

JOINT FLEET MAINTENANCE MANUAL
VOLUME II
INTEGRATED FLEET MAINTENANCE
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VOLUME II
INTEGRATED FLEET MAINTENANCE
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LCPC	Life Cycle Planning Conference
LDS	Logistics Data System
LLTM	Long Lead Time Material
LMA	Lead Maintenance Activity
LOA	Light-Off Assessment
MA	Maintenance Activity
MACHALT	Machinery Alteration
MARMC	Mid-Atlantic Regional Maintenance Center
MBT	Main Ballast Tank
MCA (Submarines)	Material Condition Assessment
MCA (Surface Ships)	Machinery Condition Analysis
MCAI	Material Condition Assessment Inspection
MCAP	Material Condition Assessment Process
MDCO	Maintenance Document Control Office
MDS	Maintenance Data System
MIP	Maintenance Index Page
MJC	Master Job Catalog
MLOC	Master Light-Off Checklist
MM	Maintenance Manager
MMBP	Maintenance and Modernization Business Plan
MOA	Memorandum/Memoranda of Agreement
MRC	Maintenance Requirement Card
MSC	Master Specification Catalog
MSCMO	Master Specification Catalog Maintenance Office
MSR	Master Ship Repair Contractor
MST	Maintenance Support Team
MT	Maintenance Team
MTT	Mobile Training Team
MWO	Maintenance Work Order
NAVAIR	Naval Air Systems Command
NAVIMFAC	Naval Intermediate Maintenance Facility
NAVSEA	Naval Sea Systems Command
NAVSEA 08	Naval Sea Systems Command Nuclear Propulsion Directorate
NDE	Navy Data Environment
NDE-SIDE	NDE-SPAWAR Integrated Data Environment
NEC	Navy Enlisted Classification
NMD	Navy Maintenance Database
NMP	Navy Modernization Program
NNSY	Norfolk Naval Shipyard
NPEB	Nuclear Propulsion Examining Board
NRL	Naval Research Laboratory
NRMC	Navy Regional Maintenance Center
NRMD	Nuclear Regional Maintenance Department
NRRO	Naval Reactor Representative Office
NSA	Naval Supervisory Authority
NSSFNL	Naval Submarine Support Facility New London
NSWC	Naval Surface Warfare Center
NSWCCD	Naval Surface Warfare Center, Carderock Division
NSY	Naval Shipyard
NWRMC	Northwest Regional Maintenance Center
OIC	Officer In Charge
OMMS-NG	Organizational Maintenance Management System - Next Generation

OPNAV	Naval Operations
OPORD	Operational Order
OPTAR	Operating Target
OQE	Objective Quality Evidence
ORDALT	Ordinance Alteration
PAC	Pre-Arrival Conference
PARM	Participating Acquisition Resource Managers
PB4M	Planning Board for Maintenance
PCD	Production Completion Date
PCO	Primary Contracting Officer
PE	Port Engineer
PEO	Program Executive Officer
PHNS	Pearl Harbor Naval Shipyard
PIRA	Pre-Inactivation Restricted Availability
PLAD	Plain Language Address Directory
PMA	Phased Maintenance Availability
PMR	Periodic Maintenance Requirement
PMS	Planned Maintenance System
PMT	Performance Monitoring Team
POET	Point of Entry Testing
PORSE	Post Overhaul Reactor Safeguards Examination
PPEA	Propulsion Plant Engineering Activity
PR	Planning Review
PRC	Project Review Conference
PSIA	Private Sector Industrial Activity
PTD	Provisioning Technical Documentation
PVI	Product Verification Inspection
QA	Quality Assurance
QAS	Quality Assurance Supervisor
QMP	Quality Maintenance Plan
QMS	Quality Management System
RCC	Request for Contract Change
RCD	Required Completion Date
REC	Re-Entry Control
RLAR	Reverse Liaison Action Request
RMAIS	Regional Maintenance Automated Information System
RMC	Regional Maintenance Center
RMO	Reactor Maintenance Officer
RMT	Regional Maintenance Team
ROV	Repair of Other Vessels
RPCCR	Reactor Plant Configuration Change Report
RPM	Revolutions Per Minute
RRC	Regional Repair Center
RSE	Reactor Safeguards Examination
RSG	Regional Support Group
SBAT	SUPSHIP Bath
SC	Ship Change
SCA	System Certification Authority
SDI	Ship's Drawing Index
SDM	Ship Design Manager

Regional Maintenance Team	A site specific, multi-disciplined group of people normally accomplishing “outside shop” or on-platform work. An RMT may be platform or technology specific (e.g., submarines or nuclear) to facilitate necessary worker training and competency. An RMT is generally comprised of both military and civilian workers.
Regional Repair Center	An “inside shop” focusing on a particular product line (e.g., motors) or technology (e.g., machinery). An RRC is generally comprised of both military and civilian workers.
Restoration Level Maintenance	The minimum planned inspection, maintenance and testing criteria to be applied to ensure a component will function satisfactorily until the next planned accomplishment of the maintenance requirement.
Ship’s Force	Members assigned as a ship’s permanent or rotational crew.
Technical Data	Recorded information (regardless of the form or method of recording) of a scientific or technical nature (including computer databases and computer software documentation). This term does not include computer software or financial, administrative, cost or pricing, or management data or other information incidental to contract administration. The term includes recorded information of a scientific or technical nature that is included in computer databases. For these purposes, technical data includes the characteristic of a particular science, trade or profession.
Test Depth (TD)	For the purpose of the proper method of measuring and specifying Test Depth, the following applies: Test Depth shall be measured to the bottom of the keel for all types of submarine operations. Builders trials and trials following major industrial activity availabilities greater than six months, shall be at a tolerance of plus zero (0), minus twenty (20) feet of Test Depth when specified. All other trials can be conducted at 95% to 100% of Test Depth to satisfy all the requirements specified for 100% Test Depth.
Work	<ul style="list-style-type: none"> a. Any action that actually or potentially changes (including disassembly for the purposes of inspection or repair) the approved configuration of any part, component or ship’s system. b. Any action that removes or affects the ship’s ability to operate ship’s systems or components in accordance with ship’s systems/operating manuals or reactor plant manuals. c. Any testing or inspections required to establish, maintain or reestablish certification. d. Any design, engineering, planning or configuration management functions that involve the final review and/or approval of technical information. <p>Examples of work include the following:</p> <ul style="list-style-type: none"> 1. Action which disassembles or removes any part, component or ship’s system. 2. Action specified in a Technical Work Document.

Work (Cont'd)

3. Any action that removes or affects the ship's ability to operate ship's systems or components in accordance with ship's systems manuals, operating manuals or reactor plant manuals, excluding tagout in accordance with the Tagout Users Manual, including but not limited to:
 - (a) Component or system tests.
 - (b) Intrusive inspections (such as breaking the plane of electrical panels requiring electrical safety).
 - (c) Valve line ups that alter the normal system line up not governed by operating procedures.
 - (d) Removing valve hand wheels, disconnecting of reach rods.

- (c) Docking Planned Incremental Availability.
 - (d) Extended Drydocking Phase Maintenance Availability.
 - (e) Post Shakedown Availability.
 - (f) Carrier Incremental Availabilities.
- b. CNO scheduled maintenance availabilities less than six months in duration. Short, labor intensive availabilities scheduled for accomplishment of industrial maintenance and modernization. Types of these availabilities include:
- (1) Selected Restricted Availability (SRA).
 - (2) Docking SRA.
 - (3) Phased Maintenance Availability (PMA).
 - (4) Docking Phased Maintenance Availability.
 - (5) Service Craft Overhaul.
 - (6) Extended SRA.
 - (7) Extended Docking SRA.
 - (8) Incremental SRA.
 - (9) Extended Refit Period.
 - (10) Post Shakedown Availability.
 - (11) Pre-Inactivation Restricted Availability (PIRA)

3.2.1 Early Start. An “early start” is defined as that time when ships or submarines are made available by Type Commanders (TYCOM) for the execution of maintenance/modernization, including dry-docking, prior to a scheduled CNO availability start date.

3.2.2 Early Start Concurrence. The Naval Supervisory Authority (NSA) (e.g., Naval Shipyard, Ship Repair Facility, Regional Maintenance Center, Supervisor of Shipbuilding (SUPSHIP)) shall request an “early start” period via Naval Message no later than A-75 days, A-365 days or A-210 days from scheduled availability start for surface force ships, aircraft carriers and submarines, respectively. TYCOMs shall provide concurrence to execute an “early start” period. The cognizant maintenance activity will formally document each “early start” period using applicable availability management control tools (e.g., Navy Data Environment, Final Review Estimate provided to the TYCOM, etc.), and include NSA acknowledgement that the availability cost to the TYCOM will be the same, as if no “early start” period was utilized, within that documentation.

3.2.3 Readiness to Start Availability (Aircraft Carriers and Surface Force Ships Only). The Project will conduct a Readiness to Start brief in accordance with the appropriate milestones listed in Appendix C for Aircraft Carriers and Part II, Chapter 2, Appendix D of this volume for Surface Force Ships. The purpose of this briefing is for the Project Team to demonstrate its readiness to execute, test and certify the maintenance availability. The Project Team shall review the Availability Work Package (AWP) for risks that would threaten the Project Team’s ability to accomplish the work to the expected level of quality within the scheduled time and budget. The Project Team shall develop risk mitigation strategies that eliminate or minimize risks. These risk mitigation strategies shall be outlined in a letter provided to the TYCOM and the NSA’s Immediate Superior In Command (ISIC) (e.g., Commander, Navy Regional Maintenance Center (CNRMC), NAVSEA 04X, Program Executive Officer (PEO)).

3.2.3.1 Readiness to Start Brief.

- a. All required Technical Work Documents (TWD) are complete, reviewed and approved by the NSA Engineering Department. Any unfinished TWDs will be discussed.
- b. The Quality Maintenance Plan (QMP) is complete and signed.

- c. The initial conditions can be established to support the work (e.g., drained, depressurized, de-energized, tag out and Work Authorization Form (WAF)).
- d. The required repair parts, materials (including pre-fabrication) and test equipment are available or will be available to support the work.
- e. Assigned project team personnel are knowledgeable, trained and qualified. The Executing Activity shall provide appropriate written documentation to support the qualifications or certifications prior to personnel performing any work.
- f. The milestones and key events schedule, critical path jobs and budget (including the overtime plan).
- g. All required MOAs are signed and a communications plan has been established between the key participants of the availability.
- h. A risk management plan is developed to mitigate or reduce risk. These mitigation or risk reduction options will be continuously evaluated throughout the availability.
- i. A Fast Start strategy shall be developed and monitored. A 100 hour beginning of the availability strategy will be part of this plan.
- j. Ship's Force availability related training plan.
- k. Readiness to receive Ship's Force. Items to be discussed shall include: adequacy of work space, computer and telephone connectivity, completion of training and Ship's Force watchbill qualifications.

3.3 MAINTENANCE POLICIES AND PROCEDURES.

3.3.1 Critical Path Jobs. Critical Path Jobs (CPJ) are those jobs or series of jobs that require special management attention and normally present the greatest risk to on time completion of the Key Event or availability. Industrial activities should be judicious in designating jobs as CPJs to prevent diverting management attention from those jobs which are, in fact, critical to on time completion of the availability. Consideration shall be given to, but not limited to, the following in determining the CPJs:

- a. Little or no room for delay exists.
- b. Establishing plant conditions.
- c. Long Lead Time Material (LLTM).
- d. Complexity of job or special skills or resources required.
- e. Significant test requirements.
- f. Not previously accomplished by a Fleet Maintenance Activity (FMA) (alterations, etc.).

3.3.2 Work Sequence Schedule. The Work Sequence Schedule is an integrated timeline (Pert Chart, Gantt Chart, etc.) that includes plant conditions, major work steps, tests and recertifications used to identify and progress CPJs. The Work Sequence Schedule should include:

- a. Staging.
- b. Establishing plant conditions.
- c. Issuing work procedures.
- d. Identifying major production steps.
- e. Testing/Recertifying.
- f. Closing out work procedures.

3.3.3 Milestones. Appendices A, B and C of this chapter are representative of Typical CNO Maintenance Availability milestones for ships.

- a. Appendix A of this chapter is applicable to submarines only. NAVSEA will issue specific advance planning milestones for each CNO Maintenance Availability.

- (7) Designate an Availability Coordinator to coordinate industrial activity, FMA drydock and Ship's Force work to meet the availability completion date.
 - (8) Provide updated Sea Trials status by telephone to Commander, Submarine Squadron (COMSUBRON) ELEVEN if SRDRS "modified-alert" support services are in use.
 - (9) For minor CNO Maintenance Availabilities issue the required messages for Sea Trials escort requirements/waiver of escort requirements as applicable, Fast Cruise, Sea Trials and URO Certification in accordance with paragraph 3.6.8.3 of this chapter.
- c. Surface Force Ships Only.
- (1) In coordination with the RMC Chief Engineer (CHENG), submit Change Deferral Requests and Change Notifications to SURFMEPP per Appendices AK and AL. These documents will provide adequate information to support a technical analysis, including the date the maintenance was last accomplished, the proposed timeframe for accomplishment, reason for non-accomplishment using the deferral codes provided and a mitigation strategy with impact statement for non-accomplishment. In addition, TYCOM will maintain mandatory BAWP requirements proposed for non-accomplishment in an active planning status until adjudicated.
 - (2) Coordinate with SURFMEPP to update the AWP when Class Maintenance Plan (CMP) changes drive a change to the BAWP after A-360.
 - (3) Coordinate meetings as required at key milestones and as required to support resolution of major issues, such as those associated with large budget reductions or shipyard resource shortfalls due to scheduling conflicts.

3.3.7.4 Submarine Maintenance Engineering, Planning and Procurement Activity/Planning Engineering Repairs and Alterations.

- a. Develop plans for accomplishing periodic maintenance or equipment replacement.
- b. Maintain Baseline AWP's configured to each ship class and type availability and include the standard 3-M data elements controlled by the TYCOM.
- c. Prepare and issue all phases of AWP's and AWP Supplements (if applicable).
- d. Maintain custody of shore based spares under the direction of NAVSEA and the TYCOM.
- e. (Submarines Only) Prepare, issue and maintain PMR computerized inventories and scheduling reports and associated Master Job Catalog/PMR computer tapes.
- f. (Submarines Only) Prepare, issue and maintain Maintenance Standards under the guidance of NAVSEA and the TYCOM.

3.3.7.5 (Surface Force Ships Only) Surface Maintenance Engineering Planning Program (SURFMEPP).

- a. Act as the surface force ship CMP development and management activity.
- b. Build Technical Foundation Papers for each ship class and Ship Sheets by hull.
- c. Identify, track and process all mandatory CMP requirements.
- d. Develop, track and process the BAWP to reflect changes in the CMP.
- e. Capture all mandatory maintenance close-out/return costs as the Job Control Number and Ship's Work List Item Number (SWLIN) levels.
- f. Review Change Deferral Letters and Cancellation Deferral Notification System (CDNS) requests for sufficient supporting documentation, mitigating actions and to determine the impact of reprogramming work or reducing scope in accordance with the change deferral process located in Appendix AK of this chapter.

- g. Develop a response in conjunction with applicable Technical Authorities and Engineering Authorities such as Naval Air Systems Command, Space and Naval Warfare Systems Command, Naval Surface Warfare Centers and other stakeholders. If required, coordinate the revision of the mitigation strategy with Commander, Naval Surface Atlantic (CNSL)/Commander, Naval Surface Pacific (CNSP) N43.
- h. Review and forward recommended action for CDNS requests to NAVSEA 05D with justification/recommendation for approval or disapproval within fourteen (14) calendar days of receipt.
- i. Consolidate and forward recommended Deferral Letters to NAVSEA 05D with justification/recommendation for approval or disapproval within ten (10) calendar days of receipt.
- j. Ensure the CMP configuration data, Last Maintenance Accomplished dates as designated in the Maintenance and Ship Work Planning program, next Due Dates and associated periodicities remain current using historical technical data to correct deficiencies when necessary.
- k. Review NAVSEA 05D responses to Change Deferral Requests and send the Final Disposition Letter to TYCOM within ten (10) calendar days of receipt.
- l. Coordinate the Life Cycle Planning Conference (LCPC), CSMP/Departure From Specifications (DFS)/BAWP Mid-Cycle Review and the BAWP Close-Out Verification and Assessment Meeting and summarize all Deferral Letters, Change Notifications and resulting actions for the current Fleet Readiness Plan (FRP) Maintenance Cycle.
- m. Brand tasks residing in the CMP and CSMP, as applicable.
- n. Issue the CNO Availability Advance planning schedule.
- o. Integrate Modernization tasks into the BAWP prior to A-360 in accordance with an issued Advance Planning Letter. After BAWP/AWP turnover, enter authorized Modernization tasks into the CSMP in accordance with the Navy Modernization Process and brand "B3".
- p. Attend TYCOM, RMC, and **Private Sector Industrial Activity (PSIA)** planning conferences for each ship.

3.3.7.6 Ship's Commanding Officer. The CO is the TYCOM representative for monitoring the progress and quality of industrial work. As such he should review availability progress during weekly conferences with Department Heads and others as necessary. The Supervising Authority meets weekly with the CO and other industrial activity officials as described in paragraph 3.6.3.1 of this chapter. The CO should be prepared to discuss and assist in the resolution of scheduling, design, material, and production problems. The CO's responsibilities are defined in reference (e). Additionally, COs shall:

- a. All Ships.
 - (1) Review AWP's and provide comments to the TYCOM, ISIC and SUBMEPP/PMS 312C during the WDC/PRC.
 - (2) Assign a Ship Selected Records (SSR) Coordinator to perform the functions of paragraph 3.6.6.b. of this chapter.
 - (3) Publish policy concerning the number of duty sections, liberty, ship cleanliness, tagout procedures, tank closeout and blanking of otherwise exposed fluid systems, waveguides and air systems before availability start.
 - (4) Ensure non-conformances (Waivers/Deviations or Departures from Specification) submitted during the availability by any activity are approved prior to trials at sea (if held) and not later than the completion of the availability.
- b. Submarines Only.
 - (1) Review the status of PMR maintenance schedules and CSMP reports with parent ISIC prior to CNO Maintenance Availabilities in order to assist in planning for accomplishment of the required planned maintenance and corrective maintenance. Additional information and requirements concerning PMR are discussed in detail in Volume VI, Chapter 24 of this manual.

- (2) System hydrostatic test equipment.
 - (3) Calibration equipment.
 - (4) Special tools.
- e. Ship's Force should use Appendices A, B or C of this chapter as guidance to prepare for availabilities, as applicable. These appendices provide Typical CNO Maintenance Availability Planning Milestones for submarines, surface ships and aircraft carriers respectively.

3.4.3 Availability Work Packages.

3.4.3.1 Availability Work Package Content. The AWP includes all nuclear and non-nuclear authorized industrial work and associated Forces Afloat work for modernization, maintenance and repair during the availability. The work described is developed from NAVSEA and TYCOM instructions. Forces Afloat actions in the AWP scheduled to complete prior to availability start are critical in defining additional work candidates in accordance with Appendix D.

3.4.3.2 Availability Work Package Sources.

- a. CMP.
- b. NAVSEA authorized alterations.
- c. TYCOM authorized alterations, repairs, PMRs, Engineering for Reduced Maintenance Costs items and baseline AWP.
- d. Results of pre-availability tests and inspections.
- e. CSMP.

3.4.3.3 Availability Work Package Development. The five stages of AWP development include Baseline, Preliminary, Proposed, Approved, and Completed.

- a. SUBMEPP (Submarines)/PMS 312C (Aircraft Carriers)/SURFMEPP (all other Surface Ships) develop and maintain Baseline AWP for each ship class and type of availability.
- b. SURFMEPP (Surface Force Ships only) is responsible for BAWP development. The BAWP is comprised of mandatory assessment and corrective maintenance requirements from the CMP. Additional mandatory life cycle critical work (i.e., CSMP repairs that have been branded as mandatory by SURFMEPP) as well as non-mandatory CMP items (i.e., TYCOM requested assessments, approved and authorized modernization jobs and CNO availability services) will be combined with the BAWP to develop the AWP as the maintenance cycle progresses. Mandatory life cycle critical work (identified by having an "A" brand in the category of work field), regardless of its origin (e.g., SURFMEPP, Ship's Force or RMC), will be tracked and/or adjudicated using processes described in this section.
- c. SUBMEPP (Submarines)/PMS 312C (Aircraft Carriers)/applicable TYCOM (all other Surface Force Ships) consolidate the Baseline AWP, NAVSEA authorized alterations and TYCOM authorized alterations, repairs, PMRs and Engineering for Reduced Maintenance Costs items to produce the Preliminary AWP. This Preliminary AWP is issued approximately 12 to 14 months prior to the start of the availability.
- d. Systems Command (SYSCOM), TYCOM, and the ship's CO should review the Preliminary AWP to ensure that it includes known work candidates and authorized alterations that will not be accomplished prior to availability start and for proposed work candidates, which in their opinion, are unnecessary. Appendix D of this chapter provides suggested guidelines for review of the AWP. Following the initial review of the Preliminary AWP, Ship's Force shall host a meeting with the TYCOM and SUBMEPP/PMS 312C, as applicable to consolidate comments and recommendations for the WDC/PRC. This meeting is normally held early in the same week as the WDC/PRC.

- e. SUBMEPP (Submarines only)/PMS 312C (Aircraft Carriers only)/TYCOM (Other Surface Force ships only) will host a WDC/PRC attended by NAVSEA, the Supervising Authority, FMA (if applicable), TYCOM, ISIC, PMT (Submarines Only), Strategic Systems Project Officer (SSBN/SSGN 726 Class submarines only) and Ship's Force when practical. During this meeting the Preliminary AWP is carefully reviewed and the SYSCOM and the TYCOM authorize the work. When actions are required before a decision is made, those actions are identified and subsequently monitored. The goal is to issue the Proposed AWP (one which represents all SYSCOM/TYCOM authorized work integrated and specifically tailored to the ship involved) within two months following this meeting. At this meeting, the SYSCOM/TYCOM authorizes the industrial activity to continue with planning on the basis of the work identified in the AWP. During this meeting any activity may submit new work candidates for consideration by the SYSCOM/TYCOM. The SYSCOM/TYCOM will authorize or reject each new work candidate submitted. **A reason for rejecting a work candidate will be provided.** For Surface Force Ships only, the NSA Chief Engineer will review requested growth and new work items for technical compliance.
- f. SURFMEPP (Surface Force Ships only) will host three scheduled meetings over the course of the ship's FRP Maintenance Cycle: the LCPC Mid-Cycle Review and the BAWP Close-Out Verification and Assessment Meeting. When possible, SURFMEPP conferences will be held in conjunction with other MT scheduled meetings, such as monthly Availability Advanced Planning Meetings and Planning Board for Maintenance (PB4M).
- g. SYSCOM/TYCOM and the ship's CO should review the Proposed AWP to ensure that it contains all agreements made at the WDC/PRC. Appendix D of this chapter also provides suggested guidelines for review of this AWP.
- h. The Supervising Authority will host a PAC attended by NAVSEA, FMA (if applicable), TYCOM, ISIC, SUBMEPP (Submarines)/PMS 312C (Aircraft Carriers), and Ship's Force when practical. During this meeting the Proposed AWP, with results of the pre-availability tests and inspections incorporated where possible, will be carefully reviewed and the SYSCOM/TYCOM will approve the work. The goal is to issue the Approved AWP at the conclusion of this meeting. During this meeting any activity may submit new work candidates for consideration by the SYSCOM/TYCOM and NSA Chief Engineer. The SYSCOM/TYCOM will authorize or reject each new work candidate submitted. **A reason for rejecting a work candidate will be provided.** For Surface Force Ships only, the NSA Chief Engineer will review requested growth and new work items for technical compliance.
- i. Within six months after the completion of the availability, SUBMEPP (Submarines)/PMS 312C (Aircraft Carriers)/applicable TYCOM (all other Surface Ships) will issue the Completed AWP.

3.5 AVAILABILITY PLANNING.

3.5.1 Ship's Force Pre-Planning.

- a. To effectively complete the Ship's Force and Maintenance Support Team (MST) (if assigned) responsibilities during the months preceding the start of the availability, it is necessary to assign an Officer/Chief Petty Officer as the Availability Coordinator, responsible for coordinating the completion of the milestones. The quality of the availability will be reflected in the preparations done by Ship's Force and MST (if assigned).
- b. Prior to commencement of the availability, the industrial activity will request the ship to provide personnel Temporary Assigned Duty to the activity (approximately one month prior to the start date). The industrial activity will identify the personnel requirements of this pre-arrival team based on the type of availability and ship class.

3.5.1.1 Industrial Activity Visit. The ship's CO, Executive Officer, MST Officer In Charge (OIC) (if applicable) and department heads will visit the industrial activity as soon as practical prior to the start of the availability. The CO shall meet key industrial activity managers involved in the availability, other COs of ships in availabilities at the same industrial activity and if applicable, the local Naval Reactors Representative. The Executive Officer, MST OIC (if applicable) and department heads shall meet their counterparts within the industrial activity Project Team and counterparts assigned to other ships in an availability at the same industrial activity. The Executive Officer shall also check available crew quarters and barge accommodations, if applicable. Ship's Force shall:

- c. CMP work completion, configuration updates and new CMP additions will require SURFMEPP to upload more CMP requirements into a ship's CSMP following the Mid-Cycle Review. These updates will be coordinated with the ship's PE prior to initiation. If the ship is beyond the BAWP turnover to TYCOM, updates shall be coordinated with the respective TYCOM AWP Manager in addition to the ship's PE.
- d. Mandatory CMP requirements pushed after LCPC (initial BAWP push) are required to be screened within ten (10) calendar days of receipt into the IT screening and brokering system.

3.5.1.2.5 Review of BAWP and CSMP.

- a. SURFMEPP, TYCOM representatives, RMC and the ship's MT will meet to review the ship's BAWP and CSMP to ensure inclusion of all required services/routines and lifecycle impacting Class Advisories and active DFSs. NDE modernization forecasts are addressed as applicable. RMC Assessment Directors, RMC and TYCOM TSRA Planners, NRMC, Program Manager Representatives and representatives from NAVSEA 05D, NAVSEA 21 Modernization, CNSL/CNSP N43, PSIA Contractor (or Planning Activity), ISIC, and the ship's MT shall attend this meeting.
- b. 100 percent of the BAWP requirements in the maintenance screening and brokering system (i.e., RMAIS) are required to be screened by the ship's PE. These requirements shall be screened by the PE to a scheduled or future maintenance period/availability (other than Unfunded) within the current FRP Maintenance Cycle.
- c. Any mandatory CMP requirement pushed after C+140 (initial BAWP push) is required to be screened within 60 days of the maintenance screening and brokering system import date.

