

JOINT FLEET MAINTENANCE MANUAL
VOLUME VI
MAINTENANCE PROGRAMS
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2-Kilo	3-M Maintenance Action Form
2M	Miniature/Microminiature
3-M	Maintenance and Material Management
3-MC	Maintenance and Material Management Coordinator
3-MPR	3-M Performance Rate
A&I	Alteration and Improvement
ACAT	Acquisition Category
ACCCIT	Aircraft Carrier Climate Control Investigating Team
ACF	Accomplishment Confidence Factor
ACN	Advance Change Notice
ACO	Administering Contracting Officer
ADP	Automated Data Processing
AEL	Allowance Equipage List
AER	Alteration Equivalent to Repair
AERP	Advanced Equipment Repair Program
AF	Advance Funding
AFOM	Alteration Figure of Merit
AIMD	Aviation Intermediate Maintenance Department
AIS	Automated Information Systems
AIT	Alteration Installation Team
Ao	Operational Availability
AOR	Area of Responsibility
AP	Advance Planning
APL	Allowance Parts List
APPN/PE	Appropriation/Preliminary Engineering
ARRS	Analysis, Records and Reports Section
ASI	Automated Shore Interface
ASTM	American Society for Testing and Materials
ATE	Automated Test Equipment
AWP	Availability Work Package
AWR	Automated Work Request
AWS	Attack Weapons Systems
BAF	Business Adjustment Factor
BART	Beartrap Acoustic Radiated Trials
BAWP	Baseline Availability Work Package
BCA	Business Case Analysis
BCE	Battery Charging Electrician
BCEF	Battery Charging Electrician Forward
BER	Beyond Economical Repair
BRB	Battery Record Book
BSC	Balanced Score Card
C4I	Command, Control, Communications, Computers and Intelligence
C5RA	Combat Systems, Command, Control, Communications and Computer Readiness Assessment
CAL STD	Calibration Standard
CAQAP	Contract Administration Quality Assurance Program
CAR	Corrective Action Request

CAS	Contract Administration Services
CASCAN	CASREP Cancellation or Cancellation of Casualty Report
CASCOR	CASREP Correction or Correction of the Casualty in the Casualty Report
CASREP	Casualty Report
CBA	Cost Benefit Analysis
CCT	Customer Contract Team
CD-ROM	Compact Disk - Read Only Memory
CEIPRP	Continuous Estimating Incremental Planning Review Process
CFOSS	Cargo Fuel Operational Sequencing System
CFT	Cross Functional Team
CHENG	Chief Engineer
CM	Continuous Maintenance
CMAV	Continuous Maintenance Availability
CMF	Confidence Management Factor
CMO	Contract Management Office
CMP	Class Maintenance Plan
CNO	Chief of Naval Operations
CNRMC	Commander, Navy Regional Maintenance Center
COMUSFLTFORCOM	Commander, United States Fleet Forces Command
COMLANTFLT	Commander, Atlantic Fleet
COMLOGWESTPAC	Commander Logistics Western Pacific
COMNAVAIRFOR	Commander Naval Air Forces
COMNAVAIRLANT	Commander Naval Air Force Atlantic
COMNAVAIRPAC	Commander Naval Air Force Pacific
COMNAVAIRSYSCOM	Commander, Naval Air Systems Command
COMNAVRESFOR	Commander Naval Reserve Force
COMNAVSEASYSYSCOM	Commander, Naval Sea Systems Command
COMNAVSURFGRUMIDPAC	Commander Naval Surface Group Middle Pacific
COMNAVSURFGRUPACNORWEST	Commander Naval Surface Group Pacific North West
COMNAVSURFLANT	Commander Naval Surface Force Atlantic
COMNAVSURFOR	Commander Naval Surface Forces
COMNAVSURFPAC	Commander Naval Surface Force Pacific
COMPACFLT	Commander, Pacific Fleet
COMPATRECONFORLANT	Commander Patrol Reconnaissance Forces Atlantic
COMPATRECONFORPAC	Commander Patrol Reconnaissance Forces Pacific
COMSPAWARSYSCOM	Commander, Space and Naval Warfare Systems Command
COMSUBGRU	Commander Submarine Group
COMSUBLANT	Commander Submarine Force Atlantic
COMSUBPAC	Commander Submarine Force Pacific
COMSUBRON	Commander Submarine Squadron
COMUSFLTFORCOM	Commander United States Fleet Forces Command
COSAL	Coordinated Shipboard Allowance List
CPARS	Contractors Performance Appraisal Reporting System
CPO	Chief Petty Officer
CPR	Calibration Problem Report
CQA	Contract Quality Assurance
CREI	Cost Reduction and Effectiveness Improvement
CRES	Corrosion Resistant Steel
CRL	Calibration Requirements List
CS	Combat Systems
CS/CCS	Command and Control Systems
CSMP	Current Ship's Maintenance Project
CSPE	Combat Systems Project Engineer
CTL	Class Team Leader
CTRA	Consolidated TMDE Readiness Assessment
CVF	CSMP Validity Factor

CVN	Nuclear Powered Aircraft Carrier
CWP	Controlled Work Package
CYBERFOR	Cyber Force
DCMA	Defense Contract Management Agency
DS	Dry Deck Shelter
Det/DET	Detachment
DFS	Departure From Specification
DLR	Depot Level Repairable
DMP	Depot Modernization Period
DO	Duty Officer
DoD	Department of Defense
DPP	Deployment Preparation Period
DRRS	Defense Readiness Reporting System
DSN	Defense Switched Network
DSRA	Dry-Docking Selected Restricted Availability
DSS	Deep Submergence System
EDO	Engineering Duty Officer
EGL	Equipment Guide List
EIC	Equipment Identification Code
EM	Electronic Module
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMO	Electronics Material Officer
EOC	Equipment Operational Capability
EPCP	Electric Plant Control Panel
EPCP	Expanded Process Control Procedures
EPY	Expanded Planning Yard
EQOL	Enhanced Quality Of Life
ERR	Engineering Readiness Review
ESC	Executive Steering Committee
ESD	Electrostatic Discharge
ESL	Equipment Status Log
ETR	Estimated Time to Repair
FC	Field Change
FCA	Field Calibration Activity
FCFBR	Fleet COSAL Feedback Report
FFP	Firm Fixed Price
FLR	Field Level Repairable
FMA	Fleet Maintenance Activity
FMP	Fleet Modernization Program
FMPMIS	Fleet Modernization Program Management Information System
FPY	First Pass Yield
FS&L	Food Service and Laundry
FTA	Fleet Technical Assistance
FY	Fiscal Year
GDSC	Global Distance Support Center
GFM	Government Furnished Material
GPETE	General Purpose Electronic Test Equipment
GSI	Government Source Inspection
HIP	Hull Integrity Procedure
HM&E	Hull, Mechanical and Electrical

HMERA	Hull, Mechanical, Electrical Readiness Assessment
HRMC	Hawaii Regional Maintenance Center
HW	Hot Wash
HWAT	Hot Wash Analysis Team
ICAS	Integrated Condition Assessment System
ICCP	Impressed Current Cathodic Protection
ICR	Independent Cost Review
ICV	Individual Cell Voltage
IGE	Independent Government Estimate
ILRRR	Inflatable Life Raft Recertification Record
ILS	Integrated Logistics Support
IMA	Intermediate Maintenance Activity
IMF	Intermediate Maintenance Facility
IMI	Intermodulation Interference
INSURV	Board of Inspection and Survey
IPE	Industrial Plant Equipment
IPTD	Integrated Project Team Development
ISEA	In-Service Engineering Activity
ISIC	Immediate Superior In Command
IT	Information Technology
ITP	Integrated Test Plan
IUID	Item Unique Identification
JCN	Job Control Number
JFMM	Joint Fleet Maintenance Manual
JQR	Job Qualification Requirement
JRMC	Japan Regional Maintenance Center
JSN	Job Sequence Number
KTR	Contractor
LCM	Life Cycle Manager
LDS	Logistics Data System
LLC	Lessons Learned Conference
LLTM	Long Lead Time Material
LMA	Last Maintenance Action
LMA	Lead Maintenance Activity
LOA	Light Off Assessment
LOD	Letter of Delegation
LOEP	List Of Effective Pages
LSD	Logistics Support Data
LTD	Logistics Technical Data
LWC	Lead Work Center
MACHALT	Machinery Alteration
MCF	MDS Confidence Factor
MCV	Maximum Corrected Voltage
MDCO	Maintenance Document Control Office
MDS	Maintenance Data System
MDT	Mean Down Time
MEASURE	Metrology Automated System for Uniform Recall and Reporting
METCAL	Metrology and Calibration
MFOM	Maintenance Figure of Merit
MFOMa	Average Maintenance Figure of Merit
MFOMw	Weighted Maintenance Figure of Merit

MILCON	Military Construction
MILSPEC	Military Specification
MIP	Maintenance Index Page
MJC	Master Job Catalog
MMBP	Maintenance and Modernization Business Plan
MMP	Major Maintenance Period
MMPR	Maintenance and Modernization Performance Review
MOA	Memorandum of Agreement
MOGAS	Motor Gasoline
MP	Modernization Plan
MPR	MDS Performance Rate
MR	Maintenance Requirement
MRC	Maintenance Requirement Card
MRI	Machine-Readable Information
MRMS	Maintenance Resource Management System
MS	Maintenance Standard
MSDS	Material Safety Data Sheet
MSF	Magnetic Silencing Facility
MSMO	Multi-Ship Multi-Option
MSRA	Module Screening and Repair Activity
MSS	Major Shore Spares
MTBF	Mean Time Between Failures
MTR	Module Test and Repair
MTRF	Module Test and Repair Facility
NACE	National Association of Corrosion Engineers
NAVAIR	Naval Air Systems Command
NAVICP	Naval Inventory Control Point
NAVSEA	Naval Sea Systems Command
NAVSEA 08	Naval Sea Systems Command Nuclear Propulsion Directorate
NAVSEALOGCEN	Naval Sea Logistics Center
NAVSUP	Naval Supply Systems Command
NC	Critical Noise Deficiency
NCR	No Calibration Required
NDE	Navy Data Environment
NDE-NM	Navy Data Environment-Navy Modernization
NDT	Nondestructive Testing
NEC	Navy Enlisted Classification
NFE	No Fault Evident
NGDSC	Navy Global Distance Support Center
NIIN	National Item Identification Number
NMD	Navy Maintenance Database
NMP	Navy Modernization Process
NP	Potential Noise Deficiency
NPBI	NAVSEA Paint Basic Inspector
NPV	Net Present Value
NRPO	Noise Reduction Petty Officer
NSA	Naval Supervisory Authority
NSN	National Stock Number
NSSA	Norfolk Ship Support Activity
NSSC	Naval Submarine Support Center
NSTM	Naval Ship's Technical Manual
NSWC	Naval Surface Warfare Center
NSWCCD	Naval Surface Warfare Center, Carderock Division
NSY	Naval Shipyard
NUCALT	Nuclear Alteration

NWRMC	Northwest Regional Maintenance Center
OARS	Open Architecture Retrieval System
OJT	On the Job Training
OMMS	Organizational Maintenance Management System
OMMS-NG	Organizational Maintenance Management System – Next Generation
OOC	Out Of Commission
OOD	Officer Of the Deck
OPALT	Operational Alteration
OPNAV	Office of the Chief of Naval Operations
OPNAVINST	Office of the Chief of Naval Operations Instruction
OPTAR	Operating Target
OQE	Objective Quality Evidence
ORATA	Other Restricted Availability/Technical Availability
ORDALT	Ordnance Alteration
PARM	Participating Acquisition Resource Managers
PCD	Production Completion Date
PCMS	Passive Countermeasure System
PCP	Process Control Procedures
PDS	Product Data Sheet
PE	Procedure Evaluation
PEO	Program Executive Officer
PEP	Plant Equipment Project
PFR	Periodic Force Revision
PHD	Port Hueneme Detachment
PHNSY	Pearl Harbor Naval Shipyard
PHNSY-IMF	Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
PIRA	Pre-Inactivation Restricted Availability
PLAD	Plain Language Address Directory
PM	Program Manager
PMR	Periodic Maintenance Requirement
PMS	Planned Maintenance System
PMSCA	Preventive Maintenance System Coordinating Activity
PMT	Performance Monitoring Team
POC	Point of Contact
POM	Pre-Overseas Movement
PPE	Personal Protective Equipment
PPR	PMS Performance Rate
PQS	Personnel Qualification Standard
PR	Procedure Review
PRWL	Planned Refit Work List
PSNS	Puget Sound Naval Shipyard
PSNS-IMF	Puget Sound Naval Shipyard and Intermediate Maintenance Facility
PT	Project Team
PVI	Product Verification Inspection
PY	Planning Yard
QA	Quality Assurance
QAR	Quality Assurance Representative
QBR	Quarterly Battery Report
QC	Quality Control
QOS/QOL	Quality of Service/Quality of Life
RAB	Registrar Accreditation Board

RAF	Reporting and Automated Shore Interface Processing Confidence Factor
RAR	Recorded Accomplishment Rate
RCC	Regional Calibration Center
RCM	Reliability Centered Maintenance
RCP	Recommended Change Package
REC	Re-Entry Control
RFI	Ready For Issue
RH	Relative Humidity
RIP	Readiness Improvement Program
RLP	Regional Loan Pool
RMAIS	Regional Maintenance Automated Information System
RMC	Regional Maintenance Center
ROI	Return On Investment
ROV	Repair Other Vessel
RPCCR	Reactor Plant Configuration Change Report
RPPO	Repair Parts Petty Officer
RPSM	Reactor Plant Ship Modification
RSG	Regional Support Group
SC	Ship Change
SCAT	Sub-Category
SCD	Ship Change Document
SCLISIS	Ship's Configuration and Logistics Support Information System
SCP	System Calibration Procedures
SDI	Ship's Drawing Index
SEF	Ship's Equipment File
SEMAT	Systems and Equipment Material Assessment Team
SEMCIP	Shipboard Electromagnetic Compatibility Improvement Program
SEOC	Submarine Engineered Operating Cycle
SERMC	Southeast Regional Maintenance Center
SF	Ship's Force
SFWL	Ship's Force Work List
SG	Specific Gravity
SGCP	Shipboard Gage Calibration Program
SHIPALT	Ship Alteration
SHIPMAIN	Ship Maintenance
SHW	Super Hot Wash
SISCAL	Shipboard Instrumentation System Calibration
SKED	Scheduling Software
SLICR	Ship's Logistics Indicator Computerized Report
SME	Subject Matter Expert
SNAP	Ship's Non-Tactical Automated Data Processing System
SOC	Scope of Certification
SOS	Source of Support
SOVT	System Operation Verification Testing
SPALT	Strategic Systems Programs Alteration
SPAWAR	Space and Naval Warfare Systems Command
SPETE	Special Purpose Electronic Test Equipment
SPETERL	Ship's Portable Electronic Test Equipment Requirements List
SPM	Ship's Program Manager
SPRUCE	Scheduled Preservation Upkeep Coordinated Effort
SRA	Selected Restricted Availability
SRF	Ship Repair Facility
SRF-JRMC	Ship Repair Facility and Japan Regional Maintenance Center
SSBN	Nuclear-Powered Ballistic Missile Submarine

SSES	Ship Systems Engineering Station
SSGN	Nuclear-Powered Guided Missile Submarine
SSM	Ship Systems Manual
SSP	Strategic Systems Programs
SSPC	Society for Protective Coatings
SSPINST	Strategic Systems Programs Instruction
SSR	Ship's Selected Records
ST1	Surface Team One
STAN	Shipboard Electromagnetic Compatibility Improvement Program Technical Assistance Network
STSC	Submarine Technical Support Center
SUBMEPP	Submarine Maintenance Engineering, Planning and Procurement Activity
SUBSAFE	Submarine Safety
SUPSHIP	Supervisor of Shipbuilding
SUPSHIP NN	Supervisor of Shipbuilding Newport News
SURFMEPP	Surface Maintenance Engineering Planning Program Activity
SURFOR	Surface Force
SWE	Surface Warfare Enterprise
SWLIN	Ship Work List Item Number
SWRMC	Southwest Regional Maintenance Center
SWS	Strategic Weapon System
SYSCOM	Systems Command
TA	Technical Analyst
T/A	Type of Availability
TAMS	TYCOM Alteration Management System
TAMS	Test and Monitoring System
TAR	Technical Analysis Report
TAT	Technical Assessment Team
TAVR	Technical Assistance Visit Report
TCV	Total Corrected Voltage
TDMIS	Technical Document Management Information System
TEMPALT	Temporary Alteration
TFBR	Technical Feedback Report
TFBR H/T	Technical Feedback Report History Tracking
TMA	Top Management Attention
TMDE	Test, Measurement and Diagnostic Equipment
TMDER	Technical Manual Deficiency/Evaluation Report
TMI	Top Management Issues
TOMA	Technical Onboard Monitoring Assist
T(pf)	Time (problem free)
TPOC	Technical Point of Contact
TPS	Test Program Set
TRF	TRIDENT Refit Facility
TRIPER	TRIDENT Planned Equipment Replacement
TRIREFFAC	TRIDENT Refit Facility
TRS	Technical Repair Standard
TSRA	Total Ship's Readiness Assessment
TVG	Temperature Voltage Gassing
TYCOM	Type Commander
TYKIT	TYCOM Alteration Kit
TZ	Type Zero
UIC	Unit Identification Code

UPCP	Universal Process Control Procedure	
URO	Unrestricted Operation	
VIDS/MAF	Visual Information Display/Maintenance Action Form	
WC	Work Center	
WCS	Work Center Supervisor	
WCWL	Work Center Work List	
WFD	Work Force Development	
WFT	Wet Film Thickness	
WP	Work Package	
WPER	Work Package Execution Review	
WPIC	Work Package Integration Conference	
WPS	Work Package Supplement	

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VOLUME VI

CHAPTER 1

WATERBORNE UNDERWATER HULL CLEANING

REFERENCES.

- (a) NAVSEA S9086-CQ-STM-010 - NSTM Chapter 081 R4 (Waterborne Underwater Hull Cleaning of Navy Ships)
- (b) NAVSEA 389-0288 - Radiological Controls
- (c) NAVSEA S0600-AA-PRO-010 - Underwater Ship Husbandry Manual

1.1 PURPOSE. To implement the program requirements delineated in references (a), (b) and (c) and to provide guidance for waterborne hull cleaning of naval ships. This process applies to all surface force ships, submarines and aircraft carriers.

1.2 SCOPE. As stated in reference (a), commercial and Naval experience has demonstrated that appreciable savings in energy are obtainable by maintaining smooth underwater hull and propeller surfaces through periodic waterborne hull cleaning. Additionally, a hull cleaning program provides a means in which hull damage can be detected in early stages and corrective action can be taken. The hull cleaning and propeller polishing requirements of this instruction apply to all ships. It is intended to conserve fuel, restore effectiveness of sonar systems, and reduce ship self-noise, which increases anti-submarine warfare effectiveness. Reference (a) provides necessary criteria, methodology, and guidelines for waterborne underwater ship inspection and cleaning. Reference (a) provides a rating scale for inspecting and reporting fouling, fouling thresholds to initiate cleaning, approved cleaning equipment for various underwater ship systems (i.e., hull sections, appendages, dome, masker/prairie air), cleaning requirements, safety precautions and procedures for cleaning, guidelines for establishing cleaning intervals and documentation and reporting requirements. To meet the objectives of reference (a), special attention will be given to ensure that appropriate action will be taken to clean ships within 30 days of deployment.

1.3 POLICY.

- a. Scheduling of periodic cleaning will be the responsibility of the Type Commander (TYCOM) and accomplished in accordance with reference (a). Full, partial and interim cleaning shall be accomplished by diving activities (military and civilian) certified by Naval Sea Systems Command (NAVSEA) code 00C.
- b. Full hull cleaning will only be accomplished by NAVSEA divers contracted for world wide waterborne underwater hull cleaning services. Interim or partial hull cleaning will be done by a certified navy activity or NAVSEA contracted service.
- c. The execution of waterborne underwater hull cleaning operations shall follow best management practices delineated in reference (c) to maximize hull cleaning effectiveness and to minimize the release of hull cleaning by-products into surrounding waters.

1.4 RESPONSIBILITIES. An effective hull cleaning program that ensures the delivery of reliable, environmentally sound, and quality services to the Fleet requires the well-coordinated effort of several organizations. Together, these groups must manage the planning, execution, quality assurance, inspection and condition-reporting functions necessary to ensure the work is performed efficiently and in accordance with technical specifications. Reference (c), Appendix A, Section II specifies the responsibilities for each organization (NAVSEA code 00C, Commander United States Fleet Forces Command, TYCOMs, On-Scene Navy Representative, and the Ship's Chief Engineer) involved in the hull cleaning program.

1.5 REPORTS. All waterborne underwater hull cleaning and inspection shall be documented and submitted to the respective TYCOM and NAVSEA 00C for review. Documentation for cleaning submarines shall also be transmitted to SUBMEPP Code 1844. Documentation for cleaning and inspection of aircraft carrier hulls shall also be transmitted to PMS 312C Carrier Planning Activity, Code 22. Inspection results shall be recorded on the standard Diver Hull Inspection Data form (NAVSEA 4730 available on-line at <http://www.supsalv.org>). The inspection documentation may be mailed or electronically stored and transmitted to the appropriate organizations.

Mailing addresses are as follows:

COMNAVSEASYSKOM

Attn: NAVSEA 00C5

1333 Isaac Hull Avenue S.E. Stop 1075

Washington Navy Yard, DC 20376-1075

Commanding Officer

SUBMEPP Activity

PO Box 2500

Portsmouth Naval Shipyard

Portsmouth, NH 03804-2500

Commanding Officer

PEO Carriers PMS 312C

Bldg 33

Portsmouth, VA 23709-5091

- b. If personnel from another Area RMC are used to support the FTA requirement, the Area RMC providing the personnel will pay all costs for those personnel including base salary, overtime, travel and per diem. For all other sources of support, the cognizant Area RMC will pay all costs for providing the on-site support. Area RMCs will notify the Fleets if their total FTA related expenditures in support of ships home ported in other RMC locations become significant. The Fleets will review these submissions and determine if funds transfer(s) are required to ensure RMC mission completion.

NOTE 1: IN ACCORDANCE WITH REFERENCE (a), FORWARD DEPLOYED NAVAL FORCES UNDER C7F CONTINUOUSLY OPERATE WITHIN THE INTEGRATED/ SUSTAINMENT PHASE OF THE SEVENTH FLEET TRAINING PLAN IN SUPPORT OF REFERENCE (b) UNLESS IN A CNO AVAILABILITY.

NOTE 2: IF U.S. COAST GUARD OR FOREIGN NAVY VESSELS ARE PART OF A CARRIER STRIKE GROUP OR EXPEDITIONARY STRIKE GROUP, EITHER IN WORK-UP PHASE OR DEPLOYMENT, THEY WILL RECEIVE FTA SUPPORT PRIORITIZATION AS THOUGH THEY WERE UNITED STATES NAVY SHIPS (PRIORITIES 1-7 APPLY). REIMBURSEMENT FOR ALL COSTS TO PROVIDE SUCH FTA SERVICES WILL BE IN ACCORDANCE WITH THE MEMORANDUM OF AGREEMENT/MEMORANDUM OF UNDERSTANDING THAT IS NORMALLY SIGNED BETWEEN THE SERVICES/GOVERNMENTS WHEN SUCH JOINT OPERATIONAL ARRANGEMENTS EXIST.

2.7.4.1 On-Site Support. If Distance Support is unsuccessful or if the nature of the FTA request warrants immediate transition to on-site support, the cognizant Area RMC will coordinate and provide such on-site support as prioritized below:

- Priority 1 - Casualties requiring clear and immediate action to offset personnel safety hazards and/or catastrophic equipment damage.
- Priority 2 - Services to deployed ships. If resource constrained when there are multiple requirements to provide on-site support to deployed ships, prioritization of response will be:
 - (1) SSBN FTAs;
 - (2) FTAs associated with a CASREP as determined by the TYCOM;
 - (3) Other FTA requirements as determined by the Operational Commander and TYCOM.
- Priority 3 - Services to ships that are classified as within the pre-deployment or post-deployment part of the Sustainment Phase of reference (b). If resource constrained when there are multiple requirements to provide on-site support, prioritization of response will be:
 - (1) SSBN FTAs;
 - (2) FTAs associated with a CASREP as determined by the TYCOM;
 - (3) Other FTA requirements as determined by the Operational Commander and TYCOM.
- Priority 4 - Services to ships that are classified as within the Integrated phase of reference (b), or ship's that are classified as Independent Unit Ready for Tasking. If resource constrained when there are multiple requirements to provide on-site support, prioritization of response will be:
 - (1) SSBN FTAs;
 - (2) FTAs associated with a CASREP as determined by the TYCOM;
 - (3) Other FTA requirements as determined by the Operational Commander and TYCOM.
- Priority 5 - Services to ships that are classified as within the Basic phase of reference (b). If resource constrained when there are multiple requirements to provide on-site support, prioritization of response will be:
 - (1) SSBN FTAs;

(2) FTAs associated with a CASREP as determined by the TYCOM;

(3) Other FTA requirements as determined by the Operational Commander and TYCOM.

Priority 6 - Other U.S. Navy FTA requests not addressed in one of the above priorities (e.g., FTA support during Chief of Naval Operations availabilities addressed in paragraph 2.4.3 of this chapter).

Priority 7 - Technical assistance requests from non-Navy organizations (e.g., Coast Guard, U.S. Army, U.S. Air Force, Foreign Military Sales, etc.).

2.8. Post-Fleet Technical Assistance Administrative Requirements.

- a. At the conclusion of an on-site technical assistance visit, the cognizant Area RMC representative(s) will assist the ship in completing the 2-Kilo and provide a final debrief to the ship's cognizant Department Head, or his/her designated representative, prior to departing the ship. Information collected for the FTA shall be uploaded to 3M history.
- b. A TAVR is required at the completion of on-site FTA visits as addressed in paragraph 2.6.2.h and 2.6.2.k of this chapter. TAVRs should be submitted within 5 working days of visit completion.

VOLUME VI
CHAPTER 3
SUBMARINE FLEET MODERNIZATION PROGRAM

REFERENCES.

- (a) NAVSEA SL720-AA-MAN-010 - Fleet Modernization Program (FMP) Management and Operations Manual
- (b) NAVSEA SL720-AA-MAN-030 - Navy Modernization Process Management and Operations Manual (NMP-MOM)
- (c) NAVSEAINST 9210.14 - Changes to Submarine Tenders and Destroyer Tenders with Nuclear Support Facilities, Requirements Concerning
- (d) NAVSEAINST C9210.4 - Changes, Repairs and Maintenance to Nuclear Powered Ships
- (e) NAVSEAINST 4720.14 - Temporary Alterations to Active Fleet Submarines; Control of
- (f) NAVSEA T9044-AD-MAN-010 - Requirements Manual for Submarine Fly-By-Wire Ship Control Systems
- (g) NAVSEAINST 4790.8/OPNAVINST 4790.4 - Ships' Maintenance and Material Management (3-M) Manual
- (h) NAVSEA 0989-LP-037-2000 - Commissioned Submarine General Reactor Plant Overhaul and Repair Specification
- (i) NAVSEA 0989-LP-058-1000 - Destroyer Tender and Submarine Tender Nuclear Support Facilities Overhaul and Repair Specification
- (j) COMLANTFLT/COMPACFLTINST 4720.3 - Management of Afloat Combat Systems and C41 Installations and Improvements

LISTING OF APPENDICES.

- A Major Ship Alteration Types Executive Summary
- B Submarine Alteration Request Format
- C RPCCR Forwarding Letter Format
- D Sample TEMPALT/OPALT Reporting Message
- E TYKIT Requisition Form
- F Sample Alteration Feedback Message
- G TYCOM Alteration Management System Interpretation Guide

3.1 **PURPOSE.** To establish procedures, policy and responsibilities for the management and execution of the Submarine Fleet Modernization Program (FMP). Amplifying information is contained in references (a) and (b).

3.1.1 **Scope.** The scope of this chapter is limited to Ship Alterations (SHIPALT), Naval Sea Systems Command Nuclear Propulsion Directorate (NAVSEA 08) Alterations, Alteration and Improvement (A&I) items, Machinery Alterations (MACHALT), Type Zero (TZ) Improvements, Engineering Changes, Field Changes (FC), Ordnance Alterations (ORDALT), Temporary Alterations (TEMPALT), Operational Alterations (OPALT), TRIDENT Command and Control System Modifications, Temporary Engineering Changes and Type Commander (TYCOM) Discretionary Changes. Appendix A of this chapter provides an executive summary of these major alteration types.

3.1.2 **Definition.** An alteration is defined as any modification in the hull, machinery, equipment or fittings that involves a change in design, materials, number, location or relationship of an assembly's component parts, whether the change is separate from, incidental to, or in conjunction with repairs. All modifications affecting ship's configuration, both major and minor, are prohibited without the applicable Systems Command (SYSCOM) approval and TYCOM authorization. For tenders and nuclear powered ships, the requirements concerning SYSCOM approval are contained in references (c) and (d).

3.2 RESPONSIBILITIES.

3.2.1 **Immediate Superior In Command.** The Immediate Superior In Command (ISIC) is responsible for managing the alteration program for each assigned unit as follows:

- a. Informing the Fleet Maintenance Activity (FMA) of upcoming availabilities.
- b. Monitoring FMA long range modernization and availability planning.
- c. Establishing installation priorities.
- d. Ensuring no action is taken to accomplish alterations which are not authorized for Forces Afloat accomplishment. TYCOM concurrence is required for exceptions.
- e. Maintaining a file of alteration briefs and other related documentation.
- f. Assisting units in the preparation of alteration requests (Appendix B of this chapter). Reviewing alteration requests for technical adequacy, applicability and recommend the level of accomplishment. Alteration requests should be limited to alterations affecting ship and personnel safety or providing a substantial maintenance or operational benefit.
- g. Identifying deficiencies, changes to the hull applicability of alterations, or the availability of material/design.
- h. Ensuring that only TYCOM authorized or partially completed alterations appear on the individual ship's Current Ship's Maintenance Project (CSMP). Review the Type Availability Code to ensure alterations have been properly screened for either FMA or Ship's Force accomplishment (Type Availability Two for FMA or Type Availability Four for Ship's Force).
- i. Ensuring that the Master Job Catalog (MJC) contains all alterations authorized for Forces Afloat accomplishment. The TYCOM representative and Maintenance Document Control Office (MDCO) are responsible for the retrieval of authorized alteration information from the MJC and its addition to the **appropriate maintenance database** master CSMP. If an authorized alteration is not contained in the MJC, take appropriate steps to add it.
- j. Ensuring that all OPNAV 4790/CKs are collected three days prior to the end of the availability, and that Reactor Plant Configuration Change Reports (RPCCR) are collected prior to critical operations. Within two days of receipt, the MDCO will input the original OPNAV 4790/CK and Section I of the RPCCR into the on-site **appropriate maintenance database** computer. MDCO/TYCOM will stamp all documents "ADP PROCESSED" to verify **maintenance database** reporting.
- k. (Nuclear Powered Vessels only) Ensuring RPCCRs are distributed by the ship's Commanding Officer within seven days of receipt in accordance with Appendix C of this chapter and that they identify all applicable FCs and Reactor Plant Ship Modifications (RPSM) to the correct revision level.
- l. Scheduling required ship checks prior to accomplishment of the alteration.
- m. Ensuring situational alterations are accomplished when conditions warrant.
- n. Informing ships of alterations planned during an availability in the pre-arrival message. Include alterations being accomplished by outside activities (industrial activity, vendor, Alteration Installation Team (AIT), etc.).
- o. Reviewing reports of alteration completions provided by the industrial activity during Chief of Naval Operations (CNO) Maintenance Availabilities.
- p. Ensuring that alterations authorized for Forces Afloat accomplishment are completed to the maximum extent possible prior to ship entry into a CNO Maintenance Availability.
- q. For deploying units, provide to the receiving FMA a listing of alterations desired for accomplishment during the deployment upkeep in the Material Transfer message and on the ship's CSMP.
- r. Allocating a portion of the FMA Repair Other Vessel (ROV) funding for use in procuring alteration material for installation by Forces Afloat.
- s. Before installation begins onboard assigned units, ensure a Memorandum of Agreement (MOA) is in place for any alteration or TEMPALT/OPALT accomplished by an industrial activity. Ensure the MOA provides the duration of installation and scheduled removal date for TEMPALTs/OPALTs. (See Volume II, Part I, Chapter 4 of this manual.)

- t. Ensuring installation of TEMPALTs/OPALTs are in accordance with reference (e) and installation/removal is reported in the format provided in Appendix D of this chapter.
- u. Ensuring installation of alterations by the AIT is in accordance with reference (b).
- v. Ensuring that the FMA obtains TYCOM Alteration Kits (TYKIT), which are Ready For Issue (RFI), using a TYKIT Requisition Form shown in Appendix E of this chapter.
- w. Ensuring no action is taken to procure material for alterations designated as TYKITs or other type packages. In the event that material procurement was started prior to the time the alteration was designated as a package, initiate immediate action to preclude duplicating material procurement.
- x. Ensuring that Category "A" A&I's are completed within 12 months of the date of authorization. Category "A" items affect the structural or operational capability of the ship such that non-accomplishment would result in unsafe ship conditions. Failure to complete a Category "A" A&I within 12 months will require the ISIC to submit a major Departure From Specifications (DFS) in accordance with Volume V, Part I, Chapter 8 of this manual. Category "A" A&I items will be assigned to the parent FMA for management.
- y. Maintaining a current status of alterations, a TYCOM Alteration Management (TAMS) Report, a Non-Nuclear Title "K" SHIPALT Report (available from TYCOM), and a Nuclear Alteration (NUCALT) Technical Documentation Compact Disk (CD).
- z. Preparing and forwarding TAMS/Maintenance and Modernization IT System reports to individual units a minimum of once per quarter.
- aa. Ensuring all Fly-By-Wire Ship Control System alterations are in accordance with reference (f).

3.2.2 Fleet Maintenance Activity. The FMA will establish and maintain an Alteration Management Group. This group will be responsible for:

- a. Using the priorities set by the TYCOM/ISIC, commence alteration planning in time to permit accomplishment of alterations on designated units by the end of the fiscal year designated by the TYCOM Fiscal Year Program in TAMS.
- b. Ensuring required ship checks are conducted by the installing activity in a timely manner. Request Ship's Force verify an alteration's status. In cases where Ship's Force cannot conclusively verify an alteration's status, provide necessary assistance.
- c. Ensuring no action is taken to accomplish alterations which are not authorized for Forces Afloat.
- d. Notifying the ISIC that an alteration is ready to work when all procedures have been prepared and all material is on hand.
- e. Upon completion of each non-reactor plant alteration, ensure that the OPNAV 4790/CK is completely filled in by the Lead Work Center in accordance with reference (g) and returned with the signed off Automated Work Request (AWR) to the Analysis, Records and Reports Section (ARRS). The OPNAV 4790/CK will be forwarded by the ARRS to MDCO for entry into the appropriate maintenance database and then forwarded to the ship for follow-up.
- f. (Nuclear Powered Vessels only) Upon completion of each reactor plant alteration, prepare an RPCCR using the procedures outlined in references (h) and (i). Prior to forwarding the RPCCR to Ship's Force, forward it to MDCO for entry into the appropriate maintenance database. Forward the MDCO processed RPCCRs to the ship in a timely manner, using the format in Appendix C of this chapter to facilitate their final processing and return to the ISIC/TYCOM three days prior to the end of the availability.
- g. Maintaining a file consisting of a TAMS Report, a Non-Nuclear Title "K" SHIPALT Report (available from TYCOM), and a NUCALT Technical Documentation CD report, alteration briefs, alteration software and related documentation.
- h. Maintaining a current status of alterations.

- i. For deploying units, the assembly and provisioning of all material (other than standard FMA stock items) for alterations specified on the material transfer message for accomplishment during the deployment upkeep.
- j. Maintaining the status of alteration planning for all alterations authorized for Forces Afloat accomplishment.
- k. Preparing an Alteration Feedback (Appendix F of this chapter) when problems are encountered during the planning for or installation of an alteration. Forward the Alteration Feedback to the TYCOM.
- l. Requisitioning authorized and RFI TYKITs using Appendix E of this chapter.
- m. Ensuring material necessary for the installation of alterations not designated as TYKITs is procured in sufficient time to ensure availability during scheduled upkeeps using ROV funding. This includes obtaining all hardware and software required for Ship's Force responsible alterations.
- n. Providing for proper stowage of TYKITs and other alteration material.
- o. Upon completion of a Category "A" A&I item, ensure the Re-Entry Control (REC) Number (if required) is specified on the OPNAV 4790/CK or RPCCR reporting completion.

3.2.3 Ship's Alteration Coordinator. Ships will designate, in writing, the Ship's Maintenance Manager, the Maintenance and Material Management (3-M) Coordinator, or a designated assistant as the Alteration Coordinator. Responsibilities will include:

- a. Acting as the central point of contact for all matters relating to alterations.
- b. Responding to specific requests for ship checks made by the TYCOM/ISIC or FMA.
- c. Maintaining a copy of all outstanding alteration briefs applicable to the ship.
- d. Ensuring no alteration is attempted by Ship's Force until the alteration appears in the unit's CSMP as planned for accomplishment by Work Center 991.
- e. Ensuring that all OPNAV 4790/CK forms provided by the installing activity are expeditiously completed and submitted to MDCO in accordance with reference (g) three days prior to end of upkeep.
- f. Ensuring that all RPCCRs provided by the installing activity are expeditiously completed in accordance with references (h) and (i) and forwarded in accordance with Appendix C of this chapter three days prior to end of upkeep.
- g. Monitoring the accomplishment of alterations during CNO Maintenance Availabilities by both the industrial activity and Ship's Force and reviewing alteration completion reports provided by the industrial activity. Report any discrepancies to the ISIC/TYCOM.
- h. Ensuring proper 3-M reporting by monitoring the submission of OPNAV 4790/CK forms or RPCCRs regardless of the installing activity or availability. If an OPNAV 4790/CK form or RPCCR has not been submitted for a completed alteration, obtain one. The certification letter of alterations accomplished by industrial activities will be processed as an OPNAV 4790/CK as shown in reference (g).
- i. Ensuring an MOA is in place before installation of an alteration or TEMPALT/OPALT by any industrial activity. Ensure the MOA provides the duration of installation and scheduled removal date for TEMPALTs/OPALTs. (See Volume II, Part I, Chapter 4 of this manual.)
- j. Ensuring installation of TEMPALTs/OPALTs is in accordance with reference (e) and installation/removal is reported in the format provided in Appendix D of this chapter.
- k. Ensuring TEMPALTs are removed by the scheduled removal date.
- l. Ensuring all TEMPALTs are removed prior to an industrial availability.
- m. Ensuring installation of alterations by an AIT is in accordance with reference (b).

- n. Verifying the accuracy of the TAMS Report, a Non-Nuclear Title "K" SHIPALT Report (available from TYCOM), and a NUCALT Technical Documentation CD report and reporting any discrepancies to the ISIC/TYCOM.
- o. When reporting a Category "A" A&I item as complete, ensure the REC number (if required) is specified on the OPNAV 4790/CK or RPCCR reporting completion.
- p. (Nuclear Powered Ships only) Ensuring onboard repair parts are ordered in sufficient time to ensure availability prior to a reactor plant SHIPALT installation.
- q. Ensuring all Fly-By-Wire Ship Control System alterations are in accordance with reference (f).
- r. Following installation of an alteration that modifies the structure of the Ship, such that access to vital equipment is or may be impacted, the Ship shall evaluate the need to perform Unrestricted Operation (URO)-29. If access to vital equipment could be restricted, the Ship shall perform URO-29 and provide a copy to the installing activity and the ISIC. Partial accomplishment of URO-29 is acceptable if appropriate for the alteration.

3.3 ALTERATION PROGRAMS.

3.3.1 Reactor Plant Ship Alteration Package Program (Nuclear Powered Ships only). A NAVSEA 08 program to package and position reactor plant alteration material at the Naval Inventory Control Point (NAVICP) Mechanicsburg for requisition and installation by Forces Afloat. RFI reactor plant alteration packages should be requisitioned via official correspondence to the following address:

Department of the Navy
Naval Inventory Control Point
Code 009F, Building 07
5450 Carlisle Pike
P.O. Box 2020
Mechanicsburg, PA 17055-1788

3.3.2 Alteration Installation Team Program. A program to support installation of alterations by an industrial team outside of an industrial availability. Specific guidelines governing AITs are contained in references (b) and (j). The AIT is responsible for providing the ship with:

- a. All Integrated Logistics Support (ILS), equipment (including on-board spares) and documentation.
- b. Ship's Selected Records (SSR) documentation.
- c. A complete set of installation drawings red-lined to indicate all variances.
- d. For Ship's Non-Tactical Automated Data Processing System II/III ships, appropriately formatted media for updating databases to properly reflect any configuration changes, new repair parts, and support requirements.
- e. For Non-Ship's Non-Tactical Automated Data Processing ships, hard copy Coordinated Shipboard Allowance List (COSAL) pages.
- f. A copy of the completion message.

NOTE: IF ANY OF THE ITEMS IN PARAGRAPH 3.3.2 OF THIS CHAPTER ARE NOT PROVIDED BY THE AIT, REPORT THE MISSING ITEMS IN THE COMPLETION REPORT, WITH A COPY TO THE TYCOM FMP MANAGER.

3.3.3 Type Commander Alteration Kit Program. A TYCOM program which packages all hardware and software required to plan, install and report completion of the alteration. No action should be taken by Forces Afloat to obtain material to accomplish an alteration designated as a TYKIT. Accomplishment will be authorized in TAMS when the TYKIT becomes available. The installing activity should request shipment of RFI TYKITs from the TYCOM using Appendix E of this chapter.

3.4 MONITORING OF ALTERATION STATUS.

3.4.1 Type Commander Alteration Management System. An automated system operated by COMSUBLANT/COMSUBPAC containing information relating to an alteration's completion status, authorization, scheduling and designated accomplishing activity for all A&I items, TZ Improvements, TEMPALTs/OPALTs and all SHIPALTs with the exception of Title K non-reactor plant SHIPALTs. TAMS is the instrument by which the TYCOM authorizes the accomplishment and maintains a completion status. Appendix G of this chapter provides a TAMS Interpretation Guide.

3.4.2 Navy Data Environment - Navy Modernization. The official automated system supporting the information and decision support requirements of FMP managers Navy wide. The Navy Data Environment - Navy Modernization database contains data related to: ships and their availability schedules; alteration applicability; alteration material requirements and procurement status; and material, installation and outfitting costs for non-nuclear alterations. The Navy Data Environment - Navy Modernization database is the authoritative planning baseline for FMP operation throughout the Navy FMP community.

3.4.3 Nuclear Alteration Technical Documentation Compact Disk. The NUCALT Technical Documentation CD provides information required to accomplish nuclear SHIPALTs and A&I items. It is issued to applicable ships, ISICs and FMAs quarterly. It provides information on all outstanding nuclear alterations applicable to each individual ship.

3.5 REPORTING CHANGE IN ALTERATION STATUS.

3.5.1 Reactor Plant Alterations. The RPCCR provides the format for reporting reactor plant configuration changes to the TYCOM, SYSCOMs, appropriate planning yards, reactor plant prime contractors, and NAVICP. Further guidance on its completion is contained in references (h) and (i). Appendix C of this chapter provides formats for distribution of RPCCRs.

3.5.2 All Other Alterations. The OPNAV 4790/CK provides the format for reporting non-reactor plant configuration changes. Further guidance on its completion and submission is contained in reference (g).

3.6 ALTERATION REQUESTS. Requests for new alterations should be made using the format provided in Appendix B. Alteration requests should be limited to alterations affecting safety or those providing a substantial warfighting or maintenance benefit.

3.7 ALTERATION FEEDBACKS. An Alteration Feedback Message (Appendix F of this chapter) is to be submitted to the TYCOM when a problem is encountered during the planning for or installation of a non-reactor plant alteration. Liaison Action Requests should be used to report problems encountered during the planning for or installation of a reactor plant alteration in accordance with reference (h).

3.8 PERMANENT MODIFICATIONS TO TENDERS WITH NUCLEAR SUPPORT FACILITIES.

3.8.1 Modification. Rearrangement or modification to spaces within or adjacent to the Nuclear Support Facility shall be accomplished in accordance with reference (i).

3.8.2 Improvements. Improvements designated for Ship's Force action (less space relocations or major equipment reorientations or rearrangements of spaces covered by paragraph 3.8.1 of this chapter) as specified in a Naval Sea Systems Command (NAVSEA) Upgrade Program Book or in a NAVSEA conducted Industrial Plant Equipment (IPE) Survey (subject to the stipulations of paragraph 3.8.3 and 3.8.4 of this chapter) for a unit or a unit of the same class may be used as authority to accomplish the improvement without further correspondence.

3.8.3 Changes. Changes prescribed by applicable and authorized Title D/F FMA Upgrade SHIPALTs may be accomplished by Forces Afloat when authorized by the TYCOM. Changes prescribed by applicable authorized Title K FMA Upgrade SHIPALTs must be authorized by NAVSEA.

3.8.4 Internal Space Rearrangements.

- a. Internal space rearrangements other than those addressed in paragraph 3.8.2 and 3.8.3 of this chapter are authorized provided prior TYCOM approval is obtained and in each case, none of the following are involved:
 - (1) Changes in structural bulkheads.
 - (2) Changes or modifications to ship systems such as ventilation, lighting (other than fixture relocation), potable water, etc.

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CHAPTER 4

SHIPBOARD ELECTROMAGNETIC COMPATIBILITY

REFERENCES.

- (a) NAVSEA STD DWG 407-5291780 - Standard Electromagnetic Interference (EMI) Survey Procedures
- (b) SUBMEPP Test Procedure 441-5-7001 - SSN 688 Class Submarine, Systems EMI Measurements, Dockside
- (c) Maintenance Plan 4100-02-01 - Command and Control System (CCS) Electromagnetic Interference (EMI) Testing
- (d) NAVSEA STD DWG 407-5287556 - Electronics Material Officer's Guide to Shipboard Electromagnetic Interference Control
- (e) NWP 1-03.1 - Naval Warfare Publication Operational Report
- (f) NAVSEA S9040-AA-GTP-010 - Shipboard Systems Certification Requirements for Surface Ship Industrial Periods (Non-Nuclear)
- (g) COMNAVSEASYS COM WASHINGTON DC 031440Z MAR 03 - Submarine Industrial EMC and EMI Control Interim Guidance
- (h) N6-NTSP-S-70-8003 - Navy Training System Plan (NTSP) for Electromagnetic Interference (EMI) Control
- (i) NAVSEA STD DWG 407-5287561 - Industrial Electromagnetic Compatibility (IEMC) Work Process Instructions

4.1 PURPOSE. To provide guidance in the execution of a shipboard Electromagnetic Compatibility (EMC) or the Shipboard Electromagnetic Compatibility Improvement Program (SEMCIP) program in the U.S. surface force, aircraft carrier and submarine fleets.

4.1.1 Background. The SEMCIP was established by Naval Sea Systems Command (NAVSEA) under the sponsorship of the Chief of Naval Operations (CNO). The goals of SEMCIP are to rectify mission degrading Electromagnetic Interference (EMI) problems, support fleet EMC training, and maintain shipboard EMC. SEMCIP is divided into five major elements; Up-front Systems Engineering, Fleet Response and EMI Problem Quantification, Spectrum Management/EMC in the D30 Process, Engineer EMI Fixes and Fleet EMC Support Tools. One of the Fleet tools is the SEMCIP Technical Assistance Network (STAN), a database containing current and historical information on all known shipboard submarine and Strike Force EMI problems. Since some SEMCIP elements are normally associated with the development of new systems, all elements will not be discussed here.

4.2 ELECTROMAGNETIC COMPATIBILITY ASSESSMENTS OR SURVEYS. EMC assessments are an important line of defense against shipboard EMI problems and are performed by NAVSEA or NAVSEA qualified activities for the purpose of testing various ship's systems for EMI degradation. During an EMC assessment or Survey, EMI problems are investigated and evaluated, applicable EMI fixes are installed and effects of EMI on each system tested is ascertained.

4.2.1 Shipboard Electromagnetic Compatibility Assessments. Deploying surface force ships and aircraft carriers will receive an EMC assessment from Regional Maintenance Center (RMC) as part of a Combat Systems, Command, Control, Communications and Computers Readiness **Assessment** (C5RA) approximately 4 to 6 months prior to deployment. Non-deploying ships may submit requests for an EMC assessment to the RMC or by submitting an OPNAV 4790/2K to their Regional Support Group (RSG)/RMC. Submarines will receive an EMI survey or EMI groom within two months prior to deployment during Pre-Overseas Movement 2 portion of the submarine deployment cycle. The surface force ship and aircraft carrier EMC assessment and the submarine EMI survey address different types of ship's systems and therefore will be discussed separately.

4.2.1.1 Surface Force Ships and Aircraft Carriers. EMC assessments should not be scheduled coincidental with evolutions that restrict either antenna radiation or personnel movement about the ship. EMC assessments must be performed per the requirements of reference (a), and include, but are not limited to:

- a. Using STAN to verify that all available EMI fixes have been installed, or if not installed, documented in ship's Current Ship's Maintenance Project.

- b. Performing topside visual surveys to ensure the ship conforms to the applicable topside electromagnetic control drawing as specified in STAN for that ship.
- c. Performing Intermodulation Interference (IMI) test.
- d. Performing instrumented IMI source location when IMI level exceeds the 19th order.
- e. Performing broadband noise test.
- f. Identifying source location when broadband noise is detected.
- g. Performing Time-Domain or Frequency-Domain Reflectometer measurements on all high frequency, very high frequency, and ultra high frequency transmission lines.
- h. Conducting Voltage Standing-Wave Ratio tests on all high frequency, very high frequency, and ultra high frequency transmit antennas. Where transmission lines and antennas are coupled and cannot be easily separated, reconnected and weather-proofed, testing of transmission line/antenna combinations may be performed via Time-Domain Reflectometer/Frequency-Domain Reflectometer, satisfying the testing requirements of this paragraph and paragraph 4.2.1.1g.
- i. Performing insulation resistance tests on high frequency antennas, where required by the Planned Maintenance System (PMS).
- j. Documenting all discrepancies noted on OPNAV 4790/2Ks.
- k. Assisting Ship's Force with hands-on training and technical guidance in correcting discrepancies as appropriate.

4.2.1.2 Submarines. EMI surveys require up to four working days depending on the ship class being evaluated. EMI surveys can be accomplished concurrently with most submarine work but must not be scheduled coincidental with evolutions that would impede access to the forward sonar and communications system units or cause power-down of systems during the EMI survey without prior notification of the EMC technician conducting the survey. If equipment must be powered down, the EMC technician will determine if further EMI testing can be accomplished. For an accurate assessment of the submarine EMI posture, the ship's forward electronics must be energized as close as possible to the ship's at sea lineup. The electronics and hydraulics for both multifunction mast antennas must be operational. In addition, crane service is required to lift two antenna shields (approximate weight 130 lbs. each) to cover both partially raised multifunction mast antennas for testing. Major sonar, communications, fire control or navigation system casualties will cause test data to be invalid. EMI surveys must be performed per references (b) and (c) by qualified NAVSEA or NAVSEA designated activities and include but not limited to:

- a. Using STAN to verify all available EMI fixes have been installed.
- b. Briefing Ship's Force on the details of the EMI survey and discussing testing time-lines and potential impacts to the EMI survey.
- c. Coordinating antenna shield installation and removal with the ship, RSG/RMC and port services.
- d. Performing a visual survey in the submarine to verify EMI corrective action installations in sonar and communications equipment and to look for potential EMI coupling areas associated with these systems.
- e. Energizing forward electronics in accordance with the equipment energized list, provided in reference (b) for SSN Class submarines or reference (c) for TRIDENT Class submarines.
- f. Conducting EMI surveys on sonar and communications equipment.
- g. Installing and/or repairing any EMI corrective action needed to produce EMI reduction in order to improve the total shipboard EMC of all shipboard electronic equipment and systems. This will include a retest to determine the actual reduction achieved.
- h. Analyzing test data, noting all discrepancies, and generating a Naval Departure Message documenting the results of the EMI survey.
- i. Providing EMC posture debrief to the designated submarine's officers and leading petty officers. The Naval Departure Message will also be provided to the ship at the debrief for transmission from the ship.

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CHAPTER 6
INDUSTRIAL PLANT EQUIPMENT

REFERENCES.

- (a) NAVSO P 1000 - Navy Comptroller Manual
- (b) NAVCOMPTINST 7000.38 - Productivity Enhancing Incentive Fund (PEIF)/The Productivity Enhancement Capital Investment Fast Payback Program
- (c) NAVSUP 5009 (DLAM 4215.1) - Management of Defense-Owned Industrial Plant Equipment
- (d) NAVSO P 3635 - Federal Acquisition Regulation, Section 13, Chapter 312
- (e) SECNAVINST 4855.3 - Product Data Reporting and Evaluation Program (PDREP)

LISTING OF APPENDICES.

- A Plant Equipment Project Form

6.1 PURPOSE. To define the responsibilities and procedures for the acquisition and management of Class Three and Class Four Plant Property (**inactive equipment**) as defined in reference (a).

6.1.1 Scope. This instruction applies to Class Three and Class Four Plant Property as defined in reference (a) with the following exclusions:

- a. Alterations. Develop and submit requests for alterations in accordance with Volume VI, Chapter 3 of this manual. Requests for additional shipboard equipment that will be permanently installed require an approved alteration.
- b. Productivity enhancement/fast paybacks. Develop and submit requirements in accordance with reference (b). Due to payback documentation requirements the Productivity Enhancement Incentive Fund is most often used in requesting new technology equipment for the establishment of major new capabilities. This fund is also used for the implementation of radical procedural, productivity or efficiency improvements to current maintenance capabilities.
- c. Plant property assigned an active National Stock Number (NSN). Forward requirements by requisition through the supply system to the cognizant Inventory Control Point. Acquisition of new equipment discussed in this chapter pertains only to items that are not assigned an active NSN.
- d. Operating Forces Support Equipment. Submit requirements to the cognizant Area Commander for funding consideration and local procurement by the requesting activity.
- e. Materials Handling Equipment is under the single manager control of the Naval Supply Systems Command (NAVSUP) (see Volume IV, Chapter 13 of this manual). Civil engineering support equipment is under the single manager control of the Naval Facilities Engineering Command. General Purpose Electronic Test Equipment (GPETE) is under the single manager control of Naval Sea Systems Command (NAVSEA) 04DS (see Volume VI, Chapter 9 of this manual).

6.1.2 Background. The program for acquisition of Class Three and Class Four Plant Property (as defined in section 6.2 of this chapter) is managed and funded by NAVSEA PMS 335. References (a) and (c) provide instructions to facilitate procurement and management of Class Three and Class Four Plant Property within the Department of the Navy.

6.2 DEFINITIONS.

6.2.1 Plant Equipment - Classes Three and Four Plant Property. Navy owned plant property of a capital nature (consisting of equipment, machine tools, test equipment, furniture, vehicles, accessories and auxiliary items, but excluding special tooling and special test equipment) used or capable of use in the manufacture of supplies or in the performance of services or for any administrative or general purpose.

6.2.2 Class Three Plant Property - Other Plant Equipment. That part of plant equipment, with an acquisition cost of \$100,000 or more, used in or in conjunction with the manufacture of components or end items relative to maintenance, supply processing, assembly or research and development operations, but excluding items categorized as Industrial Plant Equipment (IPE).

6.2.3 Class Four Plant Property - Industrial Plant Equipment. That part of plant equipment with an acquisition cost of \$100,000 or more, used for the purpose of cutting, abrading, grinding, shaping, forming, joining, testing, measuring, heating, treating or otherwise altering the physical, electrical or chemical properties of materials, components, or end items entailed in manufacturing, maintenance, supply processing, assembly or research and development operations as identified by noun name in references (a) and (d).

6.3 PROCUREMENT REQUIREMENTS.

6.3.1 Requesting Activities. All requesting activities shall submit requests for plant property as follows:

6.3.1.1 New Procurement. Submit all replacement (new equipment) requirements, with an acquisition cost of \$100,000 or more, to the cognizant Type Commander (TYCOM). Use the Plant Equipment Project (PEP) form, Appendix A of this chapter, to submit requirements one calendar year prior to the start of the fiscal year in which equipment is actually required (e.g., 1 October 1995 for Fiscal Year 1997).

- a. Identify each different requirement by individual project format. Instructions for completing the PEP form are included in Appendix A of this chapter.
- b. Provide a priority listing of all projects with each annual submission.
- c. Activities, such as Fleet Maintenance Activities, having an IPE Management System or IPE Maintenance Module Program shall submit PEPs on computer disk accompanied by a hard copy.
- d. New procurement requirements, with an acquisition cost of less than \$100,000 and Other Plant Equipment/IPE Maintenance Requirements (e.g., major repairs or overhaul) shall be forwarded to the cognizant TYCOM for funding consideration.

6.3.1.2 Urgent Replacement. Submit previously unidentified requirements to the cognizant TYCOM. Use the PEP form of Appendix A of this chapter, or message format if the replacement is associated with correcting a Casualty Report. Assign an integrated priority position for each requirement. If message format is used, justification and all relevant data for equipment acquisition must be provided.

- a. All PEPs shall be prioritized and evaluated to ensure compatibility with maintenance capability requirements/configuration.
- b. PEPs for replacement of currently installed equipment shall be screened to ensure there is no conflict with other maintenance actions.
- c. Cancel any project which is no longer required. Notify the TYCOM by letter of any canceled requirements.

6.3.1.3 Receipt of Plant Property. Upon receipt of plant property, comply with the procedures described below:

- a. Receive the equipment from the staging area.
- b. Notify the procurement activity immediately if deficient conditions are found after receipt. Notifications will be made via a Product Quality Deficiency Report with an information copy to the cognizant TYCOM. Product Quality Deficiency Report preparation and processing instructions are available in reference (e).
 - (1) When timing is critical, such as near the end of the warranty period, or when an urgent need to correct the problem exists, notify the procurement activity by the most expedient method (i.e., telephone or message).
 - (2) Provide the contract number, model and serial number of the plant property, date accepted, date problem developed, nature of the problem and local point of contact (name and telephone numbers).
- c. Notify the TYCOM of actual equipment delivery date.

- a. Intermediate-Level Baseline APL. The Intermediate-Level Baseline APL is supply coded Operating Space Item. 2M/MTR piece parts listed in this APL are ordered, staged in three VIDMAR-type cabinets and delivered onboard selective intermediate level ships to the 2M work center. These 2M/MTR piece parts have been identified as maintenance critical. Operating Space Item parts consumed during 2M repairs must be reordered on a one-for-one basis as usage is reported and are eligible for demand base stocking by the supply department.
- b. Organizational-Level Baseline APL. The Organizational-Level Baseline APL is supply coded Storeroom Item and contains an Allowance Note Code to ensure that 100% of the listed 2M piece parts are stocked on board regardless of stocks presently on hand and/or past usage.
- c. Augmented APL. To ensure that sufficient piece parts are authorized to support increases in 2M/MTR repairs, additional APLs have been developed to support both I- and O-Level 2M/MTR ships and shore facilities. These APLs, labeled "Augmented APLs" list all 2M/MTR piece parts appearing in the latest Gold Disk release and are applicable to a ship's class and/or maintenance capability. These APLs are supply coded Storeroom Item and allowances will be computed using normal Fleet Logistics Support Improvement Program computations. Augmented APLs will continue to be updated as the number of Gold Disks continues to increase. Parts needed for a 2M/MTR repair but not listed in 2M/MTR APLs should be reported by Fleet Coordinated Shipboard Allowance List Feedback Report in accordance with reference (p).

8.6 UNIQUE MINIATURE/MICROMINIATURE GUIDANCE (NAVAL AIR FORCE ONLY).

8.6.1 Aviation Intermediate Maintenance Department.

- a. Use reference (q) as the standard maintenance instruction when repairing aircraft or aircraft support equipment CCAs/EMs. Copies of references (q), (r), (s), and (t) shall be maintained in each 2M WC.
- b. Ensure all 2M Collateral Duty Inspectors demonstrate in-depth knowledge of 2M repairs. All micro repair should be inspected by Collateral Duty Inspectors familiar with micro repair standards.
- c. Initial support equipment outfitting for 2M stations is accomplished under the Individual Material Readiness List Program in accordance with reference (u).

8.6.2 Aircraft Carrier Fleet Maintenance Activity Module Test and Repair Facility.

- a. The mission of the MTRF WC OE15 shall be to enhance the parent Aircraft Carrier and Battle Group units' Combat Systems readiness through onboard I-Level electronics repair of CCAs/EMs.
- b. MTRF evaluations will be conducted by the Naval Underwater Warfare Center, Fleet Engineering Office during the C5RA/TSRA or prior to deployment in accordance with reference (e).
- c. Ensure all MTRF WC repair actions are documented under the Maintenance and Material Management (3-M) system per reference (d) and the procedures delineated in Appendix C of this chapter, using a pre-formatted OPNAV 4790/2K. Maintain a file copy of the OPNAV 4790/2K with the completed QA Form 17 for a period of 12 months or until the next C5RA/TSRA or QA audit, whichever is the longer period.
- d. Ensure the ESD control procedures of references (g), (h), and (i) are instituted at the MTRF WC and all departments (less Aviation Intermediate Maintenance Department) to provide for the adequate protection of ESD sensitive CCAs/EMs.
- e. Ensure that the MTR Tracking System is used to record all repairs, maintain the production database and to produce required reports.
- f. Aircraft Carrier Combat Systems Material Officers will promulgate amplifying procedures by message for Battle Group units to request MTRF WC assistance. A sample format is provided in Appendix D of this chapter.
- g. Units requesting CVN MTRF repairs submit "IMMEDIATE" message in the format of Appendix E of this chapter. MTRFs will not accept CCAs/EMs for repair without prior notification.

- h. Each MTRF shall provide Commander, Naval Air Force Atlantic (COMNAVAIRLANT)/Commander, Naval Air Force Pacific (COMNAVAIRPAC) a quarterly summary report of MTRF accomplishments, by message or Naval Telegram, due by the 15th day of the month following the end of each quarter. A sample format is provided in Appendix F of this chapter.
- i. Employ the Progressive Repair Program to establish and support the interface between the Supply Department and Combat Systems MTRF in repair of all ship systems CCAs/EMs.

8.7 UNIQUE MINIATURE/MICROMINIATURE GUIDANCE (SUBMARINE FORCE ONLY).

8.7.1 Module Screening and Repair Activity. The Module Screening and Repair Activity (MSRA) has been developed to support the AN/BSY-1(V), AN/BQQ-15D/E, and CCS MK1/2 programs (WC 84). Parts supported by the MSRA Module Support List are managed in accordance with reference (v).

- a. MSRAs are located at the Naval Submarine Support Facility New London, CT, Submarine Base Pearl Harbor, HI, and Engineering Development Model, Norfolk, VA.
- b. The MSRA suite of test equipment includes a Teradyne tester for digital CCAs/EMs, an LTX for analog CCAs/EMs, a UTS-625 for power supplies, an Amplifier Test Set for Modular Power Amplifiers, and the Display Assembly Test for displays.
- c. (Submarine Base & Naval Submarine Support Facility only) FMAs shall establish and maintain an MTRF consisting of the combined capabilities of WCs 67L, 67M, and 84A.

8.7.2 Fleet Maintenance Activity/Submarine Base.

- a. Designate the R-4 Division Officer through the Production Officer to be the overall coordinator for the MTRF.
- b. FMAs are to maintain 2M/ATE/GPETE repair capability. The minimum acceptable capability is two 2M repair stations, one of which will be microminiature capable.
- c. Promulgate amplifying procedures for out-of-area or inter-service customers to request MTRF assistance using the guidance of Appendix D of this chapter.
- d. Maintain a complete inventory of MTRF using Appendix G of this chapter.

8.7.3 Reports. FMAs shall utilize the **appropriate turn-in repairable tracking system** to generate a quarterly Mandatory Turn-in Repairable Summary Package, with option (1) of the MTRF accomplishments, forwarded to the TYCOM (N42). This summary package is due by the 15th day of the month following the end of each quarter.

9.4 REGIONAL LOAN POOLS. RLPs are established at the RMC/RCC to alleviate shipboard maintenance support shortfalls caused by a lack of shipboard GPETE due to calibration or repair requirements.

- a. RLPs include a wide variety of calibrated, Ready For Issue items stocked in sufficient quantity to ensure continuous availability.
- b. GPETE from the RLPs may be checked out for a specific purpose (i.e., repair of the AN/SPS-73 Radar, PMS of the AN/WSC-3, etc.) or to satisfy a temporary requirement for special purpose items not normally included in the ship's allowance. Pool items are intended as short-term substitutes for unavailable shipboard items. Pool items may be checked out for ten working days; however, the RMC METCAL Coordinator may authorize an extension of the ten day limit on a case basis.
- c. All GPETE returned to the RLP shall be inspected by representatives of the lending RMC/RCC and the borrowing command. The original inventory receipt is checked to see if the GPETE has been damaged or is missing accessories provided at the time of the loan. GPETE lost, damaged beyond repair or destroyed must be surveyed by the borrowing command using procedures established in reference (m). A copy of the completed survey report shall be forwarded to the appropriate TYCOM METCAL Manager.

9.5 REPLACEMENT OF GENERAL PURPOSE ELECTRONIC TEST EQUIPMENT/CALIBRATION STANDARDS.

9.5.1 Depot Level Repairables. GPETE/Calibration Standards (CAL STD) (7Z Cog), certified by a RMC/RCC or a higher-level activity as BER will be turned into the Naval Supply System. (Note: NAVAIR CAL STDs will not fall under these instructions.) For BER NAVAIR CALSTDs, RMC/RCC and Customer activities are required to contact TYCOM METCAL manager.

- a. The RMC/RCC certifying the GPETE/CAL STD as BER may turn the defective unit in to the Navy Supply System for the customer activity, provided the customer has given the RMC/RCC a requisition number under which a replacement will be ordered. If the RMC/RCC turns the defective GPETE/CAL STD in to the Naval Supply System, all turn-in data must be given to the customer to assist in any future carcass tracking follow-up investigations by the Naval Supply System.
- b. The customer activity may accept return of the defective GPETE/CAL STD from the RMC/RCC and initiate turn-in and replacement procedures through the normal Navy Supply System process.
- c. Depot Level Repairable GPETE/CAL STD will not be processed for survey by a RMC/RCC.

9.5.2 Navy Stock Funded. GPETE (1H or 9N Cog), certified by an RMC/RCC or a higher-level authority as BER will be processed for survey.

- a. The RMC/RCC certifying the GPETE/CAL STD that is BER must notify the customer of a requirement to survey the defective GPETE/CAL STD. The customer is responsible for initiating a survey action and requisitioning a replacement item through normal Operating Target funded supply channels.
- b. The RMC/RCC certifying the GPETE/CAL STD as BER may retain the carcass for cannibalization of repair parts provided the customer has acknowledged that the survey process has been initiated and has provided a copy of the survey document to the RMC/RCC.

9.6 TEST MEASUREMENT DIAGNOSTIC EQUIPMENT MANAGEMENT.

9.6.1 Ship's Portable Electronic Test Equipment Requirements List. The SPETERL is the allowance document for all GPETE, SPETE and FCA calibration standards. Test equipment and FCA calibration standards allowance requirements (quantity and type) are computed on an individual ship's entire configuration of installed electrical and electronic equipment, with due consideration for function, quantity, usage and location of prime equipment. The Allowance Change Request form, NAVSUP 1220-2, is used to request an increase or decrease in the SPETERL allowance.

9.6.2 Test Measurement Diagnostic Equipment Index. Reference (h) is the primary source for determining test equipment uses and requirements. Consult reference (h) to determine the preferred model of test equipment needed to fill a specific deficiency. Test equipment deficiencies fall into two categories, initial outfitting and replacement.

9.6.3 Sub-Category Code. Defines a family of test and measurements parameters. Test equipment within the SCAT code is prioritized in accordance with reference (m), with the lowest priority number assigned to the TMDE currently being procured to fill outstanding deficiencies. SCAT codes are the basis for identifying TMDE on MRCs.

9.6.4 Ship's Configuration and Logistics Support Information System Index. The primary test equipment inventory document for ships. The Ship's Configuration and Logistics Support Information System (SCLSIS) Index must be kept current by the submission of completed OPNAV 4790/CK forms.

9.6.5 Consolidated Test, Measurement and Diagnostic Equipment Readiness Assessment.

9.6.5.1 Consolidated Test, Measurement and Diagnostic Equipment Readiness Assessment Program. The CTRA Program is a joint fleet program that improves fleet and shore command non-Aviation TMDE readiness. The CTRA Program also includes the receipt, staging and redistribution of Fleet excess electronic test equipment, mechanical test equipment and calibration standards used to replace equipment that is missing or BER.

9.6.5.2 Type Commander Metrology and Calibration Program Managers. TYCOM METCAL Program Managers are responsible for the following:

- a. Scheduling a CTRA during ship **Fleet Readiness Training Plan** or Integrated Logistics Overhaul and every 18 to 24 months for shore commands.
- b. Budget for the CTRA program as necessary.
- c. Develop and promulgate CTRA schedule as required.
- d. Maintain excess test equipment and calibration standards at CTRA staging area for redistribution to fleet activities.

9.6.5.2.1 Consolidated Test, Measurement and Diagnostic Equipment Readiness Assessment Review Process.

- a. Brief ship's department heads, division officers and technicians.
- b. Conduct training for TMDE management and the calibration recall software.
- c. Review SPETERL and electronic (E) TMDE inventory with the ship's Combat Systems Test Equipment manager. Review will include: Configuration verification of prime systems and Fleet Supplemental Test Equipment Requirements, verification of shipboard TMDE inventory and revisions to the TYCOM approved calibration recall system inventory, prime system and test equipment updates to Navy configuration database (if during Integrated Logistics Overhaul availability), identification of SPETERL allowance changes based on actual configuration, listing of inoperable items and coordination of repair of items that fill deficiencies, removal of excess equipment from the ship and filling of deficient equipment from CTRA staging assets. Deficient initial outfitting items will be coordinated through NAVSEA.
- d. Review Mechanical "S" inventory with the SGCP Coordinator using the CRL to determine calibration requirements (TCR and MEASURE ships only). Mechanical test equipment will be listed on this mechanical inventory. Use the CRL to validate the recall inventory (TCR and MEASURE ships only).
- e. Provide the results of the assessment to the ship.

9.6.5.2.2 Consolidated TMDE Readiness Assessment Test, Measurement and Diagnostic Equipment Redistribution. The CTRA Center manages the redistribution of Fleet TMDE to fill allowance deficiencies or replace equipment that is missing or BER. Excess TMDE and decommissioned ships' assets are received and made available for redistribution to FLEET activities. Fleet activities are required to forward all excess TMDE to the CTRA Center and to utilize the CTRA Center for the initial requests to fill replacement or deficient SCAT coded TMDE.

9.7 SHIPBOARD INSTRUMENTATION AND SYSTEM CALIBRATION. The SISCAL Program, which includes SGCP, is responsible for the calibration and maintenance support for surface force ships and Landing Craft Air Cushion (LCAC) installed instrumentation and machinery control system calibration requirements, reference (e). Installed instrumentation calibration support parameters are documented in the ship specific CRL as follows:

- a. Calibration Activity. Defines responsibility for calibration of shipboard installed instrumentation for the following three calibration activities.

VOLUME VI
CHAPTER 12
DEGAUSSING

REFERENCES.

- (a) OPNAVINST S8950.2 - Magnetic Silencing
- (b) NAVSEA S9086-QN-STM-010 - NSTM Chapter 475 (Magnetic Silencing)
- (c) NAVSEA S9475-AC-PRO-010 - Degaussing Forms, Records and Reporting Procedures
- (d) NAVSEA S5475-AL-PRO-010 - Principles and Procedures for Magnetic Treatment of Ships
- (e) SSPINST 8950.2 - Procedure for Fleet Ballistic Missile (FBM)/Strategic Weapons System (SWS) Components During Flash-Deperm Treatment of an SSBN

12.1 **PURPOSE.** To provide magnetic silencing and deperming requirements, and the check ranging and reporting procedures defined by reference (a). Reference (b) provides the basic principles and background of degaussing.

12.2 **DEGAUSSING DEFINITIONS.**

12.2.1 **Deperming.** Deperming is the magnetic treatment of a ship's hull to minimize permanent magnetism and is also performed to place the ship's permanent magnetization into a standard condition such that it is approximately the same as the other ships in the class. All newly constructed ships require deperming. The deperming needs of operational ships are established by check ranging.

12.2.2 **Installed Degaussing System.** A shipboard system which reduces the residual permanent and induced magnetic signature of the ship, and is the ship's primary passive mine countermeasure system. Different combinations of degaussing coils, type of controls and power supplies help to identify a degaussing system.

12.2.3 **Magnetic Compass Compensation.** Magnetic field from a ship's degaussing system can interfere with a ship's magnetic compass heading and make the system useless for navigation. Per reference (b), a compensating coil is set up around the magnetic compass to neutralize the effect of degaussing coil field in the vicinity of the compass. Magnetic compasses that use fluxgate technology have a degaussing compensation system that does not rely on compensation coils.

12.2.4 **Check Ranging.** The action of a ship making reciprocal range runs over an instrumented array, at a Magnetic Silencing Facility (MSF), for purposes of measuring the ship's degaussed magnetic signature. Check ranging is the principle method of determining the effectiveness and reliability of installed degaussing systems. A satisfactory check range is two range runs on reciprocal headings within a six week period which are determined to be magnetically satisfactory while ship's degaussing equipment is operating properly. Underwater Electromagnetic Measurement Systems for check ranging are available at the following locations:

San Diego, CA	Norfolk, VA
Pearl Harbor, HI	Mayport, FL
Yokosuka, Japan	New London, CT
Kings Bay, GA	

12.2.5 **Degaussing Folder.** The Degaussing Folder (NAVSEA 8950/1) is an official ship log. It contains instructions for operation of the degaussing system, degaussing charts, values for current and turn settings, installation forms, compass compensation forms, and a log section showing all pertinent details of magnetic treatment and of action taken on the ship's degaussing system for the information of degaussing authorities. The degaussing folder is issued to a ship by the MSF that renders the initial magnetic treatment and system calibration. Reference (c) provides the detailed requirements for maintaining the degaussing folder.

12.3 **SHIPS AND SUBMARINES WITH INSTALLED DEGAUSSING SYSTEMS.**

- a. Reference (a) mandates check ranging for ships. To meet minimum requirements, a satisfactory check range is required every six or twelve months depending on the type of system installed. Requirements for the check ranging of ships are as follows:

- (1) After new construction.
 - (2) Before and after a major dry-docking availability.
 - (3) After a major shock to the hull from a nearby explosion.
 - (4) After grounding or collision.
 - (5) As feasible, before entering mined waters.
 - (6) Before issuing a Casualty Corrected of any Casualty Report degaussing equipment.
 - (7) At every opportunity, when entering or leaving a port with ranging facilities. **Declining use of range facilities is not an option.**
 - (8) After a major alteration to the hull and superstructure.
- b. When ranging facilities are not available in the home port, ships will satisfactorily check range annually.
- (1) Ships forward deployed to areas without ranging facilities are exempted from check range requirements by reference (a).
 - (2) Surface ships not equipped with an installed degaussing system are not required to check range (except LCS 2 class).
- c. A ship which receives notification from an MSF of unsatisfactory magnetic condition and the reason for unsatisfactory signature is a degaussing equipment failure, the ship is required by reference (a) to report via Casualty Report as directed by Chapter 5 of this volume.
- d. Installed degaussing systems will be operated at all times while underway.

12.3.1 Check Ranging.

- a. Before check ranging, contact the range facility by voice radio. Range crossings will be considered invalid unless the range is clear of other traffic (including tugboats) before crossing.
- b. Ranging facility requires the following information:
 - (1) Coil Settings. Once the ship is on course, and before the ship crosses the range, inform the facility of actual ammeter currents and polarities. Ensure the meter readings are correct for both zone and polarity. Actual coil currents in effect during the crossing **MUST** be recorded and reported to the MSF for satisfactory check ranging.
 - (2) Ships with Advanced Degaussing systems. Due to the large number of coil currents required to be reported, ships with these systems must make arrangements with the MSF to deliver this information by facsimile or other electronic methods after the crossing occurs.
 - (3) Ship's Draft. Forward and aft drafts. Provide actual keel drafts, vice navigational drafts.
 - (4) Ship's heading. If more than five degrees off channel course, provide the range with the actual ship's heading. Once the course is established, maintain a steady course and constant speed between 8 to 10 knots, or as the range operator directs.

12.3.2 Responsibilities.

12.3.2.1 Type Commander/Immediate Superior In Command.

- a. Monitor the degaussing readiness of assigned ships.
- b. Ensure that ships "check range" as required by paragraph 12.3 of this chapter.
- c. Issue waivers to check ranging and deperming requirements if necessary. The Technical Warrant Holder (NAVSEA 05P1) may be contacted if advice on impact to ship susceptibility is needed.

VOLUME VI
CHAPTER 13
SURFACE SHIP CORROSION CONTROL

REFERENCES.

- (a) NAVSEA S9086-DA-STM-010 - NSTM 100, Hull Structures
- (b) NAVSEA S9086-VD-STM-010 - NSTM Chapter 631 (Preservation of Ships In-Service - General)
- (c) NAVSEA Technical Publication T-9630-AB-MMD-010/ALL USN HULLS - Corrosion Control Assessment and Maintenance Manual (CCAMM) for the Corrosion Control Information Management System (CCIMS)
- (d) COMNAVSURFOR Instruction 3120.1 - Zone Inspections
- (e) COMNAVAIRFORINST 4790.1 - Commander Naval Air Forces Surface Maintenance and Material Management (3-M) System Manual

LISTING OF APPENDICES.

- A Preservation Departures from Specifications Process Decision Tree

13.1 **PURPOSE.** To provide basic guidelines necessary to maintain an effective Corrosion Prevention and Control Program. Guidance for inspection, prevention and repair of corrosion on ships is contained in references (a), (b) and (c), which supersedes all previous class specific Corrosion Control Manuals distributed by Naval Sea Systems Command. In addition, this chapter requires the use of the Corrosion Control Information Management System (CCIMS) database as the repository for all inspection and maintenance data. The maintenance of coating integrity to prevent structural degradation is necessary to ensure the safe and proper operation of the ship. Maintenance of areas with severe corrosion require enhanced and targeted surveillance due to the highly corrosive conditions that can lead to higher risk of accelerated structural degradation. Reference (a) provides structural system survey and inspections criteria for surface ships and aircraft carriers. Reference (c) provides specific requirements for inspecting tanks and voids and provides condition based maintenance guidance for availability planning.

13.2 **BACKGROUND.** Protective coatings are the most widely used method of corrosion control and have specific applications. Therefore, the physical location and operating environment shall be taken into consideration when choosing a coating system. Through the application of improved corrosion prevention and control techniques, procedures, and materials, longer lasting and more effective results can be obtained with a reduction in man-hours spent on preservation. The Department of Defense "Annual Cost of Corrosion for Navy Ships" study identified corrosion control/preservation as a high cost driver for ship life cycle maintenance. In order to reduce this life cycle maintenance cost, an accurate database of coating conditions is required to facilitate timely and appropriate maintenance decisions. The failure to identify, track, and repair a preservation system deficiency can result in coating failure and can result in damage to the structure, substantially increase repair costs and adversely impact both the seaworthiness and combat worthiness of the hull. The CCIMS database was developed to document coating conditions to assist in maintenance planning. The CCIMS database is located at <https://ccims.supship.navy.mil/> and can be accessed to record the results of tank, void and general structural inspections, coating systems installed, and all repairs conducted.

13.3 **POLICY.**

- a. All Level 1 and 2 corrosion control structural system surveys and inspections shall be accomplished in accordance with reference (a).
 - (1) Level I Structural System Surveys are defined as scheduled inspections per the Class Maintenance Plan specific to each ship class and are focused on ship structure and foundations.
 - (2) Condition-directed Level 2 structural inspections shall be conducted if warranted by deficiencies identified by a Level 1 survey. The Level 2 inspection shall include, but is not limited to, thickness gauging measurements and Non-Destructive Testing as applicable to the structural condition to allow for adequate assessment.

- b. The CCIMS database shall be used for documenting coating system inspections, maintenance and repairs.
- c. All inspectors and surveyors shall be qualified in accordance with reference (c) requirements.
- d. Whenever a tank or void is opened for manned entry, an inspection shall be performed. The inspection shall be performed in accordance with reference (c). All inspection results will be entered into the CCIMS database.
- e. For surface force ships and aircraft carriers, the CCIMS database will be used for ship maintenance availability planning.

NOTE: ANY OUT-OF-SPECIFICATION CONDITION FOUND IS TO BE MITIGATED IN ACCORDANCE WITH APPENDIX A OF THIS CHAPTER AND IN ACCORDANCE WITH VOLUME V, PART I, CHAPTER 8 OF THIS MANUAL.

13.4 RESPONSIBILITIES.

13.4.1 Type Commanders.

- a. Port Engineers and Maintenance Program Managers (MPM) schedule and screen corrosion control work items to the appropriate repair activities during industrial availabilities and upkeeps with sufficient length to accommodate the work.
- b. Port Engineers and MPMs screen tank, void and general structural inspection Automated Work Requests (AWR) in Availability Work Packages to the repair activities capable of performing the inspections including in-house Type Commander resources as applicable.
- c. When tasked by Port Engineers and MPMs, inspectors and surveyors assigned by Fleet Maintenance Activity/Regional Maintenance Center (RMC)/Type Commander will perform inspections using references (a) and (c). Inspector/surveyor will ensure all inspection data is entered into CCIMS database within three working days upon completion of inspection.
- d. (Aircraft Carriers only) Provide to Ship's Force:
 - (1) Self help information on corrosion control information.
 - (2) Technical assistance on setting up and updating a ship's Corrosion Prevention and Control Program.
 - (3) Coordinate and/or provide training in accordance with reference (c) for inspection personnel assigned by the Repair Officer (Ship's Corrosion Control Officer for Aircraft Carriers).

13.4.2 Fleet Maintenance Activity/Regional Maintenance Center.

- a. Maintain facilities and sufficient qualified personnel to apply protective coatings.
- b. Conduct Technical Assist Visits upon request from a ship during a fleet maintenance availability, or at other times as the workload permits, to include:
 - (1) Identification of shipboard topside corrosion problem areas.
 - (2) Recommendations for methods and means of corrosion problem correction.
 - (3) Informing Ship's Force of local industrial assets, including local Fleet Maintenance Activity/RMC, other industrial facilities (i.e., industrial activities) or Commercial Industrial Services assets.
 - (4) Self-help information for Ship's Force.
 - (5) Technical assistance on setting up and updating a ship's Corrosion Prevention and Control Program.

VOLUME VI
CHAPTER 14
CANNIBALIZATION

REFERENCES.

- (a) COMSUBLANT/COMSUBPACINST 4406.1 - Submarine Supply Procedures Manual
- (b) NWP 1-03.1 - Naval Warfare Publication Operational Report
- (c) OPNAVINST 4440.19F - Policies and Priority Rules for Cannibalization of Operational Equipment and Diversion of Material at Contractor Plants to Meet Urgent Operational Requirements

LISTING OF APPENDICES.

A Sample Cannibalization Request Message

14.1 PURPOSE. To provide guidance for active ship cannibalization and the resultant payback process between ships and Type Commander (TYCOM) cannibalization reporting requirements.

14.1.1 Policy. Cannibalization between active Fleet units is not a normal peacetime practice and will not occur unless:

- a. A significant degraded readiness condition has been reported.
- b. All possible actions have been taken to satisfy the material requirement through other means.
- c. The impact on maintenance personnel has been considered.

14.2 DEFINITIONS.

14.2.1 Self-Cannibalization. When a component is available on board the ship, but in a less essential or already inoperative piece of equipment, it may be desirable for the ship to disable the equipment/system to correct a casualty to a more critical piece of equipment or system. Such self-cannibalization is the prerogative of the Commanding Officer. Self-cannibalization is a temporary measure to return a more critical piece of equipment to an operational status. Replacement of the cannibalized component may or may not be required.

14.2.2 System Cannibalization. System cannibalization is cannibalization of system assets beyond the TYCOM's purview, including other TYCOM end-use material and inactive ship equipment and components. System cannibalizations are a supply system action whereas active cannibalizations are a maintenance action. TYCOM expeditors will initiate all system cannibalizations.

14.2.3 Active Ship Cannibalization. Active ship cannibalization is removal of component(s)/equipment installed in an active ship (or component(s)/equipment removed for overhaul from an active ship) for installation in another active ship. Because of the adverse effects of active ship cannibalization, such action will be taken as a last resort and only in exceptional cases when all other sources have been exhausted. When active ship cannibalization is authorized, the primary source for cannibalization is ships in Chief of Naval Operations Maintenance Availabilities, with recourse to operational ships only as a last resort.

14.3 AUTHORIZATION (Active Ship). Conditions upon which authorization decisions are based, include the following criteria.

- a. There is an urgent operational requirement for the equipment and the existing degradation to the equipment/system is considered to be unacceptable to meet the specific operational commitments.
- b. A Casualty Report (CASREP) and a Not Operationally Ready Supply requisition for the material or component to be cannibalized have been issued. The scheduled or estimated delivery date must be such that the parts will not be available from the designated supply stocking point in time to achieve satisfactory material readiness at least seven days prior to an underway date or operational commitment. The required part must not be available from other equipment on board the ship, where such equipment is not essential for the ship to accomplish its mission.

- c. All other sources, including screening of all ashore supply support sources, afloat inventory assets, local fabrication and system cannibalization have been exhausted.
- d. Operational alternatives such as delays in deployment and gapping requirements have been considered. Routine operations may not be sufficient cause to justify active ship cannibalization.
- e. Immediate Superiors in Command (ISIC) will normally initiate the cannibalization when special circumstances or urgent operational commitments exist.

14.3.1 Commander Naval Surface Force Ships.

- a. Cannibalization Not Involving Ships in Overhaul. When a system asset is not available and if the degree of readiness degradation (normally a CASREP) warrants such action, the only remaining alternative is to cannibalize from an active ship. Approval of active ship cannibalization request (not involving ships in overhaul) required to satisfy CASREP requirements will be authorized by the appropriate TYCOM.
- b. Cannibalization Involving Ships in Availabilities. Cannibalization from ships in availabilities will be minimized since such actions often affect maintenance/operational schedules for several ships. Cannibalization may be initiated only after non-availability of materials through the supply system or alternate sources has been ascertained. Cannibalization from ships in overhaul/availability must be approved through the appropriate TYCOM. Requests must be submitted via the normal chain of command.
- c. COMNAVSURFLANT/COMNAVSURFPAC (N43) and (N4111) will be included as information addressees for tracking purposes on all cannibalization request and approval messages.

14.3.2 Naval Air Force Ships. All cannibalization shall be requested from and authorized by the TYCOM. The request and authorizations will be via message. The requesting message will specify the source of replacement parts, and will reference communications indicating the cannibalized ship's Commanding Officer's concurrence with the cannibalization action. The message shall further specify the method of replacement.

14.3.3 Submarine Force Ships. Cannibalization actions shall be requested from and authorized by the TYCOM. In some unique circumstances, intra-squadron cannibalization to resolve CASREPs may be authorized by the Squadron Commander. In all cases cannibalization shall be in strict compliance with Appendix J of reference (a).

14.4 REQUEST AND AUTHORIZATION. The following procedures apply when requesting authorization for active ship cannibalization:

14.4.1 Requesting Ship.

- a. Submit a CASREP in accordance with reference (b) on equipment involved.
- b. Submit a Not Operational Ready Supply requisition for the parts.
- c. Specify the required delivery date. Verify, through the supply system, the part will not be available in time to correct the casualty.
- d. Determine that the required parts are not available from on board stock, other ships of the force in the same port, or other non-essential equipment on board the requesting ship.
- e. Initiate an active ship cannibalization request via naval message. Appendix A of this chapter contains a sample cannibalization message with specific reporting requirements. This format must be utilized when requesting cannibalization.
- f. (Surface Force only) Initiate an active ship cannibalization request via naval message. Cannibalization message should be addressed to approving authority as outlined in paragraph 14.3.1a. of this chapter. Appendix A of this chapter contains a sample cannibalization message.
- g. (Submarines only) INFO the following Plain Language Address Directory (PLAD) for all components that have a Last Maintenance Action Date assigned in the Planned Maintenance Requirements Inventories and Schedule: SUBMEPP PORTSMOUTH NH//DDS/SS//.

14.5 SHIP'S RESPONSIBILITIES.

- b. The TYCOM is responsible for developing and maintaining the long range five-year NAVSEA Habitability Life Cycle Program plan. Ships are selected for initial induction into the Program based on years in-service. Specific ensuing projects are based on non-compliance with criteria specified by reference (a), the general scope of habitability deficiencies as noted by the Board of Inspection and Survey, planned life cycle furniture replacement schedules, and other available documentation. Ship's Force input is encouraged.
- c. Design surveys are normally accomplished during Chief of Naval Operation's maintenance availabilities. Follow-on installation projects will be scheduled during subsequent maintenance availabilities until all designated compartments in each ship have been upgraded or received new furniture. Once all the designated compartments in any ship have been upgraded or refurnished, the process will repeat itself. That is, each compartment, after the initial upgrade, will be, in accordance with the TYCOM life cycle plan, scheduled for second and subsequent upgrades at specified intervals until such time that ship is removed from the program pending decommissioning.
- d. While the routine replacement of habitability hardware usually does not generate the requirement for changes to arrangements for ventilation, power and lighting, steam, support foundations, etc., more extensive projects such as upgrades may well generate these requirements. Where these changes result in requirements to increase the capacity of the "hotel" systems providing support, a concurrent Ship Change Document (SCD) in accordance with reference (g) for upgrade of the "hotel" systems must be executed at TYCOM expense concurrent with the individual Program project. More detailed guidance in this area is provided by Appendix A of this chapter. Verification of whether or not SCDs are required to support individual projects may be made via the following TYCOM Codes:
 - (1) COMNAVAIRPAC Shipboard Habitability Manager, Code N434A8.
 - (2) COMNAVAIRLANT Shipboard Habitability Manager, Code N431HE.
 - (3) COMNAVSURFPAC Shipboard Habitability Manager, Code N43TH.
 - (4) COMNAVSURFLANT Shipboard Habitability Manager, Code N436E6.
- e. Program projects should be prioritized in the following order.
 - (1) Crew/CPO Berthing.
 - (2) Crew/CPO Sanitary Spaces.
 - (3) Troop Spaces.
 - (4) Food Preparation and Service Spaces.
 - (5) Laundry Spaces
- f. Per the authority of reference (a), the TYCOM may task and fund various agents including an RMC to accomplish the following:
 - (1) Design habitability improvements for accomplishment by Forces Afloat or a CCT.
 - (2) Procure installation materials.
 - (3) Perform other management and engineering services.
 - (4) Provide installation or installation support services.

16.2.2.1 Program Responsibilities.

16.2.2.1.1 Chief of Naval Operations.

- a. Authorize Program.
- b. Establish shipboard habitability standards based on recommendations of Habitability Working Groups.

16.2.2.1.2 Naval Sea Systems Command.

- a. Establish technical policy.

- b. Approve furnishings, fixtures, materials, food service equipment and laundry equipment.
- c. Develop installation procedures.

16.2.2.1.3 Type Commander.

- a. The Habitability Program Manager shall follow the Technical Requirements of Appendix A.
- b. Develop the Long Range Plan and establish priorities for attainment of standards. Provide these plans to the appropriate Expanded Planning Yard (EPY) updating plans as required.
- c. Plan, schedule, coordinate and monitor projects.
- d. Authorize, budget and fund the Program.

16.2.2.1.4 Regional Maintenance Center or Other Agent as Tasked and Funded by Type Commander.

- a. Solicit, award and administer contracts to support Program requirements for design, engineering and technical support and installation. Perform the duties of a Contracting Officer's Representative for the monitoring and oversight of Program contractors.
- b. Provide project coordination throughout the life of each project.
- c. Provide liaison with Fleet and TYCOMs, COMNAVSEASYSCOM, Naval Surface Warfare Center, Carderock Division (NSWCCD) In-Service Engineering Agents (ISEA)/Life Cycle Managers (LCM), Planning Yards, other RMCs and other naval activities.
- d. Upon induction of the first ship of each class into the Program, submit preliminary habitability space arrangement concepts or drawings to COMNAVSEA's NSWCCD 974 ISEA/LCM for verification of conformance to applicable ship habitability specifications and criteria (e.g., reference (a)). Submittal of concepts or drawings for follow-on ships of the class is not required, unless different space arrangements are proposed. Submit final habitability space arrangement drawings for NSWCCD 974 ISEA review (prior to Planning Yard signature).
- e. Prepare, approve or task approval by the EPY NAVSEA drawings for the Program as required by Appendix A of this chapter. Provide copies of locally approved drawings to the EPY. (For nuclear-powered ships, drawings are submitted to the Hull Planning Yard/Reactor Planning Yard for review and approval.)
- f. Maintain a chronological record of all projects accomplished on each ship from the induction of the ship into the Program through decommissioning. This record includes initial ship check data, copies of all installation drawings, red-line drawings (if any) and other pertinent data.
- g. Identify and oversee the procurement of all required installation material. Maintain a material commodity database identifying all material approved for use under the Program.
- h. Prepare and update procurement specifications for habitability material.
- i. Identify requirements for Indefinite Delivery Indefinite Quantity Contracts to provide material for frequently used material items. (Contracts are normally awarded and administered by the Fleet Logistics Centers.)
- j. Operate material staging centers for the receipt, staging and shipping of project material.
- k. Perform quality assurance checks at material staging centers and onboard ships of new material and hardware. Prepare Quality Deficiency Reports and Reports of Discrepancy on requisitioned material as needed.
- l. Provide administrative assistance to the TYCOM in the preparation of long range habitability improvement plans and related correspondence.
- m. Maintain a habitability website to facilitate the dissemination of Program information.
- n. Respond to fleet requests for habitability assistance or support.

- o. Use NSWCCD 974's web site to access Navy approved furniture, food service and laundry equipment of references (b), (c) and (d) at: <https://90machinery.navsses.navy.mil/habitability/>.
- p. When required, request NSWCCD 974 ISEA/LCM support for approval of alternative food service/laundry equipment and furniture not found in references (b), (c) and (d). When required, request NSWCCD 974 ISEA/LCM to conduct equipment selection/evaluation and testing. Also, request NSWCCD 974 support for equipment Integrated Logistics Support packages (parts support via Allowance Parts Lists, Tech Manuals and Maintenance Index Pages/Maintenance Requirement Cards) and Coordinated Shipboard Allowance List support.

16.2.2.1.5 Supply Activity.

- a. Prepare, contract, and procure materials.
- b. Administer other associated contracts.

16.2.2.1.6 Ship Commanding Officer. (When projects are accomplished by Ship's Force.)

- a. Assign project manager and petty officer supervision for projects.
- b. Assign an adequate labor force for removal, space preparation, installation and required fire watches working under technical advisor supervision.
- c. Conduct training programs.
- d. Account for, coordinate all movement of, and store all project material as it is received on board.
- e. Coordinate all required tag-out/in paperwork and Work Authorization Forms.
- f. Dispose of all retrograde material generated by the project.
- g. Report changes affecting repair parts support to Naval Inventory Control Point. Technical data will be provided to the ship by the Agent preparing installation drawings.
- h. Report completion to the TYCOM with summary of lessons learned.
- i. Ensure Ship's Selected Records are updated, as appropriate. Technical data will be provided to the ship by the Agent preparing installation drawings.

16.2.2.2 Project Milestones. Advanced Planning milestones for scheduled projects are listed in Appendix C of this chapter for aircraft carriers and submarine forces and Volume II, Part II, Chapter 2, Appendix D of this manual for surface force ships.

16.2.2.2.1 Advance Planning Notice (Surface Force Ships only). This TYCOM generated notice identifies Projects proposed for accomplishment, and provides work scope details including, if applicable, Ship's Force manpower requirements. This notice also requests Commanding Officer's comments, concurrence, and commitment of resources to the proposed projects.

16.2.2.2.2 Advance Planning Notice (Aircraft Carriers only). Habitability projects are entered into the Availability Work Package. Volume II, **Part I**, Chapter 3 of this manual provides guidance in the development and revision of the Availability Work Package.

16.2.2.2.3 Project Confirmation Notice. Following receipt of the Commanding Officer's concurrence with the proposed work scope and commitment of resources, the TYCOM confirms the projects. Thereafter, any modification or change to the scope of the projects will adversely affect scheduled milestones and could result in project deferral or cancellation.

16.2.2.2.4 Project Authorization. (Applicable to projects accomplished by Ship's Force.) Upon receipt of the Commanding Officer's project start request, normally about two weeks before the start of the maintenance availability, the TYCOM evaluates readiness to begin the project and authorizes the project to be started. Rip-out shall not proceed until receipt of this authorization.

16.2.2.3 Project Completion Report. (Applicable to projects accomplished by Ship's Force.) Following completion of the project, the Commanding Officer shall prepare a letter describing the project experience, which will be used by the TYCOM to update planning and installation practices. The letter should include the name and designation of the project, funds expended, certification that Integrated Logistics Support procedures have been followed, and any significant problems encountered, improvement recommendations, or lessons learned. Completion letters on all authorized projects should be forwarded via the chain of command to the TYCOM.

16.2.2.4 Integrated Logistics Support Reporting. For projects accomplished by Ship's Force, the ship is responsible for submitting any necessary OPNAV 4790/CK forms for Coordinated Shipboard Allowance List support. Technical data will be provided to the ship by the Agent preparing installation drawings. For projects accomplished by a CCT, the requirements of NAVSEA Standard Item 009-21 shall be invoked.

16.3 NEW CONSTRUCTION SHIPS. U.S. Navy ships are built to meet the habitability standards of reference (a). Prior to certifying the ship's readiness for In-Service, the ISIC will conduct a Habitability Inspection to determine that the ship is materially ready for the crew to move aboard. The results of the Habitability Inspection shall be reported to the TYCOM by message per Volume I, Chapter 3 of this manual.

16.4 NAVAL AIRPAC/LANT SPECIFIC HABITABILITY IMPROVEMENT PROGRAMS.

16.4.1 Aircraft Carrier Climate Control Improvement Team.

- a. The Aircraft Carrier Climate Control Improvement Team (ACCCIT) provides technical assistance to improve aircraft carrier habitability through specific improvements to air conditioning, heating, and ventilation systems serving manned spaces. The TYCOM schedules an ACCCIT visit every 12 to 15 months, but no greater than 24 months.
- b. 30 days prior to the visit, the ship will provide a list of 50 spaces the ship requests to be inspected to the Commander, Naval Air Force Program Manager. Criteria for the spaces to be nominated are as follows:
 - (1) Normally manned.
 - (2) Spaces are being utilized as designated. Voids/storerooms that have been converted to offices/workshops by Ship's Force without alteration authorization will not be investigated.
 - (3) Space has not been investigated during a previous ACCCIT unless all discrepancies were corrected and a problem still exists.
 - (4) Main Propulsion and Auxiliary machinery spaces.
 - (5) Food Device and Laundry Spaces.
- c. During the visit, the team will provide On the Job Training for Ship's Force, validate alteration requirements, validate Planned Maintenance System coverage and assist in the preparation of Current Ship's Maintenance Project (CSMP) deferrals to document discrepancies found. Additionally, with Ship's Force assistance, the team will correct deficiencies as they are discovered if within their capability. Upon completion of the visit, a formal report will be issued listing discrepancies discovered, status of each, correction responsibility and recommended alterations. All corrected and uncorrected discrepancies identified during each survey will be submitted in electronic format (M0001 file) for submission into the ship's CSMP. The TYCOM will utilize this report to conduct follow-up shipchecks to track completion of discrepancies.

16.4.2 Food Service and Laundry (Commander Naval Air Force Pacific)/Enhanced Quality Of Life Program (Commander, Naval Air Force Atlantic).

- a. The Food Service and Laundry (FS&L) and the Enhanced Quality Of Life (EQOL) Programs were developed to achieve and maintain high standards of material and operational readiness of food and hotel services equipment through intensified work definition, configuration analysis, corrective maintenance, and programmed and emergent equipment replacements.

APPENDIX C
ADVANCE PLANNING MILESTONES

<u>MILESTONE (A-MO)</u>	<u>ACTION</u>	<u>EVENT</u>
A - 23	TYCOM	ESTABLISH PLANNING ESTIMATE. TASK RMC WITH DESIGN SHIPCHECK
A - 22	RMC or AGENT	SHIP VALIDATION AND COMMENCE DESIGN
A - 14	TYCOM	SEND HABITABILITY PROJECT ADVANCE PLANNING NOTICE (SURFACE SHIPS)
A - 13	SHIP	INDICATE CONCURRENCE/COMMITMENT TO PROJECT(S) TO TYCOM. ENTER PROJECTS(S) IN CSMP
A - 12	TYCOM	CONFIRM PROJECT
A - 9	TYCOM (AIRCRAFT CARRIERS)	ENTER PROJECTS IN AVAILABILITY WORK PACKAGE (AWP)
A - 8	PMS 312C (CVNs)/SHIP/TYCOM (AIRCRAFT CARRIERS)	PROJECT REVIEW CONFERENCE (PRC)
A - 8	RMC or AGENT	PREPARE SPECIFICATION DEVELOPMENT PACKAGE AND FORWARD TO APPROPRIATE PLANNING ACTIVITY
A - 8	RMC or AGENT	PREPARE MATERIAL REQUISITIONS
A - 7	RMC or AGENT	SEND REQUISITIONS TO FLEET LOGISTICS CENTER
A - 6	RMC or AGENT (SURFACE SHIPS)	ISSUE DRAWINGS TO EPY
A - 2	RMC or AGENT/SHIP	PROJECT KICK-OFF BRIEFING
A	SHIP or RMC AGENT	START AVAILABILITY/PROJECTS
COMP	SHIP (APPLICABLE TO PROJECTS ACCOMPLISHED BY SHIP'S FORCE)	SEND COMPLETION REPORT

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- b. Requests to change WC designation codes will not be approved unless they are applicable to all ships of a class and supported by detailed justification. This does not affect the re-assignment of a MIP to another WC (shift of maintenance responsibility). Reference (a) provides guidance for the shift of maintenance responsibility.
- c. (Submarine Force only) Small boat, tug, receiver, and service craft managers will use the specific WCs identified in Appendix C3 of this chapter for MDS documentation, however, for PMS management they may assign a “**00” WC to consolidate PFRs, MIPs, scheduling, etc., (e.g., PY30 through PY84 may consolidate PMS under WC PY00, or PY01-Mechanical, PY02-Electrical, etc.). The Unit Identification Code will be that of the parent command.
- d. (Surface and Submarine Forces only) Standard MJC assigned WC codes are reflected in Appendix D of this chapter.

19.2.3.2 Job Control Number. The Job Control Number (JCN) is the key identifier for maintenance actions and related supply documents. The JCN is used to identify the maintenance action and to relate all of the parts used when a ship reports a maintenance action and it links all associated reporting of a maintenance action. The JCN is comprised of three blocks as defined by the Ship’s 3-M manual. Block 1 is the Ship’s Unit Identification Code (5 numeric characters), Block 2 is the WC (4 alphanumeric characters, left justified) and Block 3 is the Job Sequence Number (JSN) (usually 4 numeric characters).

19.2.3.3 Job Sequence Number. The first position of the JSN is used to identify the tool or organization that created the 2-Kilo. In the case of activities other than the ship creating jobs for the ship, this first character of the JSN will be an “ALPHA” character. The control over which organizations/tools “OWN” which “ALPHA” character(s) is provided by the Job Originator Values, Appendix E of this chapter, developed within the Maintenance and Modernization Business Unit and is available through the NAVSEALOGCEN website under Maintenance and Modernization Business Unit look up tables. The specific value contained within the first position of the JSN provides enhanced data mining capabilities and facilitates data aggregation and analysis.

19.2.3.4 Scheduling. PMS is a portion of the Command’s 3-M program that provides, in one authoritative system, the scheduling information and technical procedures governing planned maintenance. PMS provides a simple method for scheduling, and documenting the execution of planned maintenance procedures. Fleet policy is as follows:

NOTE: WHERE THE GOAL OF 100% ACCOMPLISHMENT CANNOT BE REACHED, THE UNIT’S CHAIN OF COMMAND SHALL BE KEPT INFORMED OF THE CIRCUMSTANCES WHICH PREVENT ACCOMPLISHMENT OF SCHEDULED MAINTENANCE.