3.5.1.2.6 Updating the BAWP.

- a. SURFMEPP will update the BAWP with lifecycle critical repair tasks resulting from assessment requirements in addition to the results (i.e., deferral or technical challenges) from the CSMP/DFS/BAWP Mid-Cycle review.
- b. Further changes to the BAWP must be submitted using a Change Request Deferral Letter or the maintenance screening and brokering system.
- c. CMP work completion, configuration updates and new CMP additions will require SURFMEPP to upload more CMP requirements into the BAWP whose next due date falls within the current FRP Maintenance Cycle through C+120. These updates will be coordinated with the ship's PE prior to calldown. If the ship is beyond A-360, updates shall be coordinated with the respective TYCOM AWP Manager in addition to the ship's PE.
- d. Mandatory CMP requirements pushed after C+140 (initial BAWP push) are required to be also screened within 60 days of their maintenance screening and brokering system import date.
- e. Ship Design Manager authorization via SURFMEPP Platform Engineering will be obtained if stakeholders desire to withhold or delay CMP requirements generated by configuration updates and new CMP additions if these requirements will be due prior to the end of the current FRP Maintenance Cycle.
- f. Updates will cease after 100 percent D-level maintenance lock.

NOTE: IF BAWP TURNOVER TO TYCOM OCCURS WITHIN 30 CALENDAR DAYS OF C+140, THE PE MAY FORGO THE 50 PERCENT SCREENING MILESTONE AND INSTEAD HAVE 100 PERCENT OF THE BAWP REQUIREMENTS SCREENED BY MID-CYCLE REVIEW.

3.5.1.2.7 BAWP Turnover to TYCOM. The TYCOM's AWP Manager will review the BAWP and assume responsibility for planning and developing the AWP as described in paragraph 3.5.4 of this chapter.

3.5.1.3 Availability Coordinator (Submarines Only). A submarine served, nuclear trained Limited Duty Officer will be assigned to augment the normal ship's complement during Depot Modernization Periods, Engineered Refueling Overhauls, or Engineered Overhauls and will act as the Availability Coordinator for the ship. Availability Coordinator responsibilities are specified in Volume V, Part I, Chapter 1, paragraph 1.5.6 of this manual.

3.5.2 Docking Conference. For availabilities involving a ship's dry docking, the industrial activity will conduct a Docking Conference prior to the ship entering the activity if scheduled to go directly into dry dock.

3.5.3 Ship's Force Administrative Preparations. Ship's Force administrative preparations for availabilities will include:

- a. Necessary revisions to ship and department organization manuals to ensure compliance with established requirements.
- b. Preparation of necessary ship and department directives to ensure that administration is formally supported in accordance with current requirements.
- c. Formulation of procedures for qualification of underway/steaming watchstanders and maintenance of proficiency of inport watchstanders, including:
 - (1) Implementation of formal provisional qualification procedures.
 - (2) Establishment of qualification goals for Key Events, such as undocking, operational testing of ship and propulsion plant systems, steam testing, initial criticality, space turnover, etc.
 - (3) Incorporation of qualification requirements necessitated by alterations to ship or propulsion plant systems.
- d. Procedures for maintenance and security of Ship's Force/MST (if assigned) barge or office spaces.
- e. General overhaul plan for Ship's Force/MST (if assigned) responsible actions including provisions for:
 - (1) Ship off-load.
 - (2) Establishment of barge, berthing and messing facilities.
 - (3) Establishment of routine ship and barge watch bills.
 - (4) Scheduling of required shore based schools and leave for personnel.
 - (5) Provision for accomplishment of known Ship's Force/MST (if assigned) corrective maintenance.
 - (6) Establishment of Ship's Force PMS routines.
 - (7) Establishment of Integrated Logistics Overhaul (ILO) procedures.
 - (8) Provisions for shift work during known periods of intensive testing (e.g., Engine Room Steaming Operations, Hot Operations, Power Range Testing).
 - (9) Ship load-out.
 - (10) Target dates for completion of key ship and department directives and procedures.
- f. Assignment of ship system experts, or QA Inspectors, capable of monitoring industrial activity work on assigned systems.

3.5.4 TYCOM AWP Schedule and Documentation Requirements (Surface Force Ships Only).

- a. Assume lead responsibility for AWP management at A-360.
- b. TYCOM will conduct Availability Planning Conferences periodically throughout the availability planning timeline in accordance with the milestones listed in Part II, Chapter 2, Appendix D of this volume. Further details concerning Availability Planning Conferences can be found in Appendix AM.

3.5.4.1 Resource Allocation.

- a. Identify and evaluate the links between the technically mandated life cycle/service life requirements contained in the CMP, the known repair tasks mandated in the BAWP and the current readiness/corrective maintenance requirements identified in the ship's CSMP.
- b. Across this mutually supportive prioritization and resource allocation process, TYCOM will function as the representative for making resource allocation recommendations in direct support of the AWP.
- c. Submit Change Deferral Requests at any time to expedite reallocation of resources.

respects the work is unsatisfactory. If the condition reported is not corrected to the CO's satisfaction, a report will be made to CNO via the TYCOM in accordance with reference (g). Copies of this report will be sent to the industrial activity and appropriate Fleet Commander.

- (3) During the course of the availability, periodic progress reviews are conducted at the 25/50/75 percent points of elapsed time of the availability. As a minimum, discussion should include the actions towards resolution of previously reported significant problem areas not yet resolved, upcoming Key Events that may be in jeopardy, any significant changes that may be required to meet availability milestones, status of new work and any other issues deemed necessary. The report of the periodic review will be annotated in the weekly SITREP.
- f. Cost Performance Index/Schedule Performance Index (Surface Force Ships Only). In accordance with Volume VII, Chapter 7 of this manual, the RMC shall report Cost Performance Index and Schedule Performance Index.

3.6.3.2 Docking/Undocking Conferences. For availabilities involving a ship's dry docking, the industrial activity will conduct both a Docking and Undocking Conference, normally within one week prior to the expected evolution. These conferences will be conducted by the assigned industrial activity Docking Officer. Requirements for the conference agenda, attendees, and Ship's Force support are found in reference (k).

3.6.3.3 Interim Completion Conferences (Surface Force Ships Only). The NSA and the **Lead Maintenance Activity (LMA)** shall conduct 25/50/75 percent completion conferences. These conferences will review all completed work, testing and certification. All open and remaining work shall be discussed to include: schedule, upcoming key events, milestones, planned production manning versus actual production manning, integrated test plan, certification and Departures From Specification. All open and inspect work shall be completed in the first 20 percent of the maintenance availability. Two days prior to the 25 percent review conference, the LMA shall provide the status of all open and inspect results so final adjudication on any growth or new work items may be completed.

3.6.4 Assist Ship's Force Funds. The TYCOM may set aside a portion of the maintenance funds for CNO availabilities as an Assist Ship's Force (ASF) fund. This fund is controlled by the CO and is used to obtain minor industrial activity assistance in the nature of services and/or labor, to assist in completing assigned Ship's Force work. The following restrictions apply to the use of ASF funds:

- a. No work in the nature of an alteration will be undertaken, unless authorized by the TYCOM.
- b. No work using ASF funding will be undertaken in which Ship's Force is not the main participant.
- c. Only incidental material will be purchased with ASF funds. "Incidental Material" cost, when measured against the cost of labor on each specific ASF work item, will not exceed ten percent of the total job cost without TYCOM permission.
- d. A detailed account of ASF expenditures will be maintained. This account may be audited periodically by the TYCOM to ensure compliance with the restrictions in paragraphs 3.6.4.a. through c of this chapter.

3.6.5 Integrated Logistics Overhaul.

- a. The ILO concept was developed to provide improved maintenance support to the Fleet in response to the need for complete on board logistics support. An ILO focuses on both maintenance and supply requirements by ensuring that technical documentation and repair parts support the equipment which is actually on board. During an ILO, both maintenance and supply personnel are trained in the use and maintenance of shipboard logistics support documentation and systems to enable them to sustain the effects of the ILO during the operating cycle. The objective of an ILO is to improve readiness by providing a ship completing a specified availability with logistics support that accurately reflects the ship's configuration. A secondary objective is to train Ship's Force in the use of on board support documents and in recognizing and correcting support deficiencies.
- b. An ILO is a process which improves ship's readiness and equipment availability through verification of configuration status accounting data, ordering of proper logistics support, and training of Ship's Force in the use and maintenance of its logistics support documentation. An ILO is comprised of five functional elements:

- (1) Configuration Analysis and Coordinated Shipboard Allowance List (COSAL) QA consists of verification of start of availability configuration data (including planned changes) with Weapons System File data and other documentation to ensure that the Start of Overhaul COSAL fully supports the projected end of availability equipment configuration. In addition, changes in configuration reported by the accomplishing activity are verified to ensure final COSAL documents include required support.
 - (2) PMS Analysis. Includes verification of applicable Maintenance Index Pages (MIP) with ship's existing configuration and all changes to this configuration reported by the accomplishing activity. Resolution of discrepancies with PMS managers is accomplished as required. Analysis of individual MRCs is performed to ensure that required PMS repair parts and special tools are identified, included in the applicable documents, and ordered.
 - (3) Technical Manual Analysis. Ensures that the technical manuals required to support the end of availability configuration are identified and requisitioned. Technical manuals, both those off-loaded and those received during the availability, are inventoried and reviewed for applicability, correct change level, and status of changes. Technical manuals applicable to final configuration are retained. Discrepancies are resolved with the Naval Sea Data Support Activity. Technical manuals missing from the required inventory are requisitioned as are any changes needed to upgrade manuals already held. The ship's Index of Technical Publications is updated to reflect the final configuration and is provided to the ship at the end of availability by the Naval Sea Data Support Activity. Also provided are the Technical Manual requisitions still outstanding. Finally, to ensure minimum deterioration of stock after the availability, selected ship personnel are trained in technical manual maintenance procedures.
 - (4) Repair Parts Analysis. Ensures the accuracy of the repair parts inventory to be back loaded to the ship at the conclusion of the availability. This analysis includes a complete inventory of all parts aboard and identification of any parts for which there is incomplete data. It also includes recomputation of allowances based on usage or new equipment installation, turn-in of parts no longer allowed and numerous location/quality checks prior to backloading.
 - (5) Training. Focuses on proper accomplishment of the first four functional elements of the ILO to ensure that correct logistics support is identified and delivered for shipboard equipment. Efforts are made to ensure that shipboard personnel are fully able to utilize and maintain the ship's logistics support and configuration documentation, both for ILO purposes and for ongoing operating cycle requirements. COSAL use and maintenance training provides shipboard personnel with a working knowledge of the COSAL, its relationship to other maintenance documents and the procedures to ensure that logistics support remains current, (e.g., use of OPNAV 4790/CK Forms).
- c. The Ship's Force team will develop an off-load schedule of all ship's spare parts. The ship's spare part stowage plan will be updated to reflect changes in the desired location of individual spare parts. Additionally, provisions must be made for the Aviation Consolidated Allowance List to support the embarking air wing.
 - d. A ship load-out schedule, including stores, repair parts, yellow gear, and removal of industrial activity equipment, will be prepared by the ship with the assistance of the industrial activity.
 - e. During a CNO maintenance availability, the ship will ensure that new/removed equipment is reflected in the COSAL and that the required spare parts are added/subtracted as applicable. Allowance changes are to be requested in accordance with reference (I).
 - f. Spare parts, test equipment, and special tools are the hardware portion of new and old equipment. The other portions are software: drawings, technical manuals, allowance lists, operating instructions, and any other technical documentation. Prior to commencement of an availability, NAVSEA will task the industrial activity with providing a listing and schedule, for installation on board the ship, of all technical documentation for new equipment, including changes to SSR drawings and data. The ship is responsible for the installation and maintenance of technical documentation for all existing equipment.

Engineer must certify all required work and testing is completed prior to commencing Dock Trials, with any exceptions noted and approved by the appropriate technical authority and agreed to in writing by the Ship's CO, Project Manager, TYCOM and the NSA. The minimum requirements for Dock Trials are listed in Appendix I.

- f. **Fast Cruise.** Key Event conducted after Dock Trials and prior to Sea Trials during which Ship's Force operates the ship and all equipment and systems as if underway for in port training. The primary purpose of the Fast Cruise is to ensure that Ship's Force operational proficiency is adequate prior to conducting at-sea operations. The Ship's CO is responsible for conducting Fast Cruise prior to Sea Trials where the ship assumes an "at-sea" posture to exercise all equipment and systems to the maximum extent possible. The NSA Chief Engineer must ensure that all work is completed and certified prior to commencing Fast Cruise, with any exceptions noted and approved by the appropriate technical authority and agreed to in writing by the Ship's CO, TYCOM and the NSA. The minimum requirements for Fast Cruise are listed in Appendix J. Commencement of Fast Cruise requires TYCOM permission. Appendix AA provides a sample message format for ship's request for permission to commence Fast Cruise. Appendix AB provides a sample message format for ships to report Fast Cruise completion.
- g. **Sea Trials.** Key Event following Fast Cruise that constitutes the final determination of a ship's material readiness and ability to rejoin the Fleet as a fully operational unit. The Ship's CO is responsible for conducting Sea Trials in accordance with an agenda developed by the NSA, concurred on by the Ship's CO and approved by the ISIC. The NSA Chief Engineer must certify that all required work and testing is completed prior to commencing Sea Trials, with any exceptions noted and approved by the appropriate technical authority and agreed to in writing by the Ship's CO, TYCOM and the NSA. The minimum requirements for Sea Trials are listed in Appendix K. Commencement of Sea Trials requires TYCOM permission. The NSA Chief Engineer must certify to the TYCOM that all work and testing is complete and readiness to start Sea Trials (with exceptions noted) via the Readiness for Sea Trials message. Appendix AC provides a sample message format for the Supervising Activity to report all work necessary for Sea Trials has been satisfactorily completed. Completion of Sea Trials requires a formal report from the Ship's CO to the TYCOM via the ISIC.
- h. **Availability Completion.** Key Event to document all work, testing and inspections planned for and executed during the availability are complete and that all required reports and OQE have been submitted to, reviewed and approved by the NSA Chief Engineer. Availability Completion signifies that the availability is complete and the ship has successfully determined that all maintenance and modernization work performed by the NSA is fully operational. The NSA Chief Engineer must certify all work tied to the Key Event is completed per the Availability Work Certification process or technically adjudicated in writing prior to reporting Availability Completion.
- i. **End of Maintenance Phase.** Milestone to document the end of the Maintenance Phase and entrance into the Basic Training Phase. The Maintenance Phase exit criteria for equipment shall include, but not be limited to: successful passing of Readiness Assessments and Certifications for non-Engineering systems (i.e. AEGIS Light-Off, Aviation Certification, TSRA, etc.), and a Light-Off Assessment for Engineering systems, and successful completion of comprehensive post-Availability Sea Trials that tests all systems. Minimum Equipment (Redlines) must be met and maintained for all Mission Areas.

3.6.8.1.3 Availability/Key Event/Milestone Certification Procedures (Surface Force Ship Only).

- a. The procedures outlined in the following sections provide the minimum requirements to (RMCs/NSA) to utilize during execution of CNO Availabilities and major Continuous Maintenance Availabilities (as directed by the Fleet or TYCOM) for Availability Certification and Key Event/Milestone Management. This process is developed to provide the RMC Commander, via the RMC Project Manager and RMC CHENG, the maximum reasonable assurance that all availability work has been properly completed and that the ship is materially ready for the next Key Event or Sea Trial. This process provides assurance that all technical waivers/deviations have been reviewed and approved, any work exceptions (incomplete work) have been approved to not impact the Key Event/Sea Trials and work was planned, executed and tested technically correct.

- b. The following process defines the steps to be taken by the NSA and all Executing Activities when certifying work to support readiness for Key Event/Milestone. When Key Events/Milestones are accomplished sequentially and in conjunction with a tailored availability QMP, (Appendix R), this process will support incremental certification of Readiness for Fast Cruise/Sea Trials and Availability Completion and avoid late gathering of data and certifications to ensure readiness for Fast Cruise/Sea Trials. Certification may be tracked via a centralized signature sheet and central exceptions list or through each Executing Activity providing memoranda documenting work certification and exceptions. When memoranda are used, the Appendix Q signature sheet and Appendix AD through AJ certification letters/memorandums shall be collected in an Availability Certification Book maintained by the Project Support Engineer on the Project Team. Normally, the Project Support Engineer works closely with the Integrated Test Engineer to manage the availability certification process for the Project Manager. The paragraphs below describe minimum requirements associated with each action leading to certification.

3.6.8.1.4 Availability Certification Requirements and Procedures (Surface Force Ship Only).

- a. Work Authorization. This step is required for Fast Cruise/Sea Trial Certification and Availability Completion Certification, but is not normally required for Key Event/Milestone Certification. TYCOM work authorization is screened and brokered by availability vice by availability Key Event. TYCOM certification of work authorization may be completed prior to Fast Cruise/Sea Trial and does not need to be repeated prior to availability completion unless new/growth work is identified during Sea Trials which is required to be added to the AWP as a condition of availability completion.
 - (1) The TYCOM's agent (Port Engineer) or Business Agent SRF-Japan Regional Maintenance Center (JRMC) will certify that all authorized CNO Availability or Continuous Maintenance Availability work identified in the AWP has been tasked to the Prime Contractor (PSIA or Firm Fixed Price), Naval Shipyard (NSY), FMA, Alteration Installation Team (AIT) or Ship's Force.
 - (2) The TYCOM's agent (Port Engineer) or Business Agent (SRF-JRMC) will certify that all work identified after work package definition (new/growth work) has been branded and authorized for accomplishment or deferred. If work branded as "A" or technically mandated as required to be deferred, it must be concurred on by the waterfront Technical Warrant Holder (NSA CHENG).
 - (3) The TYCOM's agent (Port Engineer) or Business Agent (SRF-JRMC) will certify that a review has been accomplished on all existing deviations, waivers, and records of out-of-commission equipment. This review shall include all conditions resulting in Temporary Standing Orders (TSO), DFSs and Casualty Reports (CASREP). Deviations have either been included in the AWP or an extension of the technical deviation has been submitted to the NSA CHENG for approval and concurred on by the TYCOM. If the condition resulting in a TSO or CASREP does not require technical concurrence for extension, the TYCOM must concur with not correcting the condition that resulted in the TSO or CASREP.
 - (4) Prior to Fast Cruise/Sea Trial, the TYCOM will certify to the NSA via signature on central signature sheet or serialized letter/memorandum that the above conditions have been met. Exceptions will be noted and provided for approval by the NSA.
 - (5) The NSA/RMC certification signature will be provided by the Project Manager with the TYCOM signature or letter/memorandum and serial number noted, verifying receipt of TYCOM certification or proper work authorization accomplished.
- b. Work Documents Issued/Prime Contractor. (This step shall be completed by Key Event/Milestone for work tied to each Key Event/Milestone.)
 - (1) Code 200 & 130 Review of Work Specifications and Test Procedures. The RMC/NSA Code 200 Project Support Engineer or Test Engineering (SRF-JRMC) and RMC/NSA Code 130 Quality Assurance Supervisor (QAS) will validate that Work Specifications and Test Procedures issued by the Master Ship Repair Contractor have received a technical review in

- (2) Discussion. The extent, type and frequency of periodic monitoring, inspections, and visits should be determined on a case basis by the responsible ISIC or TYCOM representative. The initial inspection should be broad in scope in order to appraise the responsible ISIC of the adequacy of the ship's performance and progress. Normally, the initial visit will indicate the necessary frequency and scope of subsequent Tech Assists and Monitor Visits. In general, any required Work-Ups should be scheduled in advance of Key Events during the availability.
- (3) Areas of Inspection Coverage. Initial inspections normally examine the effectiveness of Ship's Force preparations for an availability. Subsequent inspections and visits should review the following areas as appropriate for the purpose of the specific inspection.
- (a) Review procedures and administrative steps for provisional watch station qualifications.
 - (b) Review department organization manuals.
 - (c) Review department instructions and administrative procedures.
 - (d) Review ship's instructions and administrative procedures.
 - (e) Review department logs, operating instructions and casualty procedures.
 - (f) Review ship's standard operating procedures and the ship's organization and regulations manual.
 - (g) Review training conducted and planned to support the goal of requalifying or reestablishing proficiency of watchstanders.
 - (h) Monitor performance of watchstanding.
 - (i) Conduct spot check of ship's records and logs in use.
 - (j) Review Ship's Force controlled work (SUBSAFE, Level I and Nuclear) and procedures to ensure proper controls and documentation in accordance with this manual and no unauthorized work is conducted within the SUBSAFE boundaries.
 - (k) Review status of Ship's Force responsible PMS/IEM.
 - (l) Inspect installed equipment for cleanliness and adequate protection from damage.
 - (m) Review Tag-Out and Work Authorization Logs. Spot check for compliance in accordance with current directives.
 - (n) Inspect ship for hazards.
 - (o) Inspect provisions for casualty control including watertight integrity.
 - (p) Verify that all COSAL material including operating space items, have been off-loaded to processing areas which provide appropriate security.
 - (q) Inspect the processing area to verify provisions and procedures for careful ILO inventory.
 - (r) Review response of supply system to requisitions in support of Ship's Force work.
 - (s) Verify that items are withdrawn from the ship's COSAL stock undergoing inventory/ILO only on an emergency basis and that such issues are well documented with appropriate adjustments to the inventory records.
 - (t) Evaluate general safety practices.
- (4) Scheduling of Periodic Monitoring, Inspection and Visits. Periodic Monitoring, Inspections, and Visits should be scheduled by the responsible ISIC as appropriate for the purposes of the inspection concerned. Some monitoring visits should be conducted on an unannounced basis. These inspections should be given so as to minimize interference with industrial activity and Ship's Force work.

- (5) Reports of Inspection. Formal reports of the results of periodic monitoring, inspection and visits are not required by the TYCOM. However, the responsible ISIC should advise the TYCOM in situations when the attainment of required progress toward completion of Key Events is in jeopardy.
- b. Pre-Critical Inspection.
 - (1) Purpose. To evaluate the readiness of the engineering department to undergo a PORSE by the Fleet Commander Nuclear Propulsion Examining Board or a RSE by representatives from NAVSEA 08.
 - (2) Discussion. The conduct of the Pre-Critical Examination by the ISIC is not intended to duplicate the inspections for which readiness is being evaluated. It is considered prudent, however, to use an inspection plan similar to that employed by NAVSEA. Normally, the crew's readiness can be assessed within two days using such a plan, which should encompass the following:
 - (a) An administrative review.
 - (b) Observation of basic drills and evolutions not requiring reactor operation.
 - (c) Personnel interviews.
 - (d) Material inspection.

NOTE: FOR SSBN/SSGN PRE-CRITICAL INSPECTIONS, THE CREW TO BE INSPECTED IS THE COMPOSITE CREW SELECTED FOR INITIAL CRITICALITY AND POWER RANGE TESTING.

- (3) Scheduling of Pre-Critical Inspections. The ISIC shall conduct a Pre-Critical Inspection within six weeks of intended criticality. The Pre-Critical Inspection shall be scheduled such that the qualification program and material condition of the ship are sufficiently complete to allow for a thorough inspection, but early enough to allow time for the correction of identified deficiencies prior to criticality. The TYCOM should be advised as soon as possible in advance of the tentative date for the ISIC Pre-Critical Inspection and confirmed dates should be established about one month in advance of the inspection.
- (4) Composition of the Inspection Team. The Pre-Critical Inspection Team should consist of:
 - (a) A nuclear trained member of the cognizant ISIC Staff, usually the Squadron Training Officer.
 - (b) A nuclear trained officer with experience as an Engineer Officer.
 - (c) When available, a nuclear trained officer from the TYCOM's Staff will participate in ISIC Pre-Critical Inspections involving refueling. Arrangements for participation of the TYCOM Staff member should be initiated by the responsible ISIC at least one month in advance of the anticipated ISIC Pre-Critical Inspection.
- (5) Reports of Inspection.
 - (a) The Senior Inspector should provide the inspected unit with an informal report of findings by the inspection team, copy to the cognizant ISIC and TYCOM.
 - (b) The ship's CO shall review the findings of the inspection team and make necessary adjustments to the training program to ensure the crew's readiness for the examination. The ship's CO shall keep the cognizant ISIC advised of the training plan and the assessment of the crew's progress.
 - (c) The cognizant ISIC shall review the inspection findings, the CO's training plan and progress evaluations, and direct follow-up reviews and/or inspections necessary to verify the ship's readiness for the examination.

- a. The Supervising Authority shall report by message (reference (x), Appendix B.3.8) to NAVSEA, satisfactory completion of all Sea Trials, completion of controlled dives, correction of all mandatory sea trial deficiencies, and resolution of all NAVSEA SSCA Category IA recommendations. Report that the SUBSAFE material condition of the ship installed, repaired, and/or tested by the industrial activity is satisfactory for URO to test depth. Identify any deferred SUBSAFE work and/or conditionally approved deviations and waivers.
- b. Following verification from the Supervising Authority of satisfactory completion of all Sea Trials, completion of controlled dives, correction of all mandatory Sea Trial deficiencies, and resolution of all NAVSEA SSCA Category IA recommendations, NAVSEA shall certify by message (reference (x) Appendix B.3.9) to the TYCOM, with information copies to CNO and the appropriate Fleet Commander, the SUBSAFE material condition of those parts of the ship installed, repaired, and/or tested by the industrial activity is satisfactory, and recommend authorization for URO to design test depth subject to TYCOM verification that SUBSAFE certification of areas outside the industrial activity AWP has been sustained.
- c. Following verification from NAVSEA of satisfactory completion of all sea trials, completion of controlled dives, correction of all mandatory sea trial deficiencies, certification that the SUBSAFE material condition of those parts of the ship installed, repaired, and/or tested by the industrial activity is satisfactory, and upon confirmation of maintenance of SUBSAFE certification of portions of ship not affected by the industrial activity, the TYCOM shall report by message (Appendix CG of this chapter) to the ship, with copies to CNO and NAVSEA, reporting status of SUBSAFE certification and authorizing URO to test depth.

3.7 COMPLETION OF AVAILABILITY.

- a. (Surface Force Ships/Aircraft Carriers) In order to standardize reporting practices, the official end of a CNO Availability will be upon Certification of work in accordance with "Availability Work Certification" dictated in this chapter and completion of the TYCOM approved Sea Trials Agenda. Ships shall report Sea Trial Agenda Completion in the form of Appendix F1 or Appendix F2 of this chapter. Availability Certification Completion can occur with agreed to exceptions as discussed in Volume VII, Chapters 7 and 8 of this manual. The TYCOM, Contractor, FMA and NSA should consider Work Certification Requirements and the definition of "Availability Completion" when adjudicating New or Growth work in any availability. If scope, time and cost are impacted by New or Growth work, the impact should be addressed and documented in writing (by the RMC Project Manager) to the TYCOM/ISIC.
- b. (Submarines only) CNO availabilities are complete when the TYCOM transmits one of the two following messages:
 - (1) Appendix BO of this chapter. (SAMPLE TYCOM MESSAGE TO SHIP CONCERNING URO FOR INDUSTRIAL ACTIVITY AVAILABILITIES LESS THAN SIX MONTHS IN DURATION (SUBMARINES ONLY)).
 - (2) Appendix CG of this chapter. (SAMPLE TYCOM MESSAGE TO SHIP CONCERNING URO FOR INDUSTRIAL ACTIVITY AVAILABILITIES GREATER THAN SIX MONTHS IN DURATION (SUBMARINES ONLY)).