- a. (Submarine Force only) An asterisk (*) will be inserted in SKED against any Maintenance Requirement (MR) which is a “Safety of Ship” item. A “Safety of Ship Item” is defined as any maintenance action vital to the maintenance of a submarine’s watertight integrity or its ability to return safely to the surface. “Safety of Ship” MRs, so designated by the cognizant technical authority, are annotated on the MIP with a single asterisk (*) in the periodicity code column. Commanding Officer notification is required for non-accomplishment of any “Safety of Ship” designated MR.
- b. Situational reference sheets will be maintained/posted in the WC PMS Manual. These sheets will contain a brief description of the situation and the maintenance action for all situational requirements listed in the right hand column of the weekly schedule. Appendix F of this chapter provides a typical situational reference sheet.

19.2.3.5 Accountability. The credibility of the Navy PMS program relies heavily on the individual accomplishing the maintenance. The required dedication and integrity of that individual cannot be overstressed. With shrinking budgets, Maintenance Effectiveness Reviews, Reliability Centered Maintenance and “fewer individuals to do more” the complete “step-by-step” performance of assigned maintenance is of paramount importance. To maintain accountability, personnel are required to sign for the completion of assigned maintenance in an Accountability Log. The Work Center Supervisor (WCS) is required to review and sign the Accountability Log weekly to verify the accuracy and completeness of entries. Accountability sheets will be maintained in the WC PMS Manual for a period of not less than 13 weeks.

19.2.4 Preventive Maintenance Feedback Reports. The PMS Feedback Report (FBR) is used to notify NAVSEALOGCEN Det Norfolk/San Diego of matters related to PMS, and the FBR may be screened by the TYCOM. Feedback forms are used to report problems and also to request PMS coverage for newly installed systems or equipments. While a request for PMS coverage will provide initial PMS coverage and changes, submission of an OPNAV 4790/CK form is required to initiate the rest of the logistic support change process in accordance with reference (a). All SKED users shall submit FBRs via SKED. Non-SKED users may submit FBRs via the Planned Maintenance System Management Information System (PMSMIS) website at <https://algol.seajax.navy.mil/pmsmis> by selecting the Feedback tab and Feedback Wizard. Non-SKED users accessing this website for the first time will need to request an account. Click on File Manager and select New User Account Request. This displays options to select a form and readme file, which can be downloaded, filled out and sent via e-mail as directed in the readme file. An e-mail will be sent to you confirming your account and providing access to the main screen.

19.2.4.1 Technical Feedback Report Reporting (Submarine Force only). The PMS FBR is used to notify the NAVSEALOGCEN Det Norfolk/San Diego of matters related to PMS, and is screened by the TYCOM. Feedback forms are used to report problems and also to request PMS coverage for newly installed systems or equipments. While a request for PMS coverage will provide initial PMS coverage and changes, submission of an OPNAV 4790/CK form is required to initiate the rest of the logistic support change process in accordance with reference (a). Submarines transmit TFBRs to their parent 3M Representative on navy.smil.mil via SIPERNET (3M Coordinators should be aware of the default SEAJAX email address that is programmed into SKED. They should ensure that TFBRs are emailed via SIPERNET to the parent 3M Representative in their homeport).

19.2.4.2 Technical Feedback Report History Tracking Program (Submarine Force only). The TFBR H/T Program is a database that contains summary information taken from TFBRs initiated by COMSUBLANT/COMSUBPAC units and support activities. The program is available via the World Wide Web with the data updated weekly. Each TFBR is presented with a header identifying the feedback report serial number, a summary of the action request and the resolution. The TFBR H/T Program contains copies of the original TFBRs and supporting documents.

- a. The system provides a centrally controlled, comprehensive TFBR/MIP/MRC history, intended to improve response time, problem resolution and reduce redundant TFBRs.
- b. The program is available to TYCOMs, Submarine Squadrons, Submarine Support Activities, ISEAs and others involved in resolving TFBRs.

19.2.4.3 Preventive Maintenance System Feedback Reports. The PMS FBR (OPNAV form 4790.7B) is used specifically to notify the NAVSEALOGCEN of matters related to PMS.

- a. While the FBR will provide initial PMS coverage and changes, submission of an OPNAV 4790/CK form is required to report configuration changes and changes in logistic support.
- b. Automated forms for FBR submission may be transmitted electronically using:
 - (1) SKED Feedback Report Wizard (preferred).
 - (2) Fleet Technical Support Center website.
 - (3) Anchor Desk website.

19.2.4.4 Feedback Report Types. There are three types of FBRs: Category A, Category B and Urgent.

- a. Category A - non-technical in nature and intended to meet PMS needs which do not require technical review, including changes in WCs. Category A FBRs are submitted to request classified or other PMS documentation, which cannot be obtained locally.
- b. Category B - technical in nature and are used to report technical discrepancies inhibiting PMS performance or shift of maintenance responsibilities.
- c. Urgent - reason for submission involves safety of personnel, ship or potential for damage to equipment and relates to the technical requirements of PMS. Urgent FBRs will be forwarded by naval message, containing a PMS Feedback Serial Number, to NAVSEALOGCEN with info to the cognizant System Command, Bureau of Medicine and Surgery, Naval Safety Center and TYCOM. The message shall describe the unsafe procedures or conditions and identify the specific MIP/MRC involved.

19.2.4.5 Feedback Report Screening. The ship's 3-M System Coordinator is responsible to screen all FBRs and serialize and forward within four days of receipt.

- a. The 3-M System Coordinator shall maintain accountability for all PMS FBRs submitted and actions taken until corrected PMS documentation is received.
- b. The 3-M System Coordinator shall also ensure that the originator and all applicable WCs are kept apprised of action taken and ensure the originating and other applicable WC Supervisors implement the changes or corrections when received.
 - (1) NAVSEALOGCEN is responsible to provide expeditious resolution to all FBRs whenever possible.
 - (2) Where resolution by NAVSEALOGCEN is not possible, the FBR will be electronically forwarded to the cognizant Technical Review Activity for resolution.

19.2.4.6 Preventive Maintenance System Technical Feedback Reports. TFBRs are specifically used for reporting technical deficiencies or errors in PMS documents. Technical PMS discrepancies that could have a detrimental effect on personnel safety, safety of ship or could result in significant equipment damage are classified as "Urgent". All other TFBRs are classified as "Routine".

19.2.4.7 Preventive Maintenance System Coordinating Activities. The central control points for processing TFBRs are the Preventive Maintenance System Coordinating Activities (PMSCA). Depending on the type and level of technical authority necessary to answer the TFBR, PMSCAs will either respond to the originator with a resolution or forward the TFBR to the appropriate NAVSEA technical authority for action.

19.2.4.8 In-Service Engineering Activities. ISEAs are those activities designated by NAVSEA as the technical experts for specific systems and/or equipment. NSWCCD is the ISEA for the majority of Hull, Mechanical and Electrical equipment installed on most ships, outside of Nuclear cognizant areas.

19.2.4.9 Action Activities. Design Activities, ISEAs or other activities under the direction of NAVSEA or other System Commands holding technical authority for systems and equipment take all appropriate action on TFBRs under their cognizance and forward the response to the PMSCAs. The PMSCAs will record the TFBR result in the system and provide the final response to the originator.

19.2.4.10 Urgent Technical Feedback Reports.

- a. Urgent TFBRs are those feedbacks reporting technical discrepancies that can result in personnel injury, risk to the safety of the ship or significant equipment damage.
- b. PMSCAs shall provide a message response to all Urgent TFBRs within one (1) working day of receipt. If the TFBR is forwarded to a Design Activity or ISEA for resolution, then the Design Activity or ISEA shall provide a message response to all Urgent TFBRs informing the originator of specific actions and/or required changes that will result from the TFBR evaluation within one (1) working day of receipt. This message response shall be addressed to the originator and distributed to TYCOMs. TYCOMs will forward this message to all commands that could be affected by PMS change. The Urgent TFBR response message may recommend pen and ink changes to the affected PMS requirement.
- c. PMSCAs shall distribute revised PMS documentation to all affected users within 30 calendar days from receipt, via special issue or Advance Change Notice.

19.2.4.11 Routine Technical Feedback Reports.

- a. PMSCAs shall perform technical review, research and provide a response to routine TFBRs where resolution does not require technical authority action.
- b. TFBRs that PMSCAs cannot resolve will be sent to the cognizant Design Activity or ISEA. The cognizant Design Activity or ISEA will provide the response to the appropriate PMSCA describing the action taken. The PMSCAs will provide the response to the originator by electronic means.
- c. Distribution of the revised MRC to the originator and other affected users will be accomplished via the next Force Revision.

- d. NAVSEA has established a goal of providing answers to TFBRs in one day. While it is realized that some TFBRs will require more extensive research, the majority of TFBRs received can and should be answered in one day.
- e. If no revision to PMS documentation is required, pertinent comments will be provided in the response to the appropriate PMSCA. When not concurring with the feedback report, the rationale for the non-concurrence must be provided to the appropriate PMSCA.

19.2.4.12 Type Commander Screening of Technical Feedback Reports (Submarine Force only). SUBMEPP has been designated by Commander Submarine Force as the TYCOM screening activity for all Submarine Force Activities. TFBRs are accessed by SUBMEPP via the PMS Management Information System prior to delivery to the NAVSEALOGCEN. SUBMEPP reviews the proposed TFBR and will:

- a. Return the TFBR to the originator under any one or all of the following circumstances:
 - (1) An answer currently recorded in the TFBR H/T Program satisfies the proposed TFBR. The TFBR will be returned with authorization to implement the previously received response or rationale for non-concurrence.
 - (2) A similar request has already been submitted and submission of another duplicative request will add no value to the process.
 - (3) The TFBR requests actions contrary to the direction of this manual or reference (a).
 - (4) The request does not adequately address or identify the problem. In cases of this nature, return of the TFBR to the originator will be a last resort, as SUBMEPP will attempt to contact the originator to better define the issue.
- b. Forward the TFBR for further processing taking any one or a combination of the following actions:
 - (1) Provide amplifying information.
 - (2) Correct erroneous data.
 - (3) Provide TYCOM concurrence of the requested change.
 - (4) Provide a Do Not Concur recommendation to NAVSEALOGCEN/ISEA.

19.2.5 Submarine Safety/Scope of Certification/Survivability and Escape (Submarine Force only).

- a. MRCs which direct work/entry within the Submarine Safety (SUBSAFE) Certification Boundary, require Re-Entry Controls to be invoked. In order to ensure that these controls are initiated, Ship's Force personnel shall over stamp those MRCs requiring such work/entry with the word "SUBSAFE" in red ink. New PMS MRC editing programs are being developed where watermarking of MRCs will begin to show up on published PMS MRCs. If a "SUBSAFE" MRC has a "SUBSAFE" watermark, over stamping in red ink as described above is not required.
- b. MRCs which direct work/entry within the Scope of Certification (SOC) Certification Boundary, also require Re-Entry controls to be invoked. SOC documentation is applicable and governing to Dry Deck Shelter (DDS) host platforms and must be loaded to Work Center WK02 for those platforms. SOC MRCs are annotated on the MIP with either an "X" or an "R" in the "OTHER" column. Non-DDS platforms need not establish WK02 nor are they governed by SOC directives.
- c. Survivability and Escape Equipment and supporting maintenance has come under increased scrutiny since the loss of the Russian submarine KURSK. All MIPs and associated MRCs dealing with Survivability and Escape equipment are to be loaded to Work Centers (WC) in accordance with Table 19-1.

Table 19-1

MIP	SYSTEM	REQUIRED WC
5940/905	SCV and HIS Valves	EA01
5940/006	ExtendAir	EA01
5940/005	SEIE and Crash Bags	WK01 (WF01 for SSN 774 Class)
5940/004	Helicopter Transfer Kit	WK01 (WQ01 for SSN 774 Class)
5940/003	MROD	RL01 (SSBN/GN 726 Class and 21 Class only)
5940/002	SUB MKIIP (ANALOX)	NE01
5940/001	LiOH Curtain	EA01
4413/015	SEPIRB	OC01

19.2.6 Evaluation.

19.2.6.1 Assessments.

- a. **Goal/Intent.** To ensure that the Command's 3-M program is functioning at maximum efficiency and per the requirements of reference (a) and this chapter. The CNO Maintenance Availability should be counted when determining when these inspections are to be done. Evaluations shall be conducted on a not to exceed normal Fleet Response Plan cycle or more frequently when deemed necessary by either the TYCOM, ISIC (Command exercising administrative control) or the unit's Commanding Officer. 3-M assessments for each unit can be scheduled without advanced notice and shall be conducted in accordance with the criteria and format established in Appendix A of this chapter. The TYCOM shall ensure that each activity shall evaluate all departments performing PMS at least once every Fleet Response Plan cycle.
- b. **Method for Assignment of Numerical Evaluations.** Planned maintenance is the foundation of a well executed, effective maintenance program. Therefore PMS must be vigorously prosecuted and thoroughly monitored. The standards of PMS performance must remain high. The minimum performance requirements are identified below. TYCOMs may authorize the utilization of specific check sheets to reflect current directives and system operation modernization provided that attributes provided by Appendix A of this chapter are properly evaluated when applicable.
 - (1) 3-M Assessment Command Total Score - (Percentage).
 - (2) 3-M Assessment - Above Standards (90% or greater)/At Standards (80-89.99%)/Below Standards (less than 80%).

19.2.6.2 Assessment Reporting. Significant deficiencies and numerical assessments are reported to the assessed unit's Commanding Officer, ISIC and TYCOM using the format shown in Appendix B of this chapter. Reporting may be accomplished on the entire unit or on a departmental basis.

- a. Significant deficiencies require a report of corrective actions taken by the unit to be forwarded to the TYCOM via the ISIC within 30 days following the assessment.
- b. Any department receiving an overall evaluation of below standard in either PMS or MDS shall be re-evaluated within a reasonable period of time, not to exceed six months, to ensure below standard areas have been corrected.

- c. Annually, the United States Fleet Forces Command (USFFC N43) will convene a conference with Commander, Pacific Fleet and all TYCOMs to review the previous year's 3-M Assessment trends, concerns and future direction.

**APPENDIX A
SECTION V-A-1**

**EXECUTIVE EFFECTIVENESS REVIEW MAINTENANCE DATA SYSTEM PROFICIENCY FACTOR
(MPF) WORKSHEET**

Ship		Department			Division		Work Center		Date		
Individual Evaluated						3-M Billet Assigned					
Proficiency Required						Proficiency Attribute				Yes/No	
	MP	RPPO	WCS	DO	DH						
1	X	X	X	X	X	3-M PQS Qualification completed					
2	X	X	X	X	X	Able to Log-on. (OMMS-NG)					
CSMP ACTIONS:											
3	X	X	X	X		Add Maintenance Action (2-Kilo)					
4	X	X	X	X		Close Maintenance Action (2-Kilo)					
5	X	X	X	X		Change Maintenance Action (2-Kilo)					
6	X	X	X	X	X	Display Maintenance Action (2-Kilo)					
CONFIGURATION MAINTENANCE ACTION:											
7	X	X	X			Report installation of equipment: (CK)					
8	X	X	X			Report modification of equipment: (CK)					
9	X	X	X			Report removal of equipment: (CK)					
UPDATE SEF:											
10	X	X	X	X	X	Review on-line equipment records:					
11			X			Add equipment records:					
12			X			Modify equipment records:					
13			X			Delete equipment records:					
UPDATE LOGISTICS SUPPORT DATA (LSD) FILE:											
14	X	X	X	X	X	Review on-line LSD records:					
15			X			Add LSD data elements:					

Ship		Department			Division		Work Center		Date		
Individual Evaluated						3-M Billet Assigned					
Proficiency Required					Proficiency Attribute					Yes/No	
UPDATE LOGISTICS SUPPORT DATA (LSD) FILE: (Con't)											
16			X			Change LSD data elements:					
17			X			Delete LSD data elements:					
SUPPLY REQUISITIONING:											
18		X	X			Order maintenance parts:					
19		X	X			Order non-maintenance related items:					
PRINT REPORTS:											
20		X	X			SEF summary reports:					
21		X	X	X	X	CSMP reports:					
PRE-TRANSMITTAL REVIEW:											
22			X	X	X	Review CSMP transactions:					
23			X	X	X	Review SEF transactions:					
24			X	X	X	Review FCFBR transactions: (MicroSnap OMMS Installations only)					
Totals											
11	15	24	12	9	Divide Total Yes by Proficiency Required totals for the billet held by the individual					Total Yes	
					MPF: (%)						

	WC CODE
Damage Control Repair Stations	ED05
Electrical Division Administration	EE00
Lighting/Battery Shop	EE01
Rewind	EE02
Power (Non-nuclear)/General	EE03
Hotel Services	EE04
Electrical Safety	EE20
<u>Machinery Division.</u>	
#1 Plant Machinery Division (CVN-65)	EM11
#4 Plant Machinery Division (CVN-65)	EM14
#2 Plant Machinery Division (CVN-65)	EM22
#3 Plant Machinery Division (CVN-65)	EM23
#1 Auxiliary Machinery Room (CVN-65)	EM31
#2 Auxiliary Machinery Room (CVN-65)	EM32
Repair Division Administration	ER00
General Work Shop	ER01
Carpenter	ER02
Pipe Shop/Marine Sanitation Device (MSD)	ER03
Machine Shop/Locksmith	ER04
f. <u>Graphics Media Department Administration.</u>	GM00
PAO	GM11
Photo Shop	GM12
Print Shop	GM13
g. <u>AIMD Department Administration.</u>	IM00
PC/QA division (NALCOMIS reported equipment)	IM01
Mechanical Repairs	IM02
Avionics	IM03
Ground Support	IM04
Field Calibration Activity	FCA1
h. <u>Legal Department.</u>	LN01
i. <u>Health Services.</u>	
Dental Department	MD01
Medical Department	MH01
j. <u>Navigation Department.</u>	NN01
k. <u>Operations Dept Administration.</u>	OX00
Meteorological	OA01
Air Ops/CATCC	OC01
Security Department Administration (when assigned).	OF00

	WC CODE
Ship's Security Force	OF01
Force Protection	OF02
Brig	OF03
CDC	OI01
Undersea Warfare/Acoustics	OM01
<u>Undersea Warfare/Acoustics (DC)</u>	<u>OM40</u>
Comm Intel/SESS	OS01
Electronic Warfare	OS02
Intelligence Department Administration (when assigned).	OZ00
Intelligence	OZ01
l. <u>Maintenance Department Administration</u> (when assigned).	PM00
3-M	PM01
MSC	PM02
Quality Assurance (QA)	PM03
m. <u>Reactor Department Administration.</u>	RX00
Reactors Auxiliaries Division Administration	RA00
Emergency Diesels	RA01
Reactor Controls Division Administration	RC00
#1 Reactor Plant	RC11
#1 Reactor Plant (Non-Nuclear CVN-68 Class)	RC12
#4 Plant Reactor Control Division (CVN-65)	RC14
#2 Reactor Plant (CVN-68 Class)	RC21
#2 Reactor Plant (CVN-65, (Non-Nuclear CVN-68 Class)	RC22
#3 Plant Reactor Controls Division (CVN-65)	RC23
Reactor Instrumentation and Maintenance	RC30
Reactor Electrical Division Administration	RE00
#1 Reactor Plant	RE11
#1 Reactor Plant (Non-Nuclear CVN-68 Class)	RE12
#4 Reactor Plant (CVN-65)	RE14
#2 Reactor Plant (CVN-68 Class)	RE21
#2 Reactor Plant (CVN-65, (Non-Nuclear CVN-68 Class)	RE22
#3 Reactor Plant (CVN-65)	RE23
Tool Issue and Technical Support	RE30
Reactor Laboratory Division Administration	RL00
#1 and #4 Reactor Plants (CVN-65)	RL00
#2 and #3 Reactor Plants (CVN-65)	RL01
#1 Reactor Plant (CVN-68 Class)	RL11
#1 Reactor (Non-Nuclear CVN-68 Class)	RL12
#2 Reactor Plant (CVN-68 Class)	RL21
#2 Reactor (Non-Nuclear CVN-68 Class)	RL22

	WC CODE
Dosimetry	RL30
Reactor Mechanical Division Administration	RM00
#1 Reactor Room	RM11
#1 Reactor Room (Non-Nuclear CVN-68 Class)	RM12
#4 Reactor Room (CVN-65)	RM14
#2 Reactor Room (CVN-68 Class)	RM21
#2 Reactor Room (CVN-65, (Non-Nuclear CVN-68 Class)	RM22
#3 Reactor Room (CVN-65)	RM23
Technical Support	RM30
Reactor Propulsion Division Administration	RP00
#1 Main Machinery Room (CVN-68 Class)	RP01
#2 Main Machinery Room (CVN-68 Class)	RP02
Shaft Alley/Reboiler/Oily Waste (CVN-68 Class)	RP05
Technical Support	RP30
Reactor Training Division Administration	RT00
n. <u>Supply Department Administration.</u>	SS00
S-1 Stock Control	SS01
S-2 Food Services	SS02
S-3 Retail Operations	SS03
S-4 Disbursing	SS04
S-5 Hotel Services	SS05
S-6 Aviation Support	SS06
S-7 Morale, Welfare and Recreation	SS07
S-8 Material	SS08
S-8A Hazardous Material	SS09
S-10 Supply Quality Assurance	SS10
S-11 CPO Mess	SS11
S-1A Customer Service (Post Office)	SS12
S-13 Supply Department 3M/DC	SS13
o. <u>Training Department.</u>	TX01
p. <u>Air Department Administration.</u>	VV00
V1 Division Administration	VA00
Flight Deck	VA01
Crash and Salvage	VA02
V2 Division Administration	VB00
#1 Catapult	VB01
#2 Catapult	VB02
#3 Catapult	VB03
#4 Catapult	VB04
#1 Arresting Gear	VB05
#2 Arresting Gear	VB06

	WC CODE
#3 Arresting Gear	VB07
#4 Arresting Gear (#3A CVN-76 Class)	VB08
Barricade	VB09
Improved Fresnel Lens Optical Landing System (IFLOLS)	VB10
Integrated Launch and Recovery Television System (ILARTS)	VB11
Flight Deck Lighting	VB12
Maintenance Control	VB20
QA	VB21
Maintenance Support	VB22
V3 Division Administration.	VC00
Hanger Deck	VC01
V4 Division Administration.	VF00
JP-5 Hanger Deck/Flight Maintenance	VF01
JP-5 Below Deck Equipment Maintenance	VF02
EM and IC Repair	VF03
JP-5 QA/Testing Lab	VF04
V5 Division Administration.	VX00
PRIFLY	VX01
q. <u>Weapons Department Administration.</u>	WG00
Weapons Handling G1 Division	WG01
Ship's Armory G2 Division	WG02
Weapons Magazine G3 Division	WG03
Weapons Elevator G4 Division	WG04
Weapons Control G5 Division	WG05
Weapons Electrical Tool Issue	WG20
r. <u>Administration Department.</u>	
CO's Admin	XX01
XO's Admin	XX02
Administration	XX03
Personnel	XX04
Special Assistants - ESO/CCC/CMC/DAPA/EOA	XX05
Flag/Embarked Staff	XF01
s. <u>Airwing</u> (when assigned).	
CAG	ZW00
Reserved for Assignment to Embarked Airwings	ZW01 thru ZW11
3. Afloat Damage Control WC Codes.	
a. <u>Safety Department DC.</u>	AS40

APPENDIX C₃A
STANDARD WORK CENTER CODES FOR SUBMARINES

Description	Used by Submarine Type	Code
<u>Executive</u>		
Executive/Administration (ADM - Functional Area Supervisor - SNAP)	All	XX00
Chief of the Boat	All	XX03
3-M Coordinator (SNAP OMMS Functional Area Supervisor)	All	XM01
Safety Petty Officer	All	SP01
<u>Engineering</u>		
Auxiliary	All	EA01
Damage Control Petty Officer (Note 1)	All	EDC1
Electrical (Main Power - SS)	All	EE01
Machinery	All	EM01
Engineering Administration	All	EX00
Engineering Log Room	All	EX02
Field Calibration	All	FCA1
Reactor Controls	All Nuclear	RC01
Engineering Laboratory	All	RL01
<u>Medical</u>		
Medical	All	MH01
<u>Navigation/Operations</u>		
Navigation/Electronics	All	NE01
Micro Miniature Repair (2M)	SSBN/SSGN	NE02
Radio/Communications	All	OC01
Afloat Information Systems/Automated Data Processing Coordinator (AIS/ADP)	All	OC02
Navigation/Operations Administration	All	OX00
<u>Research and Development</u>		
Mission Auxiliary	SSN-23 Only	MA01
Mission Electronics	SSN-23 Only	ME01
Mission Navigation	SSN-23 Only	MN01
Description	Used by Submarine Type	Code
<u>Research and Development (Cont'd)</u>		

Description	Used by Submarine Type	Code
Mission Vehicle Support	SSN-23 Only	MV01
Mission Auxiliary Support	SSN-23 Only	MV02
<u>Supply</u>		
General Stores	All	SS01
Food Services	All	SS02
Supply Administration (SNAP Functional Area Supervisor)	All	SX00
<u>Weapons</u>		
Divers	All	DV01
Central Computer (Tactical/Strategic)	SSN-688/SSN-21/SSBN/SSGN	WC01
Fire Control	All	WF01
Missile Fire Control	SSBN/SSGN	WF02
First Lieutenant	All	WK01
Dry Deck Shelter	DDS Host Hulls Only	WK02
Sonar	All	WQ01
Torpedo	All	WI01
Missile Technicians	SSBN/SSGN	WM01
Missile Launcher	All	WS01
Weapons Administration	All	WX00

Note:

1. When Squadron must generate a CSMP deferral for the submarine, the Squadron will use the correct ship's work center and the Job Sequence Number (JSN) that is generated by Regional Maintenance Automated Information System (RMAIS). Example: EM01-Q123, Q denotes that the JSN was created by RMAIS.

APPENDIX E
JOB ORIGINATOR VALUES

JOB ORIGINATOR			OBS	BRKR	JOB ORIGINATOR TEXT	SHORT TEXT
SEQ	SORT	CODE	FG	FG		
25	1	A	0	0	ACCCIT (AIR)/DC (SURF) TSRA HM&E (SUBS)	LOCAL TYCOM
26	7	B	0	0	C5RA (AIR)	LOCAL TYCOM
27	2	C	0	0	LCS (SURF) TSRA COMBAT SYSTEMS (SUBS)	LOCAL TYCOM
28	8	D	0	0	CABLEWAY (AIR) I-LVL DEPARTURE (SUBS)	LOCAL TYCOM
42	42	E	0	0	ELEVATOR SUPPORT UNIT (AIR)	LOCAL TYCOM
29	9	G	0	0	ERAT, IRAT, TMIT (SURF)	LOCAL TYCOM
30	10	H	0	0	ENHANCED QUALITY OF LIFE (AIR)	LOCAL TYCOM
43	43	I	0	0	NSLC RESERVED	NSLC
37	17	J	0	0	POET'S (AIR)	LOCAL TYCOM
31	11	K	0	0	TSRA/CSC C5RA (SURF)	LOCAL TYCOM
40	40	L	0	1	PORT ENGINEER WRITTEN JSNs	NATIONAL
39	39	M	0	0	MicroPMR (MPMR)/MSWP (SUB)	LOCAL TYCOM
41	41	N	0	0	CORROSION CONTROL (SURF)	LOCAL TYCOM
32	12	P	0	0	PEPSI (AIR)/SECAP (SURF)	LOCAL TYCOM
15	15	Q	0	1	CREATED BY RMAIS (NATIONAL)	RMAIS-N
16	16	R	0	0	INSURV (NATIONAL)	INSURV-N
33	13	S	0	0	CEMAT (AIR) SHIP SEMAT (SURF)	LOCAL TYCOM
38	18	U	0	0	TOOLSET FOR INSPECTIONS (BOILERS, GAS TURBINE, DIESELS, ETC.) (SURF)	OPNAVINST 9220.3
24	6	V	0	0	AIRCRAFT LAUNCH & RECOVERY EQUIP (AIR)	LOCAL TYCOM
34	14	W	0	0	BAWP (AIR)/ICMP; IMF TSRA; ICAS; RMC TSRA (SURF)	LOCAL TYCOM
35	15	X	0	0	BAWP (AIR)	LOCAL TYCOM
36	16	Y	0	0	BAWP (AIR)	LOCAL TYCOM
23	5	Z	0	0	MST/CLASS MAINTENANCE PLANS (SURF) Z001-Z999 for MST; ZA00-ZZ99 for CMP	LOCAL TYCOM
999,999	999,999	?	0	0	Invalid	Invalid

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VOLUME VI
CHAPTER 23
SUBMARINE NOISE REDUCTION

REFERENCES.

- (a) [NAVSEA S9073-AW-SNC-010](#) - Ship Acoustical Surveys for Submarines
- (b) [NAVSEA S9073-A4-SNC-010](#) - USS LOS ANGELES (SSN 688) Class Acoustic Stealth Manual
- (c) [NSWCCD-71-TR-2001/020](#) - February 2001 USS SEAWOLF (SSN 21) Class Acoustic Stealth Manual
- (d) [NAVSEAINST C9073.2](#) - Acoustical Survey of Submarines
- (e) [COMSUBFORINST C9460.3](#) - Coordinated Submarine Radiated Noise Analysis
- (f) [NAVSEA S9073-AF-SNC-010\(C\)](#) - Ship Noise Control
- (g) [NAVSEA S0600-AA-PRO-230](#) - Underwater Ship Husbandry Manual, Chapter 23: Submarine Predeployment Noise Inspections
- (h) [NAVSEA S0600-AA-PRO-010](#) - Underwater Ship Husbandry Manual
- (i) [NAVEDTRA 10500](#) - Catalog of Navy Training Courses
- (j) [COMNAVSUBFORINST 5400.25](#) - Standard Submarine Supply Department Organization and Regulations Manual
- (k) [COMNAVSUBFORINST 5400.29](#) - Standard Submarine Navigation/Operations Department Organization and Regulations Manual
- (l) [COMNAVSUBFORINST 5400.40](#) - Standard Submarine Combat Systems Department Organization and Regulations Manual (SSN)
- (m) [COMNAVSUBFORINST 5400.41](#) - Standard Submarine SSBN 726 Class Weapons Department Organization and Regulations Manual
- (n) [COMNAVSUBFORINST 5400.47](#) - Standard Submarine Combat Systems Department Organization and Regulations Manual (SSGN)

LISTING OF APPENDICES.

- A Supplemental Noise Measurements
- B Beartrap Acoustic Radiated Trials (BART)
- C Shipboard Noise Reduction Instruction
- D Predeployment Noise Inspection
- E Submarine Silencing Publications
- F Sample Propeller Changeout Message

23.1 **PURPOSE.** This chapter provides the requirements for an effective onboard noise reduction program during the ship's operating cycle. It identifies the acoustic surveys required to assess the radiated noise signature of a ship and summarizes the responsibilities and requirements for the onboard surveys necessary to be performed on a regular basis to maintain the submarine in its most quiet configuration.

23.1.1 **Scope.** Reference (a) discusses the various acoustic surveys to be conducted on ships in order to establish their baseline noise signatures and to monitor those signatures throughout the operating cycle. Surveys discussed in reference (a) are briefly summarized, as well as several additional survey techniques available and essential to an effective noise reduction program. In addition, a discussion of the model shipboard noise reduction program and available training programs are presented. References (b) and (c) provide class specific and comprehensive documentation on submarine noise reductions, including discussion of acoustic surveys, shipboard noise reduction program, acquisition systems, and procedures, data analysis and trending, and detailed write-ups with photographs and audio clips of typical noise sources. In addition, the manual contains an extensive library of documents and training aids.

23.1.2 **Background.** Reduction of the radiated noise signature of a submarine platform is a key element to the tactical employment of the ship. As a ship begins its operating cycle, a series of acoustic surveys are conducted to characterize the baseline noise signature. Then, throughout the remainder of its operating cycle, the ship requires the tools and procedures necessary to monitor its signature against the baseline. As deficiencies are identified,

Ship's Force needs to have an understanding of the extent to which an identified deficiency can affect the ship's radiated noise signature and the procedures required to effect corrective action. It should be kept in mind that although the implications of a degraded noise signature are fundamentally tactical in nature, the primary method of preserving a ship's acoustic advantage is through an aggressive and effective planned and corrective noise reduction maintenance program. Because of an increased emphasis in recent years, a number of new initiatives are being pursued within the technical community to develop new and improved measurement procedures and equipment that will assist Ship's Force in more effectively assessing the effects of noise deficiencies on their radiated noise signature. These efforts should lead to improved survey procedures and will be incorporated into future changes to this chapter.

23.2 NOISE REDUCTION PROGRAM ELEMENTS.

23.2.1 Radiated Noise Surveys.

23.2.1.1 Naval Sea Systems Command Acoustic Trials. These trials are conducted at the beginning of and at various times throughout each ship's operating cycle in accordance with reference (d) and provide a broad range of baseline measurements for the ship. In particular, the radiated noise signature of the ship is measured under various operating conditions. A determination is made of the controlling radiated noise offenders including those which are speed and depth dependent. While the principal objective of these trials is to assess the radiated noise signature of the submarine, platform and machinery and hull vibration measurements are also made to provide baseline and supporting data in these areas for continued ship monitoring.

23.2.1.2 Coordinated Submarine Radiated Noise Analysis Exercise. This test shall be conducted in accordance with reference (e), for Commander Submarine Force Atlantic (COMSUBLANT) units and Commander Submarine Force Pacific (COMSUBPAC) units. The primary objective of these submarine-versus-submarine exercises is to collect and analyze data to assess current acoustic vulnerabilities. These tests can be used during Pre-Overseas Movement (POM)/Deployment Preparation Period (DPP) work-ups to indicate that the deploying unit's acoustic signature is free of any unusual or highly detectable noise characteristics.

23.2.1.3 Coordinated Submarine Exercises (KILOEX/JTFEX/INT-2/TRACKEX/GUNSLINGER). While acoustic trials and surveys are the principal means to evaluate a submarine's acoustic profile, coordinated exercises provide another opportunity for the submarine force to monitor itself for noise deficiencies. Although the primary purpose of these exercises is generally tactically oriented, the noise signature obtained can and should also serve to monitor submarine radiated noise. It is incumbent upon exercise participants to note and record any unusual or excessive radiated noise being emitted by submarine exercise participants. Discrepancies noted should be reported to the cognizant Immediate Superior In Command (ISIC) for evaluation and corrective action. Initial message reports should be followed by supporting documentation including tape recordings, annotated lofargrams, and annotated frequency spectrum plots. The message report should contain the following information:

- a. Description of noise signature problem.
- b. Date and time of detection.
- c. Range at detection.
- d. Sensor/processor used for detection.
- e. Own ship depth and speed.
- f. Acoustic sea state.
- g. Water depth.
- h. Water temperature.
- i. Layer depth.

23.2.1.4 Beartrap Acoustic Radiated Trials. The primary objective of these trials is to provide a cost effective means to detect and identify radiated noise sources that have caused signature degradations. Coordinated trial events are conducted with Marine Patrol Aircraft. Detected narrowband tones in the radiated noise signature are

provided by naval message. Parent ISICs are responsible for requesting these trials. Specific information, including message requests and scheduling requirements, as well as Ship's Force and Type Commander (TYCOM) responsibility is provided in Appendix B of this chapter.

23.2.2 Onboard Noise Surveys. The noise surveys discussed in this section do not provide conclusive information on the actual radiated noise signature of the ship. However, when these surveys are analyzed for developing trends, they can be effective tools for monitoring overall ship effectiveness in noise reduction.

23.2.2.1 Platform Noise Survey. This survey is conducted to define own ship's noise environment and is the best means available to Ship's Force to assess the radiated noise signature of the ship using only onboard equipment. Surveys are conducted by taking periodic measurements under various ship's operating conditions using the applicable Planned Maintenance System (PMS) Maintenance Requirement Cards (MRC). In addition, at-sea watch-to-watch aural monitoring is also conducted. Analysis of this data determines the platform noise signature and also identifies the noise offenders which affect this signature. When changes in the ship's signature occur, the diagnostic procedures of the class specific platform noise manual are used to isolate the noise source. Platform Noise Surveys should be conducted in accordance with enclosure (2a) of Appendix C of this chapter. Propeller cavitation surveys, a separate survey from the Platform Noise Survey but considered an important part of platform noise monitoring analysis, should be conducted in accordance with enclosure (2b) of Appendix C of this chapter.

23.2.2.2 Topside and Housekeeping Survey. The most common and preventable sources of submarine noise are rattles emanating from improperly secured topside equipment, discontinuities in the hull, and machinery noise sound shorted to the hull due to improper stowage.

23.2.2.2.1 Topside Survey. The topside survey consists of a thorough inspection to identify and eliminate potential noise sources external to the pressure hull. Particular attention should be given to ensure that rattles are not installed, built in, or created by repairs, alterations, or stowage. Topside Surveys should be conducted in accordance with enclosure (2c) of Appendix C of this chapter.

23.2.2.2.2 Housekeeping Survey. The housekeeping survey consists of a thorough visual inspection to identify and eliminate these potential noise sources internal to the pressure hull. Particular attention should be given to ensure that sound shorts are not installed, built in, or created by repairs, alterations, or stowage. Housekeeping Surveys should be conducted in accordance with enclosure (2d) of Appendix C of this chapter.

23.2.2.3 Machinery Vibration Survey. A vibration survey conducted quarterly for both machinery health assessment and noise reduction purposes. Performance of this survey alone does not provide reliable information on radiated noise. Machinery Vibration Surveys should be conducted in accordance with enclosure (2e) of Appendix C of this chapter.

23.2.2.4 Hull Vibration Survey. A shipboard hull vibration survey is conducted quarterly or as required for the purpose of noise diagnostics by Ship's Force. The purpose is to assess acoustic deficiencies related to noise sources and transmission paths, and to estimate certain slow-speed, low frequency radiated noise levels. Hull Vibration Surveys should be conducted in accordance with enclosure (2e) of Appendix C of this chapter.

23.2.2.5 Isolation System Survey. This survey consists of a visual inspection of sound isolation components throughout the ship per applicable road maps and reference (f). These components include resilient mounts, pipe hangers, ground straps, and flexible piping. This visual inspection ensures that these devices are properly installed, undamaged and not sound shorted. Improper installation or failure of any of these devices will contribute to increasing the radiated noise signature of the ship. Isolation System Surveys should be conducted in accordance with enclosure (2f) of Appendix C of this chapter.

23.2.2.6 Damping Material Survey. This is a visual inspection of sound damping material installed in the vicinity of sonar arrays, sail, free flood spaces, and on machinery foundations. Like the isolation system survey, this inspection is designed to detect deficiencies in materials installed to limit the radiated noise signature of the ship. Damping Material Surveys should be conducted in accordance with enclosure (2g) of Appendix C of this chapter.

23.2.2.7 Predeployment Noise Inspections. Requirements and forms are contained in references (g) and (h) and Appendix D of this chapter.

23.2.2.8 Technical Onboard Monitoring Assist. This survey consists of at sea analysis by acoustic technical experts to evaluate the acoustic signature of the ship. The survey consists of a towed array, platform noise hydrophones and machinery and hull vibration measurements taken simultaneously to identify and localize major acoustic degradation. Emphasis is placed on training the submarine's crew on own ship noise data acquisition and analysis using their available sensors. Technical Onboard Monitoring Assists should be conducted in accordance with Appendix A of this chapter.

23.2.2.9 Sound Absorption Material Survey. This is a thorough visual inspection of interior sound absorption material and sound transmission loss material conducted in all spaces. These materials are installed to assist in habitability of the ship by absorbing vibration. Sound Absorption Material Surveys should be conducted in accordance with enclosure (2h) of Appendix C of this chapter.

23.2.2.10 Airborne Noise Survey. The airborne noise survey exists to identify shipboard areas whose airborne noise levels have increased or are possibly high enough to cause hearing damage. Airborne Noise Surveys should be conducted in accordance with paragraph 5.c.(6) of Appendix C of this chapter.

23.2.3 Shipboard Noise Reduction Program. The key to a successful shipboard noise reduction program will be the ability of the ship to identify potential noise deficiencies and to initiate prompt corrective action. References listed in Appendix E of this chapter should be a part of the ship's onboard library of submarine silencing publications. Several elements of the noise reduction program are discussed in the following paragraphs.

23.2.3.1 Noise Reduction Officer. To ensure a coordinated and aggressive approach to noise reduction, each ship will assign one of its senior Department Heads, as designated by the Commanding Officer, to serve as Noise Reduction Officer. The Noise Reduction Officer will coordinate the activities of all personnel assigned to support the ship's Noise Reduction Program. This officer will ensure that all required surveys are conducted, that identified deficiencies are documented, and that corrective action is initiated. A Noise Reduction Board, chaired by the Noise Reduction Officer, will convene at regular intervals to review the status of the Noise Reduction Program. Following each meeting, formal written reports will be made to the Commanding Officer.

23.2.3.2 Noise Deficiency Log. The ship's Equipment Status Log (ESL) will be used to record and track all noise deficiencies. Deficiencies will be entered in the section for the Work Center (WC) responsible for the equipment concerned. The Critical Noise Deficiencies (NC)/Potential Noise Deficiencies (NP) code (per paragraph 23.2.3.3 below) in the deficiency description block will tag the entry as a noise deficiency. The Noise Reduction Officer will ensure the ESL is properly maintained and accurately reflects the latest status of all noise deficiencies. Items to be entered in the ESL include noise deficiencies reported during radiated noise acoustic trials as well as those discovered during onboard surveys. Ship's logs shall be maintained in a manner where all diagnostics, repairs or other evaluations performed are documented. The logs need to be maintained until noise issues are verified to be repaired by associated acoustic or vibration measurements.

23.2.3.3 Noise Related Maintenance Records. The OPNAV 4790/2K will be used to document all deferred and completed noise related maintenance actions. Block 46-G will be used to further classify noise deficiencies in one of two categories; NC and NP.

NOTE: INFORMATION CONTAINED IN WORK CANDIDATES MUST BE UNCLASSIFIED. IF CLASSIFIED DATA IS REQUIRED TO FULLY DESCRIBE THE NATURE OF THE PROBLEM BEING REPORTED, REFER TO TYCOM REPORTING REQUIREMENTS TO FULLY DESCRIBE THE NATURE OF THE PROBLEM.

- a. The NC code will be used to identify deficiencies of a critical nature identified during one of the following:
 - (1) Naval Sea Systems Command (NAVSEA) Acoustic Trials.
 - (2) Supplemental Radiated Noise Measurements.
 - (3) Technical Onboard Monitoring Assist.
 - (4) Platform Noise Monitoring Surveys.
- b. The NP code will be used to identify deficiencies that could potentially be radiated noise problems identified during one of the following:

- (1) Topside and Housekeeping Surveys.
- (2) Machinery and Hull Vibration Surveys.
- (3) Isolation System Surveys.
- (4) Damping Material Surveys.
- (5) Airborne Sound Absorption Material Surveys.
- (6) Routine Ship Operations.

23.2.4 Training. Formal training course prerequisites and descriptions are listed in reference (i). Specific training requirements are contained in references (j) through (n).

23.3 RESPONSIBILITIES.

23.3.1 Immediate Superior In Command.

- a. Assign a Staff Noise Reduction Officer as a specific point of contact for all matters relating to noise reduction within the Squadron.
- b. Oversee and supervise the Noise Reduction Program within the Squadron, ensuring that assigned units aggressively identify and correct noise deficiencies.
- c. Submit requests for Beartrap Acoustic Radiated Trials (BART) to COMSUBLANT/COMSUBPAC, N454, N42N, as appropriate.
- d. Schedule acoustic surveys during the operating cycle of submarines in accordance with reference (d).
- e. Recommend and/or authorize corrective actions based on the findings of the surveys conducted.
- f. Review Noise Reduction Program records, survey results, procedures and monitoring equipment during material readiness inspections, Tactical Readiness Evaluations and POM/DPP certification.
- g. Schedule divers to conduct underwater hull and propeller surveys for noise deficiencies prior to undocking, pre-deployment, post-deployment, and during upkeep.
- h. Report propeller replacements using the message format of Appendix F of this chapter.
- i. Ensure that personnel tasked to support assigned submarines are adequately trained in submarine noise reduction.

23.3.2 Industrial Activity.

- a. Ensure proper handling and repair of noise critical machinery.
- b. Conduct in-shop and in-place balancing of all rotating equipment, both motors and coupled units, repaired by the industrial activity.
- c. Conduct in-place balancing as authorized by work requests.
- d. Assist ships in identifying and correcting noise problems and in conducting noise surveys in accordance with approved work requests.
- e. Establish new baseline machinery and hull vibration measurement data for repaired units.
- f. Ensure that all applicable personnel are adequately trained in submarine noise reduction.
- g. Conduct underwater hull and propeller surveys for noise deficiencies in accordance with reference (g).

23.3.3 Submarine Commanding Officer.

- a. Establish and maintain a ship's Noise Reduction Program consistent with this chapter. Appendix C of this chapter provides the basis for a shipboard instruction to meet this requirement.
- b. Appoint a senior Department Head as Noise Reduction Officer and establish a Ship's Noise Reduction Board.

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PROPELLER CAVITATION NOISE SURVEY

- Reference: (a) Class Applicable Technical Manual for Platform Noise Monitoring Analysis for Noise Reduction
(b) **NTTP 3-54.1 Submarine Tactical Security Manual**

1. Responsibility. Sonar Officer.
2. Procedure. Propeller cavitation surveys and diagnostic procedures will be conducted as specified in reference (a). Propeller cavitation curves will be developed using the procedural guidance of reference (a), for the various tactical considerations specified in reference (b).
3. Frequency. Since the ship's operating schedule dictates the frequency at which propeller cavitation surveys can be made, no specific frequency can be assigned. However, a complete cavitation survey should be made after any CNO Maintenance Availability or upkeep period. One point of the current cavitation curve should be verified at the beginning of each underway period. If results are significantly different, a complete new curve should be developed.
4. Unacceptable Propeller Tip Cavitation Performance. Propeller replacement due to poor acoustic performance is often based on unacceptable tip cavitation. Naval Surface Warfare Center, Carderock Division (NSWCCD) personnel verify the ship recorded cavitation points and provide feedback to the TYCOM and the ship. Ships with emergent poor cavitation performance should immediately record and forward cavitation curve tapes in accordance with the Platform Noise Survey Section of this Appendix.
5. Reports. The original and the five most recent cavitation curves will be retained and compared for trend analysis until the propeller is changed.
6. Review. The Sonar Officer shall compare new cavitation curves to previous ones and forward the results to the Commanding Officer via the Noise Reduction Officer.

Enclosure (2b)

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VOLUME VI
CHAPTER 24
PERIODIC MAINTENANCE REQUIREMENT PROGRAM

REFERENCES.

- (a) NAVSEAINST 4790.8/OPNAVINST 4790.4 - Ships' Maintenance and Material Management (3-M) Manual
- (b) NAVSUP Publication 485 - Afloat Supply Procedures
- (c) OPNAVINST 3120.33 - Submarine Extended Operating Cycle (SEOC) Program

LISTING OF APPENDICES.

- A SUBMEPP Maintenance and Shipwork Planning (MSWP) Periodic Maintenance Schedule - I-Level
- B SUBMEPP Maintenance and Shipwork Planning (MSWP) Inventory of Periodic Maintenance Requirements - I-Level
- C SUBMEPP Maintenance and Shipwork Planning (MSWP) Inventory of Periodic Maintenance Requirements - I/D-Level
- D Submarine Periodic Maintenance Requirement (PMR) Management Process
- E Work Package Supplement - Shipyard Planning and Feedback Report
- F Work Package - Ship's System Work Description, Part 4.13

24.1 PURPOSE. This chapter defines the functions and responsibilities of the submarine Periodic Maintenance Requirements (PMR) Program, and applies to all submarines. Details of PMR documentation are described in Appendix C of reference (a). Unrestricted Operation (URO) PMR guidance is provided in Chapter 25 of this Volume. Hull Integrity Procedure PMR guidance is provided in Chapter 38 of this Volume. Accomplishment of all PMRs is **mandatory**.

- a. The submarine Class Maintenance Plans (CMP) form the basis of a PMR Program which takes the place of the Integrated Maintenance and Modernization Planning Program for these classes and defines the planned, corrective and inactive equipment Maintenance Requirements for all levels of accomplishment.
- b. PMR work requires detailed planning and long lead time material procurement; therefore, all PMR work has been assigned to the Fleet Maintenance Activity (FMA). Ship's Force is not expected to be called upon for PMR work other than the normal responsibilities for approving, inspecting, monitoring, interference removal, delivery of ship to shop items, retesting and accepting work. Ship's Force Work Center (WC) will not be assigned as Lead Work Center (LWC) for I-Level PMR work but may be assigned as an assist WC.

24.2 TYPE COMMANDER SCHEDULING SYSTEM. PMR program management has been assigned to Submarine Maintenance Engineering, Planning and Procurement Activity (SUBMEPP) who develops CMPs, Maintenance Requirement Cards (MRC), Maintenance Repair Standards (MRCs, Technical Repair Standards (TRS) and Maintenance Standards (MS)), URO MRCs, and provides PMR configuration and scheduling information to the Submarine Force. Appendices A and B of this chapter show examples of the SUBMEPP PMR Inventories and Schedules provided in support of the Type Commander (TYCOM) PMR Scheduling System. A description of the data elements utilized is provided in each issue of the PMR Inventories and Schedules, which is issued quarterly, or as requested by the Immediate Superior in Command (ISIC). These Inventories and Schedules aid in decisions concerning PMR scheduling and accomplishment during upkeep, provide visibility to problem areas and facilitate auditing and assessing the material condition of a ship.

- a. For Non-SSBN/SSGN 726 Class submarines. The quarterly inventories and schedules include a section of I-Level PMRs coming due within the next xxx months (number of months as requested by ISIC). Additionally, they provide a combined inventory of I and D-Level PMRs shown in Appendix C of this chapter. This inventory identifies the availability for which the D-Level PMRs are planned for accomplishment.
- b. For SSBN/SSGN 726 Class submarines. This inventory provides all I and D-Level requirements, with their due dates.

24.2.1 Periodic Maintenance Requirements Schedule. The PMR Inventories and Schedules are distributed automatically by SUBMEPP to the parent ISIC every three (3) months. Appendix D of this chapter provides a flow chart of the Submarine PMR Management System. **In addition, scheduling/configuration files (M79E11) and Master Job Catalog (MJC) update files are distributed to those activities using Micro-PMR for PMR/URO calldown.**

24.2.2 Scheduling Periodic Maintenance Requirements Work. The PMR scheduling system is based on calendar periods starting with the month following the completion month of a scheduled Chief of Naval Operations (CNO) Availability, or starting with the month following PMR completion for Fleet availabilities. It is designed to ensure reliable equipment operation during the unit's extended operating cycle. The ISIC, in conjunction with the FMA, will have to smooth the work load by spreading the work over several availabilities by re-planning the scheduled start and completion dates of individual Job Control Numbers (JCN) to ensure they are accomplished prior to the due dates. Once the actual completion dates are reported, subsequent scheduling for the future periods will retain the same relative time frames based on the periodicity of the requirement. The current PMR Inventories and Schedules provided by SUBMEPP shall be maintained by the parent ISIC.

24.2.3 Periodic Maintenance Requirements Calldown/Brokering. I-Level PMRs which are due for accomplishment are called down from **Maintenance and Shipwork Planning (M&SWP)**/local scheduling system, and brokered **by the ISIC**. **PMRs should be screened to the FMA with a Priority Level of 2.**

24.2.4 Calculating Adjusted Last Maintenance Action Date.

- a. Fleet Availabilities. When a PMR is accomplished during a Fleet availability (Fleet Maintenance Activity (FMA)/Refit, **Continuous Maintenance Availability**, Voyage Repair, Planning), the adjusted Last Maintenance Action (LMA) date will be the first of the month following actual completion.
- b. CNO Availabilities. When a PMR is accomplished during a CNO Availability (Selected Restricted Availability, Interim Drydocking, Extended Refit Period, Depot Modernization Period (DMP), Engineered Refueling Overhaul or a Major Maintenance Period (treated as a CNO availability for scheduling purposes only)), the adjusted LMA date will be the first of the month following the scheduled availability's actual completion date. ISICs operating with the on-site PMR Scheduling System must ensure that Availability Dates are accurately maintained so that completed Automated Work Request (AWR) reported data reflects the adjusted LMA and on-site PMR scheduling records calculate the proper next due date.