3.8 AVAILABILITY COMPLETION DEPARTURE CONFERENCE.

3.8.1 Departure Conference and Availability Completion Message. At the end of the availability, the Supervising Authority, FMA (if applicable), and Ship's Force will conduct a Departure Conference to finalize the status of all work performed during the availability. The conduct of this conference is similar to that of the Progress Reviews conducted in accordance with paragraph 3.6.3.1.b. of this chapter, and should be used to gather all necessary information to draft and send the Availability Completion Message. Further policy on availability completion can be found in Volume VII, Chapter 7, paragraph 7.12 and Chapter 8, paragraph 8.5 of this manual. As a minimum, the Availability Completion Message should address all areas addressed in the Weekly Progress Message, Appendices F1 or F2 of this chapter as applicable, as well as the following:

- a. Unresolved maintenance issues and guarantee work items.
- b. Report of configuration changes resulting from alterations installed during the availability.
- c. Summarize the NAVSEA waivers issued during the availability.
- d. Identify those work candidates that will be deferred until the next industrial availability.

3.9 POST AVAILABILITY.

3.9.1 Completed Availability Work Package. Within six months after the completion of the availability, SUBMEPP (Submarines)/PMS 312C (Aircraft Carriers)/SURFMEPP (Surface Ships) will issue the Completed Work Package.

3.9.2 End-of-Cycle Analysis (Surface Force Ships Only). Provide inputs to support the SURFMEPP End-of-Cycle Analysis. These inputs will include DFSs approved during the availability and work that was accomplished, but not in the approved AWP.

3.9.3 Post-Availability Analysis (Surface Force Ships Only). TYCOM will participate in the post-availability analysis process and attend CNO Availability completion Maintenance and Modernization Performance Reviews in accordance with Volume VI, Chapter 44 of this manual.

3.10 BASELINE AVAILABILITY WORK PACKAGE CLOSE-OUT (Surface Force Ships Only).

3.10.1 Fleet Readiness Plan Maintenance Cycle BAWP Close-Out. The following procedures will be utilized to close-out and complete the FRP Maintenance Cycle and associated BAWP.

3.10.2 BAWP Close-Out Verification and Assessment Meeting. No later than 45 days after CNO Availability completion, SURFMEPP will conduct a BAWP Close-Out Verification and Assessment Meeting. This meeting will determine the status of all "A" branded BAWP items. A list of all BAWP work items that were not accomplished and the reason(s) for non-accomplishment will be compiled for inclusion in the BAWP Close-Out Report.

3.10.2.1 Attendees. The BAWP Close-Out Verification and Assessment Meeting will be chaired by a SURFMEPP representative. The following personnel are encouraged to attend this meeting:

- a. Ship's CO (or designated representative).
- b. Engineer Officer and Availability Coordinator.
- c. Project Engineer and Combat Systems Project Engineer.
- d. Project Manager and/or Class Team Lead.
- e. PSIA/LMA/Planning Activity Representative.
- f. TYCOM Representative.
- g. ISIC Representative.
- h. Planning Yard Representative.
- i. Program Manager's Representative.
- j. Navy Regional Maintenance Center Representative.
- k. NRMC Assessment Director.
- l. NAVSEA 05D Representative.

3.10.2.2 BAWP Close-Out Letter. This letter is a deliverable due at the BAWP Close-Out Verification Meeting in accordance with Part II, Chapter 2, Appendix D of this volume. This meeting is used to ascertain the final disposition of each BAWP mandatory requirement ("A" branded JCN in the FRP maintenance cycle) and a BAWP Close-Out Report to summarize all changes for SURFMEPP, Technical Warrant Holders, Ship Design Managers, engineering authorities and other stakeholders as applicable. Maintenance requirement status will be reviewed at the meeting for deferred, accomplished or non-accomplished-no deferral authorized status. At the conclusion of the meeting, all non-accomplished-not authorized for deferral JCNs will require adjudication via the deferral letter

APPENDIX A
TYPICAL CNO AVAILABILITY PLANNING MILESTONES
(SUBMARINES ONLY)

MILESTONES	RESPONSIBLE ACTIVITY	TIMELINE (Months)
1. Identify Non-Nuclear Title "K" SHIPALTs, fund and authorize planning and procurement.	NAVSEA	A-24
2. Identify Non-Nuclear Title "D" and "F" SHIPALTs, fund and authorize SUBMEPP to accomplish planning.	TYCOM	A-24
3. Issue Advance Planning Letter for NAVSEA funded Alterations and Selected Restricted Availability Advance Planning Milestones.	NAVSEA	A-18
4. Update CSMP. Submit to SUBMEPP via ISIC	Ship	A-16
5. Issue Preliminary AWP.	SUBMEPP	A-15
6. Issue AWP Supplement (replaces inventory of PMRs/URO).	SUBMEPP	A-12 to -14
7. Issue SHIPALT drawings.	Design Agent	A-12
8. Issue Final Planning Letter for NAVSEA funded Non-Nuclear Title "K" SHIPALTs.	NAVSEA	A-12
9. Issue Initial LLTM Report for Centrally Procured LLTM.	LLTM Agent	A-12
10. Issue Preliminary Work Sequence Schedules, provide estimates for NAVSEA funded Non-Nuclear Alterations.	Industrial Activity	A-11
11. Conduct Ship's Force Meeting.	SUBMEPP	A-10
12. Conduct initial Shipcheck.	Industrial Activity	A-10
13. Conduct site Logistics and Facilities Check (for Selected Restricted Availability at FMA only).	Industrial Activity	A-10
14. Issue message providing centrally procured LLTM and FMPMIS material availability status and best estimated delivery dates for Non-Nuclear Title "K" SHIPALTs.	NAVSEA	A-10
15. Host WDC with customers and Industrial Activity.	SUBMEPP	A-10
16. Response to NAVSEA's Material Message issued.	Industrial Activity	A-9
17. Issue Interchangeability Data Sheets for Advance Equipment Repair Program components.	SUBMEPP	A-9
18. Provide Pre-Availability Test Procedures to users on the Standardized Test Procedures CD-ROM and on the SUBMEPP ePortal web site. For ePortal access, go to http://www.submepp.navy.mil , select "Products/Services" then "Secure Web Site" and follow the instructions.	SUBMEPP	A-9
19. Issue SHIPALT Authorization (240 day) letter for NAVSEA funded SHIPALTs.	NAVSEA	A-8

MILESTONES	RESPONSIBLE ACTIVITY	TIMELINE (Months)
20. Issue Proposed AWP.	SUBMEPP	A-8
21. Confirm ability to accomplish all authorized Alterations during Availability.	Industrial Activity	A-7
22. Submit PAT results and Proposed changes to the AWP.	Industrial Activity/Ship	A-5
23. Submit Valve Lists and Sonar Testing, Assessment and Grooming Report for the AWP.	Ship/ISIC	A-5
24. Provide screening action on Pre-Arrival Test results and proposed changes to AWP.	TYCOM	A-4
25. Confirm AWP manday estimate vs. availability duration for compatibility.	Industrial Activity	A-3
26. Convene PAC.	Industrial Activity	A-3
27. Provide preliminary review estimates (90 day estimates) for NAVSEA funded Non-Nuclear Alterations.	Industrial Activity	A-3
28. Confirm receipt of centrally procured LLTM, Fleet Modernization Program Management Information System (FMPMIS) material and Advanced Equipment Repair Program (AERP) components.	Industrial Activity	A-2
29. Issue PAC Report.	Industrial Activity	A-2
30. Promulgate Availability schedule.	Industrial Activity	A-2
31. Deliver centrally procured LLTM.	LLTM Agent	A-2
32. Deliver AERP components.	SUBMEPP	A-2
33. Provide final review estimates (45 day estimates) for NAVSEA funded Non-Nuclear Alterations.	Industrial Activity	A-1.5
34. Issued Approved AWP.	SUBMEPP	A-1
35. Start Availability.	Industrial Activity	A-0
36. Conduct Arrival Conference	Industrial Activity	A-0
37. Issue monthly Availability Status messages.	Industrial Activity/ Supervisor of Shipbuilding (SUPSHIP)	Monthly
38. Submit Reactor Plant Configuration Change Reports (RPCCR) or OPNAV 4790/CK forms for completed Alterations to ship's CO.	Industrial Activity	Monthly
39. Update material history records, manual changes, onboard repair parts for complete alterations. Endorse and forward RPCCRs/OPNAV 4790/CK forms.	Ship	Monthly
40. Complete Availability.	Industrial Activity	C

APPENDIX C
TYPICAL CNO AVAILABILITY PLANNING MILESTONES
(AIRCRAFT CARRIERS ONLY)

MILESTONE	RESPONSIBILITY		
		PIA/DPIA	FDNF
1. RECEIVE/DETERMINE BUDGET CONTROL FOR CNO AVAILABILITIES		C+0	
2. PROVIDE COMP RPT TO PMS 312C/RPPY	TYCOM MPM	C+1	
3. ISSUE BAWP FDR	PMS 312C	C+1	
4. ISSUE AVAILABILITY DEPARTURE REPORT	NAVSHIPYARD	C+1	
5. CONDUCT CAMPR	PMS 312C	C+2	A-19
6. ISSUE ADVANCED PLANNING LETTER GUIDANCE/LETTER OF AUTHORIZATION	PMS 312C	C+3	A-18
7. DELIVER DRAFT BAWP	PMS 312C	C+4	
8. CONDUCT PRE-RELEASE BAWP REVIEW	PMS 312C TYCOM MPM NAVSHIPYD	C+4.5	
9. 312C DELIVERS BAWP	PMS 312C	C+5	A-16
10. INITIAL MAINT PLANNING MEETING	TYCOM MPM	A-17	A-15
11. TASK CORE WORK; RECEIVE CORE WORK (PUBLIC SHIPYARD AND PSIA)	TYCOM MPM	A-17	A-15
12. INITIAL BAWP CHANGE REQUEST SUBMITTAL	TYCOM MPM	A-15	A-13*
13. A-12 CONFERENCE	TYCOM MPM NAVSHIPYD	A-12	(NR13)A-12
14. START CAPS PROCESS/MCA	TYCOM MPM NAVSHIPYD	A-12	(NR14)A-7
15. ESTIMATES BACK FROM SHIPYARD	TYCOM MPM NAVSHIPYD	A-12	(NR14)A-7
16. SCREEN ALL KNOWN WORK	TYCOM MPM NAVSHIPYD	A-9	A-7
17. COMPLETE CAPS PROCESS	TYCOM MPM NAVSHIPYD	A-9	A-7
18. CONDUCT PRC 1	TYCOM MPM NAVSHIPYD	A-9	A-7
19. INTERMEDIATE BAWP CHG REQUEST SUBMITTAL	TYCOM MPM	A-8	A-7*

MILESTONE	RESPONSIBILITY		
		PIA/DPIA	FDNF
20. AT 50%, REVIEW PICKLIST	TYCOM MPM PROJECT TEAM PMS 312	A-7	A-5
21. MRA 1	TYCOM MPM PROJECT TEAM PMS 312	A-7	A-5
22. CONVENE PRC 2	TYCOM MPM PROJECT TEAM	A-5.5	A-3
23. SCREEN ALL KNOWN WORK		A-4	A-3*
24. CLASS C ESTIMATES BACK FROM SY			
25. FINAL BAWP CHANGE REQUEST SUBMITTAL			
26. MRA 2	TYCOM MPM PROJECT TEAM PMS 312C	A-3	A-2
27. AUTHORIZE FINAL AWP	TYCOM MPM NAVSHIPYD RMC	A-2	A-2
28. POETS/MCAI COMPLETE	TYCOM MPM NAVSHIPYD RMC	A-2	A-2
29. PSIA WORK CONTRACTED	TYCOM MPM NAVSHIPYD RMC	A-2	A-2
30. INCORPORATE RESULTS OF POET/MCAI INTO AWP	TYCOM MPM NAVSHIPYD RMC	A-2	A-2
31. FINAL REVIEW ESTIMATE (FRE) ESTABLISHED	TYCOM MPM NAVSHIPYD	*A-1	A-1
32. START AVAILABILITY		A-0	A-0

* THE FINAL REVIEW ESTIMATE (FRE) IS DELIVERED 30 DAYS PRIOR TO EXECUTION OF INDUSTRIAL WORK, BUT NO LATER THAN 30 DAYS PRIOR TO THE CNO AVAILABILITY START DATE.

- (2) Rig ship for deep submergence. Line up propulsion plant for maximum reliability. All systems shall be in the maximum secure condition with unnecessary sea systems isolated (See Note 3).
- (3) Station additional personnel throughout the ship to inspect for leaks.
- (4) Transmit commencing initial tightness dive message. Submerge the ship per the Ship Systems Manual Operating Procedures. If desired to conduct periscope depth tests, the ship may be submerged to periscope depth.
- (5) Check operation of ship control systems, including depth indication (See Note 4).
- (6) When escort is required, communicate with escort on RAC/WQC at each depth increment or at 10 minute intervals, whichever is sooner. If communications are lost, return to depth at which communications can be established before continuing (See Note 2).
- (7) All hands inspect for leaks and report them.
- (8) Inspect the discharge of all automatic drains in each EMBT Blow quadrant for sea water leakage prior to the first dive when the ballast tanks are flooded (e.g., at periscope depth).
- (9) At periscope depth, operate all masts checking optics and leakage. Observe speed and depth restrictions for masts without violation of the SOE (See Note 5). Event may be performed following initial dive, if sea state prevents operation at periscope depth.
- (10) Test operation of trim and drain system discharging to sea.
- (11) If not at 150 feet for SSN 688 Class submarines (155 feet for SSN 774 Class submarines), (160 feet for SSBN/SSGN 726 and SSN 21 Class submarines), proceed to 150 feet for SSN 688 Class submarines (155 feet for SSN 774 Class submarines), (160 feet for SSBN/SSGN 726 and SSN 21 Class submarines) and obtain SAT 1/3 trim in accordance with the Ship's Operating Manual. Take readings as required to make a check of ballasting.
- (12) At 200 feet:
 - (a) Adjust trim (See Note 6).
 - (b) Inspect for leaks.
 - (c) Communicate with escort at each depth increment or at 10-minute intervals, whichever is sooner. If communications are lost, return to depth at which communications can be re-established before continuing (See Note 2).
- (13) At 200 feet, in accordance with reference (ai):
 - (a) Check accuracy of gauges and repeaters (See Note 4).
 - (b) Evaluate signal ejectors or launchers. Conduct operational test of each by hand and impulse methods, as applicable (See Note 7).
 - (c) Check shafting bearings and stern tubes for excessive heating, leakage and noise. Main shaft seals must be tested at each depth specified in reference (ai) testing one seal for 20 minutes, and shifting to the other seal. Test the second seal for 20 minutes or until the boat is ready to go to the next depth, whichever comes first.
 - (d) Cycle rudder and planes through full throw at slow speed to check for binding.
 - (e) Operate all Main and Auxiliary Sea Water hull and back-up valves and those other seawater system valves worked during the availability (using remote closures, as applicable, from flooding control stations) that are required to maintain propulsion and other functions vital to the ship's operation.

NOTE: REQUIRED SYSTEMS ARE LISTED IN PARAGRAPH 4b OF REFERENCE (ai). OBSERVE RESTRICTIONS ON OPERATION OF SYSTEMS LISTED IN PARAGRAPH 4d OF REFERENCE (ai).

- (f) Test operation of trim and drain system discharging to sea.
 - (g) Cycle main ballast tank vents hydraulically to check for binding.
- (14) Test the SPM (see Note 13 in Appendix O of this chapter).
- (15) Additional requirements may be imposed at the discretion of the CO.
- c. The following tests and evolutions shall be carried out following the initial tightness dive and prior to the deep dive:
- (1) Transmit initial tightness dive complete message.
 - (2) A minimum of six hours of Individual Ship Exercises submerged for crew training.
 - (3) Charge air banks and battery as necessary. The ship may be submerged while charging air banks provided the depth of the ship does not exceed other guidelines in this instruction, or those of the flooding bill or ship's operating procedure.
 - (4) If escort is required, detach escort after initial tightness dive. Escort will then proceed to station for deep dive. Ensure that deep dive rendezvous time and location are clearly established before escort is released. The escort may be retained for additional testing during the transit as described in Appendix P. Transit depths shall not exceed depth as described in Appendix P.
 - (5) Additional requirements may be imposed at the discretion of the CO.
- d. The following tests and evolutions shall be carried out immediately prior to or during the deep dive:
- (1) Check that initial EMBT Blow system actuating air pressure and air bank pressure is within +0 PSIG, -200 PSIG of nominal operating air pressure.
 - (2) Verify MBT systems lined up for normal operation.
 - (3) Take sounding. Accurately fix ship's position within the specified dive area in accordance with reference (u). Transmit the commencing deep dive message.
 - (4) Proceed to normal submergence depth and obtain 1/3 speed trim. Use conservative angles and speed on initial dive.
 - (5) Trim ship to maintain neutral buoyancy (See Note 6).
 - (6) Rig ship for deep submergence. Line up propulsion plant for maximum reliability. All systems shall be in the maximum secure condition with unnecessary sea systems isolated (See Note 3).
 - (7) Station additional personnel throughout the ship to inspect for leaks.
 - (8) At 400 feet and then in increments of 100 feet descending to one-half the maximum operating depth and every 100 feet or other lesser specified increments thereafter down to the maximum authorized operating depth:
 - (a) Adjust trim (See Note 6).
 - (b) Inspect for leaks.
 - (c) Communicate with escort (if escort required) at each 100 foot depth increment or at 10 minute intervals, whichever is sooner. If communications are lost, return to a depth at which communications can be re-established before continuing (See Note 2).

NOTE: REQUIRED SYSTEMS ARE LISTED IN PARAGRAPH 4b OF REFERENCE (ai). OBSERVE RESTRICTIONS ON OPERATION OF SYSTEMS LISTED IN PARAGRAPH 4d OF REFERENCE (ai).

- (9) At depths listed for hull valve cycling in reference (ai) including the maximum authorized operation depth:

- (7) Check operation of all radars. Determine accuracy by conducting simultaneous radar and visual plot.
 - (8) Inspect stern tube packing gland/seals and circulating water flow for excessive heating, leakage and audible noise.
 - (9) Test Dead Reckoning Analyzer Indicator (if installed) or Dead Reckoning Analyzer (if installed), Dead Reckoning Tracers (if installed) and Revolution Per Minute (RPM) indication.
 - (10) Test fathometer(s) and compare with charted soundings.
 - (11) Run ahead at maximum allowable surface **shaft RPM** long enough for temperatures to reach a stable value. After readings have stabilized, at maximum allowable surface **shaft RPM**, operate the rudder through full throw in each direction, in all remote modes of operation. Time evolution and compare with design values. (See Note 1).
 - (12) Ahead, at maximum allowed surface **shaft RPM**, to back emergency.
For SSBN/SSGN 726 Class **only** - Answer ahead standard. Once ship speed has stabilized, perform back emergency for 5 minutes. This event may be conducted after the submerged full power run.
 - (13) Run astern up to a back full bell for 10 minutes or to meet the intent of a more restrictive industrial activity test. Full power run astern to be within the main engine limits of the applicable Steam and Electric Plant Manual.
For SSBN/SSGN 726 Class **only** - Run astern up to a back full bell for 5 minutes, followed by 60 SRPM for 5 minutes. (See Note 3.)
 - (14) Check operation and accuracy of ship's gyrocompass.
 - (15) Rendezvous with escort. Conduct radio and sonar communications checks (See Note 4).
 - (16) Test all bottomside sonars.
 - (17) Rig out bow planes, if applicable. Test bow/fairwater and stern planes in all modes.
 - (18) Flood variable tanks to computed compensation less a safety factor.
 - (19) Record megger/capacitance readings of all antennas, as appropriate.
 - (20) Operate trim and drain pumps (See Note 5).
 - (21) Test variable ballast system for proper operation.
 - (22) Perform both a low pressure blow and an EMBT blow for as long as necessary to verify system operability. A static blow shall not be used to test the EMBT blow system. For SSN 23 only: Additionally, perform an MBT 6 normal blow from the BCP for a minimum duration of 2 seconds to verify that air flows into MBT 6 as indicated by a reduction in air bank pressure. For SSBN/SSGN 726 Class submarines only: Additionally, perform a high pressure blow for as long as necessary to verify system operability.
 - (23) Operate the Emergency Propulsion Motor for 10 minutes.
 - (24) Surface ventilate ship.
 - (25) Check that initial EMBT Blow system actuating air pressure and air bank pressure is within +0 PSIG, -200 PSIG of nominal operating air pressure.
 - (26) Ensure all MBT blow systems are in a normal line up.
 - (27) Start atmosphere control equipment.
 - (28) Additional requirements may be imposed at the discretion of the CO.
- c. The following tests and evolutions, summarized in Appendix P, shall be carried out immediately prior to or during the initial tightness dive:

- (1) Obtain navigational fix and take soundings. Maximum depth of water is 400 feet as specified in reference (u).
- (2) Rig ship for Deep Submergence. Line up propulsion plant for maximum reliability. All systems shall be in the maximum secure condition with unnecessary sea systems isolated (See Note 6).
- (3) Station additional personnel throughout the ship to inspect for leaks.
- (4) Transmit commencing initial tightness dive message. Submerge the ship per the Ship Systems Manual Operating Procedures. If desired to conduct periscope depth tests, the ship may be submerged to periscope depth.
- (5) Check operation of ship control systems, including depth indication (See Note 7).
- (6) Equalize signal ejectors or launchers. Shoot pyrotechnics from each by hand and impulse methods (See Note 8).
- (7) Communicate with escort on RAC/WQC at each depth increment or at 10 minute intervals, whichever is sooner. If communications are lost, return to depth at which communications can be established before continuing (See Note 4).
- (8) All hands inspect for leaks and report them.
- (9) Inspect the discharge of all automatic drains in each EMBT Blow quadrant for sea water leakage prior to the first dive when the ballast tanks are flooded (e.g., at periscope depth).
- (10) Operate all periscopes checking optics and leakage. Operate all masts.
- (11) Test full throw of rudder and planes at slow speeds.
- (12) Test operation of trim and drain system discharging to sea.
- (13) If not at 150 feet for SSN 688 Class submarines (155 feet for SSN 774 Class submarines), (160 feet for SSBN/SSGN 726 Class and SSN 21 Class submarines), proceed to 150 feet for SSN 688 Class submarines (155 feet for SSN 774 Class submarines), (160 feet for SSBN/SSGN 726 Class and SSN 21 Class submarines) and obtain SAT 1/3 trim in accordance with the Ship's Operating Manual. Take readings as required to make a check of ballasting.
- (14) Test all sonar equipment on each hydrophone. In addition, for SSBN/SSGN 726 Class submarines, test the Emergency Underwater Telephone (BQC) on each hydrophone.
- (15) At 200 feet:
 - (a) Adjust trim (See Note 10).
 - (b) Inspect for leaks.
 - (c) Communicate with escort at each depth increment or at 10 minute intervals, whichever is sooner. If communications are lost, return to depth at which communications can be re-established before continuing (See Note 4).
- (16) At 200 feet as specified in reference (ai):
 - (a) Check accuracy of depth gauges and repeater (See Note 7).
 - (b) Equalize signal ejectors or launchers and conduct operational tests (See Note 8).
 - (c) Check shaft bearings and stern tubes for excessive heating, leakage and noise. Test one seal for 20 minutes and shift to the other seal. Test the second seal for 20 minutes or until the boat is ready to go to the next depth, whichever comes first.
 - (d) Cycle rudder and planes through full throw, at slow speeds, to check for binding (See Note 11).

- (e) Operate all hull and back-up valves (using remote closures, as applicable, from flooding control stations) of seawater systems required to maintain propulsion and other functions vital to the ship's operation.

NOTE: REQUIRED SYSTEMS ARE LISTED IN PARAGRAPH 4.b. OF REFERENCE (ai). OBSERVE RESTRICTION ON OPERATION OF SYSTEMS LISTED IN PARAGRAPH 4.d. OF REFERENCE (ai).

- (f) Check operation of bulkhead ventilation valves and watertight doors for binding (excluding lower escape hatches).
 - (g) Operate trim and drain pumps, discharging to sea.
 - (h) Cycle components of each torpedo tube. Check for leakage. Establish integrity of torpedo tubes by admitting sea pressure through equalizing lines or flooding connection before cycling components (See Note 2).
 - (i) Cycle main ballast tank vents hydraulically to check for binding.
 - (j) Equalize TDU with sea pressure through trim line, then cycle the muzzle valve.
 - (k) **Where installed, demonstrate ability of sanitary pump to discharge overboard.**
- (17) Conduct an EMBT blow from 200 feet keel depth. Check bank pressure before and after surfacing. Surfacing with EMBT blow may be delayed to accommodate additional testing or transit as explained in Appendix P.
- (18) Additional requirements may be imposed at the discretion of the CO.
- d. The following tests and evolutions, summarized in Appendix P, shall be carried out following the initial tightness dive and prior to the deep dive:
- (1) Transmit initial tightness dive completion message.
 - (2) A minimum of six hours of Individual Ship Exercises submerged for crew training.
 - (3) Charge air banks and battery as necessary. The ship may be submerged while charging air banks provided the depth of the ship does not exceed other guidelines in this instruction or those of the flooding bill or ship's operating procedures.
 - (4) Detach escort after initial tightness dive. Escort will then proceed to station for deep dive. Ensure that deep dive rendezvous time and location are clearly established before escort is released. The escort may be retained for additional testing during the transit as described in Appendix P. Transit depth shall not exceed depth as described in Appendix P.
 - (5) Additional requirements may be imposed at the discretion of the CO.
- e. The following tests and evolutions, may be carried out following the initial tightness dive but are not required to be completed prior to the deep dive:
- (1) Snorkel on each engine designed for snorkeling. (See Notes 9 and 12).
 - (2) Test the SPM (see Note 13).
 - (3) Check hovering system (See Note 9).
 - (4) Additional requirements may be imposed at the discretion of the CO.
- f. The following tests and evolutions, summarized in Appendix P, shall be carried out immediately prior to or during the deep dive:
- (1) Check that initial EMBT Blow system actuating air pressure and air bank pressure is within +0 PSIG, -200 PSIG of nominal operating air pressure.
 - (2) Verify MBT system lined up for normal operation.