24.2.5 Calculating Due Dates. Next Due Dates are calculated based on an Adjusted LMA date. Due dates are calculated, for scheduling purposes, by taking the adjusted LMA date month/year (number) and adding the periodicity months (number) to show the month/year due (i.e., an item with an adjusted LMA date of February 2003 (2/03) with a six month periodicity would be due in August 2003 (8/03). The PMR will be accomplished prior to midnight of the last calendar day of the month due.

24.3 PERIODIC MAINTENANCE REQUIREMENTS ACCOMPLISHMENT. PMR requirements are to be accomplished on or before the scheduled due date listed in the SUBMEPP TYCOM PMR Scheduling System Inventories and Schedules. Accomplishment of all PMRs is **mandatory**. Only by accomplishing PMR maintenance on schedule and in accordance with specifications can safe and reliable operation be ensured and the period between CNO Availabilities be extended. **When PMRs cannot be accomplished by their scheduled due date, they will appear overdue on the PMR Status web page. For overdue PMRs, the SUBMEPP representative assigned to each ISIC shall identify on the web page the reasons the PMR could not be accomplished. The purpose of the web page is to provide increased visibility of overdue PMRs to aid the ISIC in their PMR Management responsibilities.**

24.4 MATERIAL SUPPORT FOR FLEET MAINTENANCE ACTIVITY ACCOMPLISHED PERIODIC MAINTENANCE REQUIREMENTS.

24.4.1 Mandatory Parts. Parent FMAs requisition mandatory parts as specified on TRS/MRC/MS documentation for PMRs that are scheduled to be accomplished by that FMA. Material requisitioning is accomplished by the FMA using standard supply procedures. Material is not normally stocked by the FMA and is requisitioned from the nearest stocking point.

24.4.2 Contingency Parts. Contingency parts will not be procured in advance for PMR requirements and will be ordered only upon determination that a contingency part is required based on observed equipment condition. Parent FMAs may have some high usage contingency material available in stock, as identified by the Tender Load List supplements, (**not applicable to SSBN/SSGN 726 Class submarines**) however, low usage contingency material is stocked only at designated stock points or not at all.

24.4.3 Requisitioning Procedures. Submarine Engineered Operating Cycle (SEOC) PMR material requisitions shall be submitted through normal channels and shall use a Project Code of "732". Appendix 6 of Reference (b) refers. Contingency material requisitions shall be forwarded by message or telephone, and shall include appropriate "work stoppage" indicator/codes. Forward Contingency Material requisitions directly to, Fleet Industrial Support Center San Diego, Pearl Harbor or Submarine Base New London by message or telephone as appropriate; use the phrase "SEOC Requisition" as the subject line on message requisitions.

24.4.4 Material Support Provided by the Advance Equipment Repair Program. Shore based spares are available for replacing some critical equipment, such as seawater system pumps and motors, during CNO Maintenance Availabilities. The Advanced Equipment Repair Program (AERP) is managed by SUBMEPP under the direction of Naval Sea Systems Command (NAVSEA) and both TYCOMs. AERP equipment scheduled for change-out will be specifically authorized in the ship's Availability Work Package (AWP). Although originally intended to support CNO Availabilities, AERP assets, when available, are used to support Casualty Reports (CASREP). In these instances, a CASREP requisition must be submitted to Naval Inventory Control Point and the shipment of equipment is monitored and tracked until the condition "F" off-load has been returned to the refurbishment activity/vendor identified by Naval Inventory Control Point. The expedited return of an AERP off-load is essential to ensure adequate restoration turnaround time is afforded and to minimize AERP impact.

24.4.5 Material Support Provided by the TRIDENT Planned Equipment Replacement Program.

- a. TRIDENT Planned Equipment Replacement (TRIPER) is a rotatable pool program for SSBN/SSGN 726 Class submarines. TRIPER equipments are removed from the ship via pre-planned access routes and six-foot diameter Logistics and Escape Trunks, using specifically designed handling attachments and procedures. Removed equipments are replaced with fully interchangeable, tested, ready for issue units which can be rapidly installed and made fully operational within a refit period. Equipment replacement periodicity is determined by maintenance and reliability analysis and engineering judgments intended to preclude equipment failure or significant degradation during operational periods. Removed equipments are refurbished by approved Designated Overhaul Points, tested and returned to ready for issue condition for use on another SSBN/SSGN 726 Class submarine.
- b. Safety spares are made available for CASREPs which are considered as unplanned change outs. The TRIPER Program rotatable pool is managed by NAVSEA (PMS 392) and supported by various agencies and activities. Hull, Mechanical, Electrical, Ordnance and Electronics and Command and Control System equipment comprise the TRIPER inventory pool. Items under the cognizance of the Director, Strategic Systems Project Office and the Deputy Commander, NAVSEA Nuclear Power Directorate are excluded.

24.5 CORRECTIVE MAINTENANCE OF EQUIPMENT USING PERIODIC MAINTENANCE REQUIREMENTS.

Scheduled restoration of equipment by the FMA or industrial activity is done in accordance with specified Maintenance Standards (MRC, MS, TRS, Technical Manual, etc.). Whenever corrective maintenance is required on Hull, Mechanical and Electrical equipments, the SUBMEPP combined I and D-Level PMR inventory shall be reviewed by the ISIC and FMA. The ISIC and FMA will determine whether to limit repairs to those described by the ship or to have the Maintenance Standard accomplished. If the corrective maintenance is to include the criteria of the MRC, MS or TRS, the work request shall be processed in accordance with paragraph 24.7.3 and 24.7.4 of this chapter.

NOTE: IN ORDER TO RECEIVE ACCOMPLISHMENT CREDIT, THE ISIC SHALL ENSURE PROMPT COMPLETION REPORTING OF THE PMR AS DESCRIBED ABOVE. THIS WILL ENSURE THE CORRECT SCHEDULING OF PMRs FOR FUTURE ACCOMPLISHMENT.

NOTE: EQUIPMENT IS CONSIDERED TO HAVE BEEN RESTORED IN ACCORDANCE WITH PMR CRITERIA WHEN THE FOLLOWING SOFTWARE (MRC, MS, TRS) REQUIREMENTS HAVE BEEN SATISFIED.

- (1) THE EQUIPMENT IS RESTORED TO PLAN SPECIFICATIONS.**
- (2) THE COMPONENTS SATISFACTORILY PASS THE TEST REQUIREMENTS WITHIN THE MRC/MS/TRS.**
- (3) ALL MATERIAL LISTED ON THE MRC/MS/TRS AS MANDATORY HAS BEEN REPLACED.**
- (4) COMPONENTS AND EQUIPMENT ARE REPLACED WITH SUPPLY SYSTEM, AERP, OR TRIPER ASSETS.**

24.6 PERIODIC MAINTENANCE REQUIREMENTS ACCOMPLISHMENT DURING CHIEF OF NAVAL OPERATIONS MAINTENANCE AVAILABILITIES. PMRs to be accomplished by the industrial activity will be included in the SUBMEPP PMR Inventories and Schedules.

a. For SSN 688, SSN 774 and SSN 21 Class submarines:

- (1) The AWP prepared by SUBMEPP will reflect all PMRs authorized for shipyard accomplishment during the CNO Availability period at the AWP Ship Work List Item Number (SWLIN) level. The Work Package Supplement (WPS) accompanying the AWP will identify a specific PMR to the applicable AWP SWLIN paragraph. Appendix E of this chapter provides an example of the WPS format. In addition, the DMP and overhaul AWP's will contain an I-Level PMR work package cross-index. This cross-index will enable maintenance planners to readily determine the I-Level PMRs accomplished incidental to accomplishing higher D-Level PMRs or other industrial activity authorized work. The cross-index will also identify I-Level PMRs which will become overdue by availability completion plus six months. These I-Level PMRs should only be listed in the cross index as a reference and not listed in the body of the AWP. Appendix F of this chapter provides an example of the cross-index format. This ISIC will report any I-Level PMRs from the cross-index that will not be completed prior to the arrival conference for adjudication.
- (2) Upon receipt of Issue Two of a 6 month or greater scheduled CNO availability AWP the ISIC will review the AWP against the schedules and inventories and add those PMRs not covered by the Work Package (WP) coming due within 6 months after availability completion that aren't assigned to shipyard to a fleet maintenance availability prior to the CNO period, to a concurrent availability, or to a future availability with TYCOM concurrence.
- (3) For I-Level PMRs assigned to the depot, or I-Level PMRs covered by higher level maintenance assigned to the depot, the ISIC will enter "Assigned to <depot name> by AWP <AWP number>" in the Remarks/Completion block of the PMR Schedule/Inventory, Part 2 Section III and in the local scheduling system.
- (4) Completions and MCA data for PMRs accomplished by the industrial activity during CNO Availabilities will be retrieved from the **appropriate maintenance database**. The WPS, or comparable report, annotated by SUBMEPP to show PMR completions and material condition feedback categories, will be retained by SUBMEPP upon completion of the availability. The PMR Schedule/Inventory and local scheduling system will be updated by SUBMEPP.

b. For SSBN/SSGN 726 Class submarines:

- (1) The Engineered Overhaul Work Package prepared by SUBMEPP will reflect all PMRs authorized for accomplishment during the CNO Maintenance Availability period at the SWLIN level. For each SWLIN, the specific PMRs will be identified to the applicable component level. The Engineered Overhaul Work Package preparation process ensures all PMRs due prior to the first availability following the subject availability period are included in the Engineered Overhaul Work Package. The preparation process also includes review and inclusion of appropriate items from the ship's Current Ship's Maintenance Project (CSMP), Ship's Force originated deficiencies, and alterations screened for industrial activity accomplishment.
- (2) Completions and Material Condition Assessment data for PMRs accomplished by the industrial activity during CNO Availabilities will be **retrieved from the appropriate maintenance database. The WPS, or comparable report, annotated by SUBMEPP to show PMR completions and material condition feedback will be retained by SUBMEPP** upon completion of the availability. The PMR inventories and schedules and local scheduling system will be updated by SUBMEPP.
- (3) Completions and MCA data for PMRs accomplished by TRIDENT Refit Facility Kings Bay/NAVIMFAC PACNORWEST during CNO availabilities will be called down and reported using their local scheduling system as identified in paragraph 24.2.3 of this chapter.

24.6.1 Operating Cycle/Interval Extension. An audit plan to assess the material condition of a ship prior to extending their operating cycles/intervals beyond PMR periodicity due to changing CNO Maintenance Availability dates is addressed in reference (c). Procedures and responsibilities are contained in Volume II, Part I, Chapter 3 of this manual.

24.7 RESPONSIBILITIES.

24.7.1 Type Commander.

- a. The TYCOM is responsible for providing an overall scheduling system for the accomplishment of PMRs for assigned ships.
- b. Perform periodic audits of ISICs and FMAs to verify full compliance with the provisions of this chapter.
- c. Provide guidance to the ISICs, obtaining NAVSEA concurrence **in accordance with Volume V, Chapter 8, paragraph 8.2.4 of this manual.**

24.7.2 Submarine Maintenance Engineering, Planning and Procurement Activity.

- a. Receive reports of the completion of PMRs from industrial activities and extract Maintenance and Material Management (3-M) data from NAVSEA Logistics Center, Mechanicsburg PA of all Forces Afloat accomplished PMRs containing "JC" WC.
- b. Review completion reports for any change in material condition status and analyze 3-M data for Material Condition Assessment to determine validity of requirements.
- c. Update schedules to reflect new LMA and next due dates.
- d. Provide updated **quarterly** PMR inventories and schedules to each ISIC and the SUBMEPP representative at TYCOM. Notify the SUBMEPP Representative at TYCOM and each ISIC when products will not be provided as scheduled.
- e. Provide quarterly or more frequent (if requested) **scheduling/configuration files (M79E11) and MJC update files to each parent ISIC using a local scheduling system.**
- f. Provide **quarterly MJC update files to the ISIC brokering systems .**
- g. Adjust the due dates for any PMRs that are accomplished within ten months of the major CNO availability start date that will come due again during the availability by the number of months of the availability duration.

- h. (SSBN/SSGN 726 Class submarines) Provide Refit Work Package electronic files which reflect PMR scheduling to the TRIDENT Refit Facility Kings Bay at the arrival minus 60 day milestone.
- i. Prepare and issue AWP in support of CNO availabilities. **Ensure the I-Level PMR section of AWP (Part 4.13) is updated on each issue of the AWP.**
- j. Manage AERP/**Corporate Component Repair Program**/TRIPER programs.
- k. Extract PMR completion verification and documentation for SEOC availabilities from **the appropriate maintenance database.**
- l. **Ensure the SUBMEPP representative assigned to each ISIC updates Overdue PMR Status web page (https://sentinel.submepp.navy.mil/fs/pmr_status/) with the reason for D-Level PMRs not meeting the due date.**

24.7.3 Immediate Superior In Command.

- a. Although the responsibility for the accomplishment of PMRs must rest with the ship's Commanding Officer, the ISIC is responsible for scheduling and ensuring completion of all I-Level PMR work within the planned periodicity in the CMP. Normally, PMR work is accomplished by the FMA which maintains the unit's CSMP. However, when submarines are assigned availabilities to other than the parent FMA, and that FMA is authorized by the TYCOM to perform PMRs, an agreement between the parent ISIC and the accomplishing FMA will identify the PMRs to be accomplished and any associated logistics.
- b. Call down all I-Level PMRs planned for accomplishment into the CSMP by availability dates. For SSBN/SSGN 726 Class submarines this shall be 45 days prior to refit start. For non-726 Class submarines, 60 days prior to fleet maintenance availability. This ISIC must be proficient in these procedures to preclude erroneous or duplicate data from entering the CSMP. If the inventories and schedules contain errors/omissions, report the discrepancies to SUBMEPP.
- c. Maintain auditable records of PMR accomplishment for each submarine. These records will include the current SUBMEPP Quarterly PMR Inventories and Schedules and the last completed AWR for PMRs completed by the parent FMA, whether or not reflected in the SUBMEPP Quarterly PMR Inventories and Schedules. **At sites which have access to electronic certified Task Group Instructions, these Task Group Instructions can be used in place of completed AWRs as an auditable record of PMR accomplishment.**
- d. At Naval Intermediate Maintenance Facility Pacific Northwest, PMR and non-controlled URO inspection scheduling, completion, LMA date establishment and next due date scheduling shall be maintained in the **appropriate** automated database for SSBN/SSGN 726 Class submarines. This database will contain the complete history for all occurrences (past), dates of completion, frequency of occurrence, next due dates and future scheduling data for each PMR/non-controlled URO inspection. Data will be entered from Objective Quality Evidence from refit close out processes and the selected job management report.
- e. Notify SUBMEPP **Code 1814** of non-receipt of SUBMEPP Quarterly PMR Inventories and Schedules. The PMR Inventories and Schedules are also available at <https://eagle.submepp.navy.mil/ap/invsched/>.
- f. Keep the local scheduling system correct and accurate. This should be done by periodically doing a check of the data against the inventories and schedules, **M&SWP and the ship's CSMP. Ensure the SUBMEPP representative assigned to each ISIC updates the Overdue PMR Status web page (https://sentinel.submepp.navy.mil/fs/pmr_status/) with the reason for I-Level PMRs not meeting the due date.**
- g. **The ISIC should make every attempt to accomplish PMRs on or before the next scheduled due date that appears in SUBMEPP Inventories and Schedules.** Ensure PMRs which are not accomplished by the SUBMEPP scheduled due date are rescheduled.

- h. Ensure that all I-Level PMRs, which will become due during a scheduled CNO Availability (but not authorized for industrial activity accomplishment), are scheduled for accomplishment by the FMA prior to the end of the availability. The PMRs may be assigned to an FMA concurrent availability with an end date the same as the CNO availability. This will allow for a more appropriate Adjusted LMA Date.
- (1) Any I-Level PMR that is overdue by the availability start date minus 6 months and is identified in the AWP/WPS by SUBMEPP to be accomplished by the industrial activity does not have to be done prior to the availability start. This includes I-Level PMRs for which the higher tier D-Level PMR is authorized in the AWP/WPs.
 - (2) Notify the TYCOM representative at the Pre-Arrival Conference of any I-Level PMRs that will either not be accomplished prior to the availability start date or will become due during the availability.
 - (3) Any PMR accomplished within ten months prior to start of a **major** CNO Availability that becomes due again during the availability, will have their scheduled due date adjusted by SUBMEPP by the number of months of the availability duration.
- i. Review completed AWRs **or electronic certified Task Group Instructions** prior to close-out of **PMRs** to resolve any discrepancies.
- j. Transferring Periodic Maintenance Requirements to other Fleet Maintenance Activities for Accomplishment. When submarine availabilities are accomplished by other than the parent FMA (whether another FMA in the same geographic area or due to deployment), the parent ISIC will take the following action:
- (1) Coordinate with the parent FMA to select only those PMRs for accomplishment for which all plans and materials will be available and ready for shipment prior to the availability or deployment of the submarine.
 - (2) Dispatch a message to the submarine, the recipient squadron and FMA identifying by JCN the PMRs to be accomplished, confirming that plans and materials are being shipped or will be carried by the deploying submarine and that the submarine's total CSMP tape will be either retained by the parent ISIC or transferred to the recipient squadron/Regional Support Group/Regional Maintenance Center as mutually agreed prior to the availability or deployment.
 - (a) If the CSMP is retained by the parent ISIC, an AWP tape (MM6031) will be provided to the recipient FMA which will maintain it as I-Level (only AWR completions for the tended submarine accomplished by the FMA will be passed upline). The submarine will forward all 3-M transactions to the parent ISIC.
 - (b) If the total CSMP is transferred, the recipient FMA will maintain it as level II (the submarine will pass all 3-M transactions to the availability FMA). In addition, the PMR configuration and scheduling file will be transferred to the recipient FMA for URO/PMR/Calibration scheduling purposes.
 - (c) When the submarine departs from the tending FMA, the CSMP and PMR data files will be updated and returned to the parent ISIC with the letter of transfer. FMAs receiving only the work package tape will create a CSMP transfer out tape and transmittal letter for return to the parent ISIC. The parent ISIC **Maintenance Document Control Officer (MDCO)** will reconcile the master CSMP with the returning submarine's 3-M coordinator.
 - (3) Ensure that the FMA properly packages by JCN all materials, plans, drawings, etc., for dispatch to the receiving FMA or for custodial turnover to the submarine's Engineer Officer for delivery to the deployed FMA.
 - (4) Ensure MDCO/**Analysis, Records and Reports Section (ARRS)** takes coordinated action to provide a correct CSMP tape and letter of transmittal. The parent ISIC MDCO must retain copies of transfer-out and in letters for MJC Job Sequence Number control.

NOTE: ONCE A DEFERRAL HAS INITIALLY BEEN ENTERED IN THE COMPUTER AT THE ORIGINATING FMA, IT IS AUTOMATICALLY PASSED TO THE TYCOM MASTER CSMP. SUBSEQUENT TAPE TRANSFERS BETWEEN FMAs WILL NOT CAUSE THE DEFERRAL TO PASS AGAIN TO THE TYCOM PROVIDING THAT MDCO INPUTS THE TRANSFER TAPE (MM6031) TO MAINTENANCE RESOURCE MANAGEMENT SYSTEM (MRMS) PROGRAM 173 NOT 174.

- k. Non-Scheduled Repairs of PMR components. The ISIC must add to the ship's CSMP those PMRs to be accomplished in conjunction with a repair action, in lieu of a repair action, or to be credited subsequent to a repair or replacement action. One of the following actions must be taken by the ISIC and MDCO:
 - (1) When a ship's submitted deferral references a PMR for concurrent accomplishment with the repair action, or if ISIC or FMA planners recommend a PMR, the ISIC must make the decision whether or not to invoke the PMR in conjunction with or in lieu of the requested repair. This will result in two AWRs being created. The planner will have work accomplished under one JCN (EA01) and use the second JCN (EAJC) for administrative completion crediting of the PMR.
 - (2) If the repair job has resulted in replacement of the PMR component or if the maintenance standard requirements were completely accomplished prior to retrieving the PMR from the MJC, calldown the item from the local scheduling system. The ISIC should instruct FMA to report its completion including the added narrative to identify the originally assigned ship's JCN. Though the materials used cannot be re-identified to the PMR JCN, it is recommended that the total man hours expended also be reported on the PMR AWR or subsequent analysis of required PMR support.
- l. Training. The parent ISIC is responsible to provide assigned ship's training in the TYCOM PMR Scheduling System. Such training should include an overview of the SEOC Program, PMR scheduling products, MS Library and PMR program accomplishment and reporting systems. Emphasis should be placed on the ship's responsibilities to the PMR program as identified in paragraph 24.7.5 of this chapter.

24.7.4 Fleet Maintenance Activity.

- a. The FMA is responsible for accomplishing all PMR work as scheduled to the required repair standards.
- b. Commence the planning and material procurement function when the PMR is called down by the ISIC from the local scheduling system and brokered to the FMA.
- c. Progress the job, ensuring that the LWC coordinates with ship superintendent and all Assist WCs and that production time and current status is reflected in the local scheduling system.
- d. Complete the job, report its accomplishment and as found material condition feedback code on the AWR. Any significant findings should also be documented on the AWR. FMA LWCs completing AWRs are to ensure that all participating WCs document their man hours and provide action taken codes, that the Final Action Taken (the most appropriate overall action) and Date Completed have been recorded, and that the acceptance signatures from Ship's Force are obtained before returning the completed AWR to ARRS. The material condition feedback codes are described in Appendix B of reference (a) as part of the action taken code, and are as follows:

NOTE: THE BELOW MATERIAL CONDITION FEEDBACK CODES SHALL DESCRIBE THE "AS FOUND" CONDITION OF THE COMPONENTS AND NOT THE AFTER REFURBISHED CONDITION OF THE COMPONENTS.

- (1) Code "A" means the material condition of the component being refurbished could have allowed the PMR to be deferred (extend the periodicity).
- (2) Code "B" means the material condition of the component being refurbished justified the scheduled PMR.

- (3) Code “C” means the material condition of the component being refurbished should have mandated an earlier completion of the PMR (shorten the periodicity).

NOTE: VARIATIONS TO THESE CODES MAY BE DESCRIBED IN INDIVIDUAL PMR MJC NARRATIVES.

- e. ARRS will verify that all participating WCs have documented completion of assigned tasks, Ship’s Force acceptance signature is on AWR and the final action taken code (2 characters) is entered. Prior to close-out of the AWR, ARRS will pass the AWR to the ISIC for review. For MRMS FMA sites, it is essential that ARRS verify that the MRMS Availability file has the proper scheduled completion date and code to identify that it is a scheduled availability. This is done by showing a “Y” in answer to “Is this a CNO Availability” on the appropriate screen.
- f. Adjustments of scheduled start and completion dates of the PMR and factual reporting of status codes.
- g. Review corrective action request submitted by Ship’s Force via an OPNAV 4790/2K to determine if the corrective action is to include the criteria of MRC, MS or TRS requirements.
- h. If the PMR maintenance procedure has a material condition feedback form, fill out the form and submit in accordance with the reporting requirements defined in the procedure.
- i. Report to the ISIC when PMRs are met in accordance with paragraph 24.5 of this chapter, due to the expansion of work boundaries.
- j. **At the conclusion of an availability (not later than the Departure and Assessment Conference), in which I-Level PMRs were screened for FMA accomplishment, provide to the ISIC, verbally or by memo, the reason that any PMRs could not be accomplished (e.g., parts, manpower not available) as scheduled.**

24.7.5 Submarine Commanding Officer.

- a. The ship’s Commanding Officer is responsible for the execution of PMR work on the ship.
- b. All discovered maintenance deficiencies which affect the equipments and systems covered by the PMR program should be documented to reflect the possible PMR with which the deficiency is associated. This will provide the ISIC with the alternative of simultaneously imposing repairs to the criteria of the specified Maintenance Standard and credit PMR accomplishment.
- c. All maintenance deficiencies will reflect in Block 46 (TYCOM SPECIAL PURPOSE), of the OPNAV 4790/2K whether or not quality control and Quality Assurance standards are required.
- d. Review Depot Availability Work Packages and provide comments to the TYCOM and SUBMEPP representatives during the work package review.
- e. Review the status of PMR maintenance in the SUBMEPP Quarterly PMR inventories and schedules and CSMP reports with parent ISICs prior to upkeep periods in order to assist in planning for accomplishment of required PMR maintenance.
- f. All maintenance deficiencies which affect the equipments and systems covered by the PMR program should be documented to reflect the possible PMR with which the deficiency is associated. Review ship's submitted deferrals of corrective maintenance for FMA accomplishment against the PMR inventory and record any applicable Maintenance Standard numbers on the OPNAV 4790/2K. If a component or piece of equipment is listed in the inventory but a Maintenance Standard number is not identified, annotate the OPNAV 4790/2K with “PMR applies”.
- g. Ensure that the current SUBMEPP Quarterly PMR Inventories and Schedules CD, MRCs, Maintenance Requirements and TRSs applicable to the ship class are carried on board.
- h. Ensure that MRCs, MSs and TRSs, which provide detailed information and repair guidance are referenced and used during equipment maintenance. Additionally, SUBMEPP PMR inventories provide useful guidance in preparing maintenance documents and planning work (i.e., component identification, Equipment Identification Codes, Allowance Parts Lists, Maintenance Standards, etc.).

- i. If Ship's Force accomplishes a repair of a PMR component to an MRC, MS or TRS, report same to the ISIC Material Officer so that the SUBMEPP Inventory and Schedules may be updated and follow-up reporting action may be initiated.
- j. Ensure all completed AWRs for PMRs are signed as accepted by Ship's Force.
- k. At the conclusion of an availability (not later than the Departure and Assessment Conference), in which I-Level PMRs were screened for FMA accomplishment, provide to the ISIC, verbally or by memo, the reason that any PMRs could not be accomplished (e.g., parts, manpower not available) as scheduled.

FOR OFFICIAL USE ONLY
 PERIODIC MAINTENANCE REQUIREMENTS
 SCHEDULED MPS REQUIREMENTS I-LEVEL

REPORT DATE: 30 Jan 2012

CUTOFF DATE: 01 May 2013

VIRGINIA SSN 774
 SHIP'S UIC: 23013

RSG NEW LONDON
 NSSF NLON 68316

														REMARKS/COMPLETION INFO	
<u>COMPID</u>	<u>WC JSN</u>	<u>MJC NO</u>	<u>PROC TYPE</u>	<u>MAINTENANCE INSTRUCTION DOC</u>	<u>STAT</u>	<u>D D</u>	<u>LAST WRK CTR JSN</u>	<u>M C C</u>	<u>LMA DATE</u>	<u>DUE DATE</u>	<u>PER</u>	<u>ALT</u>	<u>JSN</u>	<u>DATE</u>	
<u>HSC</u>	<u>RIC</u>	<u>EIC</u>													
SYSTEM: 23811 Secondary Propulsion															
SPM SPPT EQPT		N0002EMCC7145	MS	2380-081-032	IS				Apr 2007	Jun 2012	12M	62M			
23811CE3C	31A020262	FH01000													
SYSTEM: 24511 Propulsor															
PROPULSOR ASSY	EMJC0848	N0002EMCC7135	TM	S9086-CQ-STM-010	IS		EMJC0730		Sep 2009	Dec 2009	3M				
24511CL1	83A060033	FE03000	Chapter 081												
PROPULSOR ASSY	EMJC0849	N0002EMCC7141	MS	2450-081-024	IS				Jun 2012	Dec 2012	6M/R				
24511CL1	83A060033	FE03000	R = Accomplish: 1) Prior to and following occasion when the propulsor is operated dockside for periods longer than those associated with normal ship arrival and departure. 2) Whenever abnormal noise or vibration is observed. 3) When performance declines. 4) When damage is suspected. 5) Prior to performance trials.												
SYSTEM: 25511 Piping and Accessories, Main Feedwater															
SH-0019	EMJC0903	N0002EMCC6993	MS	2550-081-104	IS		EMJC0526		Jun 2009	Jun 2011	24M				
25511DE1	99A030134X	F30K000													
SYSTEM: 25541 Piping and Accessories, Main Condensate															
CF-070	EXJC0961	N0006EXCAC757	MS	2550-081-077	IS			Z	Apr 2007	Apr 2012	60M				
25541DH70	88A010318X	F30K000													
CF-076	EXJC0962	N0006EXCAC757	MS	2550-081-077	IS			Z	Apr 2007	Apr 2012	60M				
25541DH76	88A010318X	F30K000													
CF-082	EXJC0963	N0006EXCAC757	MS	2550-081-077	IS			Z	Apr 2007	Apr 2012	60M				
25541DH82	88A010318X	F30K000													
CF-114	EXJC0957	N0006EXCAC757	MS	2550-081-077	IS			Z	Apr 2007	Apr 2012	60M				
25541DH114	883116679X	F30K000													
CF-115	EXJC0958	N0006EXCAC757	MS	2550-081-077	IS			Z	Apr 2007	Apr 2012	60M				
25541DH115	883116679X	F30K000													

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APPENDIX A
 SUBMEPP MAINTENANCE AND SHIPWORK PLANNING (MSWP)
 PERIODIC MAINTENANCE SCHEDULE - I-LEVEL

COMUSFLTFORCOMINST 4790.3 REV C CH-1

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 PERIODIC MAINTENANCE REQUIREMENTS
 I-LEVEL INVENTORY SORTED BY SYSTEM

REPORT DATE: 30 Jul 2012

VIRGINIA SSN 774													RSG NEW LONDON		
SHIP'S UIC: 23013													NSSF NLON 68316		
COMPID	WC JSN	MJC NO	PROC TYPE	MAINTENANCE INSTRUCTION DOC	STAT	D D	LAST WRK CTR JSN	M C C	LMA DATE	DUE DATE	PER	ALT	JSN	REMARKS/COMPLETION INFO	DATE
<u>HSC</u>	<u>RIC</u>	<u>EIC</u>													
<u>SYSTEM: 073 Acoustic Surveys and Tests</u>															
RADIATED NOISE		N0002WKCC6328	JFMM	4790.3	IS			Z	Apr 2007		R				
	NONE 1211													R = Accomplish when funded by NAVSEA and authorized by TYCOM during start of ship's operating cycle.	
<u>SYSTEM: 091 Ship Inspections</u>															
TSRA		N0002WKCC6373	PI		IS		WKJC0598		Jul 2009		R				
	XCONFIGITEM			COMSUBFORINST 9010.5										R = Accomplish prior to deployment.	
<u>SYSTEM: 11111 Shell Plating, Pressure Hull</u>															
SPHERE MHC0V		N0002WQCC4336	MS	1110-081-016	IS				Jun 2012	Jun 2015	36M				
	NONE 034														
<u>SYSTEM: 18511 Auxiliary Systems Foundations</u>															
AMR 50K MT		N0002EACC9759	MS	1850-081-001	IS				Apr 2007		R				
18511CL1	31A020267	A000000												R = Accomplish based upon results of inspection.	
<u>SYSTEM: 18611 Outfit and Furnishings Foundations</u>															
HAB 50K MT		N0002WQCC4403	MS	1860-081-001	IS				Apr 2007		R				
18611CL1	31A020267	1C03000												R = Accomplish based on results of inspection (MRN 301-028).	
<u>SYSTEM: 22311 Main Storage Battery</u>															
BAT TRLY ATH		N0002EECC6359	MS	2230-081-020	IS			Z	Apr 2007		R				
22311CL6	58A020009	FF03000												R = Accomplish following repairs, after cells have been removed from battery compartment.	
BAT TRLY ATH		N0002EECC6451	MS	2230-081-023	IS		EEJC0609	A	Nov 2009		R				
22311CL6	58A020009	FF03000												R = Accomplish each battery replacement prior to use.	
BAT TRLY F&A		N0002EECC6451	MS	2230-081-023	IS		EEJC0610	A	Nov 2009		R				
22311CL5	58A020010	FF03000												R = Accomplish each battery replacement prior to use.	

APPENDIX B
 SUBMEPP MAINTENANCE AND SHIPWORK PLANNING (MSWP)
 INVENTORY OF PERIODIC MAINTENANCE REQUIREMENTS - I LEVEL

COMUSFLTFORCOMINST 4790.3 REV C CH-1

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TOTAL PERIODIC MAINTENANCE REQUIREMENTS INVENTORY

REPORT DATE: 30 Jul 2012

SORTED BY SYSTEM

DALLAS (SSN700) LONDON SHIP'S UIC: 20811										CSMP LOCATION - RSG NEW NSSF NLON 68316																									
										688 LIFE CYCLE																									
<u>COMPID</u>	<u>WC JSN</u>	<u>MJC NO</u>	<u>PROC TYPE</u>	<u>MAINTENANCE INSTRUCTION DOC (STATUS)</u>	<u>M C</u>	<u>LMA DATE</u>	<u>NEXT DUE DATE</u>	<u>PER</u>	<u>ALT</u>	<u>D</u>	<u>U</u>	<u>P</u>	<u>R</u>	<u>S</u>	<u>R</u>	<u>S</u>	<u>D</u>	<u>S</u>	<u>S</u>	<u>S</u>	<u>E</u>	<u>E</u>	<u>S</u>	<u>E</u>	<u>S</u>	<u>P</u>	<u>I</u>	<u>C</u>	<u>I</u>						
<u>HSC</u>	<u>RIC</u>				<u>C</u>					<u>D</u>	0	1	1	2	0	1	2	3	2	2	0	1	1	3	2	3	1	1	0	2					
SYSTEM: 0611 Audit and Certification																																			
TSRA		N0002WKCC6372	PI				Nov10																												
SYSTEM: 073 Shipboard Test Program (Acoustic Surveys and Tests)																																			
STRBORN NOIS SY		N0002WQCC4432	PAT	073-009 (IS)	Z		Jul81																												
0000 B00HA	XCONFIGITEM																																		
R = Accomplish prior to each depot availability																																			
STRBORN NOIS SY		N0002WQCC4430	TP	073-5056 (IS)	Z		Dec05																												
0000 B00HA	XCONFIGITEM																																		
R = Accomplish after each depot availability																																			
TOPSIDE SURVEY		N0002WQCC4427	PAT	073-006 (IS)	Z		Jul81																												
0000 B006A	X9061300003																																		
R = Accomplish prior to each depot availability																																			
UND NOISE SURV		N0002WQCC4480	PAT	073-008 (IS)	Z		Jul81				D																								
0000 B00FA	XCONFIGITEM																																		
R = Accomplish each depot availability																																			
SYSTEM: 111 Superstructure and Fairwater																																			
CAT PROT DEV		N0002EACC7702	MS	6330-081-007 (IS)			May10				D																								
1111X1050A	X90613CAT01																																		

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PSA01: Jan1982 - Jun1982 SRA11: Jan1984 - Mar1984 SRA21: Oct1986 - Dec1986 DMP01: Oct 1988 - Sep1989 SRA41: May1992 - Jun1992
 SRA51: Sep1994 - Dec1994 RFN01: Oct1995 - Feb1998 SRA13: Mar2001 - May2001 SRA23: Apr2005 - Sep2005 PIR01: Jan2009 - Mar2010
 INA01: Jun2014 - Jun2015

APPENDIX C
 SUBMEPP MAINTENANCE AND SHIPWORK PLANNING (MSWP)
 INVENTORY OF PERIODIC MAINTENANCE REQUIREMENTS - 1/D LEVEL

COMUSFLTFORCOMINST 4790.3 REV C CH-1

PERIODIC MAINTENANCE REQUIREMENTS
I/D-LEVEL INVENTORY SORTED BY SYSTEM

REPORT DATE: 31 Jul 2012

MARYLAND SSBN 738
SHIP'S UIC: 21460

SQUADRON 20

														REMARKS/COMPLETION INFO	
COMPID	WC JSN	MJC NO	PROC TYPE	STAT	MAINTENANCE INSTRUCTION DOC	R M L	D D	LAST WRK CTR JSN	M C	LMA DATE	DUE DATE	PER	ALT	JSN	DATE
HSC		RIC	EIC												
SYSTEM: 073A NOISE AND VIBRATION SURVEYS INTERNAL															
STRBORN NOIS SY		N0005WQCC0204	PAT	IS	0731-009		D		Z	Jul 1992	Oct 2075	R	999M	000-F74	
073A000000		T89GEN073A	1000												R = Accomplish prior to each depot availability.
STRBORN NOIS SY		N0018EECC0020	PAT	IS	0731-003		D			Jul 1992		R		000-A33	
073A000000		T89GEN073A	1000												R = Accomplish 6 months prior to ERP, RAV and ERO.
STRBORN NOIS SY		N0018EECC0019	PAT	IS	0731-001		D			Jul 1992		R		000-A32	
073A000000		T89GEN073A	1000												R = Accomplish 6 months prior to ERP, RAV and ERO.
STRBORN NOIS SY		N0005WQCC0203	TP	IS	8-277-512		D		Z	Jul 1992		R		000-F72	
073A000000		T89GEN073A	1000												R = Accomplish during/after each depot availability.
SYSTEM: 073B NOISE AND VIBRATION SURVEYS EXTERNAL															
EXT NOISE		N0018WQCC0004	PAT	IS	0731-006		D			Jul 1992		R		000-A34	
073B000000		T89GEN073B	1000												R = Accomplish prior to each availability.
EXT NOISE		N0018WQCC0005	PAT	IS	0731-002		D			Jul 1992		R		000-A35	
073B000000		T89GEN073B	1000												R = Accomplish 6 months prior to ERP, RAV and ERO.
UND NOISE SURV		N0005WQCC0225	PAT	IS	0731-008	I	D		Z	Jul 1992		R		000-G32	
073B010000		T89GEN073B													R = Accomplish each depot availability.
SYSTEM: 1110 Shell Plating, Penetration & Inserts, Submarine Pressure Hull															
400 HZ SHORE POWER		N0005EECC0223	MS	IS	1110-081-015		I	EEJC6173	B	May 2009	May 2013	48M		000-E15	
320B040100		T999971826	4306												
400 HZ SHORE POWER		N0005EECC2012	MS	IS	1110-081-003	I	D			Jul 1992		R		000-A28	
320B040100		T999971826	4306												R = Accomplish based on deficiencies identified by Ship's Force.
ACTIVE EMIS DET		N0005EECC0212	MS	IS	1110-081-003	I	D			Jul 1992		R		000-A28	
414B000000		T89GEN414B	R000												R = Accomplish based on deficiencies identified by Ship's Force.

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COMUSFLTFORCOMINST 4790.3 REV C CH-1
APPENDIX C
SUBMEPP MAINTENANCE AND SHIPWORK PLANNING (MSWP)
INVENTORY OF PERIODIC MAINTENANCE REQUIREMENTS - I/D LEVEL

FOR OFFICIAL USE ONLY			USS SANTA FE (SSN 763) SRA 2*			PART 1			SYSTEM ID: 111A01		
WP ISSUE: ISSUE THREE			WORK PACKAGE SUPPLEMENT								
URO/HIP CHANGE NO: 145			SHIPYARD PLANNING & FEEDBACK REPORT						02NOV2011		
SYSTEM ID: 111A01 Superstructure and Fairwater											
COMP IDENT	APL/RIC	HSC	LOCATION COMPONENT DESCRIPTION	DD	MAINTENANCE STANDARD	STAT	CONDITION			REMARKS	
<u>27.0076.0666</u>				RML SY							
Clean and spot represerve (touchup) the fairwater (interior only). R = Accomplish every depot availability that URO MRC 003 is not authorized.											
INTR PSVTN	NONE	1111X1022A	SYS LVL REQ-INTERIOR PRESERVATI		MS 6310-081-015 H/CHG1	IS	A	B	C		
											Attachment 5
<u>27.0076.1302</u>				RML SY							
Perform structural inspection of the fairwater; repair as necessary (interior). R = Accomplish every depot availability that URO MRC 003 is not authorized.											
INTR PSVTN	NONE	1111X1022A	SYS LVL REQ-INTERIOR PRESERVATI		MS 7650-081-091 B/CHG8	IS	A	B	C		
<u>27.0125.1302</u>				RML SY							
Inspect; repair special hull treatment (SHT). R = Accomplish every depot availability that URO MRC 003 is not authorized.											
SHT	X90613RP459	1111X1000M	SOUND ISOLATION X DAMPING MATER	DD	OTHE S6360-AD-HBK-010	IS	A	B	C		
<u>27.0320.1302</u>				RML SY							
Inspect; repair nonwatertight access hatches, cover plates & access manhole covers. Note 1: Accomplish to the extent possible with removal, unless they are removed for other reasons. R = Accomplish whenever hatches, plates or covers are removed for other reasons.											
COVERS	X90613CM004	1111X1000Q	SYS LVL REQ-SUPER STRUCTURE (CO		MS 1510-081-004 E/CHG7	IS	A	B	C		
FAIRWATER DR	NONE	840 1111X1000R	FAIRWATER DOOR		MS 1510-081-004 E/CHG7	IS	A	B	C		
SYSTEM ID: 111A01			PART 1			PAGE - 1			FOR OFFICIAL USE ONLY		

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APPENDIX E
 WORK PACKAGE SUPPLEMENT - SHIPYARD PLANNING
 AND FEEDBACK REPORT

USS SANTA FE (SSN 763) SRA 2 CHGS 010-037 WP

PART 4.13 FMA SCHEDULED PERIODIC MAINTENANCE REQUIREMENTS

CUT-OFF DATE: 1/23/2013

WORK PACKAGE STATUS
(AUTHORIZED BY)

SYSTEM ID CHG	GCMA/MRN	COMP ID MA DESCRIPTION	LMA	DUE DATE	MJC#	SWLIN SECT	ASSN
1110	<u>27.0040.0900</u>	SAFE TRACKS TEST	Apr10	Apr12	N0002WKCC6363		
1110	<u>27.0060.0902</u>	DAVIT TEST; REPAIR	Jul10	Jan13	N0002WKCC6132		
2015	<u>44.2380.0090</u>	HS-607 TEST	May06	May11	N0006EXCAC832		
2015	<u>44.2380.0900</u>	HS-621 TEST	Dec04	Dec09	N0006EXCAC832		
2030	<u>44.2560.0900</u>	HSS-037 TEST	May03	May08	N0006EXCAC830		
2040	<u>29.0040.1300</u>	SNORKL MAST INSPECT	Jul10	Jul12	N0002EACC8973		
2070	<u>70.0140.1627</u>	GMS8A01 CONDUCT VISUAL INSPECTION	Jan11	Jan12	N0002EMCC6141		
2080	<u>70.0380.1627</u>	GCF8A01 CONDUCT VISUAL INSPECTION	Jan11	Jan12	N0002EMCC6145		
2090	<u>37.0020.22A2</u>	PUMP-1 INT REPLACE INGERSOL RAND MSW PUMP PARTS (DESIGN B)	Apr09	Apr12	N0002EMCC6241		
2090	<u>44.2380.0900</u>	MSW-035 TEST	Mar08	Mar12	N0006EXCAC729		
2090	<u>44.2380.0900</u>	MSW-036 TEST	Mar08	Mar12	N0006EXCAC729		
2090		MSW-060	Mar08	Mar12	N0006EXCAC729		

PART 4.13 FMA SCHEDULED PERIODIC MAINTENANCE REQUIREMENTS

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VOLUME VI
CHAPTER 25
UNRESTRICTED OPERATIONS

REFERENCES.

- (a) NAVSEA 0924-062-0010 - Submarine Safety (SUBSAFE) Requirements Manual
- (b) OPNAVINST 3120.33 - Submarine Extended Operating Cycle (SEOC) Program
- (c) COMSUBLANT/COMSUBPAC NOTE C3120 - Submarine Operating Restrictions and Depth Authorization

LISTING OF APPENDICES.

- A URO MRC Automated Work Request for Ship's Force Accomplishment
- B URO MRC Automated Work Request for FMA Accomplishment
- C SUBMEPP URO MRC Inventory
- D SUBMEPP URO MRC Schedule
- E Request for URO MRC Periodicity Extension Format
- F Sample Work Package Supplement

25.1 PURPOSE. This chapter provides guidance and definition for the requirements, responsibilities and actions for continued submarine Unrestricted Operation (URO) to design test depth. The URO Maintenance Requirement Card (MRC) program is invoked on all Submarine Safety (SUBSAFE) certified submarines.

25.2 UNRESTRICTED OPERATION MAINTENANCE SCHEDULING, PLANNING AND REPORTING.

25.2.1 Maintenance Requirements for Continued Unrestricted Operation to Design Test Depth. Reference (a) establishes the Maintenance Requirements and identifies the responsibilities and actions required to support continued unrestricted submarine operations to design test depth. In conjunction with reference (a), Naval Sea Systems Command (NAVSEA) has issued individual manuals containing required, periodic SUBSAFE maintenance actions for each ship/class. The URO MRCs in these publications will identify degradation of the material condition of the hull integrity boundary and of those systems affecting ship's recoverability. The requirements set forth in these publications are, in addition, defect monitoring requirements, established on an individual ship basis, for submarines in which known uncorrected deficiencies exist. SUBSAFE certification indicates that a valid recommendation for URO to design test depth can be made. Maintenance of certification is dependent on both the positive control of all re-entries into the SUBSAFE boundaries per Volume V, Part I, Chapter 5 of this manual, the satisfactory and timely completion of applicable URO MRCs as required by reference (a) and any necessary repairs. Accomplishment of the URO MRCs specified with this program identify changes within the SUBSAFE boundary which result from inadvertent error and/or from degradation caused by the service environment.

25.2.2 Scheduling and Reporting. In order for the Type Commanders (TYCOM) to carry out their responsibilities in the material certification of submarines and to aid in decisions concerning operational restrictions, an auditable system of scheduling the performance and reporting of URO MRCs has been developed. This system provides visibility to problem areas, facilitates verification and provides a permanent record of URO MRC accomplishment in the ship's Maintenance and Material Management (3-M) machinery history maintained at the NAVSEA Logistics Center.

25.2.2.1 Non-SSBN/SSGN 726 Class Ships. Submarine Maintenance Engineering, Planning and Procurement Activity (SUBMEPP) provided Periodic Maintenance Requirement (PMR) inventories and schedules and the 3-M Master Job Catalog (MJC) Programs are used for scheduling and reporting. The scheduled URO MRC requirements added to the Current Ship's Maintenance Project (CSMP) from the local scheduling system and the Automated Work Requests (AWR) produced will contain unique Job Control Numbers (JCN) consisting of ship's Unit Identification Code (five characters) plus WC (Department/Division + JC) (four characters) plus Job Sequence Number (four characters). Appendices A and B of this chapter show a URO AWR for Ship's Force and Fleet Maintenance Activity (FMA) accomplishment respectively. Appendices C and D of this chapter show examples of the SUBMEPP URO MRC inventories and schedules respectively.

25.2.2.2 SSBN/SSGN 726 Class Ships. SUBMEPP provided URO MRC inventories, schedules, Master Job File, as well as the Refit Work Planning System, are used for scheduling and reporting. The scheduled URO MRC requirements added to the CSMP from the local scheduling system and the AWRs produced will contain unique JCNs consisting of ship's Unit Identification Code (five characters) plus WC (Department/Division + JC) (four characters) plus Job Sequence Number (four characters). Appendices A and B of this chapter show a URO MRC AWR for Ship's Force and FMA accomplishment respectively. Appendices C and D of this chapter show examples of the SUBMEPP URO inventories and schedules respectively.

25.2.2.3 Submarine Maintenance Engineering, Planning and Procurement Activity Inventories and Schedules. The SUBMEPP inventories and schedules are provided quarterly. The SUBMEPP schedules reflect all URO MRC requirements coming due within the next 12 months. A description of the data elements used in the inventories and schedules is provided with each issue.

25.2.3 Baseline and Due Dates. The baseline date for determining URO MRC due dates is the Last Maintenance Action (LMA) date. LMA dates for new requirements will be based on the Change Issue Date of the URO MRC invoking the new requirement unless otherwise directed from NAVSEA. Due dates are calculated based on LMA dates in accordance with paragraph 25.2.3.2 of this chapter. It is recognized that upkeep and docking schedules for ships which are well into the operating cycle may not permit full compliance with the scheduled due dates. In such cases, a Departure From Specification (DFS) for the URO MRC will be addressed on a case-by-case basis as specified in Volume V, Part I, Chapter 8 of this manual. LMA dates and URO MRC due dates are determined as follows:

25.2.3.1 Last Maintenance Action Date. For new construction ships, all URO MRCs have an initial LMA date established at delivery from new construction or from Post Shakedown Availability to start the operating cycle in accordance with the applicable URO MRC manual. During the operating period between commissioning and start of Post Shakedown Availability and during the operating cycle following Post Shakedown Availability, an adjusted LMA, as discussed below, is used for URO MRCs. Calculate the adjusted LMA date as follows:

- a. If the PMR is accomplished during a period other than a scheduled Chief of Naval Operations (CNO) Availability (e.g., voyage repair periods, at sea, port calls, FMA Availability, refit, upkeep, etc.) the adjusted LMA date will be the first of the month following the completion date listed on the PMR data form.
- b. If the PMR is accomplished during a scheduled CNO Availability (e.g., Selected Restricted Availability, Extended Refit Period, Depot Modernization Period, Engineered Refueling Overhaul, Interim Dry Docking and other CNO Availabilities), the adjusted LMA date will be the first of the month following the scheduled availability's actual completion date.

NOTE: IMMEDIATE SUPERIORS IN COMMAND (ISIC) OPERATING WITH THE ON-SITE PMR SCHEDULING SYSTEM MUST ENSURE THAT AVAILABILITY DATES ARE ACCURATELY MAINTAINED SO THAT COMPLETED AWR UPLINE REPORTED DATA REFLECTS THE ADJUSTED LMA DATE AND ON-SITE PMR SCHEDULING RECORDS CALCULATE THE PROPER NEXT DUE DATE.

25.2.3.2 Calculating Due Dates. Next due dates are calculated based on an adjusted LMA date. Due dates are calculated, for scheduling purposes, by taking the adjusted LMA date month (number) and adding the periodicity months (number) to show the month due (i.e., an item with an adjusted LMA date of February 2003 (2/03) with a six month periodicity would be due in August 2003 (8/03)). The PMR will be accomplished prior to midnight of the last calendar day of the month due.

25.2.4 Periodicity Extensions. When determining the due date for URO MRC inspections 001, 004, and 005 for an individual submarine, inactive time (defined as the number of days pierside plus the number of days in dry-dock) may be excluded from the time elapsed since the last inspection. When determining the due date for URO MRC 002, 003 (certain portions) and 035, only the time in dry-dock may be excluded from the elapsed time. The ship's deck log, engineering log or the ship's coolant discharge log will be used to determine the number of days pierside or the number of days in drydock. Ship's Force will perform this review and provide the applicable dry-dock and/or inactive time via official correspondence to the ISIC. Extensions of periodicity from the next due date identified in the SUBMEPP PMR inventory for these URO MRCs can be authorized by the TYCOM without further NAVSEA

approval. However, they are not automatic and such requests shall be submitted by letter, in the format of Appendix E of this chapter, to SUBMEPP via the TYCOM. Upon receipt of TYCOM authorization, SUBMEPP will reflect the periodicity extension and the revised due date in the next issue of the ship's PMR inventories and schedules.

25.2.5 Scheduling, Planning and Reporting Unrestricted Operation Accomplishment at Ship/Fleet Maintenance Activity Level.

25.2.5.1 Scheduling. The TYCOM PMR Scheduling System Inventories and Schedules is distributed by SUBMEPP to the appropriate ISIC every quarter. Except at NAVIMFAC PACNORWEST, along with this PMR CD, electronic update files are provided to keep the local scheduling systems up to date with the Class Maintenance Plan (CMP). As a minimum, ISICs will schedule applicable URO MRCs 40 days (SSBN/SSGN 726 Class submarines) or 40 days (non-SSBN/SSGN 726 Class submarines), as applicable prior to refit fleet maintenance availability. Those URO MRC AWRs requiring work packages or other planning are forwarded to the FMA Planning Section.

25.2.5.2 Planning. FMA Planners will requisition materials, obtain plans and drawings, prepare Formal Work Packages and/or Controlled Work Packages and coordinate the scheduling with the Ship Superintendent, Production Officer and ISIC Material Office. Then the job will be turned over to the production WC for accomplishment. For Ship's Force accomplishment of URO MRCs, the ISIC will provide an AWR to the ship. The Maintenance Document Control Office (MDCO) will adjust the scheduled start and completion date within the local scheduling system.