- (3) Take soundings. Maximum water depth is given in reference (u). Accurately fix the ship's position within the specified dive area, in accordance with reference (u). Transmit commencing deep dive message.
- (4) Proceed to normal submergence depth and obtain slow speed trim. Use conservative angles and speed.
- (5) Trim ship to maintain neutral buoyancy (See Note 10).
- (6) Rig ship for deep submergence. Line up propulsion plant for maximum reliability. All systems should be in the maximum secure condition with unnecessary sea systems isolated (See Note 6).
- (7) Station additional personnel throughout the ship to inspect for leaks.
- (8) At 400 feet and then in increments of 100 feet descending to one-half the maximum operating depth and every 100 feet or other lesser specified increments thereafter down to the maximum authorized operating depth:
 - (a) Adjust trim (See Note 10).
 - (b) Inspect for leaks.
 - (c) Communicate with escort at each depth increment or at 10 minute intervals, whichever is sooner. If communications are lost, return to depth at which communications can be re-established before continuing (See Note 4).
- (9) At depths listed for hull valve cycling in reference (ai) (as applicable), except maximum authorized operating depth:
 - (a) Check accuracy of depth gauges and repeater (See Note 7).
 - (b) Equalize signal ejectors or launchers and conduct operational tests (See Note 8).
 - (c) Check shaft bearings and stern tubes for excessive heating, leakage and noise. Main shaft seals must be tested at each depth specified in reference (ai), testing one seal for 20 minutes and shifting to the other seal. Test the second seal for 20 minutes or until the boat is ready to go to the next depth, whichever comes first.
 - (d) Cycle rudder and planes through full throw, at slow speeds, to check for binding (See Note 11).
 - (e) Operate all hull and back-up valves (using remote closures, as applicable, from flooding control stations) of seawater systems required to maintain propulsion and other functions vital to the ship's operation at increments of depth specified in reference (ai).

NOTE: REQUIRED SYSTEMS ARE LISTED IN PARAGRAPH 4.b. OF REFERENCE (ai). OBSERVE RESTRICTION ON OPERATION OF SYSTEMS LISTED IN PARAGRAPH 4.d. OF REFERENCE (ai).

- (f) Check operation of bulkhead ventilation valves and watertight doors for binding (excluding lower escape hatches).
- (g) Operate trim and drain pumps, discharging to sea.
- (h) Cycle components of each torpedo tube. Check for leakage. Establish integrity of torpedo tubes by admitting sea pressure through equalizing lines or flooding connection before cycling components (See Notes 2 and 9).
- (i) Cycle main ballast tank vents to check for binding. Main ballast tank vents will be cycled hydraulically except at test depth where they will be cycled manually.
- (j) Equalize TDU with sea pressure through trim line.
- (k) **Where installed, demonstrate ability of sanitary pump to discharge overboard.**

NOTE: DURING SEA TRIALS DO NOT OPERATE TDUs WITH BALL VALVES BELOW 200 FEET OR TDUs WITH FLAPPER VALVES BELOW 150 FEET.

- (10) At maximum authorized operating depth:
- (a) Repeat item (9) (a) - Depth gauges and repeaters. (See Note 7)
 - (b) Equalize signal ejectors or launchers. Shoot pyrotechnics from each by hand and impulse methods, as applicable (See Note 8).
 - (c) Repeat item (9) (c) - Shafting and bearings.
 - (d) Repeat item (9) (e) - Cycle hull and back-up valves as specified in reference (ai).
 - (e) Repeat item (9) (f) - Bulkhead ventilation valves and watertight doors.
 - (f) Repeat item (9) (g) - Trim and drain pumps.
 - (g) Repeat item (9) (h) - Torpedo tubes. (See Notes 2 and 9)
 - (h) Repeat item (9) (i) - Cycle main ballast tank vents, manually only, and check for binding.
 - (i) Repeat item (9) (j) - Equalize TDU with sea pressure through trim line.
 - (j) Repeat item (9) (k) - Sanitary pump.
- (11) Prior to blow, visually inspect discharge of automatic drains in each EMBT quadrant for seawater leakage. Surface fully with EMBT blow from maximum authorized operating depth (not to exceed maximum depth permitted by the SOE at the initial speed required for the test). Check air bank pressures before and after blow. For SSN 23 only: Perform an MBT 6 normal blow from the BCP until MBTs 6A and 6B are blown to residual water levels.
- (12) Additional requirements may be imposed at the discretion of the CO.
- g. The following tests and evolutions shall be carried out on the surface following the deep dive:
- (1) Transmit completion of deep dive message.
 - (2) Note condition of periscope optics.
 - (3) Measure resistance to ground of all external electrical cables (may be accomplished upon return to dockside port).
 - (4) Take radio antenna megger/capacitance readings (as appropriate) immediately after surfacing, again in one-half hour, and compare with readings obtained in item 3.b.(19) of this appendix.
 - (5) Measure resistance across and to ground from each side of all sonar hydrophones, projectors, and transducers or run applicable sonar hydrophone and transducer fault localization test (See Note 14).
 - (6) Measure rodmeter coil and button resistance and coil insulation resistance to ground.
 - (7) Open all lower hatches. Check the upper hatch seals, Logistics Escape Trunks/Logistics Plug Trunks inter-seals and penetrations for leakage. Open the sonar sphere access door, where applicable, and check sonar sphere for leakage.
- h. The following tests and evolutions shall be carried out submerged following the deep dive:
- (1) Full power run (See Notes 15, 16 and 17).
 - (2) Emergency stop (See Notes 15 and 16).
 - (3) Steering and diving operation at full speed (See Notes 16 and 18).
 - (4) Steep angles - operate ship through several depth changes using large up and down angles to check operation of ship machinery (See Note 16).

- (5) Time raising each periscope and mast at maximum depth and speed for which they are designed. Check training feature where applicable.
- (6) Comply with CS/CCS test program with regard to firing of water slugs and testing of torpedo tubes (See Note 2).
- (7) Run ahead at maximum speed allowed by SOE. Operate torpedo tube shutters and ejection pump shutters. If shutters do not open, gradually reduce speed until shutters open. This establishes "stall speed" for each shutter.
- (8) Additional requirements may be imposed at the discretion of the CO.

4. Sea Trial Conclusion. At the conclusion of Sea Trials, and based on a review of Sea Trial deficiencies and TYCOM concurrence, the submarine may transit to a port other than the overhauling activity. During this transit the submarine shall not operate at depths greater than one-half test depth plus fifty feet, unless specifically authorized by NAVSEA, and shall not be released for unrestricted operations until all RECs are closed and final URO certification is received, per the Submarine Safety (SUBSAFE) Requirements Manual.

NOTES

1. **Temporary condensate strainers that cannot be monitored for differential pressure shall be inspected and cleaned during sea trials following at least one hour of operation at between 45 and 55 percent reactor power, and prior to operation at higher power levels, in accordance with reference (ay).**
2. **Fire water slugs from torpedo tubes at the depths and speeds required by the CS/CCS test program (or Combat Systems Assessment or Non-Propulsion Electronic System Operability, Verification and Evaluation, as applicable).**
3. **For SSBN/SSGN 726 Class only - This surface evolution, full power run astern, shall be conducted only if maintenance was accomplished on the reduction gears, the astern throttle(s) or the main shaft thrust bearing.**
4. **In the execution of any Sea Trial, whether escorted or not, submarine COs are reminded of their responsibility to communicate with escorts and/or shore authorities within prescribed, previously agreed upon, time limits to avoid initiation of inadvertent lost contact or submarine disaster procedures.**
5. **Pumps should be tested in the industrial activity, prior to Sea Trials, to determine that they can pump against a test depth head.**
6. **Reference (ai) prescribes procedures for system operation during deep dive.**
7. **Compare all depth and pressure gauges. Depth and pressure gauges should be checked as soon as the next specified depth is reached.**
8. **Integrity of launchers or signal ejectors shall be established by admitting sea pressure through equalizing lines or flooding connection and the muzzle valve/door operated before conducting operational tests. Shoot water slugs from specified launchers or signal ejectors, at depths specified by reference (ai). Shoot pyrotechnics on initial dive and at test depth on deep dive. Shooting of pyrotechnics during the initial dive shall be accomplished in conjunction with the 200 foot EMBT Blow. Shooting of pyrotechnics at test depth during the deep dive shall be accomplished in conjunction with the test depth EMBT Blow.**
9. **If major structural modifications were accomplished, those seawater systems which are not required for normal safe operation of the ship at test depth, but which have been designed for and may be subjected to test depth pressure, should not be subjected to submergence pressure during the initial dive to any specified depth (e.g., blown sanitary tanks). If major structural modifications were not accomplished, those sea water systems which are not required for normal safe operation of the ship at test depth, but which have been designed for and may be subjected to test depth pressure, may be equalized and operated on the initial dive to test depth (See reference (ai)).**

- 10. Deep dive should be conducted using moderate speed and constantly adjusting trim, at depths indicated in paragraph 3.c.(15)(a) and 3.f.(8)(a) of this Appendix, to maintain neutral buoyancy. Moderate speed shall be defined as that range of speed that allows the ship to recover from a loss of stern plane control or flooding casualty or as otherwise directed by NAVSEA.
- 11. Cycling of rudder and planes through full throw should be limited to 90% of test depth.
- 12. Check operation of electrodes, head valve and each snorkel safety circuit.
- 13. **The following table summarizes SPM/SPU limitations:**

TABLE 1. SPM/SPU Limitation Table (all classes)

Operational Cycle	Extend	Retract	Train	*Operate	*Drag
Sea Trials (Post Overhaul, New Construction)	200 Ft 5 Kts	200 Ft 5 Kts	200 Ft 5 Kts	200 Ft 5 Kts	200 Ft 10 Kts

* Do not violate the SOE of the ship.

- 14. The spherical array need not be done if an array purge or power into the array measurements are scheduled at a later date.
- 15. The submerged full power run with an ahead flank bell is to be terminated with a back emergency bell, consistent with current Main Propulsion Operating Limits (shaft torque is not a limiting factor in this test). The duration of the back emergency bell will be limited to 45 seconds, to be followed immediately by an appropriate ahead bell. The 45 second limit will:
 - a. Standardize the crashback requirements throughout the submarine force.
 - b. Provide a backing transient similar to that experienced during a stern plane jam.
 - c. Be short enough that no ship will gather sternway.
- 16. Note that the required sequence of events is initial dive, deep dive, full power run submerged, back emergency, then high speed maneuverability and steep angle tests. Initial high speed ship control tests, steep angle tests and exercises at major casualties shall be conducted in water that does not exceed one and one-half times design test depth.
- 17. Run full power submerged for at least two hours. CO may schedule full power run for four hours if he deems it necessary. Submarine depth during the submerged full power run should be in accordance with reference (u), based on the EMBT blow from maximum authorized operating depth being previously accomplished.
- 18. At maximum safe speed, operate the rudder and planes through full throw in both directions in all remote modes of operation. Time evolutions and check against design values.

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APPENDIX AL

BAWP CHANGE DEFERRAL REQUEST (SAMPLE)

4700

XX/XXXX

DD MMM YY

From: Commander, U.S. Atlantic/Pacific Fleet

To: Commanding Officer, Surface Maintenance Engineering Planning Program

Subj: USS SHIP (HULL NUMBER) FYXX-FYXX FLEET READINESS
 PLAN MAINTENANCE CYCLE BASELINE/AVAILABILITY WORK
 PACKAGE CHANGE DEFERRAL REQUEST/NOTIFICATION

Ref: (a) COMUSFLTFORCOMINST 4790.3 (SERIES), Joint Fleet Maintenance Manual (JFMM)
 (b) USS SHIP (HULL NUMBER) FYXX-FYXX Baseline Availability Work Package (BAWP)

Encl: (1) USS SHIP (HULL NUMBER) FYXX-FYXX BAWP Change Request Sheet
 (2) List of Previously Deferred CMP Requirements

1. USS SHIP (HULL NUMBER) FYXX XXX/SRA is scheduled to commence DD MMM YYYY. This letter confirms completion of Milestone 31 (A-240) in reference (a).

2. Enclosure (1) lists BAWP maintenance requirements recommended for non-accomplishment which require technical adjudication. Request adjudication of branding category "A" items identified in enclosure (1).

3. Operational Risk Summary: USS SHIP (HULL NUMBER) is/is not at risk of attaining a clear path to light-off at LOA. Additionally, the ship will/will not be materially ready to begin Unit-Level Training in one or more mission areas.

4. In accordance with reference (a), the list below contains the remaining planning milestones and dates (tasks are based on the "CNO PSIA Entitled Process"):

TASK	DATE
PSIA CONTRACTOR COMPLETE PLANNING & ESTIMATING OF WORK ASSIGNED BY A-240	DDMMMYY
80% D-LEVEL WORK PACKAGE LOCKED BASED ON \$	DDMMMYY
PSIA CONTRACTOR COMPLETE PLANNING & ESTIMATING OF WORK ASSIGNED BY A-120 DATE	DDMMMYY
100% D-LEVEL WORK PACKAGE LOCKED BASED ON \$	DDMMMYY
100% D-LEVEL WORK PACKAGE PLANNED/ ESTIMATED	DDMMMYY

5. A list of CMP and repair items already approved for deferral is included in enclosure (2).

6. Point of Contact: NAME, COMMAND, PHONE NUMBER.

X.X.XXXXXXXXXX

RANK, USN

Copy to:

NAVSEA 05D

COMNAVSURFLANT/COMNAVSURFPAC (N43)

RMC

USS SHIP (HULL NUMBER)

USS SHIP NAME (HULL NUMBER)			
List of Previously Deferred CMP Items			
JCN	Task Description	Date Authorized	Method Authorized
EX01 ZA00	G1N6 Assessment of Store Room	15 Nov 2009	CMP Electronic Notification System
EM01 ZA55	G1E8 Assessment of GTM 2A	10 Dec 2009	SDM/SURFMEPP E-Mail

APPENDIX AM
AVAILABILITY PLANNING CONFERENCE AGENDA SAMPLE
(SURFACE FORCE SHIPS ONLY)

1. Introduction of Attendees. (Chair)
 - a. TYCOM Type Desk. (TDO/Availability Work Package Manager (AWPM)/PE) (Chair)
 - b. Ship's Force.
 - c. Maintenance Team.
 - d. SURFMEPP.
 - e. TSRA.
 - f. Program Office Management Representative.
 - g. Planning Yard Representative.
 - h. Space and Naval Warfare Systems Command (SPAWAR) Representative.
 - i. Government Planners.
 - j. **PSIA** Contractor Representatives.
2. Meeting Overview - Agenda Topics. (Chair)
3. Availability Overview. (Chair)
 - a. Type.
 - b. Location.
 - c. Start Date/End Date/Duration.
 - d. Notional Mandays/Dollars/AP Dollars.
 - e. Expected Control Mandays/Dollars/AP Dollars.
4. Availability Budget. (TYCOM Type Desk)
 - a. Expected Control Breakdown.
 - (1) Fees.
 - (2) Reservations.
 - (3) Farm-Out.
 - b. Cost of work screened to date.
 - c. Budget Assessment.
5. Review ship's schedule. (Chair)
 - a. Home port.
 - b. Deployments and Underway periods.
 - c. Scheduled Availabilities. (CMAV and TSRA)
 - d. Inspections and Assessment Visits.
 - e. Alteration Installation Teams.
 - f. Special evolutions that affect ship access.
6. Review remaining advance planning milestones highlighting key dates and deadlines. (TYCOM (AWPM/PE))

7. Brief BAWP contents including status of all mandatory repair and assessment tasks due during the cycle, showing those completed, scheduled and overdue. (SURFMEPP) (A-360 only)
8. SURFMEPP Turnover BAWP to TYCOM. (SURFMEPP) (A-360 only)
9. Brief CSMP showing the screening of all off-ship jobs. Highlight potential technical issues, including Departures from Specifications (DFS) and other jobs that may later be deemed mandatory. Discuss any other concerns. (TYCOM (PE))
10. Brief status of all mandatory repair and assessment tasks due during the cycle, showing remaining tasks scheduled and overdue and discuss concerns. (SURFMEPP) (A-240, A-120)
11. Brief status of all mandatory CMP task Change Deferral Requests, showing those approved, approval pending and disapproved. (SURFMEPP)
12. Assess impact of disapproved CMP task Change Deferral Requests. (TYCOM (PE))
13. Brief schedule of remaining TSRA availabilities and mitigation strategy to accomplish those mandatory CMP assessments that were not executed as scheduled. (TSRA)
14. Assess impact of remaining inspections and assessments. (TYCOM (PE))
15. Brief Program/Fleet Alteration changes since last briefed. (TYCOM (AWPM) (SEA21 briefs Program Alterations changes, if present, else AWPM briefs both))
16. Assess impact of modernization changes on other work. (TYCOM (AWPM)/TYCOM (PE)/Planner)
17. Assess impact of AWP on habitability. (TYCOM (PE))
18. Review and assess Ship's Force planned work that may impact other work. (TYCOM (PE)) (A-120 only)
19. Review and assess Ship's Force deferred work that may need to be included in the AWP. (TYCOM (PE)) (A-120 only)
20. New Issues.
21. Ship Commanding Officer Concerns.
22. Action Required after the Meeting:
 - a. TYCOM (AWPM) distributes meeting minutes with action items.
 - b. TYCOM Type Desk briefs chain of command of the Commanding Officer Concerns.
 - c. SURFMEPP negotiates the uploading of all new CMP tasks identified after this point with the TYCOM. (AWPM/PE) (A-360 only)

APPENDIX BM
SUBMARINE SEA TRIAL SITUATION REPORT
(SITREP LESS THAN SIX MONTHS)

FM USS <SHIP NAME>//
 TO COMSUB<LANT/PAC> <NORFOLK VA/PEARL HARBOR HI>//
 INFO CNO WASHINGTON DC//
 COM<LANT/PAC>FLT <NORFOLK VA/PEARL HARBOR HI> //
 COMNAVSEASYS COM WASHINGTON DC//
 DIRSSP WASHINGTON DC// {For SSBN/SSGN Only}
 <SUBOPAUTH>// {IF OTHER THAN PARENT TYCOM}
 COMSUBRON ELEVEN//
 COMSUBGRU <NO.>//
 COMSUB<RON/GRU NO.>//
 <SUPERVISING AUTHORITY>//<CODES>//
 (OTHER UNITS IN AREA IF APPLICABLE)//
 BT
 UNCLAS //N09094//
 MSGID/GENADMIN/USS <SHIP NAME>//
 SUBJ/(TYPE AVAILABILITY) SITREP (SEQUENTIAL NUMBER)//
 REF/A/DOC/COMUSFLTFORCOM/<DATE>//
 REF/B/DOC/AS APPLICABLE/<DATE>//
 NARR/ REF A IS COMUSFLTFORCOMINST 4790.3, JOINT FLEET MAINTENANCE MANUAL, VOLUME II.
 RMKS/1. CO'S SUMMARY, EVENTS 1-9 COMPLETED WITH THE FOLLOWING DEFICIENCIES NOTED:
 A. SUBSAFE/URO DEFICIENCIES.
 1) NON-ISOLABLE SEAWATER LEAKS
 (A) #1 SCOPE HULL GLAND LEAK 1 DPM AT 20% TD
 (B) SSW-30 (BODY-BONNET LEAK)
 (C) DE-7 (STEM SEAL LEAK)
 (D) RUDDER RAM
 (E) EHP P46-3P
 (F) TD-89 (FWD ESCAPE TRUNK DRAIN)
 (G) #2 SCOPE INBOARD HOIST CYLINDER FITTING
 (H) #1 SCOPE INBOARD HOIST CYLINDER FITTING
 (I) STERN PLANES RAM PACKING
 (J) STBD RETRACTABLE BOW PLANE EXTEND RETRACT CYLINDER
 (K) AHP-525 (PARKER CHECK VALVE SEAT LEAK)
 (L) SSW-20 UPSTREAM FLANGE
 (M) EHP P025-01S (WHIP ANTENNA)
 (N) INNER STERN PLANES RAM PACKING
 2) ISOLABLE SEAWATER LEAK
 (A) TDU VENT, TD-104 LEAKS 3 DPM AT 65% TD
 (B) ASW-5 BODY-BONNET LEAK
 OTHER DEFICIENCIES
 (A) STERN PLANES AUX ANGLE INDICATOR ON BCP DOES NOT ILLUMINATE, URO-16
 (B) MSW-2 CYCLE TIME SHUT IS 10.1 SEC
 (C) MBT 3A WILL NOT OPEN
 B. NON-SUBSAFE/URO DEFICIENCIES.
 1) SCULLERY DRAIN LEAKING AT FITTING F-18, 27 DPM
 2) 3 FLOOR TILES IN CREWS MESS LIFTED AFFECTING SANITATION
 3) CO HOT WATER SHOWER RECIRC PUMP FAILED
 2. PREVIOUS DEFICIENCIES REPORTED AND STATUS.

(LIST ALL PREVIOUS DEFICIENCIES AND CURRENT STATUS-THE GOAL IS TO CAPTURE THE COMPLETE MATERIAL CONDITION IN EACH MESSAGE) STATUS = REPAIRED (REP), CORRECTIVE ACTION REQUIRED (CAR), NOT APPLICABLE (NA)

EXAMPLE –

- 1) SCULLERY DRAIN LEAKING AT FITTING F-18, 27 DPM -REP
 - 2) 3 FLOOR TILES IN CREWS MESS LIFTED AFFECTING SANITATION - CAR
 - 3) CO HOT WATER SHOWER RECIRC PUMP FAILED - CAR
 - 4) #1 SCOPE HULL GLAND LEAK 1 DPM AT 20% TD - CAR
 - 5) TDU VENT, TD-104 LEAKS 3 DPM AT 65% TD - CAR
 - 6) STERN PLANES AUX ANGLE INDICATOR ON BCP DOES NOT ILLUMINATE, URO-16 - REP
3. ADDITIONAL INFO.
- 1) DESCRIBE ANY ADDITIONAL INFO DESIRED OR LIST "NONE".
 4. TYCOM, NAVSHIPYD, AND NAVSEA REPS CONCUR-DO NOT CONCUR (AS APPROPRIATE).//
- BT

NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH CURRENT MESSAGE FORMAT AND CURRENT PLAD IS UTILIZED.

APPENDIX CP

SUBMARINE SEA TRIAL SITUATION REPORT
(SITREP GREATER THAN SIX MONTHS)

FM USS <SHIP NAME>//
 TO COMSUB<LANT/PAC> <NORFOLK VA/PEARL HARBOR HI>//
 INFO CNO WASHINGTON DC//
 COM<LANT/PAC>FLT <NORFOLK VA/PEARL HARBOR HI>//
 COMNAVSEASYS COM WASHINGTON DC//
 DIRSSP WASHINGTON DC// {For SSBN/SSGN Only}
 <SUBOPAUTH>// {IF OTHER THAN PARENT TYCOM}
 COMSUBRON ELEVEN//
 COMSUBGRU <NO.>//
 COMSUB<RON/GRU NO.>//
 <SUPERVISING AUTHORITY>//<CODES>//
 (OTHER UNITS IN AREA IF APPLICABLE)//
 BT
 UNCLAS //N09094//
 MSGID/GENADMIN/USS <SHIP NAME>//
 SUBJ/(TYPE AVAILABILITY) SITREP (SEQUENTIAL NUMBER)//
 REF/A/DOC/COMUSFLTFORCOM/<DATE>//
 REF/B/DOC/AS APPLICABLE/<DATE>//
 NARR/ REF A IS COMUSFLTFORCOMINST 4790.3, JOINT FLEET MAINTENANCE MANUAL, VOLUME II.
 RMKS/1. CO'S SUMMARY, EVENTS 1-9 COMPLETED WITH THE FOLLOWING DEFICIENCIES NOTED:
 A. SUBSAFE/URO DEFICIENCIES.
 1) NON-ISOLABLE SEAWATER LEAKS
 (A) #1 SCOPE HULL GLAND LEAK 1 DPM AT 20% TD
 (B) SSW-30 (BODY-BONNET LEAK)
 (C) DE-7 (STEM SEAL LEAK)
 (D) RUDDER RAM
 (E) EHP P46-3P
 (F) TD-89 (FWD ESCAPE TRUNK DRAIN)
 (G) #2 SCOPE INBOARD HOIST CYLINDER FITTING
 (H) #1 SCOPE INBOARD HOIST CYLINDER FITTING
 (I) STERN PLANES RAM PACKING
 (J) STBD RETRACTABLE BOW PLANE EXTEND RETRACT CYLINDER
 (K) AHP-525 (PARKER CHECK VALVE SEAT LEAK)
 (L) SSW-20 UPSTREAM FLANGE
 (M) EHP P025-01S (WHIP ANTENNA)
 (N) INNER STERN PLANES RAM PACKING
 2) ISOLABLE SEAWATER LEAK
 (A) TDU VENT, TD-104 LEAKS 3 DPM AT 65% TD.
 (B) ASW-5 BODY-BONNET LEAK
 OTHER DEFICIENCIES
 (A) STERN PLANES AUX ANGLE INDICATOR ON BCP DOES NOT ILLUMINATE, URO-16
 (B) MSW-2 CYCLE TIME SHUT IS 10.1 SEC
 (C) MBT 3A WILL NOT OPEN
 B. NON-SUBSAFE/URO DEFICIENCIES.
 1) SCULLERY DRAIN LEAKING AT FITTING F-18, 27 DPM
 2) 3 FLOOR TILES IN CREWS MESS LIFTED AFFECTING SANITATION
 3) CO HOT WATER SHOWER RECIRC PUMP FAILED
 2. PREVIOUS DEFICIENCIES REPORTED AND STATUS.

(LIST ALL PREVIOUS DEFICIENCIES AND CURRENT STATUS-THE GOAL IS TO CAPTURE THE COMPLETE MATERIAL CONDITION IN EACH MESSAGE) STATUS = REPAIRED (REP), CORRECTIVE ACTION REQUIRED (CAR), NOT APPLICABLE (NA)

EXAMPLE –

- 1) SCULLERY DRAIN LEAKING AT FITTING F-18, 27 DPM -REP
 - 2) 3 FLOOR TILES IN CREWS MESS LIFTED AFFECTING SANITATION - CAR
 - 3) CO HOT WATER SHOWER RECIRC PUMP FAILED - CAR
 - 4) #1 SCOPE HULL GLAND LEAK 1 DPM AT 20% TD - CAR
 - 5) TDU VENT, TD-104 LEAKS 3 DPM AT 65% TD - CAR
 - 6) STERN PLANES AUX ANGLE INDICATOR ON BCP DOES NOT ILLUMINATE, URO-16 - REP
3. ADDITIONAL INFO.
- 1) DESCRIBE ANY ADDITIONAL INFO DESIRED OR LIST "NONE".
 4. TYCOM, NAVSHIPYD, AND NAVSEA REPS CONCUR-DO NOT CONCUR (AS APPROPRIATE).//
- BT

NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH CURRENT MESSAGE FORMAT AND CURRENT PLAD IS UTILIZED.