25.2.5.3 Reporting to the Maintenance and Material Management (3-M) System. Each URO MRC AWR contains specific instructions on reporting the completed action and on use of a special feedback code to identify the material condition or that a change in inspection frequency is required. In order to ensure URO MRCs are correctly accomplished and reported to SUBMEPP, the following actions are to be taken prior to closeout of the AWR by Analysis, Records and Reports Section (ARRS):

- a. Submarines completing URO MRC AWRs are to fill-in the AWR with action taken codes and suffix of A, B, or C for material condition assessment, if applicable. Ship will sign for completion, ISIC will sign for acceptance. Include a narrative statement, if required, and return the original AWR to the ISIC. The ISIC will review the AWR and forward to ARRS to close out the computer AWR and update SUBMEPP inventories and schedules. Note that because of the Auto-Close features, the completed AWR will automatically close the deferral in the CSMP.
- b. FMA Lead Work Centers (LWC) completing URO MRC AWRs must ensure that all assist WCs have completed their work. The LWC then completes the AWR by filling in action taken codes, signing for completion and obtains acceptance signature from Ship's Force. The AWR is then returned to ARRS. The ARRS will verify that all participating WCs have documented completion of their assigned tasks and then pass the AWR to the ISIC for review and updating of SUBMEPP inventories and schedules prior to close-out of the AWR by ARRS.

25.2.6 Unrestricted Operation Maintenance Requirement Card Accomplishment During Chief of Naval Operations Maintenance Availabilities.

- a. The Availability Work Package (AWP) prepared by SUBMEPP will reflect all URO MRCs authorized for accomplishment during the availability at the AWP Ship Work List Item Number (SWLIN) level. The Work Package Supplement (WPS), accompanying the AWP, will identify a specific URO MRC requirement to the applicable AWP SWLIN paragraph. Appendix F of this chapter provides an example of the WPS format.
- b. For URO MRCs assigned to the depot, the ISIC will enter "Assigned to <depot name> by AWP <AWP number>" in the Remarks/Completion block of the URO MRC Schedule/Inventory and in the local scheduling system.
- c. URO MRC completions by an industrial activity during CNO Availabilities will be, for non-SSBN/SSGN 726 Class submarines, retrieved from the shipyard information system by SUBMEPP. For SSBN/SSGN 726 Class submarines, completions will be retrieved from the appropriate maintenance database. The WPS, or comparable report, annotated by SUBMEPP to show URO PMR

completions and material condition feedback categories, will be **retained by** SUBMEPP upon completion of the availability. The ISIC will verify that all URO MRCs assigned to the shipyard were reported and subsequently updated by SUBMEPP.

25.2.7 Unrestricted Operation Maintenance Requirement Card Completion Reporting.

- a. Within 30 days after the completion of an availability the activity accomplishing the URO MRC is required to provide a report of accomplishment to SUBMEPP and the ship's ISIC as well as other technical codes as designated in the URO MRC. Specific information to be included in the report is identified in the applicable URO MRC. The accomplishing activity shall retain a legible copy of the most current inspection report until the ship is disposed of or stricken from the Naval Register.
- b. Prior to Fast Cruise for CNO Availabilities, the industrial activity is required to provide the ship and ISIC with a letter of certification (including final inspection categories A, B, or C when applicable) that certifies all required inspections have been satisfactorily completed. For items which must be accomplished in dry-dock, the industrial activity is required to provide such certification prior to undocking.
- c. Upon identifying a material condition that would result in a reduced inspection periodicity if not restored to Category A condition during the availability in which the condition was found, a special report is required to be submitted by the accomplishing activity in accordance with the applicable URO MRC and, if applicable, the AWP. This special report shall be provided immediately to NAVSEA (SEA 07), TYCOM, ISIC, and SUBMEPP indicating:
 - (1) Applicable MRC.
 - (2) Equipment component identification.
 - (3) Inspection category.
 - (4) The reduced or deferred periodicity of each equipment component that should be inspected at less than its normal periodicity. This reduced periodicity report requirement is in addition to the completion reporting requirements of paragraphs 25.2.7.a and b above.

25.2.8 Operating Cycle/Interval Extensions. An Audit Plan to assess the material condition of ships prior to extending their operating cycle/intervals beyond URO MRC periodicities due to changing CNO Availability dates or operational schedules, is addressed in reference (b). Additional guidance and responsibilities are contained in Volume II, Part I, Chapter 3 of this manual.

25.3 RESPONSIBILITIES.

25.3.1 Type Commander.

- a. Perform periodic audits of the ISICs and FMAs to verify full compliance with the provisions of reference (a), Volume V, Part I, Chapter 9 of this manual and this chapter.
- b. Provide guidance to the ISICs, obtaining NAVSEA concurrence as necessary, when deviations in the scheduling or accomplishment of maintenance or repairs are required by a DFS request and resolution per Volume V, Part I, Chapter 8 or this manual.

25.3.2 Submarine Maintenance Engineering, Planning and Procurement Activity.

- a. Receive reports of completion of URO MRCs from all completing activities.
- b. Review completion reports for compliance with the scheduled periodicity requirements and any change in the status category.
- c. Establish an LMA date per paragraph 25.2.3.1 of this chapter.
- d. Revise the periodicity and next due dates in ship URO MRC inventories and schedules to reflect any NAVSEA approved periodicity change, TYCOM approved periodicity extensions for URO MRCs 001 through 005, and 035 as allowed for in paragraph 25.2.4 of this chapter and NAVSEA approval of Major DFSs for extending URO MRC requirements.

- e. Notify the TYCOM via the on-site SUBMEPP Representative of any URO MRC beyond periodicity for TYCOM resolution.
- f. Provide updated:
 - (1) URO MRC inventories and schedules CD in accordance with the distribution.
 - (2) For SSBN/SSGN 726 Class ships, provide Refit Work Package electronic files which reflect URO MRC scheduling to the Trident Refit Facility at the arrival minus 60 day milestone.
 - (3) For those ISICs using Micro-PMR, provide scheduling and configuration files to process in the local scheduling system and FMA database quarterly.
 - (4) Provide MJC update files which reflect URO MRC changes to the ISIC/TYCOM at least quarterly or upon request.
- g. Provide, as enclosures to the quarterly inventories and schedules forwarding letter, a list of URO MRCs that appear overdue in the schedules and a list of URO MRCs that have been reported complete by the fleet but Objective Quality Evidence has not been received by SUBMEPP.
- h. Receive and review URO MRC Objective Quality Evidence for technical accuracy and maintain URO MRC completion history.

25.3.3 Immediate Superior In Command.

- a. Maintain auditable records of URO MRC accomplishment for each submarine. These records will include the current SUBMEPP Quarterly inventories and schedules, completed AWRs for URO MRCs completed, data report forms/reports submitted as a result of last accomplishment and all approved DFS.
- b. Conduct periodic audits of assigned FMAs and units to verify full compliance with the provisions of reference (a), Volume V, Part I, Chapter 9 of this manual and this chapter.
- c. In addition to the records of audits, maintain a file, by ship, of the current URO MRC inventories and schedules as provided by SUBMEPP. The schedules (Appendix D of this chapter) for each ship shall be annotated with the Job Sequence Number (JSN), the new adjusted LMA date and the next due dates for the completions and any periodicity extensions authorized.
- d. Although the responsibility for the accomplishment of URO MRCs must rest with the ship's Commanding Officer, the nature and scope of the URO MRCs dictate that the ISIC coordinate the accomplishment of URO MRCs in accordance with the SUBMEPP provided PMR inventories and schedules. Accordingly, the ISIC shall assist in the preparation of, and approve each submarine's URO MRC performance schedule. **Monitor the URO MRC/Deep Submergence System/Hull Integrity Procedure Status Web Site periodically to identify potentially overdue URO MRC/Deep Submergence System/Hull Integrity Procedures. The SUBMEPP representative assigned to each ISIC shall add information, in the form of a comment to the Web Site, addressing any overdue or potentially overdue items.** In addition, the ISIC shall:
 - (1) Unless previously notified by SUBMEPP of delays, notify the SUBMEPP Representative at TYCOM of the non-receipt of schedules and reports.
 - (2) Upon receipt of the quarterly report from SUBMEPP, perform a line-by-line verification of each ship's new URO MRC Inventory and Schedule against the URO MRC Inventory and Schedule report held by the ISIC. At a minimum, this verification will include a review of each URO MRC LMA, Due Date, and Periodicity to ensure any recent completion data or rescheduling data that has been submitted to SUBMEPP has been accurately incorporated into the new Inventory and Schedule. PMRs accomplished during the month preceding the quarterly report may or may not be reflected in the issue received. Similarly, upon receipt of URO MRC changes, audit the individual URO MRC procedural and schedule information against each ship's PMR Inventory and Schedule held by the ISIC to verify that the

- component/equipment and periodicity has not changed and that provided changes do not impact current schedules. Resolve identified deficiencies through the SUBMEPP Representative at TYCOM.
- (3) Review the enclosures to the PMR procedural inventories and the schedule forwarding letter and advise SUBMEPP of the completion dates and JSNs for URO MRCs listed. Forward copies of completed Data Report Forms for these and any other URO MRC completions identified by SUBMEPP as having missing Data Report Forms.
 - (4) Following receipt of the URO MRC Inventory and Schedule quarterly report from SUBMEPP the ISIC shall provide the following material to each applicable ship:
 - (a) A copy of each PMR Inventory and Schedule CD.
 - (b) A copy of each organizational level URO AWR assigned to Ship's Force and scheduled for accomplishment during the next refit/availability.
 - (c) A copy of the individual ship's URO MRC Inventory and Schedule that has been customized by the ISIC to include information more current than the quarterly report provided by SUBMEPP and JSN scheduling information entered by the ISIC URO MRC coordinator.
- e. Control input of the SUBMEPP scheduling file (M79EII) to the local scheduling system and resultant calldowns to the CSMP, which will produce the JCN and products for job completion.
 - f. Ensure that all URO MRC requirements with the appropriate screening (Ship's Force, FMA) are in the CSMP for subsequent development by SUBMEPP of forthcoming CNO Availability AWP's.
 - g. In the event that deviations from required periodicities or full requirements of the URO MRCs are required, request approval from the TYCOM by submitting a DFS request in accordance with Volume V, Part I, Chapter 8 of this manual. Such DFS requests will be a Major DFS for URO MRC program deviations. DFS requests are also to be submitted when repairs arising from the URO MRC inspections cannot be completely accomplished. Periodicity extension requests for URO MRC 001, 002, 003, 004, 005 and 035 shall be submitted in accordance with paragraph 25.2.4 of this chapter.
 - h. Establish procedures to affect routing of completed AWRs from the FMA ARRS or from the submarine (LWC 991) through the ISIC for all URO MRC transactions. The ISIC should ensure proper documentation has been completed as described in the special reporting procedures of the AWR. This must include the material condition feedback code as part of the final action, if required. A rejection series code (6A-6I) should not be accepted unless the FMA Repair Officer cannot accomplish the URO MRC at that site. Delays in accomplishment are to be reported as status changes so that the job remains in the production system and is visible as a "to-be-done" requirement. If the URO MRC requirement cannot be accomplished at the site, the ISIC must ensure update (re-screening) of the CSMP concurrently with DFS notification, if necessary. Each processed AWR is to be validated with the PMR Special Report described in the Maintenance Resource Management System section of Volume II, Part I, Chapter 2 of this manual and, if satisfactory, passed to the Automated Data Processing Center for computer input. Upon receipt of the report of maintenance action accomplishment from an assigned unit or the FMA, review the report for completeness, consistency, acceptability of conditions and material trends. Where unsatisfactory conditions are found, direct repairs. Where repairs cannot be made, submit a DFS in accordance with Volume V, Part I, Chapter 8 of this manual. Ensure SUBMEPP inventories and schedules are updated in accordance with paragraph 25.3.3(c) of this chapter. Clear URO MRC major DFS upon TYCOM or NAVSEA approval and upon receipt of the SUBMEPP Quarterly PMR inventories and schedules, and ensure they accurately reflect the new due date of the URO MRC as stated in the approved DFS.
 - i. Upon identifying a material condition that would result in a reduced inspection periodicity, ensure the accomplishing activity immediately reports the condition found via faxed letter to NAVSEA (SEA 07), the TYCOM and SUBMEPP in accordance with paragraph 25.2.7.c of this chapter.

- j. Monitor the timely submission of URO MRC data report forms and the report of accomplishment for URO MRCs completed by the FMA and Ship's Force to ensure required documentation is submitted in accordance with paragraph 25.2.7 of this chapter. Ensure data report forms are submitted to report component replacement/repair/operation out of specification. Review all Ship's Force accomplished URO MRC data for compliance with the requirements of the URO MRC Program prior to submittal to SUBMEPP.
- k. Prior to a ship's underway period, review the ship's certification continuity report, if submitted, to ensure the ISIC and ship's records (including the CSMP) accurately reflect URO MRC status.
- l. The Parent ISIC of deploying ships will:
 - (1) Ensure that any URO MRC due for accomplishment by the ship during its deployment period is identified in the CSMP transfer file and that the ship possesses the AWRs and URO MRC data report forms (if applicable) for reporting job completion.
 - (2) Provide a message to the applicable deployed FMA/Squadron identifying any URO MRC expected to be accomplished by the deployed FMA and the status of required materials for each submarine deploying to cover the period of the deployment.
- m. Deployed Squadrons will review the URO MRC status of deployed submarines upon in-chop. Perform the function of the Parent ISIC in ensuring all URO MRCs are accomplished and reported within the required periodicity while the submarine is deployed.

NOTE: THIS IN NO WAY RELIEVES THE PARENT ISIC OF THE RESPONSIBILITY TO ENSURE THAT THE REQUIRED URO MRCs ARE ACCOMPLISHED WITHIN THE SPECIFIED PERIODICITIES.

- n. Prior to the start of a CNO availability, ISIC URO coordinators will:
 - (1) Assign JCNs to URO MRC items assigned to Forces Afloat in the AWP and screen them to an availability prior to the start of the CNO availability or to the concurrent availability in accordance with the directions in the AWP. Forces Afloat items are accomplished by Ship's Force or Performance Monitoring Team. Care must be taken to appropriately assign URO MRC items to the correct accomplishing activity.
 - (2) ISIC URO coordinators will not assign JCNs to URO MRC items assigned to the shipyard in the AWP. In the URO MRC inventories and schedules, in the remarks/completion information area, enter "assigned to (name of shipyard) by AWP (name and number of availability)". The shipyard is responsible for performing, auditing and reporting all URO MRC items assigned by the AWP.
 - (3) URO MRCs assigned to Forces Afloat by the AWP for accomplishment prior to the start of the depot period, but for some reason were not completed, will be reassigned to a concurrent availability or formally reassigned to the shipyard via a supplemental work request.
- o. During a CNO availability, URO MRCs assigned to the shipyard by the AWP which are not accomplished during the depot period will be placed on the guarantee list or reassigned to a fleet availability by the TYCOM following the depot period provided the URO MRC does not exceed its due date. The ISIC will be notified of this reassignment by formal correspondence which will include justification and reason why the scheduled and planned requirements were not met.
- p. Prior to CNO availability completion, ISICs will audit URO MRCs assigned to Forces Afloat by the AWP and ensure all have been satisfactorily completed and documented within the required periodicity. The ISIC audit will also verify that all URO MRC items coming due within six months of availability completion are complete or assigned to a follow-on fleet availability. Under no circumstances are URO MRC due dates to be exceeded. ISIC Quality Assurance Officers will not be responsible for auditing URO MRCs assigned to the depot in the AWP.
- q. Following CNO availability completion, the ISIC URO coordinator will ensure that all URO MRCs assigned to the shipyard were reported and subsequently updated by SUBMEPP. ISICs will only upline the closed JCNs for URO MRCs completed by Forces Afloat.

25.3.4 Submarine Commanding Officer.

- a. Ensure all URO MRCs are accomplished within the required periodicity as specified by reference (a), Volume V, Part I, Chapter 5 of this manual and this chapter.
- b. For visual inspections in between URO MRC 003 inspections, see Volume V, Part I, Chapter 5, paragraph 5.8.3.d. of this manual for a description of requirements to inspect submarine hull structure in between the periodic URO MRC 003 inspections.
- c. Maintain auditable records of the accomplishment of URO MRCs to permit verification of compliance with reference (a), Volume V, Part I, Chapter 10 of this manual and this chapter. These records shall consist of:
 - (1) A copy of the TYCOM and NAVSEA SUBSAFE Material Certification message from new construction, Depot Modernization Period or overhaul until the ship's current status is reflected in reference (c). When the ship's current status is reflected in reference (c) the messages may be destroyed and the current notice will be retained.
 - (2) Copies of letter of completion for all URO MRC work accomplishment by other activities.
 - (3) Copies of letters of completion and inspection reports for work accomplished by Ship's Force. The required report forms are located at the end of the individual URO MRCs. A copy of each completed report shall be submitted to the ISIC for review a minimum of 24 hours prior to underway.
 - (4) One copy each of the current Quarterly URO MRC inventories and schedules as printed from the CD provided by SUBMEPP via the ISIC. Annotate the URO MRC Inventory Report when accepting completed work requests from the FMA or Ship's Force (LWC 991). It is the ship's responsibility for ensuring that the reports reflect the actual configuration, especially with regards to the equipment identity and the Allowance Parts List.
 - (5) Copy of outstanding URO MRC AWRs to be accomplished by Ship's Force.
 - (6) One copy of each approved DFS from the requirements of reference (a), Volume V, Part I, Chapter 8 of this manual and this chapter. This authority is based on the following factors and considerations:
 - (a) The completion of all URO MRCs, or portions thereof, will be reported on AWRs provided by the ISIC in accordance with paragraph 25.2.5.3 of this chapter. Particular care must be exercised to ensure that existing conditions found at the time of inspection and/or need for repair or replacement of components is recorded in detail as prescribed by the URO MRC.
 - (b) Deviations from URO MRC requirements or periodicities may result in operational restrictions being placed on a unit. In order to determine whether such restrictions are necessary, the TYCOM must be fully apprised of the number and extent of deviations involved.
 - (c) Allow no deviations in the scheduling or accomplishment of required URO MRC maintenance actions unless formal NAVSEA approval of such deviations has been granted by an approved DFS or as allowed in paragraph 25.2.4 of this chapter. All system disassembles, repairs, and reassemblies must be conducted in accordance with Volume V of this manual, including requests for a DFS, if necessary.
 - (d) Except in an emergency, refrain from submerged operations if all required URO MRC maintenance actions have not been completed within the specified periodicities unless formal authorization to deviate from these requirements has been granted by NAVSEA. NAVSEA recommendation and TYCOM authority to conduct URO MRC to design test depth are contingent upon the satisfactory completion of these maintenance actions.

APPENDIX A

URO MRC AUTOMATED WORK REQUEST FOR SHIP'S FORCE ACCOMPLISHMENT

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IER622                                     *** AUTOMATED WORK REQUEST ***                               03 DEC 92 (92338)
OPNAV 4790/2R/Q DEFERRAL                                                           AVAIL: P106 (01JAN93-31MAR93)
*****SECTION I. IDENTIFICATION*****
1. UIC: 05152          2. OWC: EAJC          3. JSN: 3171          4. APL: 520175132          AILSN: 5520
A. NAME: FINBACK      5. EQUIP: ACCUMULATOR-HYD          13. IDENT: ACCUM MNA FC
B. HULL: SSN 670      14. EIC: TV01          16. LOCATION:          15. SAFE: NO
6. WHEN DISC: 0       7. EQ STAT: 0          8. CAUSE: 0          9. DEF REA: 6          10.:          11.:          12.:
18. CAT SHIP ALT # RN PC FS          19. PI          20. INSURV #          21. SUF          22. MDG          23. SAF          24. P/F
18A. MJC: N0008EAEACKS026
*****SECTION II. DEFERRAL ACTION*****
26. DEF DATE: 23 NOV 92 27. OMA MHR REM: AUTO 28. DEALN DATE: 31 JAN 93 9. DEF REA: 6
*****SECTION III COMPLETED ACTION*****
29. A/T: _____          30. OMA MHR EXP: 0000          31. DATE COMP:
SELECT EQUIPMENT          32. AMT: _____          33. TI: 0          34. METER READING:
*****SECTION IV. REMARKS/DESCRIPTION*****
35. REMARKS:      CHECK HYD SYS FLOOD CONTROL ACCUMULATORS IAW URO MRC 026 XXX
                   LAST COMPLETED 90001 NEXT DUE DATE 93001
                   MDCO PASS TO SHIP'S FORCE. S/F COMPLY WITH URO 026, COMPLETE
                   BLOCKS 102-104 AND RETURN THIS AWR TO MDCA FOR ADP PROCESS.
                   CONSULT THE TYCOM PMR SCHEDULING SYSTEM FOR SHIP OR COMPONENT
                   SPECIFIC INFO SUCH AS "DD", SPECIAL REQ-MTS, PERIODICITY
                   OR LEVEL OF ACCOMPLISHMENT.
37. CSMP SUMMARY: ACCOMPLISH URO MRC 026
38. 1ST CON:          39. 2ND CON:
41. PRI: 2          42. T/A: 2          43. INT PRI:          44. IUC SCRIN: 2          45. TYC SCRIN:
46. SPECIAL PURPOSE: A- B- C- D- E- F- G- H- I- J- K- L-
E. CO _____          F. TYCOM
*****SECTION V. SUPPLEMENTARY INFORMATION*****
48. REP TM: MRC URO MRC 026          ON BRD: NO
49. PREARV:
50. PLNRMK: MRC URO MRC 026
          *** COMPLETE INSPECTION FINDINGS AND FORWARD IAW URO 026 ***
50A. IUCRMK:
50B. TYCRMK:
50C. IMARMK:
*****SECTION VI. PLANNING*****
51. PMR: URO MRC 026 52. PER: 000 53. ISS: 7512 54. SPEC DATA: HP JC008638
QLV: 55. QA S/S: YES          NUC LI:          1NUC WPR:          SP CLN:          SPECID:          RADCON:
                   LI: NON DT:          SAE DIV:          SP TST:          NOISE:          OTHCON:
56. SR K E: 0091          SP INT: YES          D/D REQ:          PREOVH:          AFTOVH:          DEPART:
K.E.: UROS DUE          K.E. DATE:          NORMALLY DONE BY:
*****SECTION VII. REPAIR ACTIVITY PLANNING/SCHEDULING ACTION*****
57. L/A RWC 58. SKD STRT 59. SKD COMP 60. PMHR 61. K/O 62. TASK
          L 991 01 JAN 93 30 JAN 93 008 001
93. RAUC: 05851 L Y SPEAR          94. WK RTN #: _____          99. JOB ORDER NO:
95. EST M/D: _____          96. EST M/D $: _____          97. EST MATL $:
98. EST TOT $: _____          100. LEAD P&E: _____          101. DATE OF ESTIMATE: 23 NOV 92
102. FAT: _____          103. ACT MHRS EXP: _____          104. DATE COMP: _____
G. COMPLETED: _____          H. ACCEPTED BY:
*****SECTION VIII. SUPPLY DATA*****
PRI          DOC NUM          NIIN/PART#          DESC          QTY STATUS
    
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APPENDIX B

URO MRC AUTOMATED WORK REQUEST FOR FMA ACCOMPLISHMENT

IER622 *** AUTOMATED WORK REQUEST *** 03 DEC 92 (92338)
OPNAV 4790/2R/Q DEFERRAL AVAIL: A015* (04JAN93-07FEB93)
*****SECTION I. IDENTIFICATION*****
1. UIC: 05152 2. OWC: EMJC 3. JSN: 3170 4. APL: 884305120 AILSN: 2090
A. NAME: FINBACK 5. EQUIP: VALVE B 3.00 IPS 13. IDENT: MSW-108
B. HULL: SSN 670 14. EIC: FB08 16. LOCATION: 15. SAFE: NO
6. WHEN DISC: 0 7. EQ STAT: 0 8. CAUSE: 0 9. DEF REA: 6 10. : 11. : 12. :
18. CAT SHIP ALT #RN PC F\$ 19. PI 20. INSURV # 21. SUF 22. MDG 23. SAF 24. P/F
18A. MJC: N0008EMCKC918
*****SECTION II. DEFERRAL ACTION*****
26. DEF DATE: 23 NOV 92 27. OMA MHR REM: AUTO28. DEADLN DATE: 9. DEF REA: 6
*****SECTION III COMPLETED ACTION*****
29. A/T: _____ 30. OMA MHR EXP: 0000 31. DATE COMP: _____
SELECT EQUIPMENT 32. AMT: _____ 33. TI: 0 34. METER READING: _____
*****SECTION IV. REMARKS/DESCRIPTION*****
35. REMARKS: INSPECT BALL VALVE STEM IAW URO MRC 009
LAST COMPLETED 90001 NEXT DUE DATE 93001
CONSULT THE TYCOM PMR SCHEDULING SYSTEM FOR SHIP OR
COMPONENT SPECIFIC INFO SUCH AS "DD", SPECIAL REQ-MTS,
PERIODICTY, OR LEVEL OF ACCOMPLISHMENT
37. CSMP SUMMARY: ACCOMPLISH URO MRC 009
38. 1ST CON: LPO 39. 2ND CON:
41. PRI: 2 42. T/A: 2 43. INT PRI: 44. IUC SCRIN: 2 45. TYC SCRIN:
46. SPECIAL PURPOSE: A- B- C- D- E- F- G- H- I- J- K- L-
E. CO _____ F. TYCOM
*****SECTION V. SUPPLEMENTARY INFORMATION*****
48. REP TM: MRC URO MRC 009 ON BRD: NO
49. PREARV: *** COMP INSP FINDINGS AND FORWARD IAW URO/LID MRC 009 ***
50. PLNRMK:
THIS DEPOT JOB IS ASSIGNED TO IMA BY TYCOM
*** REPORT INSPECTION FINDINGS AND FORWARD IAW URO 009 ***
50A. IUCRMK:
50B. TYCRMK:
50C. IMARMK:
*****SECTION VI. PLANNING*****
51. PMR: URO MRC 00952. PER: 000 53. ISS: 7302 54. SPEC DATA: HPIJC006547
QLV: 55. QA S/S: YES NUC LI:NUC WPR: SP CLN: SPECID: RADCON:
LI: NON DT: SAE DIV: SP TST: NOISE: OTHCON:
56. SR K E: 0091 SP INT: YES D/D REQ: PREOVH: AFTOVH: DEPART:
K.E.: UROS DUE K.E. DATE: NORMALLY DONE BY: 1 DEP
*****SECTION VII. REPAIR ACTIVITY PLANNING/SCHEDULING ACTION*****
57. L/A RWC 58. SKD STRT 59. SKD COMP 60. PMHR 61. K/O 62. TASK
L 10C 04 JAN 93 18 JAN 93 0002 001 PACKAGE
A 38A 04 JAN 93 18 JAN 93 0027 001 INSP
A 93A 04 JAN 93 18 JAN 93 0008 001 INSP
A 93B 04 JAN 93 18 JAN 93 0002 001 QA
93. RAUIC: 05851 L Y SPEAR 94. WK RTN #: _____ 99. JOB ORDER NO: _____
95. EST M/D: _____ 96. EST M/D \$: _____ 97. EST MATL \$: _____
98. EST TOT \$: _____ 100. LEAD P&E: _____ 101. DATE OF ESTIMATE: 23 NOV 92
102. FAT: _____ 103. ACT MHR\$ EXP: _____ 104. DATE COMP: _____
G. COMPLETED: _____ H. ACCEPTED BY: _____
*****SECTION VIII. SUPPLY DATA*****
PRI DOC NUM NIIN/PART# DESC QTY STATUS

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VOLUME VI
CHAPTER 27
SCHEDULED PRESERVATION UPKEEP
COORDINATED EFFORT

REFERENCES.

- (a) NAVSEA S9510-AB-ATM-010 - Nuclear Powered Submarine Atmosphere Control Manual, Volume 1
- (b) NAVSEA S9510-AB-ATM-020 - Nuclear Powered Submarine Atmosphere Control Manual, Volume 2
- (c) NAVSEA S9086-VD-STM-010 - NSTM Chapter 631 (Preservation of Ships In-Service - General)
- (d) NAVSEA MS 6310-081-015 - Submarine Preservation
- (e) OPNAVINST 5100.19 - Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat
- (f) SOBT Video SVT-GT-9336 - Submarine Preservation

LISTING OF APPENDICES.

- A SPRUCE Key Event Schedule
- B SPRUCE Report Form
- C SPRUCE Check List

27.1 **PURPOSE.** The Scheduled Preservation Upkeep Coordinated Effort (SPRUCE) program has been established to ensure internal preservation is maintained at the highest possible level throughout the life of the ship. As a result of increased intervals between submarine Chief of Naval Operations Maintenance Availabilities, effective SPRUCE upkeeps are of prime importance. SSBN/SSGN 726 Class submarines are exempt from SPRUCE upkeeps. Under special circumstances, requests for SPRUCE upkeeps on SSBN/SSGN 726 Class submarines will be considered and shall be conducted in accordance with this chapter.

27.2 **SCHEDULING.**

- a. Immediate Superiors In Command (ISIC) shall schedule a three week SPRUCE below decks every 48 months. The SPRUCE shall contain a 14 day production period which will not be scheduled to commence sooner than two days following an underway period. Per references (a) and (b), underway periods shall not be scheduled within five days of completion of the production period. In summary:

Ship returns to port	0 days
Preparation period	2 days
Production period	14 days
Gas off period	5 days
TOTAL	21 days

- b. ISICs shall utilize every effort to accomplish a full three week SPRUCE consisting of 14 days of production. ISICs may approve a shorter SPRUCE below decks of 5 to 14 days of production time on a case-by-case basis due to operational requirements. Total allotted time for SPRUCE will at no time be less than 12 days to encompass preparation and gas off periods. A shorter production period will equate to a corresponding reduction in the overall amount of square footage accomplished during the scheduled period. When a shorter period is executed for below decks SPRUCES, meticulous attention should be given toward the accomplishment of additional below deck SPRUCE periods to ensure sufficient preservation is achieved to facilitate 33+ years hull life. SPRUCES not meeting three weeks in duration shall be properly documented by ISICs to ensure a complete history of ship's preservation is available.

Ship returns to port 0 days
Preparation period 2 days
Production period XX days
Gas off period 5 days
TOTAL 7+XX days

- c. ISICs shall schedule a one week SPRUCE for the sail interior every 24 months. Sail SPRUCEs can be coincidental with routine availabilities.
- d. A SPRUCE shall not be scheduled during other Ship's Force or Fleet Maintenance Activity (FMA) upkeeps with the exception of the five day gas off period which may be scheduled during a follow-on upkeep. A SPRUCE should not be scheduled within the six month period prior to a Chief of Naval Operations Maintenance Availability. A SPRUCE should not be scheduled within six months after a Depot Modernization Period (DMP), Engineered Refueling Overhaul, or Engineered Overhaul because of the industrial activity's preservation programs.
- e. The initial base date for scheduling is the official completion date of the ship's last DMP, Engineered Refueling Overhaul, or Engineered Overhaul.

27.3 RESPONSIBILITIES.

27.3.1 Type Commander.

- a. Administer the SPRUCE program.
- b. Maintain a file of SPRUCE lessons learned and distribute to ensure that all commands concerned have the latest information available.

27.3.2 Immediate Superior In Command.

- a. Schedule and coordinate SPRUCE upkeeps per the Key Event Schedule of Appendix A of this chapter.
- b. Coordinate submarine crew training.
- c. Monitor the effectiveness of the SPRUCE program.
- d. Chair a SPRUCE debrief with Ship's Force and FMA to review the effectiveness of the SPRUCE and generate lessons learned. The results of this meeting will be included in the Ship's SPRUCE completion letter.

27.3.3 Fleet Maintenance Activity.

- a. Provide training, tools, consumables, services, and required support personnel.
- b. Provide technical guidance consisting of around the clock coverage by a coatings inspector trained to the requirements of reference (c) and reference (d), as applicable. The coatings inspector will perform all inspections necessary to ensure proper preservation is accomplished and will complete Appendix B of this chapter for each area preserved. All completed forms from Appendix B of this chapter will be submitted to the ship for inclusion into their SPRUCE completion letter.

27.3.4 Submarine Commanding Officer.

- a. Ensure preservation is performed by Ship's Force using the procedures contained in references (c) and (d), as applicable, through (f).
- b. Ensure Ship's Force personnel are relieved of all requirements other than those necessary to maintain the safety and security of the ship during the SPRUCE.
- c. Designate an officer or Chief Petty Officer (CPO) to serve as the SPRUCE Manager.

VOLUME VI

CHAPTER 31

SURFACE FORCE SHIP MAINTENANCE PLACEMENT
AND OVERSIGHT BUSINESS RULESREFERENCE.

- (a) NWP 1-03.1 - Naval Warfare Publication Operational Report

LISTING OF APPENDICES.

A RMC Spotlight Reports

31.1 PURPOSE. The purpose of this chapter is to provide procedures and guidance regarding ship maintenance placement and oversight business rules. These procedures and guidance affect Regional Maintenance Centers (RMC), Type Commanders (TYCOM) and Ship Maintenance Teams.

31.2 BACKGROUND. Current directives demand a culture of readiness. The process described here addresses the need for a flexible maintenance support system that increases efficiency without compromising effectiveness, and defines a common planning process for ship maintenance and modernization. These processes need to be disciplined with objective measurements and institutionalized with a continuous improvement methodology.

31.3 SHIP MAINTENANCE FUNDING MANAGEMENT BUSINESS RULES.

31.3.1 Scope. The goals of the entitled funding process are to reduce premiums paid for maintenance while simultaneously improving the ability to respond to maintenance and operational requirements. The funding business rules establish the central role of the Ashore Ship's Maintenance Manager working with the ship's Commanding Officer to manage the funds required to support all maintenance for a given ship. Starting with the submission of an overall Maintenance and Modernization Business Plan (MMBP), the Ashore Ship's Maintenance Manager will establish the quarterly distribution of controls from the established annual maintenance target needed to accomplish the ship's maintenance in the most efficient manner. The process provides the ship with a level of funding stability that will provide for the execution of an effective maintenance plan.

31.3.2 Ship and Maintenance Team Business Responsibilities.

- a. Each ship's Maintenance Team is led by the Ashore Ship's Maintenance Manager. The Ashore Ship's Maintenance Manager coordinates with the RMC to execute maintenance in accordance with Fleet and TYCOM maintenance policies and directives. The TYCOM shall ensure that each ship's Business Plan is tailored to fit unique geographic and business climate situations.
- b. The Maintenance Team (primarily the ship's Commanding Officer working with the Ashore Ship's Maintenance Manager) supports the Fleet Maintenance Officer and TYCOM in identifying budget needs based on well documented requirements in the Current Ship's Maintenance Project (CSMP), the Class Maintenance Plan, the Baseline Availability Work Package, the class Technical Foundation Paper and historical data. The Ship's MMBP identifies the total funding budgeted to support the ship during the execution year, along with advance planning funding for availabilities to be executed in future years. The TYCOM determines how much of the Ship's MMBP they can fund (controls) of the total requested, and how much money per quarter (phasing plan) they can provide for executing the Ship's MMBP. The following guidelines are not all inclusive but should be considered when structuring the phasing plan:
 - (1) The Maintenance Team will receive their actual spending levels or controls from the TYCOM. The RMC, with the TYCOM's approval, may adjust controls between maintenance teams as required during the course of the execution year. The goal is to establish controls before the execution year starts and then maintain these controls fixed throughout the execution year.
 - (2) The Maintenance Team provides the RMC and TYCOM with a quarterly spending or phasing plan based on their Ship's controls. The plan should be consistent with the ship's operational cycle and predefined maintenance periods. For example, deployments and underway periods in a given quarter should cause the displacement of Continuous Maintenance (CM) controls to other quarters where the maintenance is likely to occur.

- (3) Funds will be provided to Maintenance Teams early enough to avoid premiums associated with late contract award, definitization or assignment of work.
- c. Significant deviations from the final negotiated MMBP or controls will be documented in a Summary of Events. It is recognized that the drivers for MMBP changes are often outside the direct control of the Maintenance Team and will be documented as such. The fundamental guidelines for executing at MMBP financial control levels are:
 - (1) Follow the guidance in Volume II, Part II, Chapter 1 of this manual regarding screening and brokering of work candidates.
 - (2) During the execution of an availability, growth and new work should be authorized only if the Business Case Analysis indicates that this is the best course of action, taking into consideration all applicable business and operational risks and factors.
- d. The Maintenance Team, with the TYCOM's approval, may shift controls between the Chief of Naval Operations (CNO) availability and CM budget lines in order to most efficiently accomplish required maintenance and modernization. No more than 25% of the CM controls for an individual ship shall be moved to the CNO availability without TYCOM approval.
- e. The Maintenance Team shall schedule continuous maintenance availabilities per Volume II, Part II, Chapter 2 of this manual. Adjustment of Continuous Maintenance Availability dates shall be coordinated with the RMC and requested from the Immediate Superior In Command via naval message. Date changes shall be minimized in order to realize the maximum benefit from advance planning work. The Maintenance Team may not change CNO availability dates. The Maintenance Team shall resolve CNO availability scheduling issues with the TYCOM via the RMC. The TYCOM shall include Program Executive Office (PEO) Ships in any discussions resulting in availability date changes when Program Alterations are scheduled for the availability.
- f. The Maintenance Team shall review proposals for fair and reasonable costs, work scope and applicable technical aspects prior to the Technical Analysis Report (TAR) process.
- g. The Maintenance Team has the authority to adjust the MMBP in response to changes in ship operations, planned maintenance periods, and other business case reasons provided the intended distributions do not exceed the total remaining annual budget requirement allocated for that ship. This redistribution will be documented via a revised quarterly phasing plan, a Summary of Events prompting the change, and a formal recovery plan, which will be submitted to the TYCOM via the RMC for approval and adjustment of the Maintenance Team controls. Over the course of the fiscal year, some minor adjustments to the phased funding requirement can be expected. The cognizant RMC, with approval from the TYCOM, will establish funding redistribution limits below which a formal recovery plan would not be required, however, the revised quarterly phasing plan and Summary of Events would still be needed for approval. Ship's Commanding Officers shall ensure that their Immediate Superior In Command is advised of any proposed changes to their MMBP which may affect operational schedules or planned modernization.
- h. The Maintenance Team may not unilaterally adjust the MMBP when the adjustments would exceed the total remaining funding controls allocated for the ship. Any requirement in excess of the total MMBP currently approved will require the submission of a revised quarterly phasing plan, a Summary of Events related to the change, and a formal recovery plan. The RMC will evaluate the increased requirement and will make their recommendation for approval to the TYCOM based on total controls available. The RMC may not exceed an individual ship's total funding controls.
- i. Depot level maintenance will normally be screened to the Multi-Ship Multi-Option (MSMO) contractor. The Maintenance Team may go to other contracting vehicles when:
 - (1) The MSMO contractor and government cannot agree on cost and scope.
 - (2) The MSMO contractor does not have the capability or capacity.
 - (3) Indefinite Delivery, Indefinite Quantity/Commercial Industrial Services (or Simplified Acquisition Purchases and a qualified vendors list) is available.

- (4) Other organic RMC assets are available and have the capability for the work.
- (5) Work is to be accomplished outside of homeport area.
- (6) Work is to be accomplished by an Alteration Installation Team (AIT).
- j. During the execution of a maintenance availability, it is anticipated that deficiencies will be identified that could be accomplished as either growth or new work on the existing contract. The Maintenance Team shall perform a Business Case Analysis to decide whether or not to add the work to the current availability or schedule it during another maintenance opportunity.
- k. When work deferral reduces the total cost of the job or maintenance completes with a cost under-run and funds can be recaptured, the funding controls will normally remain under the control of the respective Maintenance Team. If the funds are needed for critical work on another ship or to cover a funding shortfall at the TYCOM/Fleet level, the TYCOM will redistribute as necessary. The change will be documented in a revised quarterly phasing plan and the Maintenance Team(s) should provide to the RMC an impact statement and recommended plan to mitigate the effects of the plan change.
- l. The RMC coordinates with the Maintenance Teams to comply with their approved ship's MMBPs. The RMCs shall make a monthly MMBP execution report to the TYCOM.
- m. Maintenance Teams will issue funds to the appropriate executing activity by submitting a planning estimate to the TYCOM (via the RMC) and the TYCOM will issue the actual funding document.
- n. MSMO contractors normally submit cost reports to Maintenance Teams on a bi-weekly basis. The Maintenance Team will utilize these reports to assess the cost performance of the MSMO contractor and address items of concern to the RMC and/or TYCOM.

31.3.3 Regional Maintenance Center Business Responsibilities.

- a. The RMC Commander has the authority to execute Surface Force Ship maintenance and shall do so in accordance with Fleet and TYCOM policies and directives.
- b. The RMC Commander develops an execution year spending plan for the TYCOM's approval based on the TYCOM approved MMBPs.
- c. The Fleet Commander spending controls are issued to the TYCOM who then assigns spending controls to each Maintenance Team, informing the RMC. The RMC issues quarterly spending controls to all of the Maintenance Teams in accordance with the TYCOM's final TYCOM approved MMBP for each ship.
- d. The RMC Commander will evaluate MMBP adjustment requests based on the Summary of Events, recovery plan, and quarterly adjustment provided by the Maintenance Teams. If the RMC supports the request, the RMC will forward the issue to the TYCOM for approval.
- e. The RMC Commander shall request approval from the TYCOM whenever redistribution of annual ship funding is required. The RMC shall provide the TYCOM a record of all control changes for tracking purposes. Redistribution of funds between Active Fleet and Reserve Fleet funding lines or between different TYCOMs requires approval by the Fleet Commander.
- f. In the event of significant program wide control changes the RMCs shall:
 - (1) Provide an impact statement to the TYCOM regarding the effect on the execution of maintenance.
 - (2) Provide a recommendation to minimize the impact on Force readiness.
- g. The RMC shall evaluate the financial status of each of the Maintenance Teams on a monthly basis.
- h. The RMC shall submit monthly financial summary reports to the respective surface TYCOM. This report provides a comparison of actual versus planned funding execution. The last report for the execution year will include an annual summary showing how the funds were utilized, sorted by Naval Operations resource sponsor.

- i. C3/C4 Casualty Reports (CASREP), or a C2 CASREP with reasonable potential to become a C3/C4 CASREP, are identified as emergent maintenance and will be funded with emergent dollars. Emergent work will be scheduled to minimize premiums in as much as the operational schedule will permit. C2 CASREPs will normally be corrected using the CM Process. Consideration will be given to schedule all maintenance, including emergent, at an opportune time to reduce premiums. The RMC Commander may, with the respective TYCOM's prior approval, convert Emergency Maintenance funds to execute CNO availability or CM maintenance.
- j. Except as stated in paragraph 31.3.3i. of this chapter, C2 CASREPs will be corrected during CM periods (both scheduled Continuous Maintenance Availabilities and maintenance Windows of Opportunity) using CM funds. C2 CASREPs discovered during a CNO availability or Continuous Maintenance Availability will be addressed as new work. C2 CASREPs may be allowed to "age" until the appropriate repair opportunity. The RMC Commander has the responsibility to request TYCOM authorization when Emergency Maintenance funds should be used for the correction of C2 CASREPs or other non-CASREP related, but nonetheless urgent maintenance. The RMC is required to approve any planned delay of action on a CASREP. In the event that the delay effectively constitutes a CASREP deferral in accordance with reference (a), the RMC will forward the deferral recommendation to the TYCOM for approval.
- k. The RMC Commander will generate monthly maintenance availability metrics for all assigned ships planning for a CNO availability and ships in a CNO availability. These metrics will be briefed at least monthly to the TYCOM at Surface Team 1 Maintenance and Modernization Continuous Improvement Team meetings. The business rules for preparation of these forms are included in Appendix A.

31.3.4 Type Commander Responsibilities.

- a. The TYCOM establishes Force maintenance policies and directives, consistent with Fleet Commander guidance, and authorizes the Maintenance Team and RMC to act as the principal agent to execute those policies and directives.
- b. The TYCOM will provide a list of Fleet Alteration requirements for the execution year as input to the ship's business plan no later than 15 February in the year prior to execution. To assist with business plan development, the TYCOM will identify which alterations are scheduled for accomplishment and will provide the Maintenance Team and RMC with the cost estimates for accomplishment.
- c. When the Fleet issues the spending controls to the TYCOM, the TYCOM will in turn issue spending controls to the RMC and update those spending controls on a quarterly basis.
- d. The TYCOM has the authority to recapture spending controls previously issued to the Maintenance Teams and RMCs in response to unforeseen Force budget requirements. This will be used as a last resort, as the goal is to maintain stable funding plans in support of ships' MMBPs.
- e. If it is determined that the best course of action is not to fund a CNO availability, the TYCOM must (with concurrence from United States Fleet Forces or Commander, Pacific Fleet, whichever is appropriate) approve the removal of funds before the RMC initiates this action. The TYCOM shall ensure PEO Ships is included in the decision process to not fund any availability where Program Alterations are scheduled for accomplishment during that availability.
- f. The TYCOM will evaluate MMBP adjustment requests forwarded by the RMC based on the Summary of Events, recovery plan, and quarterly adjustment provided by the Maintenance Team. If the TYCOM supports the request but lacks spending "controls" required, the TYCOM will forward the issue to the Fleet for approval and additional controls.
- g. The TYCOM will evaluate the RMC's end of month financial status reports to assess the degree of conformance to the approved RMC consolidated spending plan.

31.4 MAINTENANCE PROPOSAL REVIEW. The maintenance process must be flexible enough to be able to respond to changing operational requirements. The key to this flexibility is to reduce the cycle time involved prior to the actual execution of the maintenance. The Continuous Estimating, Incremental Planning Review Process

guidelines will be utilized by the Maintenance Team to approve all proposed maintenance actions within time and budget constraints. The guidelines apply equally to Advance Planning, Long-Lead-Time Material, CNO, CM and Emergent Maintenance work.

31.4.1 Concept. The entitled process concept enables the Maintenance Team to review planned work items and estimates on a continuous basis as they are received. The Ashore Ship's Maintenance Manager is empowered to shift work items from CNO to CM or vice versa to optimize work scheduling and reduce premium exposure and overall cost.

31.4.2 Business Rules.

- a. The Ashore Ship's Maintenance Manager with support from the Maintenance Team shall analyze the work package against the availability schedule. In general, Maintenance Teams should consider scheduled availability lengths fixed and attempt to adjust the work package to ensure it can be completed within the scheduled dates. When justification exists, the Maintenance Team should recommend availability length adjustments to the TYCOM to minimize premiums.
- b. The Ashore Ship's Maintenance Manager with support from the Maintenance Team shall analyze the work package against potential CM windows of opportunity to maintain the scheduled dates of the availability, to best level load the contractor, and to minimize premiums.
- c. The Maintenance Team may not change CNO availability dates and shall resolve scheduling issues with the TYCOM via the RMC. The TYCOM shall include PEO Ships in any discussions resulting in availability date changes when Program Alterations are scheduled for the availability.
- d. Work packages shall be developed on a continuous basis starting no later than A-240 days in order to realize cost savings and avoid premiums associated with late identification of work in accordance with the business rules contained in Volume II, Part II, Chapter 2 of this manual.
- e. When capability and capacity allow, work shall be brokered to the Fleet Maintenance Activity, otherwise, Depot level maintenance will normally be screened to the MSMO contractor. The Maintenance Team may go to other contracting vehicles when:
 - (1) The MSMO contractor and government cannot agree on cost and scope.
 - (2) The MSMO contractor does not have the capability or capacity.
 - (3) Other organic RMC assets are available and have the capability for the work.
 - (4) Work is to be accomplished outside of homeport area.
 - (5) AIT/Indefinite Delivery, Indefinite Quantity has been identified by the Naval Supervisory Authority (NSA) as the preferred provider.
- f. The Maintenance Team shall review proposals for fair and reasonable costs, work scope and applicable technical aspects prior to the TAR process.

31.4.3 Continuous Estimating Incremental Planning Review Process. The Continuous Estimating Incremental Planning Review Process (CEIPRP) is the process by which the Maintenance Team continuously compares MSMO contractor work item estimates to independently developed government work item estimates throughout the development of the work package. Completion of package development and submission of the 100% Work Package Proposal is followed by the Technical Cost and Scope analysis, proposal revisions, final TAR, establishment of the Prorate, Pre- and Post Business Clearance, and signing of the bi-lateral contract modification (definitization).

31.4.3.1 Concept. Use of the CEIPRP is intended to achieve flow of work items into the work package up to 100% lock while continuously comparing government to contractor estimates to avoid last minute surprises due to estimate differences. This process also allows for flexibility up to the 100% lock in order to develop a package that best addresses the material condition of the ship as it begins the availability. Following the planning activity specification development, the MSMO contractor continuously submits Planning Estimates. Simultaneously, the government Maintenance Team continuously develops the Independent Government Estimate (IGE). These two estimates are then compared and any differences in scope and price (generally: those in excess of 10% difference) are resolved. Resolving these differences during work package development also reduces the amount of time required for the final TAR process. Following the 100% package lock, the planning activity completes planning, the

MSMO contractor assembles and submits the 100% package proposal. Based on the 100% package proposal, an estimate of prorates is communicated to resource sponsors along with a final funding notification in order to ensure on-time funding. This is followed by completion of the final TAR and business clearance processes.

31.4.3.2 Business Rules.

- a. The contractor shall continuously submit Class C estimates for each work item as a bottom line work item cost. The Planning Estimate provides a budget level tracking and establishes a basis for determining cost reasonableness. Paragraph cost estimates will be provided by the MSMO contractor when requested by the government to resolve differences between the contractor's Planning Estimate and the IGE.
- b. The IGE is the government's detailed estimate to the trade and paragraph level. The IGE provides budget level tracking and establishes a basis for determining cost reasonableness allowing the government to validate the Planning Activity Estimate and resolve any differences in scope or cost estimates.
- c. The package will be "Locked" at the 50% and 80% budget to ensure that work has been brokered to planning activities continuously. These milestones also reinforce timely identification of work by Ship's Force. Following the package Locks, the planning activity will complete planning and estimating.
- d. Upon completion of the Planning Activity Estimate, that estimate will be compared to the IGE for the "locked" portion of the package as a snapshot of the status of the work package development.
- e. The 100% package lock is the official milestone to mark identification of 100% of the work requirements for an availability based on the MMBP budget. All work added to or deleted from the package after the 100% lock will be via an errata or addendum.
- f. The Final Funding Notification with Estimates of Prorates will be a formal communication with resource sponsor (Email or Naval Message) with funding requirements. Estimate prorates based on Basic Work Package Proposal man-hour estimates, historical prorate data and sponsor requirements. The Maintenance Team should ensure that estimates provided to various sponsors throughout the planning process include anticipated prorate amounts.
- g. The final TAR (total package) will include all necessary information to develop a negotiation strategy, pricing recommendation and rationale to support a scope conference, if necessary, and subsequent work package cost definition. It shall include background information, essential contractor proposal information, method of evaluation, scope of work, analysis of work items with rationale to support questionable costs and summary of pricing recommendations.
- h. A scoping conference, if necessary, shall include the appropriate members of the **Project** Team, Technical Analyst, Administering Contracting Officer (ACO) or Contract Negotiator and contractor. All work items with unsubstantiated differences identified in the TAR are discussed to reach agreement on the scope of work and contractor's proposal. When all differences have been resolved, the conference shall end with an agreement on labor hours, subcontracts and materials between the contractor and ACO or Contract Negotiator.
- i. The ACO or Contract Negotiator will take the work scope conference results and ensure correct application of indirect rates, fees and prepare appropriate documentation for signature and cost definition.
- j. The ACO representative will negotiate target costs for new work.
- k. The **Project** Team will minimize growth and overtime. **Prior to definitization, growth items that cannot be settled by the Project Team shall be forwarded to the Technical Analyst to be settled in the TAR process. For Surface Force ships only, the NSA Chief Engineer will review requested growth and new work items for technical compliance.**

31.4.3.3 Schedule Modification. Operational commitments, port loading or other reasons may require modification to availability schedules and milestones may need to be adjusted accordingly as discussed in further detail in Volume II, Part II, Chapter 2, paragraph 2.5 of this manual.

31.5 GUIDANCE FOR FIRM FIXED PRICE CONTRACTS.

31.5.1 Overall Process. Unless specifically noted otherwise, the following are common practices in both the MSMO and Firm Fixed Price (FFP) contracting environments:

- a. Validation, screening, and brokering process.
- b. Maintenance Teams.
- c. Planning Board for Maintenance.
- d. MMBPs.
- e. Movement of work between CNO and CM.
- f. Maintenance Team metrics.