4.2.5 Planning Board for Maintenance. The regularly scheduled meeting of the ship's Maintenance Team, as required by Chapter II-II-1 and defined in Chapter VI-41 of this manual, to discuss ship wide maintenance issues. Chaired by the Ashore Ship's Maintenance Manager, this forum provides a review of current planned off-ship and organizational maintenance, Current Ship's Maintenance Project (CSMP) quality and accuracy, future maintenance and modernization planning, 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.

4.2.6 Maintenance and Modernization Business Plan. The Maintenance and Modernization Business Plan (MMBP), located in Volume VI, Chapter 33 of this manual, prepared six to eight months in advance of the fiscal year, is the ship's plan for maintenance and modernization effort for a fiscal year. The ship's maintenance team prepares the plan. The Maintenance Team applies its knowledge of the ship's material condition and Type Commander (TYCOM) scheduled modernization and Chief of Naval Operations (CNO) availabilities in the prospective operating cycle to develop the budget recommendation for funding maintenance requirements. The plan is based on an assessment of the ship's anticipated material condition, the validated CSMP including Class Maintenance Plan (CMP) applicable tasks, planned fleet alterations, outstanding Departures from Specifications (DFS), Casualty Reports (CASREP) and Board of Inspection and Survey material discrepancies. The MMBP shall address funding required for CNO availabilities advanced planning and CM opportunities.

4.2.7 Immediate Superior In Command. In the context of this chapter the TYCOM may act in support of or in the place of the Immediate Superior In Command (ISIC) for maintenance.

4.3 FLEET MAINTENANCE AVAILABILITIES. Fleet maintenance availabilities consist of the following:

4.3.1 Ship's Force Upkeep. A Ship's Force Upkeep is a scheduled period in which the ship is principally engaged in self-maintenance.

4.3.2 Scheduled Continuous Maintenance Availability. A Scheduled Continuous Maintenance Availability (CMAV) is a scheduled availability normally 2 to 6 weeks in duration and normally scheduled once per non-deployed quarter during a period when the ship will be in port.

NOTE: **SUBMARINE MAINTENANCE MODERNIZATION AVAILABILITIES MAY BE 2 TO 6 MONTHS LONG. THESE AVAILABILITIES CAN BE MANAGED SEPARATE FROM THE REQUIRED MAINTENANCE AVAILABILITIES OR INCORPORATED IN THE REQUIRED MAINTENANCE PERIODS AT THE DISCRETION OF THE PLANNING BOARD FOR MAINTENANCE (PB4M) AND ISIC. MODERNIZATION AVAILABILITIES WILL INCLUDE KEY EVENTS AND CERTIFICATION MILESTONES PRIOR TO AT-SEA OPERATIONS AND MAY REQUIRE SEA TRIALS AS APPROVED BY THE PB4M AND ISIC IN ACCORDANCE WITH THIS CHAPTER.**

- a. Submarines - One regular CMAV every 3 to 4 months, of which a minimum of 21 days are dedicated to production work. SSN maintenance availabilities required to support the Fleet Response Plan will be scheduled in accordance with reference (a). For SSBNs, one 28 day CMAV per each patrol cycle. For SSGNs the maintenance schedule for a 15-18 month operating cycle will be scheduled in accordance with reference (b) to include three forward deployed 21 day CMAVs. The Scheduled Continuous Availability requirement is mandatory. It cannot be deferred, deleted or shortened without TYCOM (N43) concurrence. Appendix A of this chapter contains a sample message to TYCOM from ISIC requesting concurrence to defer, delete or shorten a scheduled CMAV.
- b. Carriers - As Scheduled.
- c. Surface Ships - At a minimum, one 3-week CMAV per non-deployed quarter.

4.3.3 Unscheduled Continuous Maintenance Availability. The Unscheduled CM Availability is a single yearlong availability, for the period 01 October through 30 September, scheduled for each ship every fiscal year. The Year Long Unscheduled CM Availability is for the scheduling and completion of non-emergent work items that are not accomplished during any other schedule availability.

4.3.4 Emergent Availability. The Emergent Availability (EM) is designed for work of such an urgent nature that the heightened risk of disruption and paying of premiums is accepted and planning horizons are shortened.

4.4 COMMON ELEMENTS.

4.4.1 Responsibilities. Responsibilities regarding maintenance policies and procedures for Fleet maintenance availabilities are as follows:

4.4.1.1 Immediate Superior In Command.

- a. Coordinate scheduling of availabilities at LMAs with TYCOMs.
 - (1) Monitor corrective maintenance action taken by LMA/Executing Activities.
 - (2) Schedule and conduct inspections of Forces Afloat.
 - (3) Monitor progress of availabilities.
- b. Initiate the required budgetary actions for funding availabilities.
- c. Ensure all authorized alterations are identified by priority based on material availability.
- d. Identify the routine package to be accomplished based on Master Specification Catalog/Master Job Catalog (MJC) review (as appropriate).
- e. Review results of scheduled monitoring inspections and testing that could result in significant new work or could impact scheduled work.
- f. Identify required special evolutions associated with availabilities in support of Pre-Overseas Movement preparations and pre-availability test and inspection requirements.
- g. Issue availability planning message.
- h. (Submarines only) Ensure all Periodic Maintenance Requirement (PMR) and Unrestricted Operation Maintenance Requirement Card maintenance actions intended for accomplishment during availability are identified.
- i. (Submarines only) Send a Sea Trials Support Services message to specify Deep Submergence Rescue System "modified-alert" requirements in accordance with Appendix B of this chapter.
- j. (Submarines only) Provide updated Sea Trials status by telephone to Commander, Submarine Squadron (COMSUBRON) ELEVEN if Deep Submergence Rescue System "modified-alert" support services are in use.
- k. (Submarines only) Identify key events for each CMAV during the pre-arrival conference. Determine if Fast Cruise and/or Sea Trails is/are required based on the scope of the availability work, alterations and modernization. The ISIC will task the PB4M/Regional Maintenance Center (RMC) to submit the Fast Cruise and/or Sea Trials agendas for ISIC approval in accordance with paragraph 4.6.3.3 of this chapter.
- l. (Submarines only) Monitor Ship and Executing Activity preparations to transition to a CMAV period and make final report that the ship has transitioned to the CMAV period after the completion of the arrival conference to the Group and TYCOM.

4.4.1.2 Regional Maintenance Center/Lead Maintenance Activity. (As appropriate)

- a. Develop recommended Key Event schedule and present to the ISIC/Ship's Force.
- b. Conduct ship checks, plan work candidates and order required material.
- c. Recommend **returned** work candidates to the RMC ISIC, as applicable.
- d. Develop strategy using the guidance found in Volume VI, Chapter 9 of this manual to accomplish calibration of systems, gages, instruments and tools in support of Ship's Force requested work and the availability milestones.
- e. Identify and order Long Lead Time Material (LLTM).
- f. Review the Availability Work Package, write Formal Work Package (FWP)/Technical Work Documents (TWD), identify critical jobs and develop an Integrated Work Schedule (IWS) to aid in tracking and coordination of all work.
- g. Conduct the Work Package Execution Review (WPER).

- (8) Provide Automated Work Requests (AWR) or a list of completed work with applicable 3-M final action taken codes in accordance with reference (c).
- (9) For ships with work in the Year Long CM or EM Availability no separate formal meeting is required. Rather, issues with these availabilities should be a part of the routine PB4M held by the ship's maintenance team or special meetings as needed to properly monitor and manage the ongoing maintenance.
- (10) (Submarines Only) Ship's Force will brief the status of all scheduled K-MRCs to include time critical K-MRC status, completion percentage and schedule to complete outstanding K-MRCs in the availability.

4.4.13 100 Hour Transition Periods (Submarines only). The 100 hours at the beginning and at the end of a CMAV are critical times for availability execution. The ISIC, LMA and ship are responsible for coordinating the 100 hour plan. Any job or event that is viewed as hindering the start of the availability shall be included in the 100 hour plan. Communication is vital to ensuring a full understanding of all work and associated requirements. The 100 hour transition plans will be outlined in the Availability Planning Message in accordance with Appendix F. Details for the first and final 100 hours shall be as follows.

4.4.13.1 First 100 Hour Plan (Submarines only). The First 100 Hour Plan will notionally start the first full work day of the availability. The items listed below are the focus of the first 100 hours and will be discussed at the Arrival Conference.

- a. Establishing plant conditions/work controls.
- b. Working hours.
- c. Jobs still requiring ship checks will be listed in the availability planning message.
- d. Test forms required for Ship's Force retest of FMA work will be delivered to the ship within the first 100 hours for Ship's Force to review, plan and write procedures as necessary.
- e. Time critical jobs that will start during the first 100 hours. **Completion of all time critical K-MRCs as determined at the A-21 meeting with the maintenance team. Time critical K-MRCs are those that:**
 - (1) **Would result in long repair times if failed.**
 - (2) **Require unique plant conditions which conflict with required plant conditions for other scheduled work (e.g., seawater hull and backup valve cycling when seawater systems must be secured for maintenance or trim and drain pump performance test when trim and drain systems are to be secured).**
 - (3) **K-MRCs that have a poor historical performance based on review of the RMC curve at A-21.**

4.4.13.2 Final 100 Hour Plan (Submarines only). The Final 100 Hour Plan will notionally begin four days prior to the last day of the ship's scheduled CMAV. Items listed below must be completed prior to the 100 hour point. Appendix G will provide an outline of the final 100 hours.

- a. Production work complete - it is vital all production work is completed by the 100 hour point to allow for the remaining event to occur without delay.
- b. Weapons handling.
- c. Testing associated with production work is completed.
- d. Sail closeout.

4.5 SHIP'S FORCE UPKEEP. Ship's Force Upkeep availability is a scheduled period in which the ship is conducting self-maintenance in accordance with reference (c), training, supporting inspections by outside activities, and performing routine shipboard evolutions. Ship's Force Upkeep availability can be accomplished at sea when the ability of the ship to perform its assigned missions and tasks is not affected and the work is accomplished onboard the ship. Scheduled Ship's Force Upkeep periods shall not be interrupted for other than emergency reasons.

4.5.1 Upkeep Work Planning.

4.5.1.1 Planning Sources. The upkeep work package shall be developed using three sources:

- a. Planned Maintenance System (PMS) shall be scheduled in accordance with reference (c).
- b. Reactor Plant PMS shall be scheduled in accordance with reference (e).
- c. CSMP will be reviewed to ensure scheduling and accomplishment of all work which is within Ship's Force capability.

4.5.1.2 Ship's Force Planning Actions.

- a. Preparation for Ship's Force Upkeep should be the normal activity of the maintenance team and be discussed at PB4M meetings.
- b. Review all Ship's Force screened CSMP work candidates and identify those items to be accomplished within the scheduled Ship's Force Upkeep period.
- c. Identify CJs.
- d. Develop an IWS in accordance with paragraph 4.4.4 of this chapter to aid in tracking and sequencing CJs.
- e. Establish strategy for Ship's Force calibration of gages, instruments, and tools based on the onboard Calibration Recall List.
- f. Develop FWP, Controlled Work Packages, and TWDs, as required, in accordance with Volume V, Part I, Chapter 2 of this manual.
- g. (Submarines only) Identify operational Unrestricted Operation (URO) Maintenance Requirement Cards (MRC) to be accomplished during the availability. The ship shall identify the plan to accomplish PMRs called down by the ISIC and identify any conflicts affecting the PMR execution.

4.5.2 Ship's Force Upkeep Work Execution. Duty section, division meetings, and/or shift briefings will be conducted as necessary to discuss current status of work and projected work progress expected for the period covered. The status and projections will be based on CJs and the IWS and should be reviewed at the regular ship's PB4M Maintenance Team meetings.

4.5.3 Ship's Force Upkeep Work Completion.

4.5.3.1 Management Closeout Procedures. Upon completion of repairs, FWPs, Controlled Work Packages, and TWDs will be closed out in accordance with Volume V, Part I, Chapter 2 of this manual. Update the CSMP. Ensure non-conformances (Waivers/Deviations or Departures from Specification) submitted during the availability by any activity are approved prior to trials at sea (if held) and not later than the completion of the availability.

4.5.3.2 Dock Trials/Fast Cruise/Sea Trials. Dock Trials, Fast Cruise and Sea Trials shall be conducted as required. Sample agendas in Part I, Chapter 3 of this volume may be modified, as necessary, to ensure the equipment which was worked during the upkeep is exercised prior to at sea operation.

4.5.4 Ship Certification Prior to Underway (Submarines only). Ship and Executing Activity provide the ISIC a written report of ship's certification continuity prior to underway in accordance with Volume V, Part I, Chapter 5 of this manual. If Upgrades/Alterations or Major Repair Work of the FBW SCS was performed, the ISIC will accomplish a 100% audit, as defined in Volume V, Part I, Chapter 9 of this manual of the work. ISIC and TYCOM will use the FBW message reporting process for certification specified in Part I, Chapter 3 of this volume for availabilities of less than six months duration.

4.6 SCHEDULED CONTINUOUS MAINTENANCE AVAILABILITY.

4.6.1 Scheduled Continuous Maintenance Availability Planning. Thorough, detailed planning is an absolute prerequisite to effective CMAV execution. Effective CMAV management begins well before the ship arrives with material procurement and job planning. Appendix H of this chapter is a typical submarine CMAV Milestone Schedule to be used by all activities involved in planning and executing the submarine availability. The Surface Force Maintenance and Modernization Milestones are located in Part II, Chapter 2, Appendix D of this volume.

4.6.1.1 Scheduled Continuous Maintenance Availabilities Planning Sources. A significant portion of the CMAV Work Package can be identified in advance from five basic sources. Submarines, will also execute a planning availability as described in sub-paragraph f. below.

- a. Ship's CSMP. This document contains work items deferred during previous maintenance availabilities as the result of inadequate material support, outstanding DFS, drydock requirements, etc. To ensure the CSMP accurately reflects the required ship's maintenance, the Maintenance Team and ISIC will review each ship's CSMP in detail with Ship's Force during routine PB4Ms and prior to every maintenance availability.
- b. Ship's Force Planned Maintenance. Ship's Force shall conduct a review of PMS and Reactor Plant PMS requirements (where applicable) and ensure all maintenance actions are identified. **In particular, an in-depth review of scheduled K-MRCs is required so that they are properly integrated into the planning process.**
- c. PMR/URO electronic files (Submarines only). Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP) Activity provides electronic files of PMR/URO maintenance requirements for each ship, as applicable. The ISIC will load these requirements into each ship's CSMP for a specific CMAV.
- d. Alterations (Fleet Alterations, Program Alterations, Ship Changes and Strategic Systems Program Alterations, etc.). The RMC/ISIC will enter alterations on the ship's CSMP that the TYCOM has authorized for accomplishment. The Ship Maintenance Team/RMC/ISIC calls out alterations for a specific CMAV based on material availability and Executing Activity capacity as identified by the Executing Activity. Within funding constraints and TYCOM guidance, all alterations authorized on the TYCOM Alteration Management System (Submarine Force only)/Navy Modernization Process (NMP) are candidates for accomplishment during each CMAV.
- e. Work Routines. A set of standard routines from the MJC should be planned for every CMAV. The ISIC/RMC tailors each CMAV routine package to the needs of the ship by calling out additional routines to document periodic, interim dry docking, URO maintenance (as applicable), and calibration recall requirements, as appropriate.
- f. Planning availability. (Submarines only) A scheduled one week planning availability will normally be scheduled approximately four weeks prior to a scheduled regular CMAV. The purpose of the planning availability is to allow the LMA and other activities scheduled to perform maintenance during the regular CMAV to conduct ship checks and job scoping early enough to write required FWPs/TWDs, order material and develop a cohesive plan for the regular availability. Only underway limiting repairs should be accomplished during a planning availability. Paragraphs of 4.6.1 and all A-30 items from Appendix H of this chapter shall be addressed and focused on during the planning availability. The results of the planning availability directly feed into the WPER.

4.6.1.2 Scheduled Continuous Maintenance Availability Planning Functions. The Maintenance Team/RMC/ISIC will take the following actions in planning a CMAV. Surface Force Ships see Part II, Chapter 1 of this volume for maintenance validation, screening and brokering.

- a. Work Package Submission. Ensure that ships submit a CMAV work packages as scheduled in accordance with Appendix H of this chapter for submarines. The Surface Force Maintenance and Modernization Milestones are located in Part II, Chapter 2, Appendix D of this volume. Message work packages may be sent if the ship is not in port. This singular action has significant impact on the ability of both the RMC/ISIC and Executing Activity to properly plan for the CMAV, and determine potential impacts on other planned work.
- b. PMR/URO Review (Submarines only). Review PMR/URO requirements and ensure all maintenance actions intended for accomplishment during the CMAV are identified and entered in the CSMP. Using the PMR scheduling system as described in Volume VI, Chapter 24 of this manual, the ISIC will request that all applicable PMR work be added to the ship's CSMP when the SUBMEPP CD-ROM is received. This work is applicable if it is prescribed for the ship and is due in accordance with the associated schedule. PMR and URO work is mandatory. PMR requirements are to be accomplished on or before the scheduled due date listed in the SUBMEPP provided report as contained in the TYCOM

PMR scheduling system. PMR requirements which are not accomplished by their scheduled completion date will be rescheduled and identified to the TYCOM in accordance with Volume VI, Chapter 24, paragraph 24.7.3.g of this manual. UROs are to be accomplished by the scheduled due dates or appropriate waivers or DFS must be requested.

- c. NMP Review. Review NMP and ensure all authorized alterations intended for accomplishment during the CMAV are identified by priority based on material availability as identified by the Executing Activity. Ensure they are properly entered into the CSMP.
- d. MJC Review. Review the MJC and identify the routine package to be accomplished during the CMAV. Ensure it is properly entered into the CSMP.
- e. Review work candidates for applicability of Master Specification Catalog task lists.
- f. Draft Key Event Schedule.
- g. Work Package Screening. Screen and forward the assigned prioritized work package to the Executing Activity. Maintenance Team/RMC/ISIC responsibilities for work package screening are established in reference (c). Additional specific requirements are:
 - (1) Ensure work candidates meet the criteria for the level of work and are correctly prioritized in accordance with reference (c).
 - (2) If the assistance requested is for use of the Executing Activity facilities or technical guidance in order for Ship's Force to accomplish planned or corrective maintenance, the submitting ship and TYCOM should be advised to use MJC Routine N0000EXCNA740, (Facilities for Ship's Force Work).
 - (3) If a work candidate is received in message format, the RMC/ISIC shall input the message work candidate into the Maintenance Data System (MDS). For a ship in transit, the parent RMC/ISIC must advise the RMC/ISIC to which the ship is reporting of the desired disposition of the message work candidate.
 - (4) Designate controlled work as defined in Volume V, Part I, Chapter 5 of this manual. Indicate the appropriate governing Key Event.
 - (5) (Submarines only) If the equipment is contained in the PMR program and the repair can possibly satisfy the PMR requirement, the ISIC will designate the work as Special Interest in Block 10, note the PMR MJC Job Control Number (JCN) in Block 49, and instruct to call out the MJC item. Enter remarks as necessary in Block 49 preceded by "SQ-", and sign in Block C.
- h. From the Key Event schedule, develop an IWS in accordance with paragraph 4.4.4 of this chapter to aid in tracking and sequencing CJs.
- i. CMAV Funding. CMAV funding targets are developed as a part of each ship's MMBP. RMC/ISIC will establish CMAV funding targets in order to properly and responsibly administer funds, and gain optimum readiness return on each dollar invested.
- j. Submarine Engineering Management, Monitoring and Fleet Support Program Office Performance Monitoring Team (PMT)/Supervisor of Shipbuilding Newport News PMS 312C Material Condition Assessment (MCA) Review. Review scheduled Submarine Engineering Management, Monitoring and Fleet Support Program Office/PMT/PMS 312C MCA inspections, monitoring and testing that may result in significant new work for the Executing Activity or Ship's Force; or that may impact scheduled Ship's Force or Executing Activity work.
- k. Outside Activity Support. Identify outside activities (e.g., Naval Surface Warfare Center, Carderock Division (NSWCCD), Alteration Installation Team, Naval Undersea Warfare Center, Supervising Authority, RMC, Industrial Activity Tiger Team, etc.) participating in the CMAV and their associated support requirements.
- l. Special Evolutions. Identify required special evolutions associated with pre-availability tests and inspections.

- m. WPER. The WPER is conducted with the Executing Activity (and Ship's Force if available) as scheduled in accordance with Appendix H of this chapter. The purpose is to finalize the CMAV work package and required evolutions. This is accomplished as noted below. This meeting may be conducted in conjunction with the ship's PB4M.
- (1) Attendees will include the Maintenance Team/ISIC Material Officer/TYCOM Ship's Coordinator, Maintenance Planning Manager, RMC, Ashore Ships Maintenance Manager, Production Officer representative, Executing Activity, Ship's Engineer Officer, MST OIC, Availability Coordinator and the Ship Superintendent (as applicable).
 - (2) Assemble the proposed CMAV work package from the CSMP, PMR/UROs, NMP and MJC, as applicable.
 - (3) Screen the proposed work package to designate the work to be accomplished during the CMAV.
 - (4) Prioritize the proposed work package.
 - (5) (Submarines only) Identify Safety of Ship Maintenance Items List evolutions in Volume IV, Chapter 10, paragraph 10.4.8 of this manual.
 - (6) Designate the CJs.
 - (7) Integrate Executing Activity recommended CMAV Key Event schedule with other ISIC/Ship planned events for the ship, such as weapons moves, fueling, and training events.
 - (8) Review scheduled PMT/MCA testing that may result in significant new work after the CMAV starts.
 - (9) Establish the CMAV berth for pre-staging material and support equipment.
 - (10) Review adequacy of available testing and support equipment needed for the CMAV.
 - (11) Identify other outside activities participating in the CMAV and associated support requirements.
 - (12) Identify required special evolutions associated with pre-availability tests and inspections. The result of the CMAV WPER should be an executable work package within the CMAV time frame, budget, and Executing Activity capacity.
 - (13) (Submarines Only) Review the plan developed by the ship for the K-MRC completion and ensure it is part of the integrated schedule per paragraph 4.4.13.1.e. of this chapter. Prior to this meeting, Ship's Force engineer and 3M Coordinator will meet with the PMT, TYCOM 3M representative and ISIC together (typically at A-40) to review current K-MRC status, ensure the ship's records match that of PMT and develop a K-MRC execution plan. Any discrepancies will be adjudicated prior to A-21 and provided to the RMC for inclusion in the integrated work schedule. Additionally, PMT will provide RMC curves to Ship's Force in order to help Ship's Force develop a plan to conduct all required K-MRCs during the availability. ISIC will concur with Ship's Force plan for K-MRC completion. All time critical K-MRCs (see paragraph 4.4.1.13.e. of this chapter) should be completed as soon as possible, preferably on the in port transit with PMT aboard (when possible) but no later than the end of the first 100 hours.
- n. Re-screen Work Candidates. Re-screen and assign **returned** work candidates (in accordance with Part II, Chapter 1 of this volume). Notify ship of final disposition of each item.
- o. Issue Availability Planning Message (Submarines only). No later than two weeks prior to start of the CMAV, send the Availability Planning Message prepared in accordance with Appendix F of this chapter and reviewed during the CMAV WPER, to the ship. It should describe the major work scheduled, controlling Executing Activity and Ship's Force Key Events, PMT/MCA testing, PMR jobs scheduled, alterations to be accomplished by the Executing Activity and Ship's Force, any other scheduled evolutions and 100 hour transition plans. This message should identify the current numbers of components due or overdue from the Calibration/Weight Test Recall Program.

4.6.1.3 Issue Availability Planning Response Message (Submarines only). No later than one week prior to the start of the CMAV, the ship shall certify readiness to transition to a CMAV period, and address any concerns with the Availability Planning Message to TYCOM/ISIC in accordance with Appendix I of this chapter. The following items shall be addressed in the ship's report:

- a. Schedule requirements such as action items from Availability Planning Message, schedule of key events, ability to conduct 100 hour transition plans.
- b. Ship material preparation such as a report status of parts for Ship's Force work and desires for ISIC/TYCOM assistance in procurement and ensuring all outstanding CASREPs, SUBS, ZOZZS and TDENTS are identified in availability planning message.
- c. Ship's Force integrated schedule such as miscellaneous programs (calibration, small valve maintenance, etc.), drills and trainers that will affect Ship's Force ability to support production work, preservation zones and planned maintenance (to include PMS, Reactor Plant PMS, and PMT/KMRCs).
- d. CO's report of readiness or concerns: CO review above items and availability planning message and report readiness and exceptions to transition to CMAV period.

NOTE: ALL WORK CANDIDATES SUBMITTED AFTER THE WPER SHALL BE SCREENED AND CONTROLLED AS LATE WORK IN ACCORDANCE WITH PARAGRAPH 4.4.6 OF THIS CHAPTER.

4.6.1.4 Arrival Conference. This conference is conducted by the LMA. The Arrival Conference purpose is to provide an executive level brief to the RMC/ISIC, Executing Activity, MST OIC (if applicable) and ship's CO on the total scope of the CMAV effort and shall be conducted as discussed below. Note that the Arrival Conference may be conducted in conjunction with the PB4M.

- a. Attendees. The Arrival Conference is hosted by the responsible FMA and attended by the following personnel:
 - (1) RMC/ISIC Material representative(s).
 - (2) Executing Activity representative(s).
 - (3) Tended ship, (recommended, as applicable, are the CO, Department Heads, and Availability Coordinator).
 - (4) Site PMT/MCA Officer.
 - (5) MST OIC (if applicable).
- b. Agenda. The following items comprise the agenda to be covered during the Arrival Conference:
 - (1) Introduction of key FMA, Executing Activity and ship personnel.
 - (2) CMAV material and funding status.
 - (3) Review the CMAV Key Event schedule for potential conflicts.
 - (4) Special evolutions scheduled during the availability.
 - (5) Validate that critical jobs to be accomplished by the Executing Activities and Ship's Force are properly sequenced in the IWS.
 - (6) Introduce the LMA representative as the single point of contact for all elements of the CMAV, including responsibility for coordination of all Executing Activities and Ship's Force. This point of contact may be the Port Engineer, Project Manager, or Ship Superintendent, as applicable.
 - (7) Alterations to be accomplished.
 - (8) Significant material issues.
 - (9) Review status of outstanding DFS, as applicable.
 - (10) Results of arrival inspections and PMT/MCA testing.

- (11) Issue meeting schedule for the CMAV.
- c. Tended Ship Actions. The ship takes the following actions at this conference:
- (1) Submit a list of key Ship's Force personnel, including officers, Leading Petty Officers/Work Center Supervisors, Quality Assurance Inspectors, Calibration Coordinator and Availability Coordinator.
 - (2) Verify that all known work candidates requiring outside assistance have been identified and work candidates submitted to the LMA/TYCOM or submit known late work candidates for immediate screening.
 - (3) Discuss potential Executing Activity/Ship's Force work interface concerns.
 - (4) Identify Ship's Force/MST (if assigned) planned evolutions that could impact scheduled work and verify that they are properly sequenced in the IWS.
 - (5) (Submarines Only) Ship's Force brief the plan developed by the ship, with help from PMT, for the K-MRC completion and ensure it is part of the integrated schedule per paragraph 4.4.13.1.e. of this chapter.
- d. RMC/ISIC Actions. During this conference, the RMC/ISIC staff will take the following actions (if not already done):
- (1) Review any late work candidates submitted by the ship not addressed at the WPER. The goal is to control late work in accordance with paragraph 4.4.6 of this chapter. Should the late work presented at the conference require that other work be deferred, that work to be deferred shall be clearly understood. A Business Case Analysis described in Appendix D of this chapter should be conducted.
 - (2) (Submarines and Aircraft Carriers only). Brief the Key Events schedule for the availability. The ship's Key Events should normally be scheduled in the Pre-CMAV/Availability Planning Message, concurred with by the ship's CO on arrival and input to the MDS by the RMC/ISIC prior to the Arrival Conference. CJs controlling the CMAV completion shall be identified for special management attention by the ISIC, LMA, Executing Activity and Ship's Force.

4.6.2 Continuous Maintenance Availability Execution. CMAVs are complex evolutions characterized by detailed management, closely coordinated RMC/ISIC, Executing Activity and Ship's Force work, systems testing, and other sequenced evolutions such as weapons movements, diver operations and training. Successful CMAV execution requires the closest possible communication and coordinated efforts by the RMC/ISIC, Executing Activity and Ship's Force.

4.6.3 Continuous Maintenance Availability Completion Procedures. The following procedures will be utilized for completing a CMAV. Exceptions are provided for those CMAVs of less than four weeks, or are of a minor scope where the PB4M may be an appropriate forum.

4.6.3.1 Management Reports Close-out Procedures. Upon completion of a scheduled availability, the MDS files must be updated to reflect the current status of work. To accomplish this goal and to ensure that all activities understand the status of all work, the following procedures will be followed:

- a. Upon completion of the assigned work, the LMA or Executing Activity will present a copy of the work candidate or a list of completed JCNs with the applicable final action codes to the ship to obtain concurrence that the described work was completed. Ship's Force will complete all AWRs in accordance with reference (c). Within 2 weeks of completion, the Executing Activities who have performed any configuration change shall submit the form 4790 CK of reference (c) to Ship's Force for submission to Configuration Data Managers Database - Open Architecture.
- b. Within two working days after the completion of an availability, all work centers will ensure that final man-hours have been entered. The ship's superintendent may sign off all Executing Activity routines for the ship. Completed work candidates and AWRs will be a product of the CMAV Departure and Assessment Conference of paragraph 4.6.3.2 of this chapter.

- c. On the third working day after the completion of an availability, the Maintenance Team will ensure that the CSMP ship and shore files reflects the current status of the ship's JCNs and request a Selected Job Management Report by priority for the ship.
- d. On the fourth working day after the completion of an availability, the ship's superintendent will annotate each incomplete JCN on the final Selected Job Management Report by JCN as to its present status and actions required in order to complete the item. Lead work centers must update this status into the MDS.
- e. Within seven working days after the completion of an availability, the Executing Activity will forward copies of the annotated Selected Job Management Report to the ship and ISIC.
- f. Review status of outstanding DFSs.

4.6.3.2 End of Scheduled Continuous Maintenance Availability Departure and Assessment Conference. This comprehensive review and critique of the availability is another cornerstone of the continuous improvement policy regarding Fleet maintenance.

- a. Purpose. The CMAV Departure and Assessment Conference is held to:
 - (1) Review the conduct of the availability and identify those improvements necessary to increase the effectiveness of Fleet maintenance.
 - (2) Identify the work that was completed during this CMAV and complete the appropriate documents (e.g., work candidates, AWRs, etc.) or produce the list necessary to update the ship's CSMP to reflect the completed work.
 - (3) Identify and reschedule to a future CMAV, the work deferred during this CMAV.
 - (4) Identify any incomplete work candidates and plan of action to complete items.
 - (5) Establish the basic requirements (i.e., initial work package, sequence number and tentative dates) for the next CMAV.
 - (6) Review status of outstanding DFSs.
- b. Execution. The Departure and Assessment Conference will be held during the last week of the CMAV at a time agreed upon by the Executing Activity Repair Officer/Production Officer and the ship. This meeting may be held in conjunction with the final weekly Management Conference or Progress Review.
- c. Attendees. The Departure and Assessment Conference is arranged, coordinated and chaired by the LMA Repair/Production Officer. Where the LMA is a contractor, the LMA Project Manager may co-chair these meetings with the NSA Project Manager. However, lack of participation by the contractor does not alleviate the NSA Project Manager of this responsibility. The following personnel shall attend this meeting and participate in its agenda:
 - (1) ISIC Supply Materials, Weapons/Combat Systems, Electronics Material Officer, and Submarine Engineering Management, Monitoring and Fleet Maintenance Support Program Office/PMT Staff personnel (as applicable).
 - (2) LMA Repair Officer, Production Officer, and Ship Superintendent, or their designated representatives.
 - (3) Tended ship CO, MST OIC (if applicable), Engineer and Availability Coordinator.
 - (4) Others as directed by the TYCOM, ISIC or Executing Activity CO.
 - (5) Executing Activity representatives.
- d. Agenda. The following agenda shall be used for reviewing and assessing the CMAV. Additional items may be added at the discretion of the TYCOM, ISIC, Executing Activity or ship. Attendees will be prepared to address their respective portions of the agenda.
 - (1) Review of the CMAV work package to establish status of each item and, for items completed satisfactorily, complete the work candidate/AWR.

- (2) Review incomplete work candidates that will remain open from this CMAV and identify plan of action to complete these items.
 - (3) Identify and reschedule to a future CMAV the work deferred during this CMAV.
 - (4) Assess the scheduling, execution and quality of work accomplished by each activity during the CMAV.
 - (5) Assess the quality of general services provided by the Executing Activity site.
 - (6) Review recommendations for process improvements and possible LEAN initiatives.
 - (7) Assess lost time that prevented or delayed execution of scheduled work. (Lost time internal to the Executing Activity, e.g., waiting for transportation, assist work center, etc. and lost time caused by the ship such as waiting access, tagout, other Ship's Force support.)
 - (8) (Submarines only) At the end of the first normally scheduled CMAV after a CNO availability, the LMA, via letter, informs the appropriate Naval Shipyard, with copies to the TYCOM, PMS392 and SEA04X, of any identified lessons learned, rework and quality concerns related to Naval Shipyard work.
- e. Results. The LMA shall consolidate the minutes of this meeting into the Departure and Assessment Report to the ISIC and provide a copy to the TYCOM and SUBMEPP. The report shall include:
- (1) List of completed work and/or completed work candidates/AWRs for direct input into MDS to update the ship's CSMP and Configuration Data Managers Database - Open Architecture.
 - (2) Preliminary establishment of the next CMAV.
 - (3) List of policies and processes identified as requiring review for improvement. Proposed process improvements and corrective actions suggested to improve the effectiveness of future CMAVs.
 - (4) Lessons learned from the availability.

4.6.3.3 Fast Cruise/Sea Trials. The ISIC may schedule a one to two day Fast Cruise as part of the CMAV Key Event schedule. This is normally the last major Key Event prior to CMAV completion. As a minimum, the Fast Cruise agenda will include specified drills and evolutions necessary to re-establish proficiency in basic ship operations. It will also include sufficient formal testing to certify that the equipment and systems are fully ready to operate at sea in an operational environment. For CMAVs less than four weeks, the requirement for a Fast Cruise shall be at the ISIC discretion. The necessity of Sea Trials is a function of work performed during a CMAV and may not be required. If the duration or complexity of the CMAV is determined to be sufficient to warrant Sea Trials, the Ship/ISIC/TYCOM (as required by specific Force policy) shall determine if a formal Sea Trial Agenda is necessary, and if required, task the RMC/ship to prepare a formal Sea Trial Agenda for ISIC/TYCOM approval.

4.6.4 Hot Wash/Lessons Learned. For long duration or complex CMAVs, or in cases where there are significant lessons to be learned, Hot Wash/Lessons Learned will be conducted. The Hot Wash/Lessons Learned Conference should be within 30 days of completion of the availability. The Lessons Learned process is described in Volume VI Chapter 39 of this Manual. All key NSA, RMC, LMA, TYCOM or his representative, Executing Activity and Maintenance Team personnel shall attend it. The agenda and details of the meeting shall be determined by the RMC and Maintenance Team and shall be of appropriate length to evaluate the overall scope of the work accomplished. The Hot Wash/Lessons Learned process provides the maintenance and modernization community with a process to identify, resolve, and provide feedback communication on barriers causing inefficiencies or waste within business processes. While there are several milestone meetings within the availability planning and execution process, the feedback process exists to continually collect information to improve processes.

4.6.5 Maintenance Management Performance Goals (Submarine Tenders only). Except for section 4.6.5.1 of this chapter, which is also applicable for RMC I-Level Production Shops, the following maintenance management performance goals are established for Submarine Tender Repair and Weapons Repair Departments. COs and Repair Officers are responsible for making every effort to attain these goals.

4.6.5.1 Activity Performance Summary. The Activity Performance Summary is a compilation of manpower statistics and production indices that are cumulative on a monthly basis. The following information summarizes the content and use of this report:

- a. This report is produced weekly on a cumulative basis for the current month and analyzed by the Production Officer and Repair Officer. This analysis should help determine the relative accuracy and adequacy of the manhour accounting for each work center. The data reflects how each work center is loaded with production work.
- b. On the last day of the month, a complete monthly cumulative report is produced. A thorough review and analysis is conducted by the Repair Officer and Production Officer, similar to the weekly review.
- c. Following review and analysis, the Repair Officer approves the data and the required reports are submitted to the TYCOM (for Submarine Tenders)/Commander, Navy Regional Maintenance Center (for RMC I-Level Production Shops). The TYCOM/Commander, Navy Regional Maintenance Center in turn forwards the data to higher authority.
- d. The Performance Summary provides management with data to determine the capacity of the activity for CMAV maintenance, and subsequent monitoring of the activity maintenance effort conducted on ships. The determination of activity capacity for ship maintenance is the gauge by which managers can evaluate activity productivity while reviewing the report of manhour expenditures.
- e. Activity capacity is a function of both total manpower and the distribution of personnel within the activity. A comparison of Repair Department manning to the manpower authorization should be conducted periodically to ensure activity work centers are not undermanned with respect to rate, Navy Enlisted Classification, and/or number of personnel. This review may determine that local action is required to schedule formal schools leading to the Navy Enlisted Classification acquisition where shortages exist, or may dictate a temporary or permanent reassignment of resources from one work center to another.

NOTE: FOR RMC I-LEVEL PRODUCTION PERFORMANCE SUMMARY, RMCs ARE NOT REQUIRED TO COUNT TRANSIENT PERSONNEL AND OTHERS THAT ARE NOT ABLE TO TRULY ACCOMPLISH OR SUPPORT PRODUCTION WORK, YET ARE ASSIGNED TO I-LEVEL PRODUCTION SHOPS FOR SUPERVISION.

- f. Part One of the activity Performance Summary shows the manpower distribution within the Activity. The Analyst Records and Report Section is responsible for collecting manning information from the activity departments and divisions as a basic input to the Performance Summary. The manning level of the Repair Department is monitored to ensure that this department is properly manned across its work centers.
- g. Part Two of the activity Performance Summary provides departmental manpower usage indicators and statistics. The Productivity Index is a key indicator of activity employment. Each Productivity Index is a ratio of production manhours expended to the production manhours available. Available manhours are computed from the number of production personnel assigned each day, assuming an eight hour work day and no more than five working days per week.
- h. Part Three of the activity Performance Summary is a breakdown of activity manhours expended aboard each tended ship.
- i. Part Four of the activity Performance Summary shows the status of work screened for activity accomplishment.
- j. Part Five of the activity Performance Summary provides the same manhour usage information as Part Two, but broken down by work center.

4.6.5.2 Available Production Hours. The standard workday consists of eight hours of available production work each work day, five days a week. Weekends and national holidays are not considered to have available production work hours. It further requires that TYCOMs will establish policies that maximize available production hours within the context of the total activity mission profile. The activity CO shall implement the eight hour production

work day for activity personnel. Reduction in this available effort will be for requisite industrial training, skill qualification, facilities maintenance, and capability certification efforts needed to meet the activity's Mission Profile requirements.

4.6.5.3 Performance Indices.

- a. All factors relative to the following indices must be accurately reflected in the baseline of the FMA computer management system. These factors are:
 - (1) Assigned Manhours. The number of personnel assigned to the activity as production and production support, over the normal eight hour work day and the number of days tending (exclusive of weekends, holidays and days underway), comprise the "Assigned (Gross Available) Manhours".
 - (2) Production Manhours. The manhours actually expended in the progress and completion of work requests authorized for activity accomplishment are those expended by personnel assigned to the activity work centers. The expended manhours by personnel from other departments are not included in the activity's indices, but are credited to other special work centers on the Performance Summaries.
 - (3) Productive Support Ratio for the Department is defined as:

$$\frac{\text{Total Assigned Support Personnel}}{\text{Total Assigned Production Personnel}}$$
- b. A Productive Support Ratio of between 0.65 and 0.85 shall be maintained. A ratio of greater than 0.85 is indicative of an excessive number of FMA personnel assigned to non-FMA tasks. A ratio of less than 0.65 is indicative of a shortage of personnel in Quality Assurance, Planning and other critical production support work centers. For AS-39, local specification is $65\% \pm 10\%$.
- c. Supervisory Ratio. The Supervisory Ratio, production personnel to permanent support personnel, must be a minimum ratio of 7:1.
- d. Supply Production Support. Production work centers shall not have supply function production support personnel assigned such as Repair Parts Petty Officers. The supply support function is assigned to the Planning and Estimating and Repair Other Vehicle work centers. When the production work centers must provide technical details for Repair Other Vehicle supply requests, such research time shall be reported as production time against the applicable work request. Production managers must ensure the Automated Material Requisitioning system is fully utilized to preclude wasted labor by activity personnel in copying supply data already available from the computer.
- e. Department Productivity Index.
 - (1) The Productivity Index for the Department is defined as:

$$\frac{\text{Total Production Manhours Expended by Department Personnel for the Reported Period}}{\text{Total Production Personnel} \times 8 \text{ hours per day} \times \text{Total Number of Days Tending for the Reported Period}}$$
 - (2) A Productivity Index for the department should average between 0.55 and 0.75. An index of greater than 0.75 indicates (AS-39 local specification is 55% to 90%):
 - (a) Insufficient assignment of production personnel resulting in significant overtime work or deferral of requisite technical skill training and qualification, and proficiency or general military training.
 - (b) An excessive amount of overtime work caused by improper workloading of an activity by the ISIC.
 - (c) Inaccurate reporting of manhours.
 - (d) Inaccurate accounting of assigned personnel (e.g., 340 assigned personnel working and reporting production hours but only 310 shown in the computer as assigned).

- f. Work Center Productivity Index. A Productivity Index for individual production work centers for the month could range from 0.25 to 1.35 with a norm of 0.85. However, if the quarterly average for a production work center is less than 0.40, the number of personnel should be reduced.
- g. Repair Utilization Index. Repair Utilization Index for the Department is:
$$\frac{\text{Total Support Manhours} + \text{Expended Production Manhours}}{\text{Total Production and Support Manhours Assigned}}$$

The Department Repair Utilization Index requires 45% to 90% for the month.
- h. Long-Term Non-FMA Duty Index. There are two special work center codes established to monitor the total Repair Department (10J) and Weapons Repair Department (10K), if assigned, personnel detailed to non-activity duties for greater than 30 continuous days. These numbers should not exceed ten percent of the total assigned activity personnel averaged for the calendar quarter.

4.7 YEAR LONG CONTINUOUS MAINTENANCE. The CM is a single yearlong availability, for the period 01 October through 30 September, scheduled for each ship every fiscal year. The Year Long Continuous Maintenance (YLCM) availability is for the scheduling and completion of non-emergent work items that are not accomplished during any other scheduled availability.

4.7.1 YEAR LONG CONTINUOUS MAINTENANCE PLANNING. Planning sources and actions are similar to those for the cmav and are included above. Since the continuous availability is a year long it has no specific arrival date as a reference for the planning milestones. As a result the milestone dates for the yearlong availability are consistent with those for the scheduled availability but are referenced to the planned execution date(s) of the work item(s). This approach for non-emergent work is intended to reduce premiums and waste for most work candidates by allowing the work to be planned, resourced with manpower and materials in a routine way. The submarine planning Milestones are included in Appendix H of this chapter. The Surface Force Planning Milestones are included in Part II, Chapter 2, Appendix D of this volume. The definition of Executing Activity scope that takes place in the WPER of a CMAV does not occur in the YLCM availability as a discrete signal point. Rather LMAs should continuously define scope and schedule across the LMA and assigned Executing Activities at the times described in Appendix H of this chapter and Part II, Chapter 2, Appendix D of this volume.

4.7.2 Year Long Continuous Maintenance Work Execution. During the execution period of work items in the YLCM availability, measures should be taken to ensure that Ship's Force, LMA and Executing Activities remain appraised of:

- a. Status of work to be accomplished.
- b. Identities of designated contact personnel.
- c. Status of material and other resources.
- d. Current schedule status.
- e. Special Evolutions that may impact completion of the work items.

4.7.3 Continuous Maintenance Completion. At the end of the fiscal year the availability should be entered as complete and a new availability established for the new fiscal year.

4.8 EMERGENT AVAILABILITY. The EM availability is designed for work of such an urgent nature that the heightened risk of paying premiums is accepted and planning horizons are shortened. This type of availability is for C3/C4 CASREPs, or a C2 CASREP with reasonable potential to become a C3/C4 CASREP. These CASREPs are identified as emergent maintenance and ordinarily funded from emergent funds. The RMC Commander may, with the respective TYCOM's approval, convert Emergent Maintenance funds to execute CNO availability or CM in this regard. Emergent work will be scheduled to minimize premiums in as much as the operational schedule will permit. Generally, C2 CASREPs will be corrected using the CM Process where work is scheduled in the unscheduled Continuous Maintenance availability, a Window of Opportunity or a CMAV, which supports the ship schedule, need and policy objectives minimizing premiums paid and operational schedule impacts.

4.8.1 Emergent Availability Planning. Planning sources and actions are similar to those for the CMAV and are included above. In the case of the EM availability, the milestone dates for the availability are not consistent with those for the scheduled availability and produce added risk of disruptions and payment of premiums. This risk is acceptable only because of the affect of the work on the mission capability of the tended ship. The definition of scope and schedule for emergent work occurs after the definition for both scheduled CMAV and unscheduled CM availabilities when Executing Activities may already be fully loaded and material may need extra effort to be expedited. Additionally, it may result in already scheduled work being deferred.

4.8.2 Work Execution. During the execution period of work items in the EM Availability measures should be taken to ensure that Ship's Force, LMA and Executing Activities remain appraised of:

- a. Status of work to be accomplished.
- b. Identities of designated contact personnel.
- c. Status of material and other resources.
- d. Current schedule status.
- e. Special evolutions that may impact completion of the work items.

4.8.3 Availability Completion. At the end of the fiscal year the availability should be entered as complete and a new availability established for the new fiscal year.

4.9 INTERIM DRYDOCKING/PRE-INACTIVATION RESTRICTED AVAILABILITIES. (Submarines Only.) A scheduled availability for repair activity accomplishment of specific maintenance items, such as URO MRCs. The availability, together with a Material Condition Assessment in accordance with reference (f), can request that the CNO extend the ship's operating interval and/or operating cycle. A Pre-Inactivation Restricted Availability (PIRA) is specifically used to extend the operating interval and/or operating cycle to the inactivation availability for the submarine. An Interim Drydocking (IDD) is specifically used to extend the submarine's operating interval and/or operating cycle to the next CNO scheduled availability other than an inactivation availability. Appendix J of this chapter contains a list of Major Trial and Inspection Milestones for IDD and PIRA availabilities.

4.9.1 Type Commander/Immediate Superior In Command (Group or Squadron) Responsibilities.

- a. Authorize new items and growth industrial work items.
- b. Monitor and approve all changes in established milestones, not internal to industrial activity completion dates.
- c. Issue direction when the quality or completeness of industrial activity work is in question.
- d. Notify the TYCOM when essential Ship's Force work cannot be completed on the scheduled contract or Key Event completion date. Make recommendations for assistance where appropriate.
- e. Periodically assess and monitor shipboard conditions during the availability.
- f. Prior to Fast Cruise, the ISIC Quality Assurance Officer shall conduct a formal audit of Ship's Force Re-Entry Control (REC) and DFS Records. Using the SUBMEPP PMR and URO MRC scheduling reports and current industrial activity/Ship's Force updates to the latest report, ensure all required "D"-Level PMR and URO MRC accomplishment is current. The ISIC shall forward the audit results to the TYCOM via the cognizant Commander, Submarine Group. The ISIC will then report to the TYCOM by message in accordance with message sample format of Appendix K of this chapter the status of the crew/material certification. An update of this certification is needed prior to Sea Trial and following the rescinding of certification noted in paragraph 4.9.9 of this chapter.
- g. Conduct a material inspection of the ship prior to Fast Cruise.

4.9.2 Certification Availabilities (Less Than Six Months) (Submarines Only).

- a. Duties and Responsibilities for Sea Trials and Inspections. Reference (g), as applicable, delineates the TYCOM's responsibility for operational control of assigned submarines during trials and for assuring that the crew and ship have attained satisfactory state of training, administrative, operational and material readiness for at-sea operations during the trials. Appendix L of this chapter provides a Sample Ship Message to ISIC and TYCOM Concerning Material Certification Upon Completion of Sea Trials.
- b. General Instructions for Industrial Activity Availability Trials and Inspections.
 - (1) Fast Cruise may not commence until Dock Trials have been satisfactorily completed and a satisfactory state of crew training (if required) and material readiness (if required), as delineated by this manual, has been certified. The required inspections and tests and their associated time periods may be modified by the TYCOM upon request from the cognizant ISIC.
 - (2) Sea Trials involving escorts will not normally be scheduled to commence on a weekend. When circumstances are such that Sea Trials must be rescheduled or planned to commence on a weekend to avoid costly delays, TYCOM approval will be obtained by the ISIC.
 - (3) Critical operation of reactors while nuclear powered ships are in a naval or commercial industrial activity will be governed by reference (h). The CO may authorize critical operation of the reactor in support of tasks assigned the ship. However, as long as the ship remains in an industrial activity, the CO will notify the Supervising Authority well in advance of any critical operation of the ship's reactor. This notification shall include the nature and duration of such operations.
 - (4) In conducting the inspections required herein, inspectors should be guided by the concept that at the start of Fast Cruise, the ship should be, in all respects, ready for Sea Trials with the exception of the additional training the crew will receive during the Fast Cruise.
 - (5) The requirement for TYCOM SUBSAFE certification of SUBSAFE boundaries not entered by the industrial activity and the material readiness upon completion of an industrial activity availability imposes additional responsibilities on the ISIC inspectors. Included in the material inspection will be a review of all outstanding Forces Afloat DFS as defined in Volume V, Part I, Chapter 8 of this manual. A review of the Ship's Force REC Records is necessary for SUBSAFE work accomplished by Forces Afloat in accordance with Volume V, Part I, Chapter 5 of this manual, along with a review of the applicable URO MRC status.
 - (6) The ISIC certification message, in accordance with Appendix K, will also provide a status report of any outstanding Re-Entries, Forces Afloat DFS and delinquent URO MRCs. The scope and nature of this inspection will vary dependent upon the extent and length of the availability. In this regard:
 - (a) Material certification may be made subject to the correction of specific deficiencies. (Deficiencies are such that they can be readily identified and listed).
 - (b) Material certification should be postponed to a later date when deficiencies are so significant or so numerous as to preclude correction in the time remaining before the scheduled start of Fast Cruise.
 - (c) Deficiencies that could affect the safe operation of the ship during Sea Trials must be corrected, reinspected and reported to the TYCOM as having been corrected prior to the start of Fast Cruise.
 - (7) Inspectors must determine that all work/testing necessary to support Sea Trials has in fact been completed or identified for completion prior to the start of Fast Cruise including the following:
 - (a) All ship's systems which affect safe operation during Sea Trials must be operable.

- (b) All work necessary for safe operation of the ship during Sea Trials which was undertaken by the industrial activity, Ship's Force, FMA, or other outside activities must have been satisfactorily completed and tested. Included must be a check for any special configuration or installations ensuring that they have been authorized by the proper authority, that their impact has been fully assessed and that the Sea Trial Agenda includes these impacts or limitations.
- (8) Following the completion of the required training and material readiness certification, COs must keep the cognizant ISIC fully informed of any changes in personnel, training and/or material status which could affect the validity of certification. Prompt TYCOM notification is required to permit revision or Operational Orders and services required.
- (9) Underway trials following IDD/PIRAs, particularly initial submerged and test depth trials, must be undertaken with the knowledge that the crew lacks recent experience operating as a unit and that the ship's structure and fittings have not been tested in an at-sea environment. All tests and procedures must be conducted carefully and methodically. Systems and components designed to operate at test depth should not be demonstrated at that depth for the sole purpose of proving the design, but instead should be operated at the deepest depth at which they might be used. For example, the hovering system should not be demonstrated at test depth. Trials and tests which are inherently hazardous should not be conducted.
- (10) A schedule is required for each underway, dockside or simulated trial. Prerequisites of the first underway period are: satisfactory ship's material condition as shown by the successful completion of alongside tests, salvage inspection, Ship's Force Dock Trial, and a satisfactory state of training as shown by the successful completion of crew certification inspection and Fast Cruise. Fast Cruise deficiencies affecting safe operations revealed in either material conditions or state of training must be corrected prior to getting underway for Sea Trials.
- (11) The trial schedule shall include a minimum of six hours of Individual Ship Exercises (ISE) for Ship's Force training. This ISE should be sequenced as soon as practical after the initial tightness dive and should include the necessary evolutions to allow each watch section ship control party to familiarize themselves with their assigned stations and duties. The ship should be operated at moderate speed to develop proficiency prior to the deep dive and full power run. Testing may be scheduled during the ISE period on a not-to-interfere basis with training. The time spent in the initial tightness dive, if at moderate speed, may be included as one section's training. The requirement to provide each watch section ship control party with about two hours experience submerged at moderate speed prior to the deep dive and full power run is mandatory for ship's safety.
- (12) All trial periods must be organized such that each member of the command has an opportunity to get six uninterrupted hours of rest during each 24 hour period encompassed by the trials. Sea Trial events which can be accomplished by normal watch sections may be conducted concurrently with crew rest periods.
- (13) Prior to getting underway for Sea Trials, Shipyard, Ship's Force and Type Commander shall jointly agree that the required seven day supply of Oxygen (O₂) and seven day supply of Carbon Dioxide (CO₂) removal capacity will be available in each compartment, based upon the number of expected occupants of that compartment, independent of the supply and removal capacity in the other compartment(s).
- (14) After the conclusion of Sea Trials, the submarine shall not be operated at depths greater than 1/2 Test Depth plus 50 feet, unless specifically authorized by the TYCOM, and shall not be released for unrestricted operations until all RECs are closed and the TYCOM issues the unrestricted operations authorization message.
- (15) After the conclusion of Sea Trials, and based upon a review of Sea Trial deficiencies and TYCOM authorization, the submarine may transit to a port other than the industrial activity.