31.5.2 Firm Fixed Price Planning. Government activities shall accomplish FFP planning with the goal of compiling a complete, clear, concise and well-defined work package. The Ashore Ship's Maintenance Manager shall work with the Maintenance Team to define the work scope and solicitation in a FFP environment. The following points shall be considered in the planning process for FFP contracts:

- a. Assessments are an important part of the planning phase of any availability. The Ashore Ship's Maintenance Manager shall ensure assessment results are considered for inclusion into the work package. The Ashore Ship's Maintenance Manager shall also determine if additional assessments should be accomplished so that the material condition of critical systems and equipment can be determined prior to the work package lock date.
- b. Proper work screening between CNO and CM availabilities is critical in order to reduce costs and premiums.
- c. Work placed in a CNO FFP Availability should be limited to work requiring a facilitated shipyard, work that can not be accomplished in short CM availabilities, or work that must be accomplished in the availability to support operational readiness.
- d. When work, following the guidelines identified in paragraph 31.4.2b. of this chapter, cannot be accomplished in the designated time period without excessive premiums or with a low probability of success, the RMC Commander shall be informed. Conversely, the RMC Commander shall also be informed when there is insufficient work to justify a CNO availability.
- e. The use of proven, re-useable FFP work specifications by Maintenance Teams and planning activities should be the norm, not the exception.
- f. Ashore Ship's Maintenance Manager with assistance from the Maintenance Team shall review all contract work specifications prior to issue, and specification review changes shall be recorded and tracked by the planning activity.

31.5.3 Firm Fixed Price Placement. When building the availability package in preparation for contract placement, consideration shall be given to risk mitigation to avoid premiums during execution due to late work identification. The use of Reservations and Option Items builds in flexibility to FFP contracts when it is impossible or impractical to adequately define all requirements.

- a. Option Item guidelines:
 - (1) Option Items are to be utilized in a contract solicitation when there is a strong expectation the work will be accomplished if the prerequisite conditions requiring the work are met as a result of an event, inspection, or milestone.
 - (2) Prior to solicitation, the availability schedule shall be evaluated to ensure each Option Item can be accomplished during the contract performance period.
 - (3) Material status shall be confirmed to ensure Option Item material will be available to support the production schedule.

- (4) Funding for Option Items will be managed by the Project Manager within the ship's designated annual funding allowance under their MMBP, by either designating Reservations in the availability budget or by using CM funds.
 - (5) Option Items shall be invoked as early as possible, preferably during the period between contract award and the start of the availability. The later an option is exercised, the greater the probability that premiums will be paid for its execution.
 - (6) A listing of all Option Items, including their respective "Not Later Than" invocation dates, shall be provided to the RMC by the planning activity in the turnover letter. The Project Manager must be made aware of all Option Items and invocation dates well in advance of the availability start date. (The Maintenance Team provides the Option Items and invocation dates. This is discussed in the contract solicitation review board.)
 - (7) Option Items are not to be used as a "shopping list", and are reserved for work with a high expectation of being required. Lack of funds for a specific work item shall not be used as justification for including that work as an Option Item.
- b. During FFP solicitation, bidder's questions may be submitted to the Procurement Contracting Officer. The following processes related to bidder's questions should be followed:
- (1) The Maintenance Team shall not respond directly to bidder's questions. There must be a single point of contact for bidder's questions and answers. If queried directly, the Maintenance Team shall refer the bidder to the Advance Planning Manager.
 - (2) The RMC Procurement Contracting Officer shall ensure the Maintenance Team is provided with e-mail notification of all bidder's questions.
 - (3) The Maintenance Team shall provide inputs to bidder's questions to the Procurement Contracting Officer within 24 hours (unless the response is required immediately, or another time period is agreed upon).
 - (4) The Maintenance Team input shall be considered when formulating the Government's response.
 - (5) The final answer to bidder's questions shall be made available to the Maintenance Team via e-mail or other electronic means.
- c. FFP Oversight. During FFP availability execution, oversight of contract changes is critical to managing costs and reducing premiums. Processes that assist in the management of funds and reduction of premiums include:
- (1) Conduct a business case for all growth and new work to determine the most efficient and cost effective time to execute the work.
 - (2) Recognize that late work premiums exist, and account for these premiums when it is necessary to add growth or new work to the availability.
 - (3) The RMC Project Manager shall identify and record all validated Delay and Disruption charges paid by the Government using growth codes as a result of Navy actions. Discuss each Delay and Disruption event during Planning Board for Maintenance to prevent repeat occurrences.
 - (4) Project Manager, with the Maintenance Team, shall document "lessons learned" during availabilities and provide these to the RMC for proper distribution and training of other Maintenance Teams.
 - (5) Departure Reports shall be provided to the Maintenance Team, ensuring all applicable safeguards are in place to handle Business Sensitive Information.

APPENDIX A
RMC SPOTLIGHT REPORTS

1. **PURPOSE.** Establish guidelines for preparing an RMC Spotlight Presentation. This presentation is applicable to all ships undergoing planned (CNO/CMAV) availabilities.
2. **SCOPE.**
 - a. This business rule describes the format and processes required to compile an RMC Spotlight Presentation.
 - b. Applies to all Regional Maintenance Centers (RMC).
 - c. Implements the standardized process to be used by all RMCs.
3. **GENERAL REQUIREMENTS/BACKGROUND.**
 - a. The RMC Spotlight Presentation consists of six sections: Project Spotlight Chart, Premium Performance Chart, Package Build Chart, Hot Wash Status Report, and Global Hot Wash Data.
 - b. The Project Spotlight Chart is a snapshot of the planning milestone status and execution performance for the RMC's CNO availabilities. Examples of FFP and MSMO Spotlight Charts are given in this appendix.
 - c. The Premium Performance Chart is a snapshot of the performance with regard to premiums and churn for a specific ship in the execution phase of a CNO availability. An example Premium Performance Chart is given in this appendix.
 - d. The Package Build Chart is a snapshot of the relationship between the value of the work package, as it is being developed, to the planned and budgeted limits for a specific ship in the planning phase of a CNO availability. It is extracted from the budget tab in Navy Maintenance Database (NMD). An example Package Build Chart is given in this appendix.
 - e. The Hot Wash Status Report is a snapshot of an RMC's local and global Hot Wash issues from past CNO availabilities. An example Hot Wash Status Report is given in this appendix.
 - f. The Global Hot Wash Data Report provides amplifying information regarding current global Hot Wash issues. An example Global Hot Wash Data Report is given in this appendix.
4. **PROCESS.**
 - a. This appendix defines the RMC Spotlight Presentation, but additional slides may be included for amplification on a conservative basis. The RMCs shall comply with standard formats.
 - b. Project Spotlight Chart.
 - (1) The left column of the chart shall list all upcoming CNO availabilities for the port within the A-360 window and the next availability to reach A-360 at a minimum.
 - (2) The columns for the milestone will be populated and colored in accordance with the following guidelines:
 - (a) The top row contains the scheduled milestone date.
 - (b) The bottom row is populated with the actual date the milestone was accomplished.
 - (c) The top row is colored red/yellow/green (R/Y/G) after the milestone has been accomplished.
 - 1 Green – milestone met on schedule.
 - 2 Yellow – milestone 1-7 days late.
 - 3 Red – milestone >7 days late.

- (d) The bottom row is colored with a R/Y/G hash pattern depending upon impact to the next milestone. The bottom row is only colored for accomplished milestones and the follow-on milestone. It may be acceptable to color a future milestone if there exists substantial evidence that it will not be accomplished on time and will have a significant impact on the follow-on milestone.
 - 1 Green hash – next milestone will be met.
 - 2 Yellow hash – moderate risk for next milestone.
 - 3 Red hash – high risk for next milestone.
- (3) Comment blocks/balloons may be used to provide amplifying information as necessary.
- c. Premium Performance Chart.
 - (1) The Premium Performance Chart is developed by exported data from NMD to an Access database. Commander, Navy Regional Maintenance Center metrics division is the point of contact for the procedure.
 - (2) Premium Performance Charts are ordered in the sequence listed on the Project Spotlight Chart.
 - (3) Comment blocks/balloons may be used to provide amplifying information as necessary.
- d. Package Build Chart.
 - (1) The Package Build Chart is developed with the package build data from NMD. The information is available in the planning side of NMD under planning budget.
 - (2) Package Build Charts are ordered in the sequence listed on the Project Spotlight Chart.
 - (3) Comment blocks/balloons may be used to provide amplifying information as necessary.
- e. The Hot Wash Status Report is maintained by the RMC Hotwash Coordinator.
- f. The Global Hot Wash Data Report is to include the following, at a minimum, for the reporting period in which input is received:
 - (1) Discussion of best practices.
 - (2) Discussion of global issues including resolutions.
 - (3) Premium goal vs. actual (and if exceeded, an explanation as to why).
 - (4) Identification of premium drivers.

VOLUME VI
CHAPTER 32
TOP MANAGEMENT ATTENTION
TOP MANAGEMENT ISSUES

REFERENCES.

- (a) OPNAVINST 4700.7 - Maintenance Policy for U.S. Naval Ships
- (b) OPNAVINST 3000.12 - Operational Availability of Equipments and Weapons Systems

LISTING OF APPENDICES.

A Top Management Attention and Top Management Issues Flowchart

32.1 PURPOSE. Reference (a) provides Chief of Naval Operations (CNO) Maintenance Policy for U.S. Navy Ships, which includes the Top Management Attention/Top Management Issues (TMA/TMI) program for addressing chronic maintenance problems. Commander, United States Fleet Forces Command (CUSFFC) is tasked with developing and forwarding Hull, Mechanical and Electrical (HM&E) and Combat System (CS) Technical Ticklers to identify common maintenance issues between Fleets. This chapter provides CUSFFC policy, procedures and standardized metrics for selecting systems/equipment for inclusion in the TMA/TMI process.

32.2 BACKGROUND. The TMA/TMI process is the Navy's priority corrective action process for United States Fleet Forces Command, Fleet Commanders, Type Commanders (TYCOM), Systems Commands (SYSCOM) and Office of the CNO (OPNAV) Resource Sponsors. This process is the means to identify top material readiness and cost problems and develop solutions that effectively and efficiently achieve approved levels of performance while realizing near-term returns on investment.

32.3 APPLICABILITY AND SCOPE.

- a. The TMA/TMI process encompasses all surface force, aircraft carrier and submarine installed equipment and systems, including aviation-oriented items that are integral parts of the ship. This process supports Navy goals and initiatives that improve fleet material readiness and increase the operational availability of those items that are identified by the fleet as needing primary attention and action. The TMA/TMI process excludes equipment under the responsibility of Director, Strategic Systems Programs and Director of Naval Nuclear Propulsion Program.
- b. The TMA/TMI process uses data from diverse sources to:
 - (1) Objectively identify critical fleet problems that impact material readiness, maintenance cost and manpower/skill requirements, and warrant top-level attention.
 - (2) Focus management attention and resources needed to correct these problems.
 - (3) Enhance communication among CNO Resource Sponsors, Fleet Commanders, TYCOMs and Systems Command Program Offices.
 - (4) Execute the TMA/TMI process in accordance with the TMA/TMI Process Flowchart in Appendix A.
- c. The TMA/TMI process is the Navy's priority corrective action process for Fleet Commanders, SYSCOMs and OPNAV Resource Sponsors. This process is the means for the Fleet, OPNAV, and SYSCOMs to identify top material readiness and cost problems and develop solutions that effectively and efficiently achieve approved levels of performance while realizing near-term Returns on Investment (ROI).
- d. The TMA candidate selection process uses a variety of sources including Maintenance and Material Management (3-M) data prepared by the TMA/TMI Analysis Center to objectively identify critical fleet HM&E and CS problems that impact material readiness, maintenance cost and manpower/skill

requirements and warrant top-level attention. Fleet and TYCOMs use this data to aid in the selection of their TMA/TMI candidate systems/equipment. Fleet and TYCOMs may also solicit topic input from subordinate Commanders for problems having significant negative impact on readiness.

- e. Candidate systems/equipment metrics are forwarded from the TYCOMs to Naval Sea Systems Command (NAVSEA) for inclusion in the TMA process. The candidate selection process is a semi-annual process commencing immediately after TMA Fleet Week and culminating at Mid-Cycle with the nomination of new systems/equipment.
- f. TMI topics are selected by the TMA panel from the topics presented at TMA which require flag level attention.

32.4 RESPONSIBILITIES.

32.4.1 Commander, United States Fleet Forces Command. CUSFFC Maintenance Officer (N43) is the Staff Officer responsible for implementation of this chapter and may direct HM&E and CS/equipment be included in the TMA/TMI process.

32.4.1.1 Duties. TYCOM Maintenance Officers shall:

- a. Develop TYCOM HM&E and CS Technical Ticklers and identify common issues between ships every six months. Establish a priority ranking of systems based on selected attributes (e.g., man-hours, cost, readiness). Forward TYCOM HM&E and CS Technical Ticklers to Commander, Naval Sea Systems Command (COMNAVSEASYSKOM) 05 for surface force ships. For submarines, provide TMA issues to COMNAVSEASYSKOM 07, with copy to OPNAV Resource Sponsors and other cognizant SYSCOMs as appropriate, via a coordinated/joint cover letter.
- b. Coordinate TMI Panel agendas and dates with TMA/TMI Working Group Chair(s).
- c. Participate on TMA panels and chair TMI Panels.
- d. Chairs the TMI panel at least annually either through established Enterprise Board of Directors meetings or as a separate TMI panel.
- e. Coordinate Fleet participation in the TMA and TMI process (TYCOMs and Regional Maintenance Center Supports).

32.4.2 Naval Sea Systems Command. NAVSEASYSKOM coordinates overall SYSCOM participation in the TMA. Specifically, SEA 07 coordinates the efforts for submarine platforms. SEA 05 coordinates efforts for surface and carrier platforms.

32.4.2.1 Duties.

32.4.2.1.1 Commander, Naval Sea Systems Command (05). COMNAVSEASYSKOM (05) for surface force ships and aircraft carriers shall:

- a. Form the TMA/TMI Working Groups and Panels and staff with appropriate representatives.
- b. Receive and disseminate the TYCOM HM&E and CS/C4I Surface Force Ship Technical Ticklers to the appropriate TMA/TMI Working Groups.
- c. Review and forward Plan of Action and Milestones and ROIs, or other technical presentations from TMA/TMI Working Groups to Fleet and TYCOMs.
- d. Chair the surface force ships and aircraft carrier TMI Panel and establish the NAVSEA response to Fleet identified TMI issues.

32.4.2.1.2 Naval Sea Systems Command 07/Program Executive Officer Submarines. SEA 07/Program Executive Officers (PEO) Sub shall:

- a. Form the TMA/TMI Working Groups and Panels and staff with appropriate representatives.
- b. Receive and disseminate the TYCOM HM&E and Nuclear Planning and Execution System TMA issue letter to the appropriate program offices for action.

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CHAPTER 33

MAINTENANCE AND MODERNIZATION BUSINESS PLAN

REFERENCES.

- (a) OPNAVENOTE 4700 - Representative Intervals, Durations, Maintenance Cycles, and Repair Mandays for Depot Level Maintenance Availabilities of U.S. Navy Ships

LISTING OF APPENDICES.

A. Executive Summary Sheet

33.1 MAINTENANCE AND MODERNIZATION BUSINESS PLAN.

- a. The Maintenance and Modernization Business Plan (MMBP) identifies the total private sector maintenance funding budget available to support the ship during the execution year and advance planning and funding needs for availabilities to be executed in future years. The MMBP also includes funding for modernization. This includes funding for all Fleet Alterations and those Program Alterations managed by the Type Commander (TYCOM) or Naval Supervisory Authority (NSA) (Regional Maintenance Center (RMC)/Naval Shipyard/Supervisor of Shipbuilding). The MMBP does not include funding for modernization that is managed by the Ship's Program Manager (SPM) or Participating Acquisition Resource Manager and accomplished by Alteration Installation Teams through separately administered contracts.
- b. MMBPs will be developed for all ships that will be in commission at the start of the upcoming Fiscal Year (FY). A second MMBP will be developed for any ship scheduled to start a Chief of Naval Operations (CNO) Availability in the first quarter of the following FY. This second business plan will address only the CNO Availability controls, a Risk Assessment and will not include Continuous Maintenance (CM) controls. The TYCOM will normally use the same TYCOM Target Controls for these out-year CNO Availabilities as used for the upcoming FY CNO Availability controls. These out-year MMBPs will require additional refinement in the next MMBP cycle.

33.2 MMBP RESPONSIBILITIES.

33.2.1 Maintenance Team Responsibilities. The Maintenance Team identifies budget needs to the NSA and the TYCOM based on well-documented work in the Current Ship's Maintenance Project (CSMP) and Class Maintenance Plan. The Maintenance Team MMBP identifies the total maintenance funding.

- a. The Maintenance Team establishes the funding phasing plan that will roll up to the Fleet Commander's overall phasing plan. It should be noted that the accuracy of the phasing plan is critical to the Fleet and TYCOM's ability to provide timely and stable funding. A Maintenance Team over executing or under executing its budget will cause unnecessary funding churn. For this reason, Maintenance Teams and NSAs should develop phasing plans that are accurate and reasonably achievable. For example, if a CNO Availability is scheduled to start in the first month of a quarter, the funding for that availability will be required in the previous quarter and should be phased in the earlier quarter. CM phasing will depend largely on ships' schedules and should not simply be divided into four equal quarters in the phasing plan.
- b. Each Maintenance Team will include an assessment of known material readiness risks associated with the MMBP funding levels in their initial MMBP submittal. In a case where there is unacceptable risk associated with the assigned funding controls, the TYCOM may agree to adjust assigned controls.
- c. Maintenance Teams shall use the format provided in Appendix A for MMBP submission.

33.2.2 NSA Responsibilities. For submarines and aircraft carriers, actions assigned below to the NSA may be performed directly by the TYCOM or a designated agent (i.e., Immediate Superiors In Command (ISIC), Trident Refit Facility, or Naval Submarine Support Center).

- a. The NSA has the authority to execute ship maintenance and shall do so in accordance with Fleet and TYCOM policies and directives.
- b. When conditions warrant, the NSA will develop a Business Adjustment Factor (BAF) percentage for CNO Availabilities to account for local business conditions. BAFs are established as a percentage of the availability budget, similar to the growth or award fee percentages. The BAF is an adjustment or hedge against impacts to the manday rate or premium levels for specific CNO Availabilities due to factors such as high or low port loading. Examples of other situations that may require an allowance in the BAF are seasonal adverse weather patterns, anticipated labor union issues, anticipated labor rate adjustments or the general business conditions in the port.
- c. The NSA will make any additional adjustments to TYCOM target controls based on prioritization of the work package, risk analysis and Business Case Analysis (BCA) included in the Maintenance Team's MMBP submissions. The overall, total NSA CNO Availability funding controls and total CM funding controls provided to the NSA by the TYCOM may not be exceeded in these adjustments.
- d. (Surface Ships only) During the year of MMBP execution, changes to individual ship controls exceeding 10% require TYCOM notification; changes in excess of 20% require TYCOM approval. In the event adjustments are required that exceed available funds, the NSA will provide a written justification supporting the change and a formal recovery plan to the TYCOM for approval.
- e. Appendix A may be modified as required, with TYCOM concurrence, for unique NSA processes or circumstances.

33.2.3 TYCOM Responsibilities (Surface Force Ships only).

- a. Establish Force maintenance policies, directives and authorize the NSA to execute those policies and directives.
- b. Provide Target Controls to the NSA in March of each year and review those controls as required by the budget approval process. These controls are between the TYCOM and the Port Engineer.
- c. Ensure the established modernization plan is accurate and issue Fleet Alteration Letters of Authorization.
- d. Validate MMBPs and promulgate approved CNO availability and Continuous Maintenance funding controls in naval message format at the beginning of each fiscal year.
- e. Align Surface Warfare Enterprise processes with established waterfront support organizations and establish the readiness and cost control processes required to provide greater overall enterprise effectiveness.
- f. Support the ISIC with warships ready for tasking by aligning manning, training, equipping and maintaining processes of ships by class.
- g. Assess current readiness, analyze metrics, examine trends, determine root causes, establish lessons learned and provide recommendations and solutions, while emphasizing readiness and cost control.
- h. The TYCOM will provide the RMCs with TYCOM Target Controls in March of each year and will revise these controls as required by the budget approval process.

33.2.4 TYCOM Responsibilities (Aircraft Carriers and Submarines only). The TYCOM establishes Force maintenance policies and directives and authorizes the NSA to execute those policies and directives.

- a. The TYCOM ensures that the established modernization plan is accurate and issues Fleet Alteration Letters of Authorization.
- b. The TYCOM has final approval of all MMBPs and will promulgate approved CNO Availability and CM funding controls in naval message format.

33.2.5 Ship Program Manager Responsibilities. The SPM ensures that the Letter of Authorization for Program Alterations is accurate and includes Program Alterations funding estimates.

33.3 THE MMBP SUBMISSION.

33.3.1 MMBP Spreadsheet. The required format for submission of MMBPs is provided in Appendix A of this chapter. As noted in paragraph 33.2.2.e. of this chapter, changes may be made to Appendix A to reflect NSA unique circumstances.

33.3.1.1 General Description. The MMBP provides the maintenance team's description of the planned maintenance and funding phasing.

33.3.1.2 Executive Summary Sheet.

- a. Section I: The Schedule Overview is intended to illustrate major milestones in the current and upcoming year: assessments, deployments, availabilities, decommissioning, etc.
- b. Section II: This section begins with initial controls (CNO and CM) and applies adjustments to those controls by TYCOM and RMC. The final numbers in each of these categories are funds available for assignment to CM and CNO work as appropriate. Particular care must be taken to ensure that the sign (where subtraction has a "-" or a number is preceded and followed with parentheses, e.g., "(10)" indicating a negative number) of these numbers are correct, as they are linked to the CONTROLS AND PHASING sheet.
- c. Section III: Ensure that program alterations (K-Alterations) are included here and not included in other locations. D-Alterations, Machinery Alterations, and Ship Change Documents should be located in Section II.
- d. Section IV: This section provides an area for the maintenance teams to indicate areas of risk associated with the particular FY's maintenance plan. This section does not include topics that are not applicable to the execution FY risk. Areas to be discussed here:
 - (1) Work items identified in the UNFUNDED REQUIREMENTS sheet, and their impact to current or future operations.
 - (2) Upcoming assessments that may identify serious discrepancies.
- e. Section V: This section provides a general rollup of the work planned for the execution FY. Items in this section need not be identified by Job Control Number/Job Sequence Number, but rather a general layout of work to be brokered to individual availabilities and their notional values; this should include historical repairs from assessments. The bottom of this sheet sums items from other portions of the workbook for comparison purposes. Items of note in this section:
 - (1) The items identified in the "green" section of Section V are planned for completion in the execution FY and therefore are not elements of risk.
 - (2) The "shortfall" cell should be equal to or less than the UNFUNDED cell.
 - (3) The Risk section on the bottom of the spreadsheet feeds directly from the UNFUNDED REQUIREMENTS SHEET. This section sums the unfunded items by funding type and then by associated risk (see paragraph 33.3.1.4 of this chapter).

33.3.1.3 Controls and Phasing Sheet. This sheet applies changes (growth pools, overhead, award fees, and the business adjustment factors) to the adjusted controls. This sheet provides a further adjustment to the controls, as well as a phasing of the controls that should be completed by the Maintenance Teams so as to reflect the maintenance schedule. Particular care should be taken to ensure that sums are correct, since TYCOMs use this sheet to plan quarterly cash flows.

33.3.1.4 Unfunded Requirements Sheet.

- a. This sheet identifies those items in the Class Maintenance Plan or validated maintenance items in the ship's CSMP that cannot be completed in the execution FY due to funding constraints. To be included in the UNFUNDED REQUIREMENTS list, the following conditions must be satisfied:
 - (1) The work can be accomplished in the time available if additional funding is applied, and/or
 - (2) The work can be accomplished in the execution year if additional Continuous Maintenance Availability (CMAV)/CNO time were allotted.

- b. The column marked “Funding Type” has permissible entries: CM, CNO and AP. They are meant to indicate the most likely funding areas to which the work would be brokered if funding were available.
- c. The “Risk” column has permissible entries of “High,” “Medium” and “Low” as determined by a BCA guided by Volume II, Part I, Chapter 4, Appendix D of this manual. These columns must be populated in order to properly assess the risk associated with the MMBP, as well as to feed properly to the Executive Summary Sheet.

33.3.2 Prioritization. Maintenance Teams should use any and all resources at their disposal to prioritize the work for which funds are available. The prioritized work should support the ship’s current readiness requirements as well as work designed to ensure the ship can operate effectively its full service life.

33.3.3 Maintenance Summary and Risk Assessment. The Maintenance Team and TYCOMs will address any known maintenance risks based on Funding Controls or ship’s maintenance schedule for the upcoming FY. This risk assessment must provide sufficient detail to enable NSA/TYCOM to make critical decisions with respect to funding adjustments. Photographs, inspection reports, docking reports, operating logs, vibration analysis, Maintenance Figure of Merit (MFOM) data and other objective evidence of important maintenance which is not able to be accomplished within the Maintenance Teams funding controls should be included.

33.4 BUDGET PROCESS AND MMBP DEVELOPMENT TIMELINE.

33.4.1 Guidance. In order to develop MMBPs prior to the start of the FY in which they will be executed, it is necessary to begin the process well before the final budget is approved and financial controls are passed to the Fleet Commanders, TYCOMs, and eventually to the Maintenance Teams. Maintenance Teams shall develop MMBPs using the following guidance and timeline. For submarines and aircraft carriers, actions assigned below to the NSA may be performed directly by the TYCOM or a designated agent (i.e., ISICs, TRIDENT Refit Facility, or Naval Submarine Support Center).

33.4.2 Initial Budget Guidance (March).

- a. The TYCOM, in coordination with the Fleet Maintenance Officer, will establish an initial estimate of the expected funding controls for the next FY. Based on this information, TYCOMs will develop a common maintenance funding strategy, establish initial TYCOM Target Controls for each ship’s CNO Availability and each ship’s CM budget. The CM budget provides funds for both the yearlong continuous availability and scheduled CMAVs. TYCOM Target Controls are passed from the TYCOM to the Maintenance Team as the initial input to the MMBP process.
- b. The TYCOM and the SPM will ensure Letters of Authorization accurately reflect the modernization plan. SPMs and Participating Acquisition Resource Managers will provide installation estimates for Program Alteration installations or installation support services for which funding will be provided to the Maintenance Team. The TYCOM Target Controls discussed above will be separated into Fleet maintenance and Fleet funded alteration controls by the TYCOM before the controls are passed to the NSA.

33.4.3 Provide Controls to Maintenance Team (April).

- a. The Maintenance Teams will use the Class Maintenance Plan to develop assessment schedules with NSA for inclusion in individual MMBPs.
- b. ISIC shall provide ship operational schedule information to the Maintenance Team. This information is used to schedule CMAVs and Assessments for the upcoming year.
- c. The NSA will establish BAF if required for each CNO Availability, anticipated CNO Availability and CM growth percentages, support service percentages and Award Fee percentages as applicable for entry into the MMBP Budget Planning Sheet, Appendix A. For surface ships, Maintenance Teams may modify target controls for ships within a class based on their relative material condition.
- d. Maintenance Teams will develop MMBPs based on these initial controls. This iterative process will involve risk assessment and BCA of any differences between the Maintenance Teams identified funding needs and the funding controls established for them.

33.4.4 Execution Strategy Adjustments (May). The TYCOM in coordination with Fleet Commanders will determine if adjustments to the TYCOM Target controls are required. For surface force ships, the TYCOM will provide the NSA with direction for the adjustment of controls.

33.4.5 (Surface Ships only) Maintenance Team Submit MMBPs for Approval via NSA (June). The NSA approves, consolidates and submits copies of each assigned ship's MMBP to the TYCOM for review and approval.

33.4.6 TYCOM Approves MMBPs (July).

- a. The TYCOM approves MMBPs and promulgates final approved CNO availability and CM controls.
- b. The TYCOM/RMC provides final CNO budget controls and CM controls to the Maintenance Teams.

33.4.7 Submit Phasing Plans (August).

- a. The NSA funds administrators will review and adjust each Maintenance Team's phasing plan to correspond with the total controls. Each NSA will provide the Maintenance Team phasing plans to TYCOM.
- b. The TYCOM will submit phasing plans to the Fleet Commander.

33.5 BUSINESS PLAN RESOURCES.

33.5.1 Resources. The following resources and information shall be reviewed and considered in the development of MMBPs. This list is not intended to be all-inclusive and is provided as a starting point.

- a. The notional CNO man-day requirements used by the TYCOM to establish initial TYCOM Target Controls.
- b. The ship's CSMP.
- c. The ship's Baseline Availability Work Package.
- d. The Class Maintenance Plan.
- e. Areas of specific concern that will be assessed or inspected prior to the availability.
- f. Modernization Plan - Program and Fleet Alterations.
 - (1) Program Ship Change (SC) Authorization letters provided by Program Executive Officer Ships include NAVSEA, Space and Naval Warfare Systems Command (SPAWAR), Naval Supply Systems Command and Naval Air Systems Command (NAVAIR) planned installations.
 - (2) Fleet SC Authorization letters provided by the TYCOM include Fleet Alterations, Alterations Equivalent to Repair, and Machinery Alterations.
 - (3) Information contained in Program Executive Officer/Systems Command and TYCOM SC authorization letters will be consolidated into Hull Modernization Plans. Hull Modernization Plans will list all SCs (Program and Fleet Alterations) programmed for installation on each ship for the entire FY.
- g. Deployment and operational schedules.
- h. Assessment and inspection schedules (Hull, Mechanical, Electrical Readiness Assessment (HMER), Combat Systems Command, Control, Communications and Computer Readiness Assessment (C5RA), Board of Inspection and Survey (INSURV), etc.).
- i. Ship's event schedules (Change of Command, etc.).
- j. Long-term ship's CNO Availability and decommissioning schedule.
- k. CNO Availability and CMAV Planning Milestones.
- l. Departures from Specifications.

- m. Habitability Project Plan/Schedule (TYCOM provide).
- n. Other Availability Programs (TYCOM provide).
 - (1) Underwater Hull Cleaning.
 - (2) Calibration.
 - (3) Other miscellaneous.

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CHAPTER 36

SURFACE FORCE SHIP/AIRCRAFT CARRIER MODERNIZATION PROGRAM

REFERENCES.

- (a) NAVSEA SL720-AA-MAN-030 - Navy Modernization Process Management and Operations Manual (NMP-MOM)
- (b) CLF/CPFINST 4720.3 - Management of Afloat Combat Systems and C4I Installations and Improvements
- (c) DODINST 5000.2 - Operation of the Defense Acquisition System

LISTING OF APPENDICES.

- A Modernization Plan Flowchart
- B Ship Change Document Template
- C Technical Assessment Flowchart
- D Cost Benefit Analysis Flowchart
- E Alteration Figure of Merit Flowchart
- F Voting Database Flowchart

36.1 **SCOPE.** This chapter is applicable to all Surface Force/Aircraft Carrier ships and shore activities involved in ship modernization. The provisions of this chapter have been developed in collaboration with Naval Operations (OPNAV). Where there are conflicts with reference (a), this chapter shall take precedence until such time as OPNAV implementing directives can be modified/issued. References (b) and (c) govern the management of afloat Combat Systems and Command, Control, Communications, Computers, Collaboration and Intelligence installations and improvements, and Initial Adversary Vulnerability Assessment policies and remain in effect as written. Type Commander (TYCOM) Maintenance Directorates shall be the lead for ensuring implementation. Ships will continue the current practice of forwarding change requests to the Immediate Superior In Command (ISIC), who will forward the change request to the respective TYCOM for entry into the Navy Data Environment (NDE). Only alterations entered in NDE will be considered for inclusion in Modernization Programs. This chapter is not applicable to submarines. Submarines will continue to utilize existing instructions.

36.2 **PURPOSE.** The purpose of this chapter is to document the Surface Force Ship/Aircraft Carrier Modernization Program, which emphasizes early decisions under the control of United States Fleet Forces Command (USFFC), Pacific Fleet, and Navy Cyber Forces (CYBERFOR), and expands on the decision process for deciding which alterations and modifications will be developed, procured, certified and installed on all surface force ships and aircraft carriers. The objective is to assure that fleet modernization investments address the fleet's greatest concerns and are integrated and prioritized across Strike Groups, ships, systems and warfare areas. The process directly involves Navy leadership at all levels (Fleet, OPNAV, Force TYCOMs, Systems Commands (SYSCOM) and Program Executive Offices (PEO)) in the programming, planning and installation of modernization in a consistent and disciplined manner.

36.3 **BACKGROUND.** The End to End Ship Maintenance and Modernization (previously Ship Maintenance (SHIPMAIN)) was developed to concentrate on the early decision process regarding which alterations are to be accomplished. This process provides timely Fleet involvement and the assurance that changes are driven by current fleet requirements. The Modernization Program itself was implemented to modify the Entitled Process (formerly the Fleet Modernization Program (FMP)) due to Fleet concerns which included alterations developed and hardware procured but never installed. It was to also alleviate concerns over significant changes to availability work packages after authorization letter issuance, and alteration installation problems caused by failure to satisfy planning milestones. While these issues are often times driven by overall funding instability in Navy budgets and changing priorities, the associated costs consume modernization funding minimizing the ability to modernize. The Navy Modernization Process (NMP) has replaced the FMP, and is documented in reference (a). The NMP provides a structure for the orderly identification, approval, design, planning, programming, budgeting, installation, life cycle

support and configuration control of technical and survivability improvements to all ships of the active and reserve fleets. This chapter also provides overall prioritization in the alterations to be accomplished and discipline and accountability in the adherence to NMP processes.

36.4 **PROCESS.** Appendix A provides a flowchart of the entitled modernization process decision and prioritization.

36.4.1 **Key Elements.** Key elements of the Ship/Carrier Modernization Program are:

- a. A single process to identify, evaluate and approve all hardware and computer software modifications to all ships and ship's systems. The process is based on approved business rules and is owned by the Force TYCOMs Commander Naval Surface Forces/Commander Naval Air Forces (COMNAVSURFOR/COMNAVAIRFOR). The process operates in concert with Acquisition Program processes of reference (b).
- b. Consolidation of all alterations into two types:
 - (1) Fleet alterations funded by the Fleet.
 - (2) Program alterations funded by the SYSCOMS/PEOs.
- c. A four-phase process (Preliminary Analysis, Concept Design, Design Development, Ship Integration) supported by Decision Points at the end of Phases I-III. Senior Fleet/OPNAV personnel comprise the Decision Boards identified in paragraph 36.6 of this chapter. Provisions exist to combine Phases II and III for less complex changes as delineated in paragraph 36.4.8 of this chapter. Any major changes encountered during Ship Integration will require reporting back to Decision Point 3 for approval to continue the Ship Change.
- d. A single NDE database, maintained by Naval Sea Systems Command (NAVSEA) 04. The Ship Change Document (SCD), which replaces the Justification Change Form, Ship Alteration Record, in service Engineering Change Proposal and all other alteration documents used in the FMP, will be entered and tracked in NDE from inception through installation in the last applicable ship. Appendix B illustrates the SCD template. This SCD is a living document and may not look the same in NDE. Only SCDs entered in NDE will be considered for inclusion in modernization plans for specific hulls.
- e. Involvement of Fleet, OPNAV, TYCOMs, SYSCOMS and PEOs in the decision making process, utilizing three boards of stakeholders at the O-6, one and two star Admiral, and three star Admiral level. Voting members of the boards represent appropriate Fleet and OPNAV organizations. SYSCOM and PEO representation is included to validate the readiness of the alteration to proceed to the next step. Paragraph 36.5.2 of this chapter addresses the business rules associated with the voting process. Depending on cost and impact thresholds, decisions are made by one of the three boards. An electronic voting capability (eVote), embedded in NDE, will be used on a continuing basis to facilitate timely action by the boards, and minimize the need for boards to formally convene. NAVSEA 04 will ensure data is available to voting members 10 to 14 days prior to required voting. As noted on the Modernization Flow Chart, Appendix A of this chapter, Technical Assessments are conducted at three points in the process, and in conjunction with the Alteration Figure of Merit (AFOM) and Cost Benefit Analysis (CBA) blocks, are assembled in a Recommended Change Package (RCP) which provide the basis for decisions made by the O-6, 1/2 Star and 3 Star Boards.
 - (1) The O-6 level board approves Fleet alterations except in cases where the scope and complexity dictate referral to a higher level board, makes the majority of decisions involving the lower cost and lesser impact Program alterations, and provides recommendations for the higher level boards.
 - (2) The one and two star board validates the O-6 board decisions and provides Fleet/OPNAV/claimant recommendations to Acquisition Category (ACAT) III and ACAT IV and below program milestone decision authorities.

- (b) 5 working days to adjudicate funding issues (associated with Funding Concurrence-resource identification). If resource sponsor fails to provide acceptable trade-off, the board has the authority to approve in accordance with SCD.
- b. 1-2 Star Review Board
 - (1) Will meet monthly to review Modernization Plan and to consider forwarded RCPs that fall within their monetary threshold (>\$50M and <\$200M total program cost).
 - (2) Concur or non-concur with recommendation to expedite.
 - (3) Concur or non-concur with recommendation to go to Phase IIA.
 - (4) Voting process will be achieved within the following timelines:
 - (a) 20 working days to vote.
 - (b) 5 working days to adjudicate funding issues (associated with Funding Concurrence-resource identification). If resource sponsor fails to provide acceptable trade-offs, the board has the authority to approve in accordance with SCD.
- c. 3 Star Review Board
 - (1) Will meet quarterly to review Modernization Plan and to consider forwarded RCPs that fall within their monetary threshold (above \$200M total program costs).
 - (a) Approve/disapprove 1-2 Star Board recommendations.
 - (b) Voting process will be achieved within following timelines:
 - 1 60 days to vote.
 - 2 5 days to adjudicate funding issues (associated with Funding Concurrence-resource identification). If resource sponsor fails to provide acceptable trade-offs, the Board has the authority to approve in accordance with SCD.
 - (2) Submits annual Modernization Plan to OPNAV N7.

36.7 APPROVAL FOR FLEET ALTERATIONS. Approval for Fleet Alterations shall be via official TYCOM Letter of Authorization **in accordance with the milestone listed in Volume II, Part II, Chapter 2, Appendix D of this manual** and entered into NDE. Alterations shall not be authorized for installation unless included in NDE. The TYCOM shall establish Fleet Alteration funding policies for each fiscal year by defining a “fleet modernization control” (i.e., a specified percent of the maintenance budget set aside for Fleet Alteration modernization). Resource sponsor (OPNAV N43) approval to fund alterations that result in exceeding the fleet modernization control will require offsets to be identified to keep the fleet modernization control at the specified level/percentage. If offsets cannot be identified, it will be the responsibility of the TYCOM to increase the fleet modernization control within the constraints of the maintenance budget (i.e., increases to the fleet modernization control will be offset by decreasing the amount of the maintenance budget allotted for maintenance).

36.8 EXECUTION YEAR CHANGES TO MODERNIZATION PLANS. It is expected this process will minimize changes during the execution year. Operational priorities may require some changes after the approved Modernization Plan has been submitted with the annual President's budget submission to Congress. Execution year changes to the approved Modernization Plan will be limited and only as approved by the Voting Boards in accordance with fiscal statutes and regulations.

36.9 METRICS. A goal of the Ship Modernization Program is to instill discipline in the process, ensuring stability from alteration inception through final installation, minimizing deficiencies. To support this stability a number of business rules have been established within this chapter. The metrics established are used by all levels of the chain of command to measure the process, determine what barriers exist in the entitled process and to predict downstream milestone attainment. Metrics are not to be used to measure performance of individuals. Any methods employed to circumvent collection of valid metrics are counterproductive, mask real process improvement, and often create more work for Maintenance Team members. From a process improvement standpoint, it is far preferable to miss a metric milestone based on good business decisions rather than to work around the process measures to avoid the “hit”.
Examples of undesirable actions:

- a. Cancellation of an aged, unscreened job with subsequent production of a new identical job for the sole purpose of avoiding a high cycle time.
- b. Having the ship re-upline a Maintenance and Material Management Maintenance Action Form (2-Kilo) with desired changes, knowing it will over write the shore file, rather than taking the First Pass Yield (FPY) hit and changing the original 2-Kilo.
- c. Not making needed changes to a 2-Kilo before screening it to a planning activity just to avoid an FPY hit.
- d. Utilizing the date the 2-Kilo is written and uplined as the “when discovered date” vice the date the deficiency was actually discovered in order to avoid a high ship to shore cycle time.

36.9.1 Evaluation. The five selected metrics below will be used to evaluate the Ship Modernization Program processes. Regional Maintenance Center (RMC) Commanders will report metric measurements to Commander, Navy Regional Maintenance Center monthly. This reporting requirement allows process efficiency and effectiveness collaboration between SEA04 and Commander, Navy Regional Maintenance Center where required, impacting process replanning and execution during Maintenance and Modernization overlap.

36.9.1.1 Process Effectiveness. For all alteration installation completions, determine if it was accomplished in the same fiscal year as called for in the Modernization Plan developed during the most recent POM cycle. (Example: The Modernization Plan used as the baseline for this metric will be set by POM06 for Fiscal Year (FY)06 and FY07 and set by POM08 for FY08 and FY09.) Metric data will be collected and analyzed monthly with Fleet and Program alterations plotted separately. This same data will be tallied by SYSCOM on an annual basis.

CALCULATION:

- 1.
$$\frac{\text{Total \# of Fleet Alterations completed as per the Modernization Plan schedule}}{\text{Total \# of Fleet Alterations completed}}$$
- 2.
$$\frac{\text{Total \# of Program Alterations completed as per the Modernization Plan schedule}}{\text{Total \# of Program Alterations completed}}$$
 - a. Source Data and Reporting Frequency for Measurement. All data used for this metric shall come from Navy Data Environment-Navy Modernization (NDE-NM). A separate monthly tally of Fleet and Program alterations installed in accordance with the Modernization Plan will be plotted to provide a trend on the “effectiveness” of the process.
 - b. Basis for Baseline: Since this metric is based solely on the entitled process, the baseline will be established after 12 months of data collection.
 - c. Required NDE Fields:
 - (1) Alteration Identifier.
 - (2) Alteration Type (Fleet or Program).
 - (3) Installation FY from most recent POM cycle.
 - (4) Actual completion FY.

36.9.1.2 Process Efficiency. The process efficiency is the percentage of planned installation dollars that were actually expensed. Comparison of the planned installation dollars to the actual cost of installations performed. For all alteration installation completions, determine if it was accomplished for the estimated cost as provided in the Modernization Plan developed during the most recent POM cycle. (Example: The Modernization Plan used as the baseline for this metric will be set by POM06 for FY06 and FY07 and set by POM08 for FY08 and FY09.) Metric data will be collected and analyzed monthly with Fleet and Program alterations plotted separately.

CALCULATION:

- 1.
$$\frac{\text{Total estimated cost of Fleet Alterations completed as per the Modernization Plan schedule}}{\text{Total actual cost of completed Fleet Alterations}}$$
- 2.
$$\frac{\text{Total estimated cost of Program Alterations completed per the Modernization Plan schedule}}{\text{Total actual cost of completed Program Alterations}}$$

- (1) Certify personnel, facilities, and activities in PCMS handling, Quality Assurance, application, and destruction, maintaining records for each certification.
 - (2) Provide Equipment Guide List (EGL) packages for AP-1, AP-2 and S-1 assessments.
 - (3) Incorporate and distribute ship configuration revisions submitted following AP-1 and AP-2 assessments.
 - (4) Conduct analysis of all 18M-1R measurements and provide Forces Afloat reports of results and recommendations.
 - (5) Adjudicate all PCMS related requests for Departures from Specifications.
 - (6) Designate a PCMS ISEA to function as the first line technical resource for Forces Afloat.
 - (7) Coordinate PCMS in service activities with the broader Surface Maintenance Engineering Planning Program Activity (SURFMEPP) organization and other activities, such as corrosion control programs.
- b. Navy Regional Maintenance Command:
- (1) Ensure that RMCs have adequate PCMS SMEs/technicians to support PCMS core activities. Provide stewardship of RMC SMEs to ensure a seamless transition when personnel are scheduled for transfer or retirement. If qualified PCMS Technicians are not available at local RMC, the RMC should contact the following (in order of contact) for assistance:
 - (a) Other RMCs.
 - (b) PCMS ISEA (NSWC PHD). This request shall include funding for the performance of the activity.
 - (2) Ensure integration of PCMS SME support to all former SUPSHIP planning and execution of shipboard repairs and other upkeep performed under the auspices of the RMC organization.
 - (3) Establish I-Level PCMS tiling support shops at RMCs with PCMS responsibilities.
 - (4) Ensure the integration of PCMS restoration on all RMC conducted repairs and corrosion control projects where PCMS coverage is required. This is to be focused on ship-shop level projects which are most efficiently accomplished inside of a production shop prior to return aboard ship.
- c. Type Commanders shall:
- (1) Coordinate with the System Commands in identifying, solving and correcting PCMS deficiencies.
 - (2) Refer all PCMS related Departures from Specifications to NAVSEA for adjudication..
 - (3) Prior to promulgation, review and authorize all documents prepared by technical agencies that contain procedures relative to PCMS and the fleet PCMS program.
 - (4) Evaluate comments and recommendations regarding the fleet PCMS program. If necessary, promulgate changes to existing policy and procedures.
 - (5) Fund PCMS RIPs to provide for the additional RMC labor and material required to conduct these events at least bi-annually.
 - (6) Ensure that proper corrosion control procedures are employed in the planning and execution of I and D Level maintenance affecting PCMS areas. Reference (e) provides detailed guidance.
- d. Immediate Superiors in the Chain of Command (ISIC) shall:
- (1) Submit requests to schedule PCMS core activities for each unit to maintain unit currency in trained personnel and 18M-1R assessments. PCMS RIPs shall be conducted at an interval not to exceed 24 months.

- (2) Review and take the appropriate action to correct PCMS discrepancies for subordinate units.
- e. RMCs shall:
- (1) Maintain qualified PCMS personnel and ensure assets are available to perform PCMS core activities in accordance with reference (b).
 - (2) Provide Technical Assistance via distance support/on site visit as appropriate.
 - (3) Conduct PCMS core activities. Provide the following to the PCMS ISEA within four weeks following AP-1 events:
 - (a) Redlined updates to key plans and detailed drawings.
 - (b) Completed EGL inspection checklist, including revised items.
 - (c) Completed digital photo survey.
 - (4) Ensure all personnel assigned to PCMS responsibilities meet the requirements of reference (b).
 - (5) Ensure that RMC PCMS SMEs are involved in planning of all PCMS equipped ship topside maintenance where PCMS is affected.
 - (6) Ensure that RMC Quality Assurance personnel, certified by the PCMS ISEA, are actively involved in the Quality Assurance of all I and D level PCMS related repairs and installations.
 - (7) Ensure that contracted or I-Level jobs activities, facilities and personnel selected to conduct PCMS work are certified for the work being conducted.
 - (8) Include in contracted I and D-Level jobs the provision of PCMS tiles for planned PCMS repairs and interference areas. Ships shall not be tasked to provide tiles or other PCMS Allowance Parts List/Allowance Equipage List items to support work undertaken by other than Ship's Force, except with the specific concurrence of the TYCOM.
- f. Surface Force Ship Commanding Officers shall ensure:
- (1) Scheduling of PCMS activities within periodicity.
 - (2) Obtaining RMC SME assistance in reviewing work packages to ensure identification of all topside signature related issues.
 - (3) Establishment and maintaining of the following shipboard organization:
 - (a) PCMS Department Head: in accordance with reference (a), the Commanding Officer shall appoint a Department Head responsible for coordinating operation and maintenance of PCMS. Their responsibilities include:
 - 1 Providing the Commanding Officer monthly PCMS effectiveness summaries including major PCMS deficiencies, the compliance of the ship with personnel certification requirements, an abbreviated Plan of Action and Milestones for correction of Category 1/2/3 deficiencies and corrosion items, and the due date for the next 18M-1R.
 - 2 Coordinating shipboard PCMS indoctrination for newly reported personnel.
 - 3 Coordinating ship-wide PCMS preventive and corrective maintenance schedule.
 - 4 Coordinating distribution and update of Planned Maintenance System (PMS) materials including ship specific PCMS keyplan drawings and EGLs required for PMS inspections.
 - 5 Serving as single point of contact for Quality Assurance of PCMS related Current Ship's Maintenance Project entries, review of all topside configuration changes (including program alterations, fleet alterations, field changes, etc.) to ensure Radar Cross Section reduction has been considered.

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CHAPTER 38

DEEP SUBMERGENCE SYSTEMS
HULL INTEGRITY PROCEDURESREFERENCES.

- (a) NAVSEA SS800-AG-MAN-010/P-9290 - System Certification Procedures and Criteria Manual for Deep Submergence Systems

LISTING OF APPENDICES.

- A SUBMEPP DSS HIP Inventory
B SUBMEPP DSS HIP Schedule
C Request for DSS HIP Periodicity Extension Format

38.1 PURPOSE. This chapter provides guidance and definition for the requirements, responsibilities and actions for Deep Submergence Systems (DSS) Hull Integrity Procedures (HIP) to continue certification for manned operations. The DSS HIP program is invoked on Dry Deck Shelter (DDS) certified under reference (a).

38.2 HULL INTEGRITY PROCEDURES MAINTENANCE SCHEDULING, PLANNING AND REPORTING.

38.2.1 Maintenance Requirements for Continued Certification. Reference (a) establishes the Maintenance Requirements and identifies the responsibilities and actions required to support continued unrestricted Submarine/DSS manned operations. In conjunction with reference (a), Naval Sea Systems Command (NAVSEA) has issued individual manuals containing required, periodic Scope of Certification (SOC) maintenance actions for each DSS. The DSS HIP procedures identify degradation of the material condition of the hull integrity boundary and of those systems affecting occupant safety. SOC certification indicates that a valid recommendation for continued manned operations can be made. Maintenance of certification is dependent on the positive control of all re-entries into the SOC boundaries per Volume V, Part III, Chapter 5 of this manual, the satisfactory and timely completion of applicable DSS HIP procedures as required by reference (a) and any necessary repairs. Accomplishment of the DSS HIPs specified with this program identify changes within the SOC boundary which result from inadvertent error and/or from degradation caused by the service environment.

38.2.2 Scheduling and Reporting. To enable the Type Commanders (TYCOM) to carry out their responsibilities in the maintenance of certification of DSSs and to aid in decisions concerning operational restrictions, an auditable system of scheduling the performance and reporting of DSS HIPs has been developed. This system provides visibility to problem areas, facilitates verification and provides a permanent record of DSS HIP accomplishment in the DSS's Maintenance and Material Management (3-M) machinery history maintained at the NAVSEA Logistics Center.

38.2.2.1 Dry Deck Shelter. Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP) Activity provided Periodic Maintenance Requirement (PMR) inventories and schedules are used for scheduling and reporting. The scheduled DSS HIP requirements are added to the Current Ship's Maintenance Project (CSMP) from the local scheduling system and the Automated Work Requests (AWR) produced. Appendices A and B of this chapter show examples of the SUBMEPP DSS HIP inventories and schedules respectively.

38.2.2.2 Submarine Maintenance Engineering, Planning and Procurement Activity Inventories and Schedules. The SUBMEPP inventories and schedules are provided quarterly. The SUBMEPP schedules reflect all DSS HIP requirements coming due within the next 9 months. A description of the data elements used in the inventories and schedules is provided with each issue.