4.9.3 Operating Depth Policy. The TYCOM's policy with respect to maximum allowable operating depths during trials, evolutions to be performed at the various depths, and the prescribed maximum water depth applicable in each case is stated in Volume VI, Chapter 26 of this manual. In every instance where the maximum authorized operating depth is exceeded, a report shall be made in accordance with reference (i), section 3.3.5.c.

4.9.4 Propulsion Plant Tests (If Required). For full power trials provisions of reference (j), Section 6 applies. Submarine depth during the submerged full power trial should be consistent with the applicable Submerged Operating Envelope (SOE), based on the Emergency Main Ballast Tank (EMBT) blow from maximum authorized operating depth being previously accomplished. The full power submerged ahead test for commissioned nuclear powered submarines shall be terminated by a back emergency bell. The duration of the back emergency shall be limited to 45 seconds, to be followed immediately by an appropriate ahead bell. Caution must be exercised to avoid developing stern way.

4.9.5 Phase II Crew/Material Condition Inspection. A Phase II Crew Certification Inspection is normally not required, but should be determined on a case basis by the parent ISIC. If there will be less than 15% personnel turnover, crew certification may be waived. Should the CO determine that alterations accomplished or the transfer of experienced personnel warrant a crew certification, a formal request shall be submitted to the ISIC. When required, crew certification will be performed in accordance with references (k) through (o). The material certification consisting of an ISIC audit of all Ship's Force SUBSAFE work in accordance with Volume V, Part I, Chapter 9 of this manual will need to be conducted for all industrial activity availabilities since the extent of the availability is such that an independent evaluation by an organization other than Ship's Force is required.

4.9.6 Pre-Critical Inspections. For availabilities where the reactor will be shutdown for 16 weeks or more, it is considered prudent to use an inspection plan similar to that employed by NAVSEA. Normally, the crew's readiness can be assessed within two days using such a plan, which should encompass the following:

- a. An administrative review.
- b. Observation of basic drills and evolutions not requiring reactor operation.
- c. Personnel interviews.
- d. Material inspection.

4.9.6.1 Scheduling of Pre-Critical Inspections. The ISIC Pre-Critical Inspection should be scheduled by the responsible ISIC about four weeks prior to criticality. The TYCOM should be advised as soon as possible in advance of the tentative date for the ISIC Pre-Critical Inspection and confirmed dates should be established about one month in advance of the inspection.

4.9.6.2 Composition of the Inspection Team. The Pre-Critical Inspection Team should consist of:

- a. A nuclear trained member of the cognizant ISIC Staff, usually the Squadron Training Officer.
- b. A qualified nuclear trained officer with experience as an Engineer Officer.

4.9.6.3 Reports of Inspection.

- a. The Senior Inspector should provide the inspected unit with an informal report of findings by the inspection team, copy to the cognizant ISIC and TYCOM.
- b. The ship's CO shall review the findings of the inspection team and make necessary adjustments to his training program to ensure his crew's readiness for criticality. He shall keep the cognizant ISIC advised of his training plan and his assessment of his crew's progress.
- c. The cognizant ISIC shall review the inspection findings, the CO's training plan and progress evaluations and direct follow-up reviews and/or inspections necessary to verify the ship's readiness for criticality.

4.9.7 Dock Trials. Dock Trials must, as a minimum, test those systems/equipment repaired or altered during the availability. The CO should use Appendix M of this chapter as a guide in preparing the Dock Trial Agenda.

4.9.8 Fast Cruise. Fast Cruise may commence immediately upon completion of Dock Trials and shall consist of the minimum requirements as set forth in Appendix N. The requirement for a Fast Cruise may be less than or greater than 24 hours in length depending upon the length of the availability and the time since the crew last operated the

ship at sea. The CO, with ISIC concurrence, will determine length of the Fast Cruise. Prior to the ship commencing Fast Cruise, the Supervising Authority shall report to the ship, by message, that all mandatory work approved for accomplishment during the availability is completed. When the ship is ready for sea, with the exception of conducting Fast Cruise and after receipt of the SUBSAFE material certification report from the performing activity as required by reference (p) and Volume V of this manual, the ship will request permission from the ISIC by priority message to commence Fast Cruise. The ISIC will then, if satisfied with the state of crew training and material readiness, authorize the ship to commence Fast Cruise by message, information copy to CNO, Fleet Commander, NAVSEA, and the TYCOM.

- a. A 24 hour rest and repair period will normally be scheduled following Fast Cruise and prior to the start of Sea Trials. This rest and repair period may be extended or reduced at the discretion of the ISIC.
- b. COs should consider the work and alterations accomplished during the availability when determining the extent of the Fast Cruise. The minimum requirements are listed and identified with an asterisk in Appendix N of this chapter.

4.9.9 Sea Trials. Following completion of Fast Cruise the ISIC will notify the TYCOM of satisfactory completion of Fast Cruise and readiness for Sea Trials using the message format of Appendix O. The submarine TYCOM will authorize the ISIC to allow the ship to get underway for Sea Trials using the message format of Appendix P. Sea Trials are required only as necessary to test work completed during the availability but must include those mandatory requirements identified in Appendix Q of this chapter. The industrial activity shall include at least two days in the availability for conduct of Sea Trials. The industrial activity shall prepare a Sea Trial Agenda for Sea Trials conducted after an availability at the industrial activity. For an availability at a FMA, the submarine shall prepare the Sea Trial Agenda, assisted by the industrial activity. The submarine involved shall submit the Sea Trial Agenda to the ISIC for approval, with an information copy to the TYCOM. During the Sea Trial the submarine CO will keep the TYCOM aware of the progress of the Sea Trial through periodic Situational Reports using the message format of Appendix R of this chapter. The frequency of these Situational Reports will be identified by the TYCOM or the Sea Trial Agenda. Extensions or reductions of the Sea Trial period may be granted where warranted by the scope of the work accomplished. Where extension of the Sea Trial period and a change in the availability schedule is required, requests for such extensions must be submitted by the industrial activity to the TYCOM as early as practical. All deficiencies resulting from Sea Trials will be satisfactorily resolved prior to the completion of the availability. If no Sea Trial deficiencies are found, the availability may be completed with TYCOM occurrence at the completion of Sea Trials.

NOTE: SUBSEQUENT TO THE MESSAGES, APPENDICES O AND S OF THIS CHAPTER, ANY DEFICIENCY DISCOVERED AND THE CORRECTIVE ACTION TAKEN WHICH AFFECTS THE WATERTIGHT INTEGRITY, THE RECOVERABILITY OF THE SHIP, THE OPERATIONS OF THE SHIP'S CONTROL SURFACES OR THE SHIP'S SALVAGE CAPABILITY SHALL BE REPORTED TO THE TYCOM BY THE SUPERVISING AUTHORITY/ISIC/TYCOM REPRESENTATIVE BY MESSAGE. PREVIOUS CERTIFICATION MESSAGES SHALL BE SUSPENDED. WHEN A REVIEW OF THE DEFICIENCY IS COMPLETED BY THE TYCOM, THE TYCOM WILL CERTIFY THAT THE SHIP'S SUBSAFE CERTIFICATION BOUNDARY IS SATISFACTORY FOR SEA TRIALS TO A SPECIFIED DEPTH.

- a. Assignment of Escort Ship.
 - (1) In accordance with reference (q), an escort shall be provided during deep dive submergence trials for ships completing an availability for repair of collision/grounding damage where deformation is observed to be in the hull integrity envelope and/or supporting structure.
 - (2) In accordance with reference (q), the requirement for providing an escort during deep dive submergence trials upon completion of all other availabilities will be evaluated by Commander, NAVSEA on a case basis. Commander, NAVSEA will advise the applicable Submarine Force Commander in writing whether or not an escort will be required based on the scope of work in the availability. In general, an industrial activity availability of less than six

months duration should not require an escort, since the work typically performed in these availabilities is limited in scope, is carefully controlled and, therefore, does not result in substantial risk of unidentified or incomplete work adversely affecting the SUBSAFE boundary.

- (3) Escort requirements should be determined early so that an escort satisfying the requirements of Part I, Chapter 3, paragraph 3.6.8.4.7.b.(6), of this volume can be scheduled if required. The TYCOM will in turn request services from the Fleet Commander as applicable. As a general rule, pressure hull work which could not affect hull circularity will not require an escort.
 - (4) Waiver of escort requirements may be requested by message when necessary. The ISIC will request the waiver as soon as possible. The TYCOM will pass the request to Commander, NAVSEA for approval. An escort waiver request message is to include all of the following specific statements, as applicable:
 - (a) A () inch by () inch hull cut between frames () and () including a () inch section of frame () was the only major hull integrity work accomplished during the availability. If no hull frame cut was made, a positive statement to that effect is required.
 - (b) The hull cut weld satisfactorily passed Radiographic Testing and 7 day Magnetic Particle Testing nondestructive tests.
 - (c) Post repair frame circularity check readings are within specifications.
- b. Assignment of Deep Submergence Rescue System During Submarine Sea Trials.
- (1) A Submarine Rescue Diving Recompression System will be placed in a modified alert status at the beginning of Sea Trials requiring an escort following an industrial availability or major maintenance availability for:
 - (a) Ships initial tightness and deep dive events.
 - (b) Subsequent Sea Trials until the completion of the initial dive to design test depth.
 - (c) If, in the TYCOM's judgment, a Sea Trial requires an escort due to major hull cuts.
 - (2) The ship conducting Sea Trials will notify COMSUBRON ELEVEN when Submarine Rescue Diving Recompression System services are no longer required due to completion of the events in paragraph 4.9.9 of this chapter or due to delay in completing Sea Trials.
- c. The ship's normal load out of Lithium Hydroxide canisters for Disabled Submarine (granular or ExtendAir®, no mix), Lithium Hydroxide curtains (or ExtendAir® Deployment kits, if equipped), Emergency Air Breathing masks, Submarine Escape Immersion Ensemble suits and oxygen candles is not sufficient to support this increase in personnel. Therefore, an additional four Lithium Hydroxide canisters (or three ExtendAir®, if equipped), four Lithium Hydroxide curtains (or one ExtendAir® Deployment kit for every multiple of 60 ExtendAir® canisters in the compartment, if equipped), one Emergency Air Breathing mask, one Submarine Escape Immersion Ensemble suit and two Oxygen candles shall be carried for each rider exceeding normal crew manning. Stowage of this additional equipment for Disabled Submarine shall be in the same escape compartment as the rider's designated General Emergency muster site assigned by the Commanding Officer. Lithium Hydroxide canisters, Emergency Air Breathing masks, Submarine Escape Immersion Ensemble suits and Lithium Hydroxide curtains are to be obtained from the industrial activity.

4.9.10 Interrupted Sea Trials. In the event a Sea Trial is interrupted, or an additional Sea Trial becomes necessary, the following requirements are to be met. These requirements shall be invoked if the ship returns to port for industrial activity repairs which affect SUBSAFE certification or which will require at-sea testing.

- a. The submarine will draft a revised Sea Trials Agenda to support resumption of the trials. This agenda shall be provided to the ISIC for concurrence and TYCOM for information.
- b. Ship's Force will report by message (format of Appendix T of this chapter) that Ship's Force is ready for follow-on sea trials.

- c. The ISIC shall report by message (format of Appendix U of this chapter) to the TYCOM that the material condition of those SUBSAFE Certification boundaries that were installed, repaired and/or tested by Ship's Force is satisfactory for resuming Sea Trials.
- d. Upon completion of all of the requirements in paragraphs 4.9.10.a. and b. above, the TYCOM will provide a message (Appendix V of this chapter) to the ISIC granting permission to proceed with the conduct of Sea Trials and authorize the ship to dive to the Sea Trial operating depth.

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APPENDIX A

SAMPLE MESSAGE TO TYCOM FROM ISIC REQUESTING CONCURRENCE TO DEFER, DELETE
OR SHORTEN A SCHEDULED CMAV

(MESSAGE IS NOT REQUIRED FOR CMAV'S 32 DAYS OR LONGER IN DURATION)

FM COMSUB<RON NO.>//
 TO COMSUB<LANT/PAC> <NORFOLK VA/PEARL HARBOR HI>//
 INFO COMSUBGRU <NO.>//
 NSSC <LOCATION>//
 <SUPERVISING AUTHORITY>//<CODES>//
 BT
 UNCLAS//N09094//
 MSGID/GENADMIN//USS <SHIP'S NAME>//
 SUBJ/(SUBS) REQUEST TO <MISS/SHORTEN> USS <SHIP NAME/HULL NO.> CMAV//
 REF/A/DOC/COMUSFLTFORCOM/<DATE>//
 NARR/REF A IS COMUSFLTFORCOMINST 4790.3, JOINT FLEET MAINTENANCE MANUAL, VOLUME
 II//
 RMKS/1. DUE TO <CAUSE OF MISSING/SHORTENING AVAIL> THE USS<SHIP NAME> WILL NOT BE
 ABLE TO MEET THE SCHEDULED CMAV REQUIREMENTS PER REF A.
 2. THE FOLLOWING INFORMATION IS PROVIDED TO SUPPORT <SHORTENING/MISSING> THE
 SCHEDULED CMAV.
 A. CMAV NUMBER:
 B. CMAV DATES:
 C. CMAV DURATION: (NUMBER OF DAYS)
 D. ACTIVE CASREPS:
 <CASREP #, DESCRIPTION, REPAIR PLAN>
 E. ACTIVE SUBS:
 <SUBS DESCRIPTION, REPAIR PLAN>
 F. SCHEDULED CMAV DATES FOR THE NEXT TWELVE MONTHS:
 G. IMPACT ON FUTURE WORKLOAD TO I-LEVEL MAINTENANCE ACTIVITY:
 H. STATUS OF K-MRCS: (NUMBER **OUTSTANDING**, **PLAN TO COMPLETE** **TIME CRITICAL K-MRCS**)
 NUCLEAR PMS ISSUES:
 I. STATUS OF PATS/POTS IF CNO AVAILABILITY PENDING:
 3. <ADDITIONAL REMARKS>
 4. REQUEST CONCURRENCE TO <MISS/SHORTEN> SCHEDULED CMAV <FISCAL QUARTER,
 YEAR>.///
 BT

**NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH CURRENT MESSAGE FORMAT AND
 CURRENT PLAIN LANGUAGE ADDRESS DIRECTORY (PLAD) IS UTILIZED.**

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APPENDIX E2

CMAV KEY EVENT CODES

(SUBMARINES ONLY BASED UPON TYPICAL MINIMUM 21 PRODUCTION DAY SCHEDULE)

EVENT #	KEY EVENT	SCHEDULING GUIDANCE
1	ARRIVAL	
2	ESTABLISH PLANT CONDITIONS	PER 100 HOUR PLAN
3	DIESEL INSPECT	AS REQUIRED BY PMS PERIODICITY, COORDINATION WITH ISIC AND DIESEL INSPECTOR
4	FLEET TECH SUPPORT TROUBLESHOOTING COMPLETE	PER 100 HOUR PLAN
5	TEMP SERVICES INSTALLED	PER 100 HOUR PLAN
6	SAIL RACETRACK/STAGING INSTALLED	PER 100 HOUR PLAN
7	VLS PLATFORM INSTALLED	PER 100 HOUR PLAN
8	PMT MONITORING PERIOD COMMENCE - COMPLETE TIME CRITICAL K-MRCS	PER 100 HOUR PLAN
9	SALVAGE INSPECTION	AS REQUIRED
10	Rx PLANT COOL DOWN	AS REQUIRED
11	Rx PLANT HEAT-UP	AS REQUIRED
12	NON-AVAILABILITY EVENT, INSPECTION OR EVALUATION THAT MAY IMPACT SCHEDULE	AS REQUIRED
13	BERTH SHIFT	AS REQUIRED
14	FUEL MOVEMENT	AS REQUIRED
15	BALLASTING EVOLUTIONS	AS REQUIRED
16	WEAPONS MOVEMENT	AS REQUIRED
17	DIVER OPERATIONS	AS REQUIRED
18	SHIPS TRAINING EVOLUTION	AS REQUIRED
19	STORES ON/OFF LOAD	AS REQUIRED
20	SHIP TO SHOP WORK CUTOFF	AS REQUIRED
21	O2/N2 LOADING/UNLOADING	AS REQUIRED
22	HAZARDOUS EVOLUTIONS	AS REQUIRED
23	TEMP SERVICES REMOVAL	PRIOR TO FINAL 100 HOURS OF AVAIL

EVENT #	KEY EVENT	SCHEDULING GUIDANCE
24	VLS PLATFORM REMOVAL	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
25	TANK CLOSEOUTS	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
26	SAIL CLOSE-OUT	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
27	TD SYSTEM COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
28	ASW/MSW SYSTEM COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
29	HYDRAULIC SYSTEMS COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
30	ELECTRICAL SYSTEMS COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
31	A/C SYSTEM COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
32	VENTILATION SYSTEM COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
33	REFRIGERATION SYSTEM COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
34	AIR SYSTEMS COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL
35	PROPULSION PLANT WORK COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL (TYPICALLY 20TH PRODUCTION DAY)
36	ALL WORK COMPLETE (INCLUDES PRODUCTION, AIT AND PRIVATE CONTRACTOR WORK)	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL (TYPICALLY 20TH PRODUCTION DAY)
37	PROPULSION PLANT TESTING COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL (TYPICALLY 21ST PRODUCTION DAY)
38	PRODUCTION WORK SYSTEM TESTING COMPLETE	COMPLETED PRIOR TO FINAL 100 HOURS OF AVAIL (TYPICALLY 21ST PRODUCTION DAY)
39	FAST CRUISE PRE-UNDER WAYS	96 TO 4 HRS PRIOR TO FAST CRUISE
40	PRE-UNDER WAYS	96 TO 4 HRS PRIOR TO UNDERWAY
41	DOCK TRIALS COMPLETE	72 HOURS PRIOR TO END OF AVAIL
42	PROPULSION PLANT START UP	PER FINAL 100 HOURS

NO.	MILESTONE	Responsible Activity	Scheduled CMAV *	Year-Long CM *	Remarks
19	Solicit Bids.	RMC	NA	NA	A-50 for FFP/IDIQ. If CMAV is to be performed under an IDIQ contract and is over \$500k we may need to add 30 days for solicitation in accordance with Fair Value purchasing policy. This would reset the CMAV solicit bid milestone to A-70.
20	Review PMR/URO requirements and ensure all maintenance actions intended for accomplishment during the availability are identified.	ISIC	A-60	NA	
21	Review CSMP and ensure all deferred maintenance actions intended for accomplishment during the availability identified by priority and submit to the TYCOM/ISIC.	Maintenance Team	A-50	NA	
22	Provide Availability Funding for Modernization to the RMC/LMA.	SYSCOMS/PEO/TYCOM	A-45	NA	Includes funding for AITs support services.
23	Review PMS, Reactor Plant PMS, CSMP, and testing requirements and ensure all Ship's Force maintenance actions scheduled for accomplishment during the availability are identified. Ship's Force review K-MRC data with PMT, TYCOM 3M representative and ISIC to develop K-MRC Completion Plan for submission to integrated work schedule.	Maintenance Team	A-40	NA	See Paragraphs 4.4.13.1 and 4.6.1.2.m.(13) of this chapter.
24	Review TYCOM Alteration Management System/NMP and ensure all authorized alterations intended for accomplishment during the availability are identified by priority based on material availability as identified by the LMA.	TYCOM	A-40	NA	

NO.	MILESTONE	Responsible Activity	Scheduled CMAV *	Year-Long CM *	Remarks
25	Review the MJC and identify the routine package to be accomplished during the availability.	TYCOM	A-40	NA	
26	Review CSMP T/A 2 items. Identify and order LLTM.	FMA	A-40	NA	
27	I-Level work package fully brokered.	Maintenance Team/ Ship's Force	A-40	E-14	Intent is to fully broker all known work to I-Level by this date. This allows for routine procurement of materials and brokering of work candidates to other Executing Activities if necessary.
28	Establish funding targets for budgeting purposes for the availability.	Funding Activity	A-40	NA	
29	Review the availability work package, begin writing FWPs/TWDs, identify critical jobs and develop the integrated work schedule to aid in tracking and coordination of all work.	LMA	A-40	E-14	
30	100% of D-Level maintenance work package 2Ks planned, estimated.	Planning Activity	A-35	E-14	A-60 for FFP/IDIQ.
31	I-Level work package fully accepted.	Planning Activity	A-33	E-14	Intent is for I-Level to accept or reject all work brokered to it up to this point in time, work entering later in the process will be subject to normal Business Case Analysis. At this point the I-Level activity work has been locked. Any remaining work will be re-brokered to another Executing Activity, rescheduled or returned.
32	100% of maintenance work D-Level package 2Ks locked.	Maintenance Team	A-30	E-7	A-60 for FFP/IDIQ.
33	Submit I-Level work package and schedule to the LMA for integration.	RMC	A-30	E-14	A-15 for FFP/IDIQ.
34	Submit executing activity work package and schedules to the LMA for integration.	All Executing Activities	A-30	E-14	

NO.	MILESTONE	Responsible Activity	Scheduled CMAV *	Year-Long CM *	Remarks
35	Develop recommended Key Events schedule and present to ISIC/Ship's Force/TYCOM.	LMA	A-30	NA	
36	Begin to integrate executing activity schedules.	LMA	A-30	E-7	
37	Review scheduled Ship's Maintenance Monitoring Support Office, PMT, MCA inspections and testing that may result in significant new work for the FMA or Ship's Force or that may impact scheduled Ship's Force and/or FMA work.	TYCOM	A-30	NA	
38	100% of O-Level maintenance work package locked.	Maintenance Team	A-30	NA	A-60 for FFP/IDIQ Intent is to provide work to be accomplished so that an integrated execution schedule can be developed for the WPER.
39	Identify to RMC/ISIC /TYCOM returned work candidates.	LMA	A-30	NA	
40	Begin processing all new work as "late work". See Appendix D for Business Case Analysis.	RMC	A-30	E-30	The intent is that all work regardless of the intended Executing Activity or level (O, I, or D) will have been brokered and accepted. Hence additional work will be treated as "late work".
41	MOA SUBMITTED	AIT Manager/outside activity	A-30	NA	
42	Conduct Planning Availability	Maintenance Team/LMA	A-30	NA	Should be prior to the WPER.
43	Cutoff for bidders questions.	PCO	NA	NA	A-30 for FFP/IDIQ.
44	Perform risk assessments and verify deliverables O-Level, I-Level, and D-Level work items and AIT schedule requirements to LMA.	Maintenance Team	A-25	NA	This is to confirm that the LMA has all input for his development of the integrated availability schedule. Note that for FFP CMAV LMA will not be identified until A-15, verification with LMA will take place at WPER.

NO.	MILESTONE	Responsible Activity	Scheduled CMAV *	Year-Long CM *	Remarks
45	Complete ship checks and order all required material.	Executing Activities	A-25	NA	
46	Conduct Work Package Execution Review (WPER) - finalize funding.	Maintenance Team	A-21	NA	A-10 for FFP/IDIQ. LMA/executing activity presents fully planned execution schedule (could be a Gantt chart) to the full Maintenance Team.
47	Deliver Material (LLTM and Kitted Materials) to Executing Activity.	Planning Yards/PARM	A-20	NA	
48	Complete TAR.	RMC	A-20	NA	
49	Submit Bids.	Contractor	NA	NA	A-20 for FFP/IDIQ.
50	Definitize Work Packages.	Maintenance Team/RMC	A-18	E-7	
51	Award Contract.	RMC	NA	NA	A-15 for FFP/IDIQ.
52	Issue availability planning message prepared in accordance with Appendix F of this chapter.	ISIC	A-14	NA	
53	Work Specs Developed.	Executing Activity	NA	E-14	
54	Develop strategy for FMA/Ship's Force calibration of gages, instruments and tools.	Maintenance Team/LMA	A-10	NA	
55	Issue availability planning response message prepared in accordance with Appendix I of this chapter.	Ship's Force	A-7	NA	Send to ISIC and TYCOM
56	Commence First 100 Hours	Maintenance Team/LMA	A-0	NA	
57	Conduct Arrival Conference.	LMA	A-0	NA	
58	Report ships transition to CMAV period.	ISIC	A-0	NA	Send to ISIC and TYCOM
59	Conduct Progress Review.	LMA	Weekly	NA	
60	Commence Final 100 Hours	Maintenance Team/LMA	C-4	NA	
61	Complete Availability.	LMA	C+0	30 Sep	
62	Conduct Departure and Assessment Conference.	Maintenance Team/LMA	C+0	NA	
63	Issue Departure and Assessment Report.	LMA	C+21	NA	

APPENDIX R
SUBMARINE SEA TRIAL SITUATION REPORT
(SITREP)

FM USS <SHIP NAME>//
 TO COMSUB<LANT/PAC> <NORFOLK VA/PEARL HARBOR HI>//
 INFO CNO WASHINGTON DC//
 COM<LANT/PAC>FLT <NORFOLK VA/PEARL HARBOR HI>//
 COMNAVSEASYS COM WASHINGTON DC//
 DIRSSP WASHINGTON DC// {For SSBN/SSGN Only}
 <SUBOPAUTH>// {IF OTHER THAN PARENT TYCOM}
 COMSUBRON ELEVEN//
 COMSUBGRU <NO.>//
 COMSUB<RON/GRU NO.>//
 <SUPERVISING AUTHORITY>//<CODES>//
 (OTHER UNITS IN AREA IF APPLICABLE)//

BT

UNCLAS //N09094//

MSGID/GENADMIN/USS <SHIP NAME>//
 SUBJ/(TYPE AVAILABILITY) SITREP (SEQUENTIAL NUMBER)//
 REF/A/DOC/COMUSFLTFORCOM/<DATE>//
 REF/B/DOC/AS APPLICABLE/<DATE>//

NARR/ REF A IS COMUSFLTFORCOMINST 4790.3, JOINT FLEET MAINTENANCE MANUAL, VOLUME II.

RMKS/1. CO'S SUMMARY, EVENTS 1-9 COMPLETED WITH THE FOLLOWING DEFICIENCIES NOTED:

A. SUBSAFE/URO DEFICIENCIES.

- 1) #1 SCOPE HULL GLAND LEAK 1 DPM AT 20% TD
- 2) TDU VENT, TD-104 LEAKS 3 DPM AT 65% TD.
- 3) STERN PLANES AUX ANGLE INDICATOR ON BCP DOES NOT ILLUMINATE, URO-16

B. NON-SUBSAFE/URO DEFICIENCIES.

- 1) SCULLERY DRAIN LEAKING AT FITTING F-18, 27 DPM
- 2) 3 FLOOR TILES IN CREWS MESS LIFTED AFFECTING SANITATION
- 3) CO HOT WATER SHOWER RECIRC PUMP FAILED

2. PREVIOUS DEFICIENCIES REPORTED AND STATUS.

(LIST ALL PREVIOUS DEFICIENCIES AND CURRENT STATUS-THE GOAL IS TO CAPTURE THE COMPLETE MATERIAL CONDITION IN EACH MESSAGE) STATUS = REPAIRED (REP), CORRECTIVE ACTION REQUIRED (CAR), NOT APPLICABLE (NA)

EXAMPLE –

- 1) SCULLERY DRAIN LEAKING AT FITTING F-18, 27 DPM -REP
- 2) 3 FLOOR TILES IN CREWS MESS LIFTED AFFECTING SANITATION - CAR
- 3) CO HOT WATER SHOWER RECIRC PUMP FAILED - CAR
- 4) #1 SCOPE HULL GLAND LEAK 1 DPM AT 20% TD - CAR
- 5) TDU VENT, TD-104 LEAKS 3 DPM AT 65% TD - CAR
- 6) STERN PLANES AUX ANGLE INDICATOR ON BCP DOES NOT ILLUMINATE, URO-16 - REP

3. ADDITIONAL INFO.

1) DESCRIBE ANY ADDITIONAL INFO DESIRED OR LIST "NONE".

4. TYCOM, NAVSHIPYD, AND NAVSEA REPS CONCUR-DO NOT CONCUR (AS APPROPRIATE).//

BT

NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH CURRENT MESSAGE FORMAT AND CURRENT PLAD IS UTILIZED.

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- a. Management of ship maintenance is best performed by individuals most familiar with the condition of the ship, budgetary considerations and available workforce. (This requires a cooperative effort from the Ashore Ships Maintenance Manager and the Naval Supervisory Authority (NSA) Lead Maintenance Activity (LMA) for Submarine Fleet Availabilities). They have the responsibility to accomplish maintenance, repair and modernization work within available financial resources while balancing operational and technical risk.
- b. The Ashore Ship's Maintenance Manager screens all work candidates to the right time period and maintenance availability (e.g., Chief of Naval Operations (CNO) availabilities, Continuous Maintenance Availability, Window of Opportunity (WOO), Emergent Availability). Determination includes balancing operational schedule, material readiness requirements and cost concerns to maximize maintenance productivity (material readiness/related maintenance cost).
- c. All work screened by the Ashore Ship's Maintenance Manager to be accomplished aboard ship will be electronically visible to the NSA (LMA for Submarine Fleet Availabilities). Work assigned to the NSA (LMA for Submarine Fleet Availabilities) will be tasked in accordance with Ashore Ship's Maintenance Manager brokering determination. TYCOM approval is required if the initial brokering determination needs to be changed.

1.4.2 Screening/Brokering. Although they may appear to be accomplished simultaneously, screening and brokering are actually two distinct processes.

- a. Screening. Determines and assigns the work candidate to the right time period and maintenance availability. Determination includes balancing operational schedule, material readiness requirements and cost concerns to maximize maintenance productivity (material readiness/related maintenance cost).
- b. Brokering. Determines and tasks the right activity to perform the work based on business case analysis, material availability, experience, tool requirements, personnel requirements, special considerations (Environmental, Health and Safety) and capacity.

1.4.3 Key Data.

- a. The validated work candidate contains the following key data elements to aid in the screening and brokering process:
 - (1) Configuration Item (maintenance object) identification.
 - (2) Symptom (OPNAV 4790/2K - Block 35).
 - (3) Expected scope of preventive/corrective/alterative maintenance (OPNAV 4790/2K - Block 35).
 - (4) Required Completion Date (RCD).
 - (5) Level of Maintenance (TYCOM Code 1,2,3).
 - (6) Identification of a Master Spec Catalog item (pre-planning data).
 - (7) Priority (Figure of Merit).
- b. All OPNAV 4790/2Ks in the Master File should be screened and brokered to a maintenance availability within eight days after being uploaded from the Shipboard File.
- c. Work candidates will be brokered to the appropriate maintenance activity with the capability and capacity to accomplish the work during the required time frame. When practicable, Fleet Maintenance Activity capacity will be utilized first.
- d. Available capacity will be judged after applying Maintenance Figure of Merit and Deadline Date. For Surface Force ships, this determination is made through a coordinated effort between the Project Manager, Ashore Ship's Maintenance Manager, RMC Ship superintendent and the Maintenance Team **Private Sector Industrial Activity** representative (If under a **Private Sector Industrial Activity** contract).

- e. The cause and effect relationship between screening and brokering must be exercised to maximize maintenance productivity. This may require negotiation with the ship and/or maintenance activity to adjust the Deadline Date.
- f. Other considerations for screening and brokering:
 - (1) Synergistic relationship between work candidates exist.
 - (2) Splitting responsibility.
 - (3) Third party access.
 - (4) Port loading.
 - (5) RMC Production Department training requirements.

1.4.4 Guidelines.

- a. Validation, screening and brokering will be accomplished continuously. The Ship Material Maintenance Officer will provide recommendations to the Ashore Ship's Maintenance Manager. The Ashore Ship's Maintenance Manager will use the guidelines below to screen and broker work candidates to the proper availability.
- b. All work will be screened to an availability created and numbered in accordance with the business rules in Appendix A of this chapter.
- c. Work candidates shall be screened to the following type of availabilities: CNO, Continuous Maintenance (CM), emergent or unfunded. No other type of availability shall be used.
 - (1) CNO Availability. The work candidate is best performed during the scheduled CNO availability. These work candidates include major Ship Alterations and repairs that require support services and coordination.
 - (2) Continuous Maintenance Availability. Based on ship availability, priority of the job, business case analysis, periodicity or other consideration, the maintenance should be performed during a scheduled Continuous Maintenance Availability or during a window of opportunity permitted by ship's schedule.
 - (3) Emergent Availability. Emergent work is performed at greater cost than work planned and completed in other availabilities. The criteria to be used to qualify work as emergent is provided in TYCOM business rules (e.g., Volume VI, Chapter 31, Paragraph 31.3.3 of this manual for Surface Force ships).
 - (4) Unfunded Availability. This availability is reserved for work candidates, which should be shown as backlog or are of such low priority they are unlikely ever to be accomplished.
- d. Brokering shall be as follows:
 - (1) Work candidates for technical assistance, assessment or inspection will be brokered to the RMC Fleet Maintenance Activity or another technical activity.
 - (2) Work candidates will be brokered to the lowest level of maintenance activity, filling Fleet Maintenance Activity capacity first, based on the following criteria:
 - (a) Material availability.
 - (b) Capability:
 - 1 Experience.
 - 2 Available Production Resource Tools.
 - 3 Available qualified/certified personnel.
 - 4 Ability to comply with Environmental, Health and Safety regulations.
 - (c) Work center capacity.

(d) Funding.

1.4.5 Additional Requirements for Scheduled Mandatory Tasks Pushed by CMP. (Surface Force ships only) Since mandatory tasks pushed to the CSMP by the CMP are directed by proper Technical Authority, further screening and brokering restrictions apply.

- a. Certain fields on mandatory tasks cannot be changed, including job summary, problem description, recommended solution, deadline date and maintenance level.
- b. Mandatory tasks must be accomplished by an off-ship maintenance activity, not by Ship's Force. Organizational-level requirements are scheduled by Planned Maintenance System (PMS), not by CMP.
- c. Mandatory tasks cannot be cancelled or passed to history by the Maintenance Team, or customer completed without being screened to an availability. If cancellation is requested, the CMP item must be adjudicated by proper Technical Authority and approved for cancellation as dictated in paragraph 1.2.3 of this chapter.
- d. Mandatory tasks shall be screened to a defined maintenance period instead of to the year-long CM availability. When equipment condition requirement or other scheduling problems make it impractical to accomplish the mandatory task, the year-long CM availability may be used for non-depot mandatory tasks. However, mandatory tasks screened to a CM availability will be considered to be improperly deferred after the mandatory tasks deadline date without consideration of the availability end date (see paragraph 1.4.5.g.(1) of this chapter).
- e. Mandatory task may not be screened to an emergent maintenance period. Planned maintenance does not warrant the use of emergent maintenance money. This requirement does not preclude pulling a task from the CMP when needed and screening it to an emergent maintenance period.
- f. If the mandatory task is screened to the unfunded availability or to an availability that begins more than 90 days after the mandatory task's deadline date, a "notification" is triggered by the Cancellation Deferral Notification System (CDNS) to notify the appropriate Technical Authority and a Departure From Specification (DFS) may be required. The Ashore Ship's Maintenance Manager comments will be reviewed and the Technical Authority will either recommend approval or disapproval of the DFS. The Ashore Ship's Maintenance Manager shall then rescreen the mandatory tasks to an appropriate availability in accordance with the guidance provided in the DFS. This functionality is referred to as the "CDNS Process".
 - (1) The Ashore Ship's Maintenance Manager may challenge whether the mandatory tasks should be accomplished (as opposed to not accomplished until after the deadline date). The task should be screened to the unfunded availability and comments entered. Depending on whether the CDNS notification is administrative or technical, the mandatory tasks will be adjudicated in the following manner:

NOTE: THE SUBSTITUTED WORK CANDIDATE WILL BE SUBJECT TO THE SAME PUSHED TASK RESTRICTIONS DESCRIBED IN THIS SECTION.

- (a) Administrative: If the intent of the task was completed since the Last Accomplished Date by a non-CMP work candidate, provide that Job Control Number in the comment field. If the Planning Activity Engineer agrees that the intent of the task was met by the non-CMP work candidate, the Planning Activity Engineer will cancel the pushed mandatory tasks from the CSMP. If the intent of the task is covered by a non-CMP work candidate that is currently open and in planning or execution, the Planning Activity Engineer will substitute the pushed mandatory tasks with the non-CMP work candidate and cancel the pushed mandatory tasks from the CSMP. If the mandatory tasks cannot be accomplished because the component/system no longer exists on the ship, the Planning Activity Engineer will cancel the pushed mandatory tasks from the CSMP and update the configuration records. For all administrative notifications, if the Planning Activity Engineer does not agree with the Port Engineer's comments, the CDNS notification will be forwarded to the SDM for resolution.

- (b) Technical: The Ashore Ship's Maintenance Manager can technically challenge pushed mandatory tasks using CDNS. Reasons for technically challenging mandatory tasks include: non-modernization configuration change, permanent or temporary DFS exists, and/or authorized modernization upgrade to equipment. If the Planning Activity or SDM disapproves the CDNS notification an email will be sent to the Ashore Ship's Maintenance Manager providing justification. All technical challenges will be reviewed by the Planning Activity or SDM for resolution.
 - (2) If the Ashore Ship's Maintenance Manager determines that the mandatory tasks should be accomplished beyond the due date, the task should be screened to the recommended availability and comments entered. Reasons for deferring a mandatory task past its due date include: a temporary DFS exists making the task unnecessary before the due date, lack of an appropriate maintenance availability by the due date, unable to set required assessment conditions because of a related casualty or other issue, lack of capability/capacity to accomplish the mandatory tasks by due date, etc. Deadline challenges shall be documented using the CDNS Process and must be reviewed and approved by the Planning Activity and a DFS may be required.
- g. CMP push tasks must be accomplished within required periodicity, or approval for deferral in the CDNS Process by NAVSEA Technical Authority. Ashore Ship's Maintenance Managers, RMCs and TYCOMs should resolve these mandatory task deferrals promptly. CMP push tasks can be addressed using a DFS and/or the CDNS Process. Deferred CMP push task delays are categorized as:
 - (1) Open and overdue. Often, CMP push tasks are screened to an appropriate availability but are not executed by their deadline dates. Sometimes, task deferrals are approved through the CDNS Process but then are subsequently moved to a later availability without further Planning Activity or SDM approval. Open and overdue jobs are particularly troublesome because they are now past the deadline date and do not have deferral approval from Technical Authority via a DFS and/or the CDNS Process. Specific types of open and overdue CMP push tasks jobs include:
 - (a) Job is open, screened to a year-long CM availability and past its deadline date.
 - (b) Job is open, screened to an acceptable numbered availability (one that starts no later than 90 days after the deadline date or one approved in the CDNS Process by the Planning Activity or SDM).
 - (c) Job is open, unscreened and past its deadline date.
 - (2) Overturned and not rescreened. When a mandatory task is challenged by the Ashore Ship's Maintenance Manager via DFS and/or the CDNS Process but that challenge is overturned by Technical Authority, the Ashore Ship's Maintenance Manager receives an email stating that the job must be rescreened to an appropriate availability for accomplishment. Jobs should be rescreened to an appropriate availability within 30 days after the Ashore Ship's Maintenance Manager is made aware of the ruling.
- h. Deferral notifications approved by the Planning Activity or SDM are approved for the availability to which the mandatory task was screened when the mandatory task triggered a notification. If a mandatory task is subsequently rescreened to a later availability, the approval is removed and the screening action must be acted on by the Planning Activity or SDM again.

1.5 ASSESSMENTS.

1.5.1 Maintenance Team.

- a. All material condition assessments, including tasks for Combat Systems Command, Control, Communications and Computer Readiness Assessments or Total Ship's Readiness Assessment, shall be derived from the CMP. Scheduled condition assessments have been validated by an approved Reliability Centered Maintenance analysis to be applicable and effective, and are pushed by the CMP system to the CSMP shore file for the Ashore Ship's Maintenance Manager action, based on the ship's last accomplished date and task periodicity. Unscheduled material condition assessments are not,

without further evidence of need, considered effective and are thereby not pushed into the CSMP shore file, but can be pulled from the CMP by the Ashore Ship's Maintenance Manager or his representative if there is evidence of need (such as degraded performance, errors, or other indication of problems). Scheduled tasks can also be pulled if circumstances warrant, and the Last Accomplished Date will be properly updated. The Ashore Ship's Maintenance Manager with help from the Maintenance Team shall review all 2-Kilos pushed from the CMP system just as for any other offship 2-Kilo, and broker to the appropriate assessing activity.

- b. Only assessment tasks in the CMP or assessment procedures in the PMS database may be used for assessments. Information addressing assessment requirements found not to be included within the CMP or PMS databases, such as local practices, In-Service Engineering Activity unique items, RMC practices, etc., shall be forwarded using the Technical Feedback Report for review and approval as an acceptable addition to the CMP and PMS databases. If not approved, these practices shall not be used by any activity.
- c. The Ashore Ship's Maintenance Manager will make the preliminary determination of the most appropriate source for all off-ship activity work for their assigned ships. Decisions made by the Ashore Ship's Maintenance Manager, with concurrence from the Maintenance Team, shall be in compliance with policies in this instruction, reference (a), and guidance provided by the cognizant RMC.

1.5.2 Type Commander. The TYCOM shall develop and execute a Memorandum of Agreement in accordance with Volume II, Part I, Chapter 3 of this manual with each supporting RMC to define reporting and administrative relationships between the TYCOM and the RMCs.

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VOLUME II**PART II****CHAPTER 2****SURFACE SHIP AND AIRCRAFT CARRIER WORK PACKAGE PREPARATION**REFERENCES.

- (a) NAVSEAINST 4710.8 - Cost and Performance Reporting for CNO Scheduled Ship Maintenance Availabilities
- (b) NAVSEA S0300-B2-MAN-010 - Supervisor of Shipbuilding Conversion and Repair Operations Manual

LISTING OF APPENDICES.

- A Prorate Items with Explanations
- B Master Specification Catalog Maintenance Office Guidelines
- C Surface Ship Prorate Process
- D Surface Ship Availability Milestones
- E Aircraft Carrier Navy Modernization Process Milestones
- F Planning Priority Matrix
- G Depot Planning Priority Schedule (PSIA)
- H₁ Process Flowchart Firm Fixed Price CNO Availability
- H₂ Process Flowchart Firm Fixed Price CMAV or Emergency Availability
- H₃ Process Flowchart Firm Fixed Price PSIA CNO Availability
- H₄ Process Flowchart Firm Fixed Price PSIA CMAV Availability

2.1 PURPOSE. To establish ship maintenance work items and specification package preparation procedures, milestones and business rules. These rules apply to Regional Maintenance Centers (RMC), Commander, Naval Surface Force Pacific; Commander, Naval Surface Force Atlantic; Commander, Naval Air Forces Atlantic; Commander, Naval Air Forces Pacific; Systems Commanders (sponsoring Program Alterations) and other Alteration Installation Team (AIT) Sponsors. This chapter is not applicable to submarine availabilities.

2.1.1 Prorated Business Rules. This chapter also provides prorated business rules including:

- a. Defining common prorates, those prorates to be assigned to specific alterations, and those Type Commander (TYCOM) operational prorates (Appendix A).
- b. Providing a simple consistent method to divide those prorates between Program Alterations, Fleet Alterations, maintenance and repair items.
- c. Providing a coast specific "Prorate Factor" used in planning as part of the Cost Benefit Analysis of the Ship Change (SC) Document to estimate installation cost of the alteration. Paragraph 2.4.6.2 of this chapter lists the Prorate Factors.

2.1.2 Responsibilities.

- a. The Life Cycle Manager/Ship Program Manager (SPM) is responsible for the planning, budgeting and execution of the approved Program Ship Modernization.
- b. The TYCOM is responsible for the planning, budgeting and execution of the approved Fleet Ship Modernization, ship repair and ship maintenance.
- c. The Ashore Ship's Maintenance Manager is responsible for the execution of each ship's Maintenance and Modernization Business Plan (MMBP) and the division of the prorated percentages between Fleet and Program based on the business rules herein.

2.2 SCOPE. The goal of the effort is to deliver effective maintenance and modernization while capturing efficiencies. The cost avoidance can then be put to use in accomplishing additional maintenance. This chapter introduces work package preparation improvements that leverage existing planning information and process

capabilities to make final work package content decisions closer to the time work is actually scheduled to begin. This will significantly reduce the churn in the work package content and support timely delivery of all work desired for the Chief of Naval Operations (CNO) availability. This includes the depot level repair and modernization package, Ship's Force, Intermediate Maintenance Activity and AIT modernization work. Effective financial management of ship maintenance and modernization depends upon use of return cost data in planning for future installations. Upon completion of each availability, the participants must use the availability completion report return cost data to update Navy Data Environment modernization cost estimates and the next fiscal year business plan. Return costs for repair work will also be used to populate and validate costs estimates that are resident in the Master Specification catalog. A disciplined prorate distribution process, coupled with updates to the Navy Data Environment database and the business plan will help modernization financial planning and reduce cost surprises both before and during availability execution.

2.3 EXECUTING ACTIVITY PLANNING. Work Package Preparation process improvements include long-term contractual relationships and **Private Sector Industrial Activity (PSIA)** contracts, with our executing activities and private ship repair yards. The Executing Activity (EA) is the public or private enterprise that is assigned or awarded the responsibility for accomplishing the actual production work to effect modernization and repairs to surface force ships/aircraft carriers. For the most part, the EAs will perform the planning for accomplishment of the work that they will execute. All work, whether CNO availability, continuous maintenance or emergent work will have a Ship Specification Package (SSP) prepared in the appropriate maintenance database work planning and execution tool. The exception to EA planning is first of ship class ship alteration advance planning (drawing preparation and material ordering). This will be performed by the assigned planning yard. The EA will plan subsequent ship alteration installations provided they are not of such a complex nature that it is determined that these should be assigned to the planning yard. In most cases, as part of the planning effort, the EA will prepare the actual work specification (accomplished today in the Navy Maintenance Database (NMD) for depot level or in another maintenance Automated Information System for I-Level). The exceptions to the EA work item preparation is that the government may elect to accomplish work item development to provide an avenue to train government personnel in the critical skill sets used during the work item development process and/or to provide surge capabilities for the EA during peak work loading.

2.4 MASTER SPECIFICATION CATALOG.

2.4.1 Work Package Preparation. The Work Package Preparation process will leverage the large library of planning documents that exist today and are currently stored in Master Specification Catalogs (MSC). The MSCs provide a ready resource of technically correct and current work items that are universally accessible for use. The vast majority of these documents can be reused for planning future repair actions. The primary purpose of the MSC is to reduce maintenance costs by:

- a. Reducing planning efforts.
- b. Identifying and promoting best practices.
- c. Effectively managing lessons learned.
- d. Minimizing delays associated with maintenance planning.
- e. Providing a cost estimate for the work item.

2.4.2 Use of the Master Specification Catalog. Use of the MSC by Maintenance Teams and Planners at maintenance activities is mandatory. Processes are established to allow all users to recommend content and provide feedback regarding the quality of specifications and templates. The Depot level MSC can be accessed through the NMD application. The Depot level catalog consists of master specifications, specifications used directly without any modification, and templates that can be used with minor modifications. NMD has been modified to capture the contractors' planning estimates and actual return costs. This allows standard costs to be developed for the specifications residing in MSC. The D-Level MSC is maintained by the Master Specification Catalog Maintenance Office (MSCMO) at Surface Maintenance Engineering Planning Program (SURFMEPP), who is assigned to standardize all templates to the maximum extent possible to ensure the specifications that reside there are technically correct and reflect the most current guidance. Appendix B provides the general guidelines for template preparation, processing and maintenance. The MSCMO will incorporate the directives of Naval Sea Systems Command (NAVSEA) Standard Specification for Ship Repair and Alteration Committee, and Volume VII, Chapter 4,

2.5.2 Committed Work at 100% Lock. One hundred percent of the depot level package must be identified, with the activity accomplishing the planning to complete planning and estimating in accordance with the appropriate milestones in Appendix D of this chapter for Surface Force Ships and Appendix E of this chapter for Aircraft Carriers. The EA will then have 30 days to produce an integrated work schedule that will be reviewed at a Work Package Execution Review. By delaying the final commitment of the last 20% of the depot level work package until the 100% lock date there should no longer be any reason to front load “insurance” work. The new entitled work package preparation process will better reflect the most current priority of maintenance that needs to be performed on the ship. The milestones described above are designed for use by those ships supported with **PSIA** contracts. For Surface Force Ships, Appendix D describes milestones to be used with Firm Fixed Price (FFP) contracts. Where **PSIA** contracts are not in effect and no existing Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover the work contemplated, work packages for Continuous Maintenance Availabilities (CMAV) must be submitted to meet local contracting milestones.

2.5.2.1 Automated Work Request Screening. By no later than the 100% lock date, the entire depot level package shall have been screened to the appropriate IT System availability by the Ashore Maintenance Manager (PE). The PE shall screen the Automated Work Requests (AWR) based upon the established TYCOM controls and planning budget. The Project Manager will broker the screened work to the planning activity for development of work specifications. No additional AWRs shall be brokered for inclusion into the basic proposal after lock date.

- a. 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, addendum or inducted as new work via the Request for Contract Change Process.
- b. For certain availabilities, the 100% lock date will need to be adjusted to a date which will support timely definitization. Appendix D reflects the various milestones based upon the package size. This will usually be based upon the total projected budget (all funding sponsors) of the project to be contracted. The RMC and TYCOM shall agree upon the change in planning preparation dates. It is anticipated that any change will be made no later than A-360.
- c. TYCOM Port Engineers shall screen work using AWR estimates against their Available Controls/budget. Available planning budget is defined as the remaining budget after Long Lead Time Material (LLTM), contractor fees, other work and growth pools are subtracted from controls.
- d. The contractor Class C and Independent Government Estimate (IGE) submission at the 50 and 80 percent milestones are required to ensure that calculations of package build are based on an accurate estimated value.
- e. The Project Manager will verify that the planning budget supports the estimated value of the 100% locked work package. If the work package exceeds the planning budget, the Project Manager will notify the funding sponsor(s) of the delta and request additional funds or removal of work from the authorized priority list to get to the budget allocated.
- f. On the lock date, the Project Manager will provide the RMC Administrative Contracting Officer with a complete/consolidated list of all AWRs that make up the 100% D Level work package. The Administrative Contracting Officer will issue the list of AWRs to the **PSIA** contractor annotating that all AWRs listed constitute the basic work package. The contractor shall ensure that all AWRs listed are incorporated in work items, published and included in the proposal through to award. Currently availabilities are not being definitized on time due to the time it takes from package lock. Furthermore, churn in package content after the 100% lock date causes turmoil in the contractors ability to develop a work package proposal.

2.5.3 Flow Metric. In order to track the progress of creation of the work package, a work package flow metric has been created. This metric will provide the maintenance team a tool to manage their work package preparation progress. It also provides the RMC Commander and the maintenance teams a leading indicator of the manner in which the ship's Maintenance and Modernization Business Plan is being executed.

2.6 CONTINUOUS MAINTENANCE AVAILABILITIES. CMAVs are intended to provide the maintenance team with the flexibility required to do the right maintenance at the right time for the right price. An additional intent of CMAVs is to provide the agility required to support the fleet response plan.

2.6.1 Continuous Maintenance Availability Types. CMAVs are established as the only type of availability that will be accomplished on Surface Force ships outside of CNO availabilities for non-emergent maintenance. Fleet Maintenance Activity Availabilities, Restricted Availabilities, Technical Availabilities are no longer authorized to describe ship maintenance availabilities. There are two basic types of CMAVs, scheduled (XAZ) and unscheduled (XCM). CMAV schedules will be reviewed at each Planning Board for Maintenance and will be adjusted as ship's operational schedules dictate. Schedule adjustment should be requested by the ship via naval message to the Immediate Superior In Command (ISIC), information to the applicable RMC.

2.6.2 Continuous Maintenance Availability Business Rules. The following CMAV business rules have been established to provide guidance for developing work items associated with scheduled and unscheduled repair and modernization availabilities, managing assigned work brokered to both CNO and CMAV availabilities for FFP and PSIA contracts, and establishing priorities for the executing activity to accomplish planning and execution of Work Candidates into work items. This enables the Vision of Entitlement to be realized. The Vision of Entitlement requires a somewhat continuous flow of the planned work items to allow for a continual estimating, work item review and cost definitization process.

2.6.2.1 Applicability. This process is applicable to all personnel involved with writing work items for repair and modernization contracts using work items developed/maintained in NMD in accordance with this manual, Maintenance and Modernization contracts and NAVSEA Standard Items. The start and stop points of the process are when a Work Candidate is brokered from an appropriate IT system into an availability and the production period of the maintenance availability is completed.

2.6.2.2 Ship Specification Package. The Project Manager on behalf of the Maintenance Team shall:

- a. Establish a SSP within NMD Planning for scheduled and unscheduled CMAVs ((XAZ), (XCM) and (XEM)) and set up the availability in NMD to receive AWRs from Regional Maintenance