38.2.3 Baseline and Due Dates. The baseline date for determining DSS HIP due dates is the Last Maintenance Action (LMA) date. LMA dates for new requirements will be based on the Change Issue Date of the DSS HIP invoking the new requirement unless otherwise directed from NAVSEA. Due dates are calculated based on LMA dates in accordance with paragraph 38.2.3.2 of this chapter. It is recognized that upkeep schedules for vehicles

which are well into the operating cycle may not permit full compliance with the scheduled due dates. In such cases, a Departure From Specification (DFS) for the DSS HIP will be addressed on a case-by-case basis as specified in Volume V, Part I, Chapter 8 or Volume V, Part III, Chapter 8 of this manual. LMA dates and DSS HIP due dates are determined as follows:

38.2.3.1 Last Maintenance Action Date. All DSS HIPs have an initial LMA date established at installation to start the operating cycle in accordance with the applicable DSS HIP manual. During the operating cycle, an adjusted LMA, as discussed below, is used for DSS HIP. Calculate the adjusted LMA date as follows:

- a. If the PMR is accomplished during a period other than a scheduled Availability (e.g., voyage repair periods, at sea, port calls, Fleet Maintenance Activity (FMA) Availability, refit, upkeep, etc.) the adjusted LMA date will be the first of the month following the PMRs completion date.
- b. If the PMR is accomplished during a scheduled availability (e.g., Overhaul or Restricted Availability), the adjusted LMA date will be the first of the month following the scheduled availability's actual completion date.

38.2.3.2 Calculating Due Dates. Next due dates are calculated based on an adjusted LMA date. Due dates are calculated, for scheduling purposes, by taking the adjusted LMA date month (number) and adding the periodicity months (number) to show the month due (i.e., an item with an adjusted LMA date of February 2005 (2/05) with a six month periodicity would be due in August 2005 (8/05)). The PMR will be accomplished prior to midnight of the last calendar day of the month due.

38.2.4 Periodicity Extensions. When determining the due date for certain DSS HIPs inspections, inactive time may be excluded from the time elapsed since the last inspection. Extensions of periodicity from the next due date identified in the SUBMEPP PMR inventory for these DSS HIPs can be requested by the TYCOM and require NAVSEA approval. However, they are not automatic and such requests shall be submitted by letter, in the format of Appendix C of this chapter, to SUBMEPP via the TYCOM. Upon receipt of TYCOM authorization, SUBMEPP will reflect the periodicity extension and the revised due date in the next issue of the DSS's PMR inventories and schedules.

38.2.5 Scheduling, Planning and Reporting Hull Integrity Procedure Accomplishment at Sustaining Activity/Fleet Maintenance Activity Level.

38.2.5.1 Scheduling. The TYCOM PMR Scheduling System Inventories and Schedules are distributed by SUBMEPP to the appropriate Immediate Superior In Command (ISIC) every quarter. A copy of each Compact Disk (CD) is to be provided to each applicable vehicle by the ISIC. As a minimum, ISICs will schedule applicable DSS HIPs 60 days prior to scheduled availabilities. Those DSS HIP AWRs requiring work packages or other planning are forwarded to the FMA Planning Section. In the case of operational type DSS HIPs the AWRs are sent to Ship's Force Lead Work Center (LWC) 991.

38.2.5.2 Planning. FMA Planners will requisition materials, obtain plans and drawings, prepare Formal Work Packages and/or Controlled Work Packages and coordinate the scheduling with the Ship Superintendent, Production Officer and ISIC Material Office. Then the job will be turned over to the production Work Center for accomplishment. For Ship's Force accomplishment of DSS HIP, the ISIC will provide an AWR to the vehicle.

38.2.5.3 Reporting to the Maintenance and Material Management (3-M) System. Each DSS HIP AWR contains specific instructions on reporting the completed action and on use of a special feedback code to identify the material condition or that a change in inspection frequency is required. In order to ensure DSS HIPs are correctly accomplished and reported to SUBMEPP, the following actions are to be taken prior to closeout of the AWR by Analysis, Records and Reports Section (ARRS):

- a. Sustaining Activities completing DSS HIP AWRs are to fill in the AWR with action taken codes and suffix of A, B or C for material condition assessment, if applicable. Sustaining Activity will sign for completion, ISIC will sign for acceptance. Include a narrative statement, if required, and return the original AWR to the ISIC. The ISIC will review the AWR and forward to ARRS to close out the computer AWR and update SUBMEPP inventories and schedules.

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CHAPTER 39
LESSONS LEARNED PROCESS BUSINESS RULES
FOR SURFACE FORCE SHIPS

LISTING OF APPENDICES.

A Access to Lessons Learned Conference Website on SURFOR Web

39.1 PURPOSE.

- a. The primary purpose of the Lessons Learned Conference (LLC) is to facilitate communication between Project Teams of all Surface Force ship classes across all Regional Maintenance Centers (RMC) and supporting activities at various stages in their availability to assist in improving cost, schedule and performance. The LLCs provide a singled-up approach to evaluate and capture critical lessons learned and barriers brought forward by Project Teams to facilitate process improvements in the Surface Navy.
- b. The LLC process encompasses the established milestones and/or meetings within the planning and execution of availabilities in accordance with Volume II, Part II, Chapter 2 of this manual. Appendix D of Volume II, Part II, Chapter 2 of this manual includes a detailed table of milestones. Meetings that already exist to reinforce process improvements may include the Advance Planning Meeting, Work Package Integration Conference, Work Package Execution Review, Arrival Conference, 50% Conference and Completion Conference. While these events occur at various times, the feedback process exists to continually collect information to improve processes.

39.2 LESSONS LEARNED CONFERENCE OVERVIEW.

39.2.1 Lessons Learned Conference Concept. The LLC is not a program review, an evaluation of the Maintenance Team (government or contractor) or a forum to acknowledge heroism or place blame. It is a process review, an evaluation of the execution of the availability from the advance planning to the completion of the availability. It is also a place to identify process issues that can further improve overall end to end maintenance and modernization process.

39.2.2 Lessons Learned Conference Objective. The objective of the LLC is to identify process improvements as they pertain to scheduled availabilities. Feedback will be shared locally and globally in the surface force ship community and will ultimately be embedded into the maintenance and modernization processes.

39.2.3 Lessons Learned Conference Key Membership.

- a. Process Owner. Commander, Naval Surface Forces Atlantic N43 and Commander, Naval Surface Forces Pacific N43 are the overall LLC process owners. As such, Commander, Naval Surface Forces Atlantic N43 and Commander, Naval Surface Forces Pacific N43 are responsible for the general management of implementing the LLC process to ensure process effectiveness. While the Type Commanders (TYCOM) are the LLC Process Owners, the LLCs are part of the Surface Team One (ST1) structure as a “Knowledge Sharing Network”. Each Knowledge Sharing Network under ST1 is assigned a Process Master; the LLC Process Master will be identified by the Process Owners.
- b. The RMC LLC Analysis Team Member. Each RMC must have a designated LLC Analysis Team Coordinator and a designated LLC Analysis Team Waterfront Operations Representative on the Analysis Team. Some RMCs may choose to have the Coordinator and Waterfront Operations Representative to be one and the same due to the time requirements demanded of an Analysis Team Member.
 - (1) The LLC Analysis Team Coordinator is responsible for the coordination and facilitation of their local RMC’s scheduled LLCs. This person serves as the liaison between the Project Teams and the global LLC Community. Further guidance regarding the RMC LLC Coordinator’s responsibilities are outlined in the LLC Analysis Team Business Rules.

- (2) The LLC Analysis Team RMC Waterfront Operations Representative is responsible for providing the Waterfront expertise and knowledge for their local RMC to the Analysis Team. This person serves as the liaison between his or her RMC's waterfront and the global LLC Community. Further guidance for the roles and responsibilities of the local RMC LLC Analysis Team Member in completing the LLC Availability Overview Presentation is contained in the LLC Analysis Team Business Rules.

NOTE: WHILE THE LLC ANALYSIS TEAM MEMBER POSSESSES MANY RESPONSIBILITIES AS THE LLC MEETING FACILITATOR, HE OR SHE SHOULD EXPECT TO RECEIVE ASSISTANCE FROM ALL STAKEHOLDERS.

- c. RMC Class Team Leader (CTL). The RMC CTLs are responsible for attending each of their respective class of ships LLC regardless if their RMC is scheduled to brief during the meeting. By attending all LLCs, they will be able to assist the Analysis Team in knowledge and lessons learned transfer between their Ship Class LLC and the Project Teams internal to his or her RMC.
- d. RMC Availability Project Manager (PM). The RMC PM is responsible for preparing and briefing their ship's Chief of Naval Operations (CNO) Availability LLC Overview Presentation. The RMC PM will capture all lessons learned, action items and barriers deemed necessary to be communicated to the Surface Maintenance and Modernization Community.
- e. Maintenance Community. Other maintenance activities involved with ship availabilities (in addition to those highlighted in preceding paragraphs) will participate in the LLC. These representatives are active members of the LLC Community and are responsible for maintaining awareness of ship class issues and participating in the individual ship LLCs. The following participants are mandatory:
 - (1) TYCOM N43 Type Desk Office.
 - (2) TYCOM Project Engineer.
 - (3) Immediate Superior In Command.
 - (4) Ship's Force Representative.
 - (5) Multi-Ship Multi-Option/Firm Fixed Price Contractor.
 - (6) Surface Maintenance Engineering Planning Program Activity (SURFMEPP) Detachment Representative.
- f. Modernization Community. Representatives of any Alteration Installation Team or other non-repair activity involved with availabilities will participate in the availability LLC meetings as appropriate:
 - (1) Naval Sea Systems Command (NAVSEA) 21.
 - (2) Field Activities.
 - (3) Space and Naval Warfare Systems Command.
 - (4) Program Manager Representative.
 - (5) Planning Yard Representative.

39.3 PREPARING FOR THE LESSONS LEARNED CONFERENCE.

39.3.1 Preparation. To adequately prepare for an LLC, Project Teams should track any lessons learned and barriers that they feel will be beneficial to other Project Teams throughout their Planning and Execution phases. All Project Teams will be first introduced to the LLC Process during their first scheduled Integrated Project Team Development Event **in accordance with the milestones listed in Volume II, Part II, Chapter 2, Appendix D of this manual** by their local RMC LLC Analysis Team Coordinator/Waterfront Operations Representative.

39.3.2 Lessons Learned Conference Presentation Overview. The LLC Availability Overview Presentation serves as the format for the Project Teams to articulate key lessons learned and barriers encountered during their Availability Cycle. The LLC Availability Overview Presentation template is available through the RMC Analysis Team Member. Throughout the planning stages and execution of the availability, Maintenance Team members, including the RMC, Ship's Force, contractor, Alteration Installation Teams and other key availability stakeholders shall assist the RMC PM in submission of the LLC presentation. Input should also be gathered from:

- a. Ship's Commanding Officer's Weekly Situation Reports.
- b. Standard metrics identifying top cost drivers.
- c. Late add alteration risk assessment messages (including comparison of expected versus actual impact to the availability).
- d. Late add alteration risk acceptance.
- e. Waivers for work added after **the late add impact assessment as dictated by the milestones listed in Volume II, Part II, Chapter 2, Appendix D of this manual** (including impact to availability).
- f. Cost variance forms provided by contractor.
- g. A review of contract changes to the base work package.

39.4 CONDUCTING A LESSONS LEARNED CONFERENCE.

39.4.1 Lessons Learned Conference Schedule. LLCs are scheduled for each ship class to take place via Video Teleconference once every quarter. Required LLC Project Teams are determined based on their Start of Availability and End of Availability dates. A schedule of all LLCs is available on the LLC website.

39.4.2 Agenda. The primary focus of the meeting is to discuss lessons learned, best practices and barriers pertaining to the selected CNO Availability. An agenda for all scheduled LLCs will be forwarded to all participants by the ST1 LLC Process Master, RMC LLC Analysis Team Coordinator or CTL. The agenda will also be available on the LLC website (<https://www.surfor.navy.mil/sites/st1/llc>).

39.4.3 Lessons Learned Conference Focus Areas. Surface Force Ships are required to participate in LLCs at various times during a ship's scheduled CNO Availability Cycle from A-390 to C+30. The LLCs serve as a venue for Project Teams to discuss the behaviors and practices that affected the Availability along with reporting of the results of those availabilities to the Maintenance and Modernization community. The purpose and phases of LLC are as follows:

- a. Advanced Planning Session occurs between A-390 to A-360.
 - (1) Discussion on any lessons learned or barriers associated with the Advanced planning time frame from A-540 to A-241.
 - (2) Initiate Project Team Member communications.
 - (3) Identify significant risks to Availability Planning.
- b. Planning Lessons Learned session occurs between A-120 to A-80.
 - (1) Discussion on any lessons learned or barriers associated with the Pre-planning time frame from A-240 to A-61.
 - (2) Discuss risks and established risk mitigation plans.
 - (3) Share lessons learned/barriers of the planning process.
- c. Execution Lessons Learned session occurs between C-15 to C+30. Discuss any lessons learned or barriers affecting the Availability associated with the time frame from A-540 to C+60.

39.4.4 Invitees. Key membership and project team personnel involved with the availability, **including the TYCOM,** will be notified of the LLC meeting by the ST1 LLC Process Master, the RMC LLC Analysis Team Coordinator or the CTL. Key stakeholders involved with future availabilities will also be invited to attend the meeting.

39.4.5 Invites and Announcement. The RMC LLC Analysis Team Coordinator will review the scheduled LLCs on no less than a monthly basis. The schedule will include a list of hulls that are scheduled to present at an LLC, to include the phase of their availability they will be presenting. The process and timeline for LLC notification is outlined in the LLC Analysis Team Communications Plan.

39.4.6 Lessons Learned Conference Documents. All LLC documentation will be in accordance with the LLC Analysis Team Communications Plan.

39.4.7 Lessons Learned Conference Minutes. All participants, action items and barriers will be documented in minutes following each LLC. The minutes will be forwarded no later than three business days to all invitees, ST1 Executive Steering Committee (ESC) and RMC Commanders. The minutes will also be posted on the LLC site on the Surface Force (SURFOR) Web.

39.4.8 Lessons Learned Conference Website. LLC process meeting documents and information shall be posted on the SURFOR LLC website. This site tracks all scheduled LLCs throughout the calendar year, all meeting preparation materials to include necessary read-ahead material for participants, Project Team Point of Contact Lists and meeting minutes. The website should be used to aid in planning work packages and preparing for availabilities to ensure that any barriers and lessons learned identified by previous LLC Project Teams are applied to future availabilities. The website is located at <https://www.surfor.navy.mil/sites/st1/llc>. See Appendix A for instructions on obtaining access.

39.5 INTERACTION AMONG FEEDBACK PROCESSES.

39.5.1 Relationships. The LLC meeting is sensitive to the contractor-government relationship and the legal procedures that accompany it. The Department of the Navy Acquisition Reform strategy includes a goal to “build a continuous dialogue with industry to identify mutually beneficial opportunities and practices”. While the Department of the Navy encourages open communication between the contractor and the government, many legal issues arise from such information sharing. It is critical that the LLC meetings and general processes maintain awareness of the following legal procedures: Federal Advisory Committee Act, Procurement Integrity Act, Trade Secrets Act and Organizational Conflicts of Interest. Additionally, the LLC process is mindful of other feedback/review processes, such as the Award Fee Board and Contractor Performance Assessment Report.

39.5.2 Consistency. These business rules recognize the need for consistency between other feedback processes and the need for all to exist. As the LLCs will most likely occur prior to the Award Fee Board and the Contractor Performance Assessment Reports issuance, sensitive issues may arise. The LLCs intend to remain focused on process improvement, lessons learned and barrier identification. The LLC will allow for sensitive issues to remain in closed sessions or within the scope of their existing feedback and review processes.

39.6 LESSONS LEARNED CONFERENCE APPLICATION AND KNOWLEDGE SHARING.

39.6.1 Communication of Lessons Learned, Barriers and Action Items. Lessons Learned, Barriers and Action Items and their associated resolutions are only useful when they are communicated between maintenance and modernization professionals. The following are the required methods for sharing information in a timely manner, but are not the only means to share this information:

- a. Maintenance and Modernization Performance Review. Status of LLC Action Items and Barriers will be provided during each Maintenance and Modernization Performance Review.
- b. Surface Team One Executive Steering Committee Meetings. When requested, the LLC Process Master will brief the ST1 ESC. As a minimum, each ESC meeting will include a status brief of all open action items and barriers. When barriers are briefed to the ESC, the barrier will be assigned to the correct point of contact for action and closure.
- c. Surface Team One Monthly Process Master Meetings. Monthly meetings will be conducted with each Surface Ship Readiness Initiative Process Master or designated support personal. These meetings will serve as a venue to provide a critical review of assigned action items from each LLC.

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CHAPTER 41

MAINTENANCE AND PROJECT TEAM

REFERENCES.

- (a) NAVSEA SL720-AA-MAN-030 - Navy Modernization Process Management and Operations Manual (NMP-MOM)

41.1 PURPOSE. The purpose of this chapter is to define and establish the membership and responsibilities of the Maintenance and Project Teams (PT) and those supplemental members of both that support the maintenance and modernization process. The Maintenance Team, PT and those that supplement under the Planning Process are integral members of a complex evolution that requires communication, coordination and collaboration in order to accomplish availability planning, execution and close out efficiently and effectively. The contents of this chapter compliment Volume II, Part II, Chapter 1, Volume VI, Chapter 31, Volume VI, Chapter 33, and Volume VII, Chapter 7 of this manual.

41.2 MAINTENANCE TEAM. Each ship shall have a formally structured Maintenance Team. The team is led by the Ashore Ship's Maintenance Manager **outside of maintenance availabilities** and consists of representatives from the ship and the supporting shore maintenance infrastructure. The responsibility of the Maintenance Team is to manage the **advanced planning and planning of maintenance, the routine maintenance of the ship** and modernization in accordance with the maintenance policies, directives and business rules of the Fleet Commander, Type Commander (TYCOM) and **Commander, Navy Regional Maintenance Center (CNRMC).**

41.2.1 Crew Swap. When a crew swap occurs that rotates a different crew to a hull, the non-crew members of the Maintenance Team shall remain with the hull and provide continuity in planning and execution.

41.2.2 Maintenance Team Members. While there are many who contribute to the **planning** of ship maintenance and modernization, some key personnel have a continuing involvement in and responsibility for management of the overall **advanced** planning and **planning** of the ship's maintenance and modernization. **The Maintenance Team forms the core of the PT.** The Maintenance Team shall **be permanently assigned to the ship and shall** consist of the following members:

- a. Ashore Ship Maintenance Manager. **Validates, screens and assigns** all maintenance and modernization, including assessments, requiring off ship assistance. **Ensures the Program Manager (PM) has visibility of all assigned work. For all combat systems related maintenance and modernization the Ashore Ship's Maintenance Manager will coordinate with the Combat Systems Port Engineer.** Assignments are:
 - (1) Surface Force Port Engineer
 - (2) Naval Air Force TYCOM Maintenance Program Manager
 - (3) Submarine Force Maintenance Coordinator
- b. Ship's Commanding Officer. Primary representative for the ship. (The Commanding Officer may delegate to a representative.)
- c. **I-Level Ship Superintendent.** Manages **Regional Maintenance Center (RMC)** Government production work for Continuous Maintenance (CM), Continuous Maintenance Availability (CMAV) and Chief of Naval Operations (CNO) availabilities. **Manages I-Level production work planning, integration, execution and close out, reporting progress/status to the Project Manager and Ashore Ship's Maintenance Manager.**
- d. **RMC/Supervisor of Shipbuilding (SUPSHIP) Project Manager.** **Supports the Ashore Ship's Maintenance Manager in the advanced planning and close out phases of the maintenance availability.**
- e. Ship Material Maintenance Officer. Coordinates Maintenance Team activities with Ship's Force personnel. Assignments are:
 - (1) Surface Force Ship Material Maintenance Officer

(2) Naval Air Force Ship Maintenance Manager*

(3) Submarine Force 3M Coordinator

* The Reactor Maintenance Officer fills this role for Nuclear Propulsion issues.

f. Contractor Program Manager (when required). Manages authorized contractor/company work. Assignments are:

(1) Surface Force Prime Contractor Program Manager

(2) Naval Air Force Prime Contractor for RMC contracted (non Naval Shipyard (NSY) work

(3) Submarine Force Prime Contractor for RMC contracted (non NSY) work

g. Maintenance Support Team (LCS class ships only).

41.2.3 Responsibilities of the Maintenance Team. The primary responsibility of the Maintenance Team is to manage the **advanced planning and planning of the** maintenance and modernization process in accordance with the maintenance policies, directives and business rules of the Fleet Commander, TYCOM and the **Naval Supervisory Authority (NSA)**.

41.2.3.1 The Four Principal Roles of the Maintenance Team.

- a. Management of Ship Maintenance. The Maintenance Team ensures the ship's Current Ship's Maintenance Project (CSMP) and Availability Work Package (AWP) are validated and accurately reflect the ship's material condition and current maintenance status. The Maintenance Team ensures there is an initial cost estimate in man-days and material dollars for all work candidates, including assessments and technical assistance. The estimates shall be developed by the **Project** Manager during initial review of the work candidates to be as accurate as possible, based on available information such as return costs from similar jobs, Ashore Ship Maintenance Manager experience, NSA and other government prepared or approved estimates. These estimates shall be updated within the CSMP, as they are refined in order to provide the Maintenance Team with adequate data to plan maintenance actions. For **Aircraft Carriers**, these estimates will be entered in the Proposed AWP and finalized in the Authorized AWP. The Maintenance Team coordinates inspections, certifications, assessments and assist visits in support of the class maintenance plan. Additionally, the Maintenance Team may provide on-scene assessment of equipment condition to develop valid and accurate work candidates.
- b. Budgeting for Ship Maintenance. The Ashore Ship's Maintenance Manager is responsible for the ship's **Maintenance and Modernization Business Plan (MMBP)**. The Maintenance Team develops the budget recommendation for funding maintenance requirements for the fiscal year. The Maintenance Team assesses the ship's anticipated material condition for budget consideration including the validated CSMP, Class Maintenance Plan, planned fleet alterations, outstanding Departures From Specification (**DFS**), **Temporary Standing Orders and Casualty Reports**. This MMBP shall address the funding required for **execution year maintenance**. Ashore Ship's Maintenance Manager and the Maintenance Team members will maintain their ship within the fiscal guidance defined by the approved MMBP. Chapter 33 of this volume describes the development and maintenance of the MMBP.
- c. Logistics and Technical Expertise. The Maintenance Team members maintain a current, valid CSMP and AWP that serve as the authoritative source for all information on maintenance requirements. All technical guidance and advice provided by the members of the Maintenance Team must be in compliance with Systems Command approved **technical** guidance and policy. In instances where action by a Technical Authority is needed, the **Project** Manager shall ensure this authorization is obtained. The effective logistics support for maintenance depends on the accuracy of the ship's configuration records. The Maintenance Team oversees prompt submission of change documentation pursuant to maintenance or modernization, validates change entries and ensures configuration records (e.g., Configuration Data Managers Database - Open Architecture) are updated.

- d. Availability Coordination. The Ashore Ship's Maintenance Manager works for the TYCOM to develop, plan and coordinate scheduled availabilities, CM opportunities and emergent repairs of assigned ships within the resources provided. The TYCOM shall enter CNO availabilities, assessments, associated routine tasks and authorized Fleet and Programmed Alterations into the appropriate Maintenance Automated Information System in accordance with standard availability planning milestones. The Maintenance Team serves as the point of contact for the NSA in coordinating maintenance and planning activities. The Maintenance Team facilitates the orderly conduct of work candidate identification, validation, screening, assigning and brokering.

NOTE: RESPONSIBILITIES FOR EACH MEMBER HAVE BEEN BROKEN DOWN INTO TWO CATEGORIES, RESPONSIBLE AND ACCOUNTABLE.

41.2.4 Specific Duties of Maintenance Team Members.

41.2.4.1 Ashore Ship's Maintenance Manager.

- a. For Aircraft Carriers, receives the Baseline Availability Work Package (BAWP) from the Carrier Planning Activity. Builds and refines the Proposed and Authorized AWP's.
- b. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
- (1) Leads the Maintenance Team and maintains frequent contact with the Commanding Officer and conducts personal observations of shipboard conditions. Establishes and maintains an effective communications plan with the ship during deployment. More information can be located in Volume II, Part II, Chapter 1, paragraph 1.2.2 of this manual.
 - (2) Maintains the CSMP shore file accuracy and provides recommended changes for the shipboard CSMP to the Ship Material Maintenance Officer and 3M Coordinator. (See Volume II, Part II, Chapter 1, paragraph 1.3.1 of this manual.)
 - (3) Validates all off ship maintenance for assigned ship(s), including off-ship assessments. (See Volume II, Part II, Chapter 1, paragraphs 1.3.2, 1.3.4 and 1.3.5 of this manual.)
 - (4) Develops initial planning estimates based on information such as return costs from similar jobs and Government prepared or approved estimates. (See Chapter 31, paragraph 31.4.2 of this volume.)
 - (5) Screens work candidates to the appropriate maintenance availability based on the MMBP, operational schedule, material readiness requirements and cost benefit analysis. (See Volume II, Part II, Chapter 1, paragraphs 1.4.1 and 1.4.4 of this manual.)
 - (6) Schedules, and assists the ship's Commanding Officer in conducting the Planning Board for Maintenance meetings, including agenda development. (See Volume II, Part I, Chapter 4, paragraph 4.2.5 of this manual.)
 - (7) Coordinates all off-ship maintenance and modernization requirements.
 - (8) Screens Automated Work Requests in support of 100%, 80% and 50% package lock, including CSMP, Class Maintenance Plan (CMP) and TYCOM routines.
 - (9) Initiates work candidates (OPNAV 4790/2K) for "service" work.
 - (10) Develops Business Case Analysis and generates applicable Engineering Services Request, provides advice and serves as the ship's point of contact for access to technical expertise for all ship maintenance and modernization requirements, including the development of Ship Changes.
- c. Responsibilities: A contributor, this will be the person or people assigned to do the work.
- (1) Communicates, coordinates and tracks ship and applicable class problems.
 - (2) Ensures configuration change requests are promptly submitted.
 - (3) Ensures completion work candidates (OPNAV 4790/2K) are entered into the CSMP and the appropriate IT system. (See Chapter 2, paragraph 2.6.2 of this volume.)

- (4) Executes the approved MMBP to best utilize windows of opportunity. (See Volume II, Part II, Chapter 2, paragraph 2.1.2 of this manual.)
- (5) Makes recommendations to the ship's Commanding Officer and management on any deferred work items. (See Volume II, Part II, Chapter 1, paragraph 1.4.5 of this manual.)
- (6) Coordinates maintenance availability scheduling and execution. (See Volume II, Part II, Chapter 2, paragraph 2.6.5 of this manual.)
- (7) (Surface Force only) Supports the RMC in planning assigned ship maintenance/modernization availabilities. (See Volume VII, Chapter 1, paragraph 1.3.8 of this manual.)
 - (a) Develops and schedules work packages. Recommends resolutions to CNO scheduling issues.
 - (b) Recommends CM opportunities to the ship's Commanding Officer and the NSA management. Creates CM availabilities.
 - (c) Screens work candidates (OPNAV 4790/2K) to appropriate level of maintenance (Organizational, Intermediate, Depot (O, I, D)). Reviews assessment results for inclusion in work packages.
 - (d) Assists NSA Project Manager with work package analysis for Multi-Ship Multi-Option (MSMO) contracts.
 - (e) Provides availability evaluation input documentation during availabilities supporting Contractors Performance Appraisal Reporting System (CPARS).
- (8) Supports Fast Cruise, Dock Trials, Sea Trials, Propulsion Plant Light Off Assessment (LOA) and Production Completion Date (PCD), Combat Systems or AEGIS Light Off and TYCOM validation of PCD.
- (9) Attends Integrated Project Team Development (IPTD), Work Package Integration Conference (WPIC), Work Package Execution Review (WPER), Lessons Learned Conference (LLC) Life Cycle Planning, Docking, Arrival, 25%/50%/75% reviews, Undocking, and Departure conferences,
- (10) Plans, coordinates and executes mid-deployment shipcheck.
- (11) Supports Ship's Force for AWP collection and management of Objective Quality Evidence (OQE).
- (12) Performs AWP risk assessments and verifies deliverables to Contractor (KTR) (O, I, D work items and Alteration Installation Team (AIT) schedule requirements).
- (13) Assists the NSA with technical close out and availability work certification. Assists ship in achieving maintenance phase exit criteria.
- (14) Supports the 100% Package Lock Letter.
- (15) Validates growth and new work, assists with the Regional Calibration Center process.
- (16) Supports and participates in work specification review.
- (17) Provides incremental funds for ordering Long Lead Time Material (LLTM) for both repair and alteration/modification work to meet required dates.
- (18) Submits change deferral request letter to Surface Maintenance Engineering and Planning Program (SURFMEPP).

41.2.4.2 Ship's Commanding Officer. Primary representative for the ship. Works with the Ashore Ship's Maintenance Manager on the development and prioritization of the ship's maintenance and modernization including the MMBP.

- a. **Accountable:** Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Reports progress weekly to the TYCOM. Recommends urgent and compelling decisions to the TYCOM.
 - (2) Works with the Ashore Ship's Maintenance Manager to develop the final work package submission for the ship.
 - (3) Directs efforts to identify all shipboard maintenance requirements and ensures accurate and timely entry into the CSMP. Reviews, plans and monitors accomplishment of organizational level work.
 - (4) Initiates requests for technical assistance, including distance support.
 - (5) Determines the affect of material deficiencies on mission capability and releases Casualty Reports.
 - (6) Integrates maintenance planning in the ship's operational schedule.
 - (7) Ensures the ship is prepared for and ready to conduct: propulsion plant PCD/LOA, combat systems PCD, combat systems light off events.
 - (8) Chairs the Planning Board for Maintenance meeting.
- b. **Responsibilities:** A contributor, this will be the person or people assigned to do the work.
 - (1) Verifies technical assistance final resolution satisfies ship's maintenance issue.
 - (2) Ensures Ship's Force assists with the management and oversight of work execution by maintenance activities and AITs.
 - (3) Executes shipboard DFS process.
 - (4) Ensures ship properly supports 25%/50%/75% reviews; Arrival, Docking, Undocking, Fast Cruise, Dock Trials, Sea Trials, Departure, and Completion key events and conferences; IPTD, WPIC, WPER events; and CSMP, DFS, BAWP Mid-Cycle reviews.
 - (5) Consolidates software delivery.
 - (6) Ensures Integrated Logistics Support (ILS) is provided.
 - (7) Assists in scheduling and execution of mid-deployment shipcheck.
 - (8) Collaborates in the authorization of growth/new work.
 - (9) Supports the Integrated Test Plan execution and work certification.
 - (10) Assists in achieving maintenance phase exit criteria. Ensures proper space turnover, Ship's Force AWP collection and management of OQE, and availability technical closeout.

41.2.4.3 I-Level Ship Superintendent. Manages RMC Government production work for CM, CMAV and CNO availabilities. Manages I-Level production work planning, integration, execution and closeout, reporting progress and status to the PM and Ashore Ship's Maintenance Manager.

- a. **Accountable:** Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Manages the collection of I-Level OQE.
 - (2) Manages RMC work planning, scheduling, integration, and work execution. Resolves conflicts among all Executing Activities. Ship checks work candidates (2K) as applicable and provides estimates on all I-Level work candidates. Recommends cancellation of invalid work candidates, if applicable.
 - (3) Represents the RMC to Ship's Force for RMC production maintenance work. Coordinates the performance of I-Level work including all scheduling and availability coordination, ensuring the I-Level work package is fully accepted in accordance with milestones.

- b. Responsibilities: A contributor, this will be the person or people assigned to do the work.
 - (1) Ensures completion of I-Level production work supporting LOA, propulsion plant PCD, AEGIS and Combat Systems Lightoff, Docking, Undocking, Fast Cruise, Dock Trials, Sea Trials, and Availability Completion.
 - (2) Assists ship in achieving maintenance phase exit criteria. Ensures I-Level work is complete in support of availability certification, completion, and technical close out.
 - (3) Attends availability production meetings; Arrival, Docking, Undocking, Departure, WPIC and WPER conferences.
 - (4) Coordinates work planned and performed by RMC production department, submits I-Level schedule to KTR/NSY for integration, coordination of I-Level open and inspects, coordination of oversight for I-Level work (Product Verification Inspection (PVI), Procedure Evaluation (PE), Procedure Review (PR)).
 - (5) Provides recommendations regarding assignment of work candidates to RMC production department based on the capabilities and capacities of the RMC. Works closely with the Project Manager and Ashore Ship's Maintenance Manager on the validation and screening of all work candidates to the I-Level.
 - (6) Ensures completed maintenance action (OPNAV 4790/2K) for completed work.

41.2.4.4 RMC/SUPSHIP Project Manager (as a member of the Maintenance Team). Supports the Ashore Ship's Maintenance Manager in the advanced planning and planning phases of the maintenance availability.

- a. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Supports the Ashore Ship's Maintenance Manager in the performance of maintenance and modernization.
 - (2) Brokers and integrates work candidates to form optimized work packages.
 - (3) Establishes the availability in the appropriate IT system.
 - (4) Ensures LLTM for Firm Fixed Price and MSMO contracts is ordered to support availabilities.
 - (5) Conducts Work Specifications Review with Ashore Ships Maintenance Manager.
 - (6) Serves as the advanced planning manager for contracted maintenance during CNO availabilities and scheduled CMAVs conducted at contractor or Government depots. Coordinates the continuous cost estimate review process.
 - (7) Provides timely financial accounting information during the execution of maintenance to customers.
- b. Responsibilities: A contributor, this will be the person or people assigned to do the work.
 - (1) Supports CSMP/DFS/BAWP mid-cycle review.
 - (2) Attends IPTD events, scoping conferences (see Volume VII, Chapter 2, paragraph 2.12.1 of this manual), WPIC and WPER.
 - (3) Assists in coordinating mid-deployment shipchecks.
 - (4) Provides incremental funds for ordering LLTM for both repair and alteration/modification work to meet required dates.

41.2.4.5 Ship's Material Maintenance Officer. (The Reactor Maintenance Officer fills this role for Nuclear Propulsion issues.) Coordinates Maintenance Team activities with Ship's Force personnel.

- a. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.

- (1) Provides the Ship's Force work package to the Project Manager and executing activity. Assists in coordinating the integration of Ship's Force work for CNO and/or CMAV availabilities. Provides shipboard schedule inputs (see Volume II, Part II, Chapter 1, paragraph 1.2.2 of this manual). Interfaces with the Project Manager and the executing activity to resolve maintenance issues.
 - (2) Commanding Officer's principal assistant for management of ship maintenance. Prepares the ship input to the Planning Board for Maintenance agenda in support of the Ashore Ship's Maintenance Manager. Works with the Maintenance and Material Management Coordinator to maintain an accurate shipboard CSMP. Approves, validates and ensures submittal of accurate work candidates (OPNAV 4790/2K).
 - (3) Works with the Quality Assurance Officer and department representatives to submit and track DFSs.
 - (4) Ensures initiation of work candidates (OPNAV 4790/2K) to request distance support and technical assists. Works with Subject Matter Experts (SME) to coordinate tech assist visits.
 - (5) Monitors timely submission of configuration change requests.
 - (6) Ensures Ship's Force verification of completed work and returns Completed Maintenance Action (OPNAV 4790/2K) to the Ashore Ship's Maintenance Manager.
 - (7) Ensures valid deferred work is incorporated into the CSMP.
- b. Responsibilities: A contributor, this will be the person or people assigned to do the work.
- (1) Ensures repair work candidates are submitted supporting 50%/80%/100% D-Level lock milestones.
 - (2) Ensures Ship's Force I-Level work package 100% brokered and locked.
 - (3) Ensures ship's initial conditions are set for work to begin by outside activities and Work Authorization Forms are properly executed. Ensures systems and equipment are properly tagged out, drained and depressurized.
 - (4) Generates any new work requests along with supporting urgency information.
 - (5) Ensures Ship's Force has planned and prepared for propulsion plant PCD, LOA, and AEGIS/combats systems PCD and light off, Fast Cruise, Dock Trials and Sea Trials mid-deployment shipchecks.
 - (6) Attends the Docking, Arrival, 25%/50%/75%, Undocking and Departure conferences, WPIC, WPER, IPTD, LLC events, and CSMP/DFS/BAWP Mid-Cycle review.
 - (7) Provides oversight and management to ensure AIT controls are in place, Regional Maintenance and Modernization Coordination Office requirements are met prior to starting work onboard ship, and assignment of SMEs to support AITs.
 - (8) Ensures Ship's Force work is complete to support end of availability, space turnover, and availability work certification.
 - (9) Supports Ship's Force ILS and consolidates software delivery.
 - (10) Coordinates with Ship's Force the execution of the Integrated Test Plan.
 - (11) Ensures Ship's Force, RMC, Lead Maintenance Activity (LMA), AWP collection and management of OQE.
 - (12) Ensures AWP risk assessments are performed and deliverables to KTR verified.
 - (13) Collaborates in the authorization of growth/new work.
 - (14) Assists ship in achieving maintenance phase exit criteria.

41.2.4.6 Contractor Program Manager. Manages and supervises authorized contractor work (see Volume II, Part II, Chapter 1, paragraph 1.2.2 of this manual).

- a. **Accountable:** Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Schedules and oversees KTR required open and inspects.
 - (2) Provides information and advice to the Government on matters of mutual concern to include contractor cost and time estimates, future work planning, contractor capability and capacity for varied work accomplishment (i.e., port loading), production management, integration of work from multiple activities and production problems for assigned availabilities.
 - (3) Establishes and recommends availability milestones. Provides schedule for: Integrated Test Plan (ITP), Expanded Process Control Procedures (EPCP), Universal Process Control Procedure (UPCP), Process Control Procedures (PCP), availability planning and assessments.
 - (4) Reviews and submits condition reports, initiates completion reports for authorized work completed.
 - (5) Ensures progressing Cost/Schedule Status Reports.
- b. **Responsibilities:** A contributor, this will be the person or people assigned to do the work.
 - (1) Recommends scheduling of work to best take advantage of port work loading conditions, provides recommendations for reduction of premiums in the accomplishment of work.
 - (2) Ensures completion of 50%, 80% and 100% D-Level maintenance work package 2Ks are planned and estimated. Publishes work package in the appropriate IT system. Conducts work specification reviews in support of each milestone, final package submission and cost proposal. Ensures work package is Technical Analysis Reported, negotiated and definitized.
 - (3) Attends 25%/50%/75% reviews; Arrival, Docking, Undocking and Departure conferences; WPIC, WPER and LLC events.
 - (4) Ensures completion of the ITP, propulsion plant PCD and LOA, Combat Systems\AEGIS PCD and Light Off, Fast Cruise, Dock Trials, Sea Trials, and Availability work certification.
 - (5) Ensures consolidated software delivery and ILS support is provided.
 - (6) Supports the PM to ensure the availability business and technical close requirements are met.
 - (7) Supports the DFS process.
 - (8) Ensures requirements are met to support the EPCP, UPCP, PCP, cleanliness processes.
 - (9) Provides contractor oversight of LMA checkpoint execution (V, G, I points) as well as PVI, PE, PR.
 - (10) Provides personnel to coordinate with AIT, Fleet Maintenance Activity and Ship's Force to update production schedule (NSI 009-060).
 - (11) Provides Integrated Total Ship Test Plan (NSI 009-067).
 - (12) Ensures contractor work is complete to support space turnover.
 - (13) Supports the authorization of growth/new work.
 - (14) Ensures habitability items are complete.
 - (15) Provides incremental funds for ordering LLTM for both repair and alteration/modification work to meet required dates, ensures delivery of material (LLTM and kitted materials) to executing activity.
 - (16) Ensures work and support services are in place to support dock and undock.

41.3 **PROJECT TEAM.** (Augmentation during maintenance availabilities between A-120 and C+60). The PT shall be assigned to the ship availability and shall consist of those persons listed below and all members of the Maintenance Team. The Project Manager leads the PT and has the responsibility to ensure overall integration, execution and close out of a ship's availability. The PM is responsible for quality, schedule and cost. Some PT members may be assigned responsibilities for more than one ship.

- a. RMC Project Manager. When a RMC is the NSA, the PM is responsible for integration, execution, and close out of the Work Package. When the NSY is the NSA the RMC PM is responsible for planning, integrating, coordinating, and executing the MSMO contracted maintenance work items, in support of the NSY Project Manager.
- b. NSY Project Manager (Superintendent). When a NSY is the NSA. Leads the PT. Manages Government production work for CNO availabilities. The Project Superintendent is the senior NSA representative and has the overall responsibility to plan, integrate and execute availabilities.
- c. Contract Specialist.
- d. Quality Assurance Specialist.
- e. NSA Logistical Representative.
- f. SEA 21 Hull, Mechanical and Electrical and AEGIS Combat Systems On-Site Logistician (where applicable).
- g. Project Support Engineer.
- h. Integrated Test Engineer.
- i. Assessment Director.
- j. Technical Matter Expert (Surface Force Ship critical work only).
- k. Shipbuilding Specialist.
- l. AIT On-Site Installation Coordinator.
- m. AIT Manager.
- n. Combat Systems Project Engineer (CSPE).
- o. SEA 21 Hull Manager (Program Office Modernization only).

41.3.1 Specific Duties of Project Team Members.

41.3.1.1 NSY Project Manager (Superintendent). When a NSY is the NSA, the NSY leads the PT. The NSY Project Manager leads the PT. The NSY Project Manager is the Senior NSA Representative and has the overall responsibility to plan and execute availabilities.

41.3.1.2 RMC Project Manager. When the RMC is the NSA, the RMC Project Manager leads the PT, including the Maintenance Team members, during the maintenance availabilities. Acts as the availability management team point of contact for outside agencies seeking information relating to the project, the contractor's performance or technical issues under review.

- a. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Brokers and tracks all assigned maintenance work items through execution. Coordinates planning and cost estimating and design specification preparation and scheduling. Coordinates and manages shipchecks in accordance with Volume II, Part II, Chapter 2, paragraph 2.6.2.3 of this manual. Reviews specifications to ensure completeness and conformance with authorized work. Ensures all specifications for work are developed using approved technical guidelines ensuring maximum use of current NAVSEA approved Standard Items and Standard Work Item templates (Master Specification Catalogue).

- (2) Analyzes feedback submissions in accordance with Chapter 39, Section 39.5 of this volume.
- (3) Briefs Ship's Force on the status of all work, by work item (see Volume VII, Chapter 2, paragraph 2.8.8 of this manual).
- (4) Acts as business agent with other activities on availabilities and contracts assigned that includes ensuring that TYCOM funds are utilized properly. Evaluates all Technical Analysis Reports (TAR) and supports the Contracting Officer in contract negotiations. Acts as assistant funds administrator (when designated in writing from the RMC Commanding Officer) for assigned availabilities and contracts.
- (5) Documents delay and disruption charges and lessons learned in accordance with Chapter 31, paragraph 31.5.3 of this volume.
- (6) Manages ship repair and modernization work items, job orders and contracts assigned by progressing and evaluating all work to anticipate, prevent and minimize delays, resolving all problems that affect the end cost, quality, schedule and performance of assigned availability or contract.
- (7) Evaluates and acts on the reports received from other members of the availability management team. Prepares reports on current status of assigned project or contract.
- (8) Maintains liaison with customers, the ships Maintenance Team, Ship's Force Representatives, and financial/accounting personnel.
- (9) (RMC PM only) Maintains liaison with RMC functional departments and the contractor.
- (10) Arranges and conducts the arrival conference (see Volume VII, Chapter 7, paragraph 7.7.1 of this manual), weekly progress conferences, weekly commanding officer's brief (see Volume VII, Chapter 7, paragraphs 7.7.2, 7.8.8, 7.12.1, 7.9.4 and Volume II, Part I, Chapter 3, paragraph 3.6.3.1 of this manual), Docking conference, and the Availability Completion conference. Attends weekly management meeting and on-site meetings to provide comprehensive information to all concerned and to remain current in all aspects of the project.
- (11) (RMC PM only) Arranges for RMC representation at all conferences pertaining to assigned availabilities and contracts. Coordinates the on-site work effort in observing the contractor's in process production performance and operational testing events for projects assigned to the team.
- (12) Reviews all work accomplished by assigned Shipbuilding Specialists to ensure compliance with regulations, directives, instructions, and policies as well as to ensure that intended work is practical and necessary.
- (13) (RMC PM only) Reviews contractors work schedules, manning curves, material ordering/receipt schedules and special tasking/equipment requirements. Evaluates contractors' proposals prior to and during contract execution. Takes corrective actions to eliminate conflicts and prevent work stoppages. Identifies and initiates action to correct, prevent, and minimize delays, resolving all problems that affect quality, schedule and contractor performance.
- (14) Provides written reports (CPARS) to the Contracting Officer for award fee evaluations on CNO availabilities.
- (15) Coordinates required action as a result of post overhaul/repair inspections with the NSA Technical Authority and Maintenance Team in accordance with Volume IV, Chapter 4, paragraph 4.3.2 of this manual.
- (16) Maintains records for the Contracting Officer to include but not limited to the following:
 - (a) Maintains a Significant Event Log (see Volume VII, Chapter 7, paragraphs 7.3.2 and 7.2.4 of this manual). All significant event logs from the shipbuilding specialist.

- (b) Maintains correspondence files containing copies of all correspondence to the contracts office both internal and external.
 - (c) Obtains work authorizations for growth and new work. Work authorizations may be in the form of naval messages, speed letters, letters, other transmittals or documents. In the case of growth work, the authorization may be verbal, a memo at a meeting or a telephone call. Verbal authorizations should be documented with a memorandum for the record.
 - (d) Maintains a ledger notebook or spreadsheet to assist in funds administration. For each contract modification initiated in the work package, the Project Manager shall show the title of the item, cite the proper funding authorization and account and show the Government estimate. The ledger shall show funds committed and obligated for each contract modification and other financial transactions and provide an indication of funds available for future use. When changes occur during the negotiation process, the funds reserved or obligated shall be changed to reflect the current funding status. Periodically, at least monthly, the Project Manager shall reconcile ledger accounts with the Contracting Officer and Comptrollers' accounts to ensure that funds are not over obligated or expended.
 - (e) Maintains material requisitions for Government Furnished Material (GFM) with prices.
 - (f) Maintains project orders and economy act orders issued to other Government activities.
 - (g) Maintains completion reports.
 - (h) Maintains departure reports including summary costs of individual work items.
- (17) (RMC PM only) Reviews contractor condition reports (see Volume VII, Chapter 7, paragraphs 7.10.2, 7.12.2 and 7.10.3 of this manual), exceptions list, and contract modifications for approval.
 - (18) Maintains contact with the ship through the guarantee period (see Volume VII, Chapter 7, paragraph 7.12.4 of this manual).
 - (19) Prepares a "Readiness to Start" report (see Volume VII, Chapter 7, paragraph 7.6.3 of this manual).
 - (20) Assists Contracting Officers (see Volume VII, Chapter 2, paragraph 2.7 of this manual), participate in the contract awards phase (see Volume VII, Chapter 7, paragraphs 7.6.1, 7.6.2, and 7.6.7 and Chapter 3, paragraph 3.7.5 of this manual), manages funding for option items in accordance with Chapter 31, paragraph 31.5.3 of this volume, participates in the pre-award survey, verifies adequate funding for acceptable berthing and messing and performs contract administration.
 - (21) (RMC PM only) Provides appropriate clearance letters to the ship for RMC and contractor personnel (see Volume VII, Chapter 7, paragraph 7.6.9 of this manual).
 - (22) Conducts underwater hull inspection and walkthrough (see Volume VII, Chapter 7, paragraph 7.8.8 of this manual).
 - (23) Provides a list of expected prorated items with work numbers assigned (see Volume II, Part II, Chapter 2, paragraph 2.4.6.2 of this manual).
 - (24) (RMC PM only) Establishes a Ship Specification Package within Navy Maintenance Database (NMD) Planning for CMAVs and set up availability in NMD to receive Automated Work Requests from the appropriate IT system. (See Volume II, Part II, Chapter 2, paragraph 2.6.2.2 of this manual.)
 - (25) (RMC PM only) Reviews and validates Automated Work Requests received in NMD Strategic Systems Programs planning availability daily (see Volume II, Part II, Chapter 2, paragraph 2.6.2.3 of this manual).

- (26) Prepares and schedules the LOA/propulsion plant light off (see Volume II, Part I, Chapter 3, paragraph 3.3.4 of this manual).
- (27) (RMC PM only) Reports costs, schedules and maintains the status of all CNO and CMAV work conducted at contractor and Government facilities.
- (28) Coordinates, schedules and administers advance planning functions. Analyzes work package to maintain available dates and minimize premiums.
- (29) Participates in availability final cost validation.
- (30) Participates in establishing controls to fund all repairs for an availability.
- (31) (RMC PM only) Analyzes work package to level load contractor.
- (32) Assures planning estimates are established for timely receipt of funds, requests funds and distributes relevant availability information.
- (33) (RMC PM only) Coordinates review of both Government and contractor estimates for "reasonableness and fairness". Recommends alternate contracting vehicles if applicable.
- (34) (RMC PM only) Submits contract work packages to appropriate procurement activity for solicitation and monitors progress of contract award.
- (35) (RMC PM only) Responds to contract bidders' questions during Fleet Fast Pay solicitation.
- (36) Provides inputs for funding requirements and serves as the Maintenance Team funds manager for CNO availability preparation and execution.
- (37) Chairs advance planning meetings, reviews and accepts or modifies recommended availability milestones.
- (38) Updates appropriate product and pricing databases.
- (39) Prepares advance planning status messages, fuel and ammunition offload, readiness to start, pre-availability agreement, monthly availability status messages and completion messages for scheduled CNO/CMAV availabilities.
- (40) Coordinates interface of outside activities during availability execution (i.e., Systems Commander, TYCOM, In-Service Engineering Agent, AITs and other customers).
- (41) Oversees contractor and/or NSY work during availability execution. Progresses and monitors other integrated availability work.
- (42) Assists with business case analysis preparation.
- (43) Verifies that controls are sufficient to fund all repairs required to support operational commitments.
- (44) Reviews cost reports for cost performance.
- (45) Executes availability planning milestones. Enforces depot availability "lock", planning and estimating dates.
- (46) Prepares the business case analysis for growth and new work recommendations and recommends resolutions to the Ashore Ship's Maintenance Manager. Reviews the authorization and funding, and submits information to the contracting officer for negotiation on growth and new work.
- (47) Coordinates urgent and compelling requests.
- (48) Chairs weekly production progress meetings and provides regular status reports to TYCOM or designated representative.
- (49) Reviews condition reports and evaluates submitted time and cost estimates for accomplishment or deferral in concert with the Ashore Ship's Maintenance Manager's concurrence.

- (50) Oversees an independent Government review of brokered work candidates for obligation of Government funds and execution.
 - (51) Ensures work candidate 2K documentation is complete and completion reports are initiated by the executing activity.
 - (52) Verifies funds availability and maintains funds tracking reports.
 - (53) (RMC PM only) Submits I-Level schedule to KTR for integration.
 - (54) Ensures work is complete to support PCD, LOA, combat systems light off, propulsion plant light off, Dock Trials, Fast Cruise, Sea Trials (contractual milestone).
 - (55) Provides oversight of AIT management.
 - (56) Attends 25%, 50%, 75% reviews; Arrival, Docking, Undocking, Departure, and Completion conferences; IPTD, LLC, WPIC and WPER events.
 - (57) Ensures work is complete and closed out to support business close.
 - (58) Coordinates condition report responses.
 - (59) Coordinates consolidated software delivery and ILS support.
 - (60) Ensures work is complete supporting habitability completion.
 - (61) Provides oversight of (PVI, PE, PR) and LMA checkpoint execution (V, G, I).
 - (62) Ensures LMA coordinates with AIT, Fleet Maintenance Activity and Ship's Force to update production schedule (NSI 009-060).
 - (63) Ensures LMA provides Integrated Total Ship Test Plan (NSI 009-067).
 - (64) Requests funds for repair and modification work LLTM, orders LLTM Firm Fixed Price/MSMO.
 - (65) (RMC PM only) Ensures contracted maintenance is complete supporting space turnover.
 - (66) (RMC PM only) Performs risk assessments and verify deliverables to KTR (O, I, D work items and AIT schedule requirements).
- b. Responsibilities: A contributor, this will be the person or people assigned to do the work.
- (1) Provides supporting information for Business Case Analysis.
 - (2) Participates in CSMP/DFS/BAWP mid-cycle reviews, coordinates mid-deployment shipchecks, and participates in scoping conference (see Volume VII, Chapter 2, paragraph 2.12.1 of this manual).
 - (3) Reviews and provides feedback on Engineering Service Request.
 - (4) Ensures LMA and I-Level collection and management of AWP OQE.
 - (5) Provides oversight of the Integrated Test Plan Execution.
 - (6) (RMC PM only) Ensures contractor coordination of open and inspects with participating activities.
 - (7) Progresses Cost/Schedule Status Reports.
 - (8) Participates in risk letter development and signed out.
 - (9) Assists with the authorization of growth and new work.
 - (10) Assists ship in achieving maintenance phase exit criteria.

41.3.1.3 Contract Specialist. The Contract Specialist who acts as the Administering Contracting Officer (ACO) and whose duties parallel the responsibilities of the Contracting Officer. Their authority is limited as specified by the level of their Defense Acquisition Workplace Improvement Act qualifications level of authority, specific limitations of their warrant and specific assignments made by the Contracting Officer. The ACO is assisted by additional warranted, Defense Acquisition Workplace Improvement Act qualified personnel, who are assigned specific

responsibilities for processing contractual issues and to assist with the management and administration of a contract. The contract specialist is a contributor and this will be the person or people assigned to do the work. The contract specialist's responsibilities are listed below in sub-paragraphs a. through d.

- a. Participates in negotiations. TAR, advance planning funding administration and definitization. Prepares for and participates in the award fee board/CPARS.
- b. Ensures financial and contractual requirements are met for availability completion and business close.
- c. Assists in developing pre business clearance, progressing Cost/Schedule Status Reports and participates in the Regional Calibration Center process.
- d. Provides incremental funds for ordering LLTM for both repair and alteration/modification work to meet required dates.

41.3.1.4 Quality Assurance Specialist. Supports the administration of the Contract Administration Quality Assurance Program to evaluate the effectiveness of the Contractor's Quality Management System on work being performed both shipboard and in the contractor's/subcontractor's plant.

- a. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Develops a Quality Management Plan for each CNO availability in accordance with CNRMC Standard Operating Procedure 4700/C200XXX.
 - (2) Reviews contract specification items to determine inspections/tests required, and PCPs for review (PR/PE/Program Quality Assurance).
 - (3) Verifies all critical tests and inspections associated with Level I work, Nondestructive Testing and critical welding such as P-1 piping.
 - (4) Reviews past contractor quality data (Quality Data Evaluation/PVI/Government and contractor generated corrective action reports) to support planned surveillance actions.
 - (5) Reviews submitted list of sub-contractors to be utilized to support identification of Defense Contract Management Agency notification requirements.
 - (6) Promulgates the Quality Assurance (QA) plan to the PT for use via the Project Manager.
 - (7) Participates in bid specification and work specification review with the PT supporting quality and technical requirements in accordance with invoked milestones. Provides feedback for incorporation into work specification requirements.
 - (8) Attends scheduled meetings, assesses contractor capabilities, monitors contract performance, provides technical support to the ACO, and participates in claims avoidance.
 - (9) Maintains a Significant Events Log. Provide a copy of the log to the contracting officer and PM at the completion of the availability.
 - (10) Completes Past Performance Information Surveys within 14 days of completing each availability and provides written reports to Contracts Department in support of Award Fee Evaluations and CPARS. Conducts Procedure Reviews for PCPs submitted by contractors.
 - (11) Maintains a copy of all Corrective Action Requests (CAR) generated by the Government, as well as those written by the contractor (when requested by the Government in accordance with NSI 009-04). Maintains a status of all CARs generated by the Government and updates the Project Manager.
 - (12) Informs Project Managers of quality problems that are, or have the potential to, affect their ship.
 - (13) Accomplishes Ship's Force QA Interface training prior to each CNO availability.
 - (14) Assists Shipbuilding Specialist, as functional responsibilities permit, in the coverage of G-Points.

- (15) Performs random surveillance of AIT work while evaluating the prime contractor. When AIT non-conformities are discovered, they are to be addressed to the Project Manager. If it is determined that the non-conformity warrants the issuance of a Government CAR, and the AIT manager/On-Site Installation Coordinator does not issue the CAR to the AIT, the RMC QA department shall notify NAVSEA 04XQ detailing the Government sponsor information.
 - (16) Performs 100% final preservation record review to support work certification at the end of the availability.
 - (17) Accomplishes in-process reviews of contractor's test and inspection plan to ensure compliance with NAVSEA Standard Item requirements.
 - (18) Reviews and oversight of PCP, EPCP, UPCP.
- b. Responsibilities: A contributor, this will be the person or people assigned to do the work
- (1) Provides quality assurance, quality control support of AEGIS Light Off, combat systems light off, propulsion plant light off, production completion date, Fast Cruise, Dock Trials and Sea Trials.
 - (2) Provides quality oversight of AIT and AIT management
 - (3) Provides quality oversight and input of business close, technical close.
 - (4) Provides quality oversight and review and condition report submission.
 - (5) Provides quality review of services request.
 - (6) Provides quality oversight of AWP, LMA, I-Level collection and management of OQE.
 - (7) Provides quality oversight of the Integrated Test Plan Execution.
 - (8) Provides quality oversight of LMA Checkpoint Execution (V, G, I), and (PVI, PE, PR).
 - (9) Provides quality control oversight of work certification.
 - (10) Provides quality oversight of all work specifications Face to Face reviews.

41.3.1.5 NSA Logistical Representative. Responsible for supporting the configuration management of a ship and validating configuration of the ship following modernization efforts. Accountable as owner of the work and the person who makes the final decision on a task and has the ultimate ownership over that task.

- a. Monitors the configuration management process.
- b. Ensures timely action on submittal of configuration change requests and follows up to update configuration records and associated logistics support.

41.3.1.6 SEA 21 Hull, Mechanical and Electrical and AEGIS Combat Systems On-Site Logistician (Surface Force Ships only). Accountable to ensure that all equipment has proper logistics support completed and available for delivery at the time of installation. Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.

- a. Researches, documents and coordinates delivery of all ILS in support of combat system material readiness to the ship.
- b. Arranges storage and transportation of parts and equipment. Performs inventory audits of installation kits. Assists in the expediting of parts throughout the availability.
- c. Provides applicable logistics data to project engineers end of availability report.
- d. Provides assessment data, near real time, into ship's CSMP.

41.3.1.7 Project Support Engineer. The Project Support Engineer is a critical part of availability certification and will work closely with the NSA Project Manager and Chief Engineer to help certify the availability.

- a. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task. Provides engineering/technical services during availability planning. The services include:

- (1) Reviews of contractor work specifications ensuring the requirements of tasking documents are met, naval standards are invoked, and final acceptance testing will validate work performed.
 - (2) Attends all pre-availability planning meetings, assuming a leading role in addressing technical issues and coordinating resolution of technical authority issues.
 - (3) Maintains a records system of tasking documents, 2-Kilos, temporary DFS, a listing of specifications reviewed and documented comments forwarded for correction.
 - (4) Coordinates resolution of technical issues during availability execution (i.e., DFS, Condition Reports, Liaison Action Requests).
- b. Provides engineering/technical services in support of ongoing waterfront production work at private contractor facilities. Serves as the principal point of contact for all engineering related technical issues between the Fleet Technical Support Divisions, the PT and other outside commands. These services include:
- (1) Provides oversight of the contractor's technical performance of shipboard work for compliance to contract specifications.
 - (2) Provides oversight of contractor's quality assurance management program for technical documents and data.
 - (3) Provides oversight of contracted Original Equipment Manufacturer technical representatives.
 - (4) Provides technical evaluation and recommendations for contractor change proposals, growth and new work.
 - (5) Serves as the PT's technical authority point of contact. Assigned to resolve all technical issues, adjudicate non-conformances, DFS, waivers and deviations and provides for technical responses to contractor condition reports.
 - (6) Provides oversight of assigned planning yard on-site field personnel responsiveness and technical adequacy.
 - (7) Reviews and approves or disapproves contractor prepared PCP used to provide contractor mechanics guidance for accomplishment of critical repair processes.
 - (8) Initiates Liaison Action Request to document changes or questions to NAVSEA installation drawings.
 - (9) Technical point of contact for analyses during final acceptance testing, certifications and technical inspections.
 - (10) Attends all production meetings to assist and advise the PT in all matters concerning the repair and modernization of shipboard systems and equipment.
 - (11) Provides coordination for the ship availability technical closeout documents to ensure all technical related documents have been properly answered and/or adjudicated.
- c. Participates as a member of the Maintenance Control Team.

41.3.1.8 Integrated Test Engineer. The Integrated Test Engineer is a critical part of availability certification and will work closely with the NSA Project Manager and Chief Engineer to help certify the availability. Accountable as owner of the work and the person who makes the final decision on a task and has the ultimate ownership over that task.

- a. Approves and provides oversight of the contractor's development and management of the ITP. Ensures the ITP is functionally linked to the Integrated Production Schedule. Ensures the ITP is responsive to changes in production schedule such that when production items completion dates change, their associated test dates change as well. Ensures the ITP includes all testing for all maintenance activities.
- b. Reviews work specification to ensure appropriate work to test relationships have been developed.

- c. Reviews AWP to identify testing key events and milestones that may be required in addition to production key events and milestones (i.e., Aviation Certification and Combat Systems Command, Control, Communications and Computer Readiness Assessment).
- d. Coordinates with NSA Project Manager to ensure the ITP accurately reflects the AWP and the integrated production schedule.
- e. Coordinates with the Program Executive Officer in accordance with CSPE and Test Coordinator (if assigned) to provide information and status as required.
- f. Acts as the Governments primary point of contact to collect scheduling and testing information from all non-LMA maintenance activities including AITs, Fleet Maintenance Activity, In Service Engineering Agent (ISEA) and NSY. Provides this information as Government Furnished Information to LMA for inclusion into the Integrated Schedule and ITP.
- g. Acts as Government point of contact to coordinate Ship's Force testing schedule and major training evolution schedule information. Provides this information as Government Furnished Information to LMA for inclusion into the Integrated Schedule and ITP.
- h. Evaluates Test Sequence Networks provided by each maintenance activity prior to submitting to the LMA. Evaluates Integrated Test Sequence Networks provided by LMA.
- i. Ensures the Integrated Testing Schedule is updated at least weekly or as milestones and growth work changes dictate.
- j. Receives OQE for completed test procedures from all maintenance activities and evaluates results for completeness and accuracy. Ensures non-conformances are documented and action is taken to resolve or technically adjudicate.
- k. Serves as Government representative on Total Ship Testing Task Group as outlined in NAVSEA Standard Item 009-67.
- l. Provides a final report at the completion of the availability showing completion of all testing, or tests that remain unexecuted with exception reasons and plan for completion.
- m. Ensures the availability of special instrumentation, recording devices, support services, test ranges and data collection requirements to support Sea Trials events. Approves the LMA input to the Sea Trials agenda for submission to Ship's Force, ensuring all test procedures with underway requirements are properly scheduled.
- n. Participates as a member of the Maintenance Control Team.

41.3.1.9 Assessment Director. Leader of assessment execution. Provides management of military personnel, Government engineers and technicians, contractors, data entry personnel and logisticians in support of assessment program visits and events. Plans, schedules, organizes, directs and manages the execution of Total Ships Readiness Assessment visits and CMP assessment events.

- a. **Accountable:** Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Attends the AWP turnover with SURFMEPP and TYCOM managers to ensure visibility, resource allocation and scheduling of all CMP assessment tasks.
 - (2) Augments/assists the PT in CMP assessment accomplishment.
 - (3) Updates the PT on progress in meeting established milestones and deadlines for completion of assignments, projects and tasks, and ensures all team members are aware of and participate in planning for achievement of team goals and objectives.
 - (4) Manages dedicated Visit Support Team performing logistics validation, data entry and data collection support functions.
 - (5) Utilizes data provided by the Fleet Technical Assist (typically RMC Code 200) personnel to assist the Maintenance Team in documenting, completing and closing CMP assessment requirements.

(6) Assists Ship in achieving Maintenance Phase Exit Criteria through execution of Assessments.

- b. Responsibilities: A contributor, this will be the person or people assigned to do the work. Participates in CSMP/DFS/BAWP mid-cycle review and life cycle planning conference. Provides open and inspect oversight for screening potential repair.

41.3.1.10 Technical Matter Expert. The Technical Matter Expert is the Maintenance Control Team leader and acts as the principle assistant to the NSA for propulsion plant work. Accountable as owner of the work and the person who makes the final decision on a task and has the ultimate ownership over that task.

- a. Provides technical guidance in the execution of EPCPs and Controlled Work Packages.
- b. Reviews EPCPs and any revisions for technical adequacy. Verifies and provides recommendations in support of administrative changes to EPCPs. Conducts on-site surveillances and PVIs during execution of EPCPs. Communicates concerns and problems in support of EPCP execution to all levels, including Ship's Force/NSA/KTR. Represents the Government during selective check-points, to include testing in the EPCP, and acts as the RMC Chief Engineer's representative for EPCP certification.
- c. Participates as a member of the Maintenance Control Team.

41.3.1.11 Shipbuilding Specialist. Shipbuilding Specialists are individuals that possess a primary trade background but effectively perform across trade lines in two or more trade skill disciplines. Team assignments are made to balance trade expertise appropriately with the type of work in the project. A wide variety of comprehensive duties and responsibilities are assigned to these individuals who are expected to act as decision makers with comprehensive knowledge of each work item assigned. Typical assignments include the following duties and responsibilities (as with Project Managers, this may vary depending on the supporting organization):

- a. Accountable: Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Provides current information relating to assigned work items to the Project Manager (see Volume VII, Chapter 7, paragraph 7.3.4a. of this manual).
 - (2) Attends meetings, resolves production problems, develops scope of work requirements, assists in the development of Government TARs and negotiation positions, assesses contractor capabilities, work progress and performance, provides technical support to the ACO, and participates in claims avoidance and provides other technical support as required (see Volume VII, Chapter 7, paragraph 7.3.4b. of this manual).
 - (3) Interfaces with members of the Ship's Force to provide current project information, notifies responsible personnel of scheduled evolutions and solicits required or desirable Ship's Force (see Volume VII, Chapter 7, paragraph 7.3.4c. of this manual).
 - (4) Receives and investigates contractor reports, assists with the development of the Government's technical response, requests engineering support, prepares necessary contract modifications, develops the Government cost estimates, estimates the delay and disruption that may occur because of a contract modification, assists with negotiation preparation relative to TARs and contract modifications (as authorized by the ACO), provides the ACO support in negotiations and maintains records of actions taken (see Volume VII, Chapter 7, paragraph 7.3.4d. of this manual).
 - (5) Performs and witnesses Government "G" notification points, identified in the work specifications, when the contractor calls them out. Accomplishes random PVIs utilizing checklists or an attribute system to determine contractor compliance with the quality and technical requirements of the work specifications/contract. Writes a Corrective Action Request when nonconformities are detected in accordance with Chapter 11 of this volume (see Volume VII, Chapter 7, paragraph 7.3.4e. of this manual).
 - (6) Determines the physical progress, as a percentage of work completed, of each work item and each contract modification assigned. Updates this information weekly in a comprehensive progress report that is used in calculating the contractor's entitlement to progress payments as well as in evaluating the contractor's schedule performance (see Volume VII, Chapter 7, paragraph 7.3.4g. of this manual).

- (7) Monitors the GFM and Contractor Furnished Material report to anticipate actions that may be necessary to preclude schedule impact by unsatisfactory material delivery dates. Initiates material orders to replace unsatisfactory GFM or to provide items with unique Government control and confirms the necessity for the contractor to make cash purchases from the Naval Supply system when it is in the best interest of the Government (see Volume VII, Chapter 7, paragraph 7.3.4h. of this manual).
 - (8) Monitors the contract guarantee period to help determine whether failure of equipment or systems covered by the guarantee clause is the responsibility of the Government or the contractor, ensures that the work determined by the ACO to be the responsibility of the contractor, whether it is covered by guarantee or was an exception to the completion of the contract, is repaired in accordance with the specification requirements and provides cost estimates for incomplete work so that the ACO can ensure that appropriate contract funds are retained in the event that the work must be deleted from the contract requirements or be procured from another contractor (see Volume VII, Chapter 7, paragraph 7.3.4i. of this manual).
 - (9) Provides positive lessons learned along with feedback related to deficient or inefficient work specifications or work authorizations to the appropriate planning group for use in improving future procurements (see Volume VII, Chapter 7, paragraph 7.3.4j. of this manual).
 - (10) Conducts oversight coordination and inspection of work-related environmental issues associated with Ship's Force and contractor's operations. This effort includes but is not limited to Hazardous Material and Hazardous Waste handling, removal, storage, transportation and disposal (see Volume VII, Chapter 7, paragraph 7.3.4k. of this manual).
 - (11) Provides input to the Project Manager to support Award Fee Evaluations and CPARS (see Volume VII, Chapter 7, paragraph 7.3.4n. of this manual).
 - (12) Maintains the following records: (see Volume VII, Chapter 7, paragraph 7.3.4o. of this manual)
 - (a) Significant Events Log.
 - (b) Work item specifications, references and estimates for the work package, updated to reflect all modifications.
 - (c) Contractor condition reports including Government replies.
 - (d) New work identified and not authorized.
 - (e) GFM delivery status.
 - (f) Records relating to the contractor's capabilities and capacity.
 - (g) Contractor performance evaluations.
 - (h) Supports LMA collection and management of AWP OQE.
- b. Responsibilities: A contributor, this will be the person or people assigned to do the work.
- (1) Provides quality oversight to support propulsion plant, AEGIS and combat systems light off.
 - (2) Provides quality oversight of AIT and AIT management.
 - (3) Provides quality oversight of availability completion.
 - (4) Provides support of Business Case Analysis for new work.
 - (5) Reviews condition report submissions and responses.
 - (6) Coordinates consolidated software delivery.
 - (7) Provides quality oversight supporting Fast Cruise, Dock Trials, Sea Trials Docking and Undocking.
 - (8) Reviews Engineering Services Request.

- (9) Provides quality oversight of Integrated Test Plan execution.
- (10) Participates in quality check points supporting oversight of contracted work, PVI, PE and PR.
- (11) Provides quality oversight of open and inspects.
- (12) Provides quality oversight of the Regional Calibration Center process.
- (13) Participates in work certification.
- (14) Conducts work specification review.

41.3.1.12 AIT On-Site Installation Coordinator. The AIT On-Site Installation Coordinator is the Government or military employee designated by, and acting with, the authority of the AIT Manager on-site. Accountable as owner of the work and the person who makes the final decision on a task and has the ultimate ownership over that task.

- a. Provides the ship with: (see Chapter 3, paragraph 3.3.2 of this volume)
 - (1) All ILS equipment (including on-board spares) and documentation.
 - (2) Ship's Selected Records documentation.
 - (3) A complete set of installation drawings red-lined to indicate all variances.
 - (4) Hard copy Coordinated Shipboard Allowance List pages.
 - (5) A copy of the completion message.
- b. Performs additional duties as required by Appendix H of reference (a).

41.3.1.13 AIT Manager. The AIT Manager is the Government activity, ISEA, military person or Government civilian tasked and funded by the AIT Sponsor to initiate, fund, plan, coordinate, schedule, manage and oversee the successful accomplishment of the alteration/ship change. Accountable as owner of the work and the person who makes the final decision on a task and has the ultimate ownership over that task.

- a. Coordinates with the NSA to ensure satisfactory completion of alterations. (See Volume II, Part I, Chapter 2, paragraph 2.1.1 of this manual.)
- b. Identifies support, schedule, and impact requirements according to required milestones. (See Volume II, Part II, Chapter 2, Appendix D of this manual.)
- c. Tasks and funds SID Development according to milestones. (See Volume II, Part II, Chapter 2, Appendix D of this manual.)
- d. Develops and submits the Memorandum of Agreement. (See Volume II, Part II, Chapter 2, Appendix D of this manual.)
- e. Performs additional duties as required by Appendix H of reference (a).

41.3.1.14 Combat Systems Project Engineer (Surface Force Ships only). These specialists monitor the contractor's performance of work and testing in the combat systems work package. The CSPE provides expert advice in the anticipation, identification and resolution of problems that may occur during the maintenance, repair and alteration installation phases, as well as during the grooming and complex systems level testing phases. The CSPE takes a more active role by accomplishing duties similar to those of production controllers/ship surveyors/shipbuilding specialists in addition to those of electronics engineers or technicians for Combat Systems work items during an availability or project. Accountable as owner of the work and the person who makes the final decision on a task and has the ultimate ownership over that task. CSPE's responsibilities include the following:

- a. Provides current information relating to assigned work items to the Project Manager. This may also include reports to the ship's assigned Port Engineer for Combat Systems (see Volume VII, Chapter 7, paragraph 7.5.4a. of this manual).
- b. Attends meetings to resolve production problems, develops scope of work requirements, assists in the development of TARs to support the Government negotiation positions, assesses contractor capabilities, work progress and performance, provides technical support to the ACO, participates in claims avoidance and provides other technical support as required.

- c. Interfaces with members of the Ship's Force to provide current project information, notifies cognizant personnel of scheduled evolutions, solicits required or desirable Ship's Force participation and provides technical advice.
- d. Receives and investigates contractor reports, writes and receives answers to Liaison Action Requests, provides interim answers to Test Problem Reports, assists in developing the Government's technical response to contractor requests, assists the TAR writer by providing engineering support and in developing the Government cost estimates, assists in preparing necessary contract modifications, estimates the delay and disruption that may occur because of a contract modification, and provides the ACO support in negotiations and maintains records of actions taken.
- e. Observes "G" POINTS for electronic systems and equipment identified in the work specifications when they are presented by the contractor, witnesses required equipment or system tests and accomplishes random in-process inspections (PVI) at the work sites to determine contractor compliance with the requirements of the specification. Documents the contractor's failure to satisfy contractual responsibilities.
- f. Determines the physical progress, as a percentage of work completed, of each work item and each contract modification assigned. Updates this information weekly in a comprehensive progress report that is used in calculating the contractor's entitlement to progress payments as well as in evaluating the contractor's schedule performance.
- g. Monitors the GFM and Contractor Furnished Material report to anticipate actions that may be necessary to preclude schedule impact by unsatisfactory material delivery dates. Assist the Fleet and Industrial Supply Center or RMC Material Department in visually identifying and verifying receipt of GFM. Initiates material orders to replace unsatisfactory GFM or to provide items with unique Government control and authorizes the contractor to make cash purchases from the Naval Supply system when it is in the best interest of the Government.
- h. Monitors the contract guarantee period to help determine whether failure of equipment or systems covered by the guarantee clause is the responsibility of the Government or the contractor. Ensures that the work determined by the ACO to be the responsibility of the contractor, whether it is covered by guarantee or was an exception to the completion of the contract, is repaired in accordance with the specification requirements. Provides cost estimates for incomplete work so that the ACO can ensure that appropriate contract funds are retained in the event that the work must be deleted from the contract requirements or be re-procured.
- i. Provides lessons learned and feedback related to deficient or inefficient work specifications or work authorizations to the appropriate planning group for use in improving future procurements.
- j. Maintains a Significant Events Log.
- k. Coordinates the efforts of the Master Ship Repair Agreement/Agreement for Boat Repair and each combat systems related AIT.
- l. Participates in the Lessons Learned Conference as appropriate.
- m. Provides written reports to support Award Fee Evaluations and CPARS.
- n. Manages Combat System alteration package and AIT work and facilitates integration with the NSA.
- o. Submits work candidates (2K-MAF) for industrial assistance required for AIT efforts.
- p. Submits work candidates (2K-MAF) for Attack Weapons Systems Element Assessment CMP task accomplishment and uncovered deficiencies.
- q. Ensures that lessons learned identified during availability LLCs are applied across the ship class.
- r. Provides Combat System and Command, Control, Communications, Computers and Intelligence (C4I) test requirements and schedules.
- s. Coordinates C4I schedules and installations, and manages the AIT execution activities.
- t. Provides Combat Systems and C4I reach back to Participating Acquisition Resource Managers and ISEAs.

41.3.1.15 SEA 21 Hull Manager (Surface Force Ships only). Primary SEA-21 waterfront Surface Combatant Modernization and Integration Representative for execution, engineering, logistic and programmatic support. Primary interface between PT and program office funded activities for all program alterations.

- a. **Accountable:** Owns the work, the person who makes the final decision on a task and has the ultimate ownership over that task.
 - (1) Supports to the NSA/RMC in the validation of alteration maturity and Regional Maintenance and Modernization Coordination Office check in for program alterations sponsored by SEA-21 and SEA-05 that are executed by AITs at the RMC.
 - (2) Coordinates with ISEA/Participating Acquisition Resource Manager to identify, document and resolve issues of possible concern to the program office as they relate to Navy Modernization Process alteration development or installation.
 - (3) Delivers material (LLTM and Kitted Materials) to Executing Activity.
- b. **Responsibilities:** A contributor, this will be the person or people assigned to do the work.
 - (1) Participates in CSMP/DFS/BAWP mid-cycle review.
 - (2) Ensures work supports availability completion.
 - (3) Ensures consolidated software delivery and ILS support.
 - (4) Attends IPTD, Docking, Arrival, Undocking, Departure and 25%/50%/75% review events/conferences.
 - (5) Participates in work certification.
 - (6) Participates in work specification review.
 - (7) Performs risk assessments and verifies deliverables to KTR (O, I, D work items and AIT Schedule Requirements).
 - (8) Sends letter of authorization for Program Alterations.

41.4 PLANNING PROCESS SUPPORT (Augmentation outside of maintenance availabilities). Supplements both the Maintenance and PTs in the planning and execution of engineered maintenance (CMP, Planned Maintenance System), modernization (Letter of Authorization) and corrective maintenance (CSMP) from advanced planning through close out. Consists of the following members and others as needed:

- a. Fleet Commander representatives.
- b. TYCOM representatives.
- c. Program Executive Officer representatives.
- d. CNRMC representatives.
- e. Systems Command representatives.
- f. SUPSHIP representatives.
- g. Planning Yard representatives.
- h. Carrier Planning Activity representatives.
- i. Submarine Maintenance Engineering, Planning and Procurement representatives (SUBMEPP).
- j. SURFMEPP representatives.
- k. RMC Technical and Logistical SMEs.
- l. RMC Class Team Leaders.

41.5 PLANNING BOARD FOR MAINTENANCE. A regularly scheduled meeting between the ship's Maintenance Team members and stakeholders (e.g., TYCOM, Immediate Superior In Command, planning activity, **Ship's Program Manager**, etc.) to discuss ship-wide maintenance issues. This forum provides a routine and regularly scheduled management review of current planned off-ship and organizational maintenance, CSMP and AWP quality and accuracy, future maintenance and modernization planning, work prioritization, work integration and fiscal concerns. The objective is to ensure clarity of intent for both the ship's efforts and the shore infrastructure with respect to total ship maintenance, operational schedules and other concerns affecting ship material readiness. While the frequency of Planning Board for Maintenance meetings may vary due to a ship's schedule, a minimum of one meeting per **quarter** is expected. The Planning Board for Maintenance is the forum for discussing all maintenance issues, including metrics that are currently used to measure the maintenance effectiveness of the ship and the performance of the ship's assigned Maintenance Team.

41.5.1 Business Rules. Each maintenance team will incorporate the following business rules.

- a. **Ashore Ship's Maintenance Manager** will be responsible for all Planning Board for Maintenance decisions.
- b. The frequency of the Planning Board for Maintenance meetings may vary due to a ship's schedule; a minimum of one meeting per month is expected.
- c. The meeting will be chaired by the Commanding Officer.
- d. The core Maintenance Team shall participate in the Planning Board for Maintenance. Other attendees may participate as required.
- e. The Ashore Ship Maintenance Manager will prepare the agenda and provide it to the Commanding Officer and core team members 48 hours in advance.
- f. The agenda provides a list of topic areas to be reviewed during the Planning Board for Maintenance. It does not require an exhaustive examination of each topic during the meeting. Rather the meeting can be used to report the results of detailed reviews, updates, problem investigations and analyses conducted by assigned teams outside of the Planning Board for Maintenance meeting.

41.6 WORKFORCE DEVELOPMENT PROGRAM (RMC ONLY).

- a. The Work Force Development (WFD) Program is designed as a vehicle for professionalizing the Surface Force Ship workforce. That objective is accomplished through a formal training and certification process that is robust, standardized and repeatable at each RMC. The intent is to support the professional growth of RMC maintenance community personnel and promote career progression opportunities that enhance the long-term prospects for individual work force members, while maximizing overall effectiveness of the maintenance community as a whole. The net result of the WFD Program is a capability that maintenance and modernization work performed at one RMC is both repeatable and standardized with identical maintenance and modernization work performed at any other RMC.
- b. CNRMC serves as the WFD Program sponsor. CNRMC also serves as the Curriculum Control Authority for all WFD training courses and curricula. Each WFD course is delivered via a training team and WFD training covers the vital skills necessary to execute quality Surface Force Ship maintenance and modernization work.
- c. The WFD Program is applicable to all maintenance personnel assigned to each of the following RMCs: Norfolk Ship Support Activity, Norfolk, VA; Southeast Regional Maintenance Center, Mayport, FL; Southwest Regional Maintenance Center, San Diego, CA; Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility, Pearl Harbor, HI; and Puget Sound Naval Shipyard and Intermediate Maintenance Facility, Bremerton, WA.
- d. All WFD Program courses include comprehensive classroom training, position-specific case-studies and practical exercises, and a detailed Job Qualification Requirement (JQR). While JQRs for a given position may be accomplished outside of the associated formal WFD course (i.e., either before or after completing the course), final certification of each course graduate is not granted by CNRMC until each JQR task is completed.

41.7 INTEGRATED PROJECT TEAM DEVELOPMENT. The PT develops a shared understanding of the assigned project and processes and works to build the rapport and trust required to meet their goals. New members, as well as experienced members, benefit from learning activities which focus on team building and teamwork.

- a. The IPTD curriculum focuses on development and integration of the PT; development of availability expectations and success criteria; advance planning; development, reviewing, refining, validating and communicating key strategies; aligning all members of the integrated PT; process improvement; availability execution processes; and knowledge sharing.
- b. In developing, executing and aligning training, there are many methods and curricula available, at both the corporate level and the individual organization level, to increase team member effectiveness. The IPTD staff works with the PT leadership to identify needs and offer solutions to schedule and logistic questions, topic selection, speaker selection and best learning techniques for each IPTD. From facilitation of arranged topics to customized training programs, the IPTD Staff will continually meet the needs of the PT.

41.7.1 Program Events. The IPTD program attendance requirements are listed in Figure 41-1. The program is notionally conducted in five events prior to the availability start date and one mid-availability. IPTD events at the 50% point are outlined below:

- a. A-360 IPTD - Planning
 - (1) Midlife Avails: A-360, Std Avails: A-270
 - (2) 1/2 day duration
 - (3) Focus: IPTD Overview and Tools
- b. A-270/195 IPTD – Strategic Alignment
 - (1) Midlife Avails: A-270, Std Avails: A-195
 - (2) 2-3 day duration
 - (3) Focus: Team Development and Alignment
- c. A-195 - Strategy Development
 - (1) Midlife Avails and Std Avails: A-195
 - (2) 2-3 day duration
 - (3) Focus: Team Development and Alignment through Strategies
- d. A-120 - Tactical Preparation
 - (1) Midlife and Std Avails: A-120
 - (2) Scheduled to coincide with the WPIC
 - (3) 2-3 day duration
 - (4) Focus: Work Integration & Execution Plan
- e. A-45/30 - Execution Readiness
 - (1) Midlife Avails: A-45, Std Avails: A-30
 - (2) Scheduled to coincide with the WPER
 - (3) 1-2 day duration
 - (4) Focus: Readiness-to-Start
- f. 50% Review – Regroup
 - (1) Midlife Avails: 50% Conference
 - (2) Std Avails: 50% Conference/TBD by PT

- (3) 1 day duration
- (4) Focus: Regroup, Refocus & Realign

	IPTD Target Event Dates					
	A-360	A-270	A-195	A-120	A-30	Mid-Avail
RMC: Project Manager (PM)	✓	✓	✓	✓	✓	✓
TYCOM: Port Engineer (PE)	✓	✓	✓	✓	✓	✓
MSMO: Project Manager (PM)	✓	✓	✓	✓	✓	✓
*Ship's Force: CO, XO			✓	✓	✓	✓
*Ship's Force: Availability Coordinator			✓	✓	✓	✓
SEA21: Program Manager Rep (PMR)		✓	✓	✓	✓	✓
SEA21: SURFMEPP Det Rep		✓	✓	✓	✓	✓
TYCOM: Type Desk Officer/ Assistant (TDO/TDA), Avail Work Package (AWP) Manager		✓	✓	✓	✓	✓
**RMC: ShipBuilding Specialist, Contracts Specialist, TSRA Rep, Engineering, QA		✓	✓	✓	✓	✓
**MSMO: Integration Manager, QA		✓	✓	✓	✓	✓
*Ship's Force: Department Heads				✓	✓	✓
Various: Alteration Installation Team (AIT)				✓	✓	✓
MSMO: Shop Leads					✓	✓

Figure 41-1 IPTD Target Event Dates

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- b. Assessment procedures standardized to the maximum extent possible and identified in the CMP.
- c. A standardized assessment tool set used to plan, execute and report assessments.
- d. Assessment results recorded in a common shared data warehouse.
- e. Accomplished using a common material assessment process, as defined below.
- f. Assessment process has an effective method of feedback for periodic reviews and analysis for improvements.

42.5 MATERIAL ASSESSMENT PROCESS.

42.5.1 Discussion. The primary focus of the material assessment process is to coordinate and integrate the various Navy material assessment processes into a single, integrated, effective process designed to evaluate, measure and report individual unit's material condition. This information will be used to improve fleet readiness, ship design, maintenance and modernization identification, as well as the self-assessment capabilities of fleet units. Activities performing assessments are encouraged to communicate with each other to avoid duplicate work. Additionally, the assessment process will provide data to help determine a unit's ability to reach its expected hull life, measure the effectiveness of the CMP and identify potential crew training deficiencies.

42.5.2 Material Assessments. Units will undergo assessments per the CMP and as scheduled by the TYCOM. Systems and equipment are selected for assessment based upon:

- a. The CMPs.
- b. Ship Class trends.
- c. Unit requests.
- d. Review of the Current Ship's Maintenance Project (CSMP).
- e. Maintenance Team inputs.
- f. Integrated Condition Assessment Systems (ICAS)
- g. Integrated Performance Assessment Reports
- h. Corrosion Control Information Management Systems
- i. Master Assessment Index

42.5.2.1 Surface Force TSRA Material Assessments. TSRA visits are nominally two weeks in duration. However, at the discretion of the TYCOM, TSRA events may be scheduled for more or less than two weeks in order to avoid conflicting with operational schedules. When the TSRA event is scheduled for less than two weeks, the focus of the TSRA will be identification and documentation of systems deficiencies.

42.5.3 Assessment Authorizing. The Platform Program Manager develops the CMP requirements as outlined in reference (b), and provides the requirements to the Platform TYCOM, who develop the assessment work packages and initiate assessments via "go assess work notifications" (GA2-K). Many factors determine what items will be selected for assessment, including the level of risk, funding constraints, ship's availability and ongoing maintenance and modernization. RMCs are tasked by Commander, Naval Sea Systems Command to support surface ships under the cognizance of Commander, Naval Surface Force Atlantic and Commander, Naval Surface Force Pacific to plan and execute TSRAs.

- a. The CMP contains two types of assessment notifications that may influence the agenda:
 - (1) Scheduled assessments.
 - (2) Unscheduled "As needed" or "pulled assessments" ("Go Assess" maintenance notification). The Go Assess maintenance notification (GA2-K) identifies the equipment and the associated assessment procedure which shall be used.

- b. Individual material assessments (not more than five assessment procedures) may be scheduled outside of a scheduled assessment event or availability if they can be planned and coordinated on a not to interfere basis with the unit's combined schedule (operational and maintenance). A larger number of assessments or assessment events require additional planning, integrated scheduling and project management (e.g., C5RA, TSRA, Carrier Material Assessment Team, etc.). In this case, a maintenance availability should be used or added to the ship's schedule. These assessment notifications are screened and brokered to the appropriate executing activity.
- c. All material assessments are scheduled in accordance with the CMP and should not be repeated or duplicated by multiple activities. Assessment results shall be shared and used by multiple activities.
- d. Surface Force TSRAs will include comprehensive assessments of ship's Hull, Mechanical and Electrical, combat systems, Command, Control, Communications, Computers and Intelligence systems, support equipment and logistics condition per reference (c). TSRAs are tailored material assessment packages scheduled to occur at specific times during a ship's schedule to improve maintenance availability planning, CSMP management, equipment repair, Ship's Force technician proficiency and operational availability. The Master Assessment Index process is used by Surface TYCOM as a risk prioritization model to assist in the development of the TSRA agenda.

42.5.4 Assessment Planning. For scheduled material assessments or events, the Executing Activity identifies a Team Leader and develops the execution plan. The plan contains all of the necessary information required to complete the assigned tasks and should be integrated with the unit's schedule. Conduct assessments using the applicable pieces of the standard assessment tool set. **To facilitate planning and scheduling and avoid redundancy, assessments may be consolidated into a material inspection. Deficiencies identified during other major ship inspections and assessments such as C5RAs shall be incorporated into the final INSURV inspection report if the assessment was conducted within 60 days of the scheduled material inspection or as negotiated between INSURV and the TYCOM. Although deficiencies generated during the assessment will become part of the final INSURV report, these deficiencies will be annotated as "corrected", where applicable. The TYCOM will document this linked event by message request to INSURV, cognizant RMCs and the affected unit nominally four months prior to the scheduled material inspection. INSURV will evaluate the request and determine the scope and applicability of the linkage.**

42.5.5 Assessment Execution.

- a. Work with the unit's personnel to assess, analyze and document the material condition in accordance with standard procedures. Maintain good communications with all levels of unit personnel. Train unit personnel in assessment procedures and techniques.
- b. The assessment includes validation of equipment configuration, evaluation of the maintenance periodicity and effectiveness, evaluation of the assessment periodicity.
- c. Documentation of assessment results by the equipment Subject Matter Expert (SME) will include all required data. A maintenance ready work notification (2-Kilo) that is sufficiently defined, contains correct and complete information, provides an accurate diagnosis, and provides an applicable, effective and feasible recommended resolution. A properly validated maintenance ready work notification (2-Kilo) should allow the planning and executing activities the ability to understand the requirement and not to expend additional manpower or time obtaining needed information for any deferred maintenance, and completion of the assessment maintenance notification. All Unclassified Non-Nuclear Naval Propulsion Information/Naval Nuclear Propulsion Information assessment results and data will be handled in accordance with current regulations and standing guidance from NAVSEA 08.
- d. During Surface Force TYCOM TSRA assessments, repairs will be accomplished based on priority, availability of parts, Ship's Force support, SME availability or time remaining in the TSRA.
- e. Conduct assessments using the Automated Work Notification software contained in Afloat Toolbox for Maintenance. This software is located in the MFOM Suite. All collected data is stored in the MFOM data warehouse.
- f. Certifications, inspections and visits shall document material deficiencies on an Automated Work Notification (2-Kilo) that at a minimum identifies the configuration item and adequately describes the symptoms and/or conditions that are below standards. For example, the 2-Kilo may identify that a

specific component does not function properly and requests assistance to troubleshoot/diagnose system discrepancy. If the deficiency is clearly understood, the assessor is required to record what they know or understand the deficiency to be.

42.5.6 Assessment Reporting.

- a. The Executing Activity conducting the assessment should analyze assessment results and notify the Commanding Officer or his designated representative of any findings that could result in a Casualty Report, underway limiting or Repair Before Operate condition. The System Command (NAVSEA 05, SPAWAR 05 or NAVAIR) shall identify material improvement recommendations for new construction, future alterations or further analysis by the technical community.
- b. For Surface Force Ships, RMC shall send a Prerequisite and Test Requirements message per reference (c) at least three weeks prior to the start of the event.
- c. For Surface Force Ships, the ship shall send a Readiness to Commence message per reference (c) no later than five days prior to the scheduled event.
- d. Report assessment results using the standard assessment tool set:
 - (1) To include whether an assigned assessment procedure was completed, partially completed or not accomplished.
 - (2) To produce a maintenance ready work notifications (2-Kilo) for each discrepancy identified during the assessment. Determine with unit personnel their repair capability/capacity when recommending level of effort, (i.e., Organizational, Intermediate or Depot repair).
- e. To identify Integrated Logistic Support deficiencies and pass to TYCOM/Global Navy Distant Support to research and resolve, reporting any configuration discrepancies.
- f. To provide any procedure discrepancies, validation and periodicity feedback.
- g. To document man hours and costs.
- h. For Surface Force Ships, RMC shall send a TSRA Completion message per reference (c) no later than five business days after TSRA completion.

42.5.7 Standard Assessment Tool Kit.

- a. The standard assessment tool kit consists of:
 - (1) The catalog of approved assessments outlined in the ship's CMP. The procedure should be written in a format appropriate to the activity and experience of the personnel assessing (i.e., Maintenance Requirement Card for Unit personnel, Task Group Instruction for Naval shipyards, standard item for private shipyards, etc.).
 - (2) If an equipment or system assessment does not exist, one must be developed in accordance with the assessment technical guide and identified in the CMP.
 - (3) All assessments shall be planned, executed and reported using the Fleet approved assessment computer application(s) and the results recorded in the Fleet designated data warehouse.

42.5.8 Assessment Personnel.

- a. When assessments are conducted by the unit's personnel, they should be from a rating associated with the equipment being assessed (operationally knowledgeable) and should be experienced in conducting assessments.
- b. Outside activity personnel should be technically knowledgeable in the area they will be assessing and considered SMEs. Additionally, they should be trained on the assessment process, how to document the material condition of the equipment or system and basic RCM principles as discussed in reference (a).

42.6 RESPONSIBILITIES.

42.6.1 Fleet Commander. Fleet Commander shall:

- a. Maintain a common material assessment process and policy. Conduct periodic reviews of processes and procedures as recommended by TYCOMs and technical warrant holders.
- b. Be the Fleet's advocate and single point of contact for all material assessment issues to include:
 - (1) Policy.
 - (2) Training, assessment criteria.
 - (3) Procedures.
- c. Provide and support a standard material assessment tool set.
- d. Review the personnel and monetary resources required for the operation, improvement and support of the material assessment process and provide for these requirements in the budget effort.
- e. Establish minimum standards of continuous program improvements for the TYCOMs.

42.6.2 Type Commander. TYCOMs/Immediate Superior In Command shall:

- a. Schedule and authorize material assessments.
- b. Define the scope of material assessment.
- c. Provide funding for execution and support when not part of the mission funded executing activities Capabilities Plan.
- d. Conduct periodic reviews of the material assessment process.
- e. Establish standards of effectiveness to ensure continuous program improvement.
- f. Evaluate units ability to self assess and report training deficiencies to the appropriate activity.

42.6.3 Material Assessment Executing Activity. The Material Assessment Executing Activity shall:

- a. For RMC managed assessments, the RMC will send a Prerequisites and Test Requirements Message as directed by the TYCOM. Appendix B provides a sample message template. When requesting SMEs from another RMC for Assessment Events (TSRA, C5RA), the requesting RMC will fund travel and per diem expenses for government and military SMEs. For Surface Force Ships, use reference (c) sample message template and supplemental guidance for all TSRA events.
- b. Conduct unit pre-visit brief in order to affect maximum support for the visit.
- c. Assist the Assessment Team with access to the base and unit.
- d. Review documented system deficiencies. Determine system material condition using established test procedures and unit's input. Unit personnel shall be included in this process as a training effort.
- e. Task the Team Leader to provide daily progress reviews to unit assessment event coordinator.
- f. Determine, in concert with Unit personnel, the correct maintenance level (Operational, Intermediate, Depot) to correct deficiencies.
- g. Document man hours expended and assessment results using the standard assessment tool set and record the results of the "Go Assess" maintenance notification (GA2-K).
- h. Document assessment deficiencies via maintenance notification.
- i. Establish configuration baseline (sight validation) of selected systems to upgrade logistics support documentation. Initiate configuration changes for direct input into the ship's maintenance management system.
- j. Assist unit personnel in repair and groom, as required, and as dictated by time/resource constraints and operational necessity.
- k. Assist unit personnel in identifying material requirements to effect repairs.

- l. Provide an out brief to the unit's Commanding Officer (or his representative), describing significant findings. Additionally, ensure all maintenance work notifications are loaded into the unit's CSMP and shore files complete and intact.
- m. For Surface Force Ships, RMC shall send a TSRA Completion message per reference (c) no later than five business days after TSRA completion.
- n. Support assessments as requested by the TYCOM.
- o. Initiate change recommendations for program improvement.
- p. Ensure all assigned personnel are experienced, knowledgeable and qualified as required.

42.6.4 Commanding Officer. Commanding Officers, as directed by the TYCOM, for scheduled assessments should:

- a. Prepare for assessments events in accordance with this instruction.
- b. Designate a senior management representative as the unit's assessment event coordinator.
- c. Send, as directed by the TYCOM, a Readiness to Commence assessment message no later than five working days prior to the scheduled start of the assessment event. Appendix C provides a sample message template. Reference (c) provides a sample message template for all TSRA events. Include contact information for the ship's coordinator and key unit personnel.
- d. Provide support for assessment team (e.g., ICAS data, access to specific spaces, electrical power and cooling water requirements, man aloft equipment tag-out and Radio Frequency radiation requirements, a secure space, Shipboard Nontactical Automated Data Processing Program/Legacy Organizational Maintenance Management System – Next Generation, Internet access and e-mail accounts).
- e. Prepare systems/equipments, tag outs, Work Authorization Form, request support services and generate Quality Assurance packages as required.
- f. Ensure there are no conflicting evolutions, training, drills, field days, major system overhauls or other events that would detract from the timely and efficient completion of the assessment event that have been planned or scheduled.
- g. Reschedule the preventive maintenance requirements that will be accomplished during the assessment event to eliminate redundant accomplishment if the assessment is scheduled to occur so that no greater than one-half (1/2) of the scheduled periodicity is exceeded.
- h. Host assessment event briefings.
- i. Ensure the 3-M Coordinator, Functional Area Supervisors and the Supply Officer (or representative) are available as needed during the Assessment.
- j. Ensure divisional personnel are assigned to work closely with the Assessment Team SMEs during testing and repair to maximize On the Job Training and awareness of identified equipment problems.
- k. Remove key maintenance personnel from the watch bill during normal working hours in order to improve efficiency of the assessment event.
- l. Correct material discrepancies as time permits.
- m. Send, as directed by the TYCOM, a Quicklook completion message within five working days following the completion of the assessment event. Appendix D provides a sample message template. Additionally, include in the Quicklook report feedback and recommendations to the TYCOM to support continuous improvement of the assessment event process.

NOTE: INDIVIDUAL MAINTENANCE ASSESSMENTS (NOT MORE THAN FIVE ASSESSMENT PROCEDURES) MAY BE SCHEDULED OUTSIDE OF A SCHEDULED ASSESSMENT EVENT OR AVAILABILITY. HOWEVER, THEY STILL NEED TO BE COORDINATED WITH THE SHIP'S SCHEDULE AND SHOULD NOT INTERFERE WITH OPERATIONAL REQUIREMENTS.

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VOLUME VI
CHAPTER 43

**GUIDANCE FOR ENHANCED MODERNIZATION AND ALTERATION INSTALLATION TEAM
INTEGRATION DURING AVAILABILITIES**

REFERENCES.

- (a) NAVSEA SL720-AA-MAN-030 - Navy Modernization Process Management and Operations Manual

43.1 CONCEPT.

- a. Scope. This policy applies to all modernization work (Ship's Force, shipyard, Intermediate Maintenance Activity and Alteration Installation Team) conducted during all types of Availabilities (Chief of Naval Operations, Continuous Maintenance Availability, Fleet Maintenance Availability, etc.) on all platforms. This chapter compliments the support policy of the Fleet Modernization Program as described in Chapter 3 and Chapter 36 of this volume.
- b. Overview. Ship availability duration must be limited to only that required to accomplish planned repairs and alterations. Unnecessary time in depot maintenance periods reduces the time when ships are operationally available to support the Fleet Response Plan. Accordingly, scheduling of production and test activity for all work must be optimized to keep availability schedule duration to a minimum. The key to duration optimization is rigorous, inclusive and detailed integrated planning, which encompasses all anticipated work into a balanced schedule. Once an integrated and executable schedule is established and agreed to by all participating activities, the Naval Supervisory Authority (NSA) shall be responsible and have the authority to manage the execution of the modernization through its completion.
- c. This chapter provides planning and execution requirements for all modernization activities participating in an availability. Disconnected or diffused planning and execution creates local delays and disruption to the overall availability effort, creates additional coordination challenges for NSAs and Ship's Force, and results in excessive availability durations and higher secondary costs.
- d. Essential to establishing an integrated and executable schedule is a stable and properly funded repair and modernization work package. Type Commanders and Program Managers must structure, plan and program repairs and installations with an understanding that they will be executed not in isolation, but as part of a larger, integrated effort with competing constraints and requirements. Accordingly, repair candidates and alterations not authorized at the Work Package Integration Conference (WPIC) will not be included in the integrated schedule, and will only be authorized after the WPIC when the NSA has advised the customer of the cost and schedule impact associated with a proposed late work addition.

NOTE: FOR SURFACE FORCE SHIPS SUSTAINMENT, TYPE 1 AND 2 ALTERATIONS (TERMED "INTERNAL EQUIPMENT ALTERATIONS") MAY BE INCORPORATED INTO THE PACKAGE UP TO THE 100 PERCENT LOCK.

43.2 AVAILABILITY PLANNING BUSINESS RULES.

- a. The NSA/Lead Maintenance Activity (LMA) has overall responsibility for the availability and possess the authority to organize, structure and coordinate availability execution matters. All other participants shall support the NSA/LMA in this regard. Accordingly, it is paramount that the NSA/LMA balance the needs of all participants and customers in the availability.
- b. All participating activities shall provide all availability requirements (specifications, Automated Work Requests, major Planned Maintenance System and Ship's Force projects, approved installation drawings, schedule needs, system and compartment release dates, industrial support requirements, etc.) to the NSA/LMA as specified by other applicable milestones in this manual. Technical Points of Contact (TPOC) for each repair or installation activity shall also be provided to the NSA/LMA to assist with integrated planning questions. These TPOCs shall also be present during the execution of the availability and have authority to represent their organization's interest in matters relating to their repair

or installation. For Aegis ships, all Combat System upgrade packages shall be assembled, scheduled and integrated by the Aegis Combat System Project Engineer and submitted to the NSA/LMA as a package via the SEA21 Hull Manager.

- (1) Alteration Installation Teams shall provide requirements in accordance with reference (a).
- (2) The LMA shall develop an inclusive, detailed, integrated and resource-loaded schedule of all participating activities. All participants shall meet and review the proposed plan and make necessary adjustments to render a balanced and optimized integrated schedule. This formal schedule review shall occur after the WPIC, but no later than the Work Package Execution Review. The NSA/LMA shall serve as the final arbiter of conflicts. By the Work Package Execution Review, all integrated schedule conflicts shall be resolved by the NSA/LMA.
- (3) The LMA shall be specifically tasked to accomplish integrated availability planning and execution. For Regional Maintenance Centers, the following related set of specifications achieving end-to-end integration shall be invoked in the availability Contract Line Item Number at a lead time commensurate with the complexity of the work package:
 - (a) "Availability Program Management Alteration Installation Team Integration" Standard Work Template 897-04 (Appendix ___).
 - (b) Combat Systems Light-off/AEGIS Light-off Compartment Release Schedule, SWT 813-01 (Appendix ___), as applicable.
 - (c) Propulsion Plant Light-off Assessment Standard Item(s), as applicable.
 - (d) Aegis Light-off NAVSEA Standard Item(s), as applicable.

NOTE: TASKING SHALL ENSURE THE NSA/LMA CAN PROVIDE INITIAL "SCHEDULE CONFLICT AWARENESS" AT THE WPIC.

- c. Costs for this integration effort shall be prorated amongst the participating customers using existing, standardized proration conventions.

43.3 AVAILABILITY EXECUTION BUSINESS RULES.

- a. During availability execution, the LMA shall manage and coordinate the project and recommend resolutions to conflicting issues. The NSA will exercise final arbiter for conflict resolution.
- b. The LMA shall host weekly production progress and work review meetings. All activity participants shall ensure their TPOC is present to assist in coordination and conflict resolution.
- c. LMAs also conduct daily production coordination meetings. It is recommended that all activity participants and TPOCs attend these on an as-needed basis to assist (in real-time) with coordination and conflict resolution.
- d. In all availability meetings, communications and forums, a forward-looking, anticipatory focus should be applied by all parties to intercept potential problems and resolve them as soon as possible and with least cost and schedule impact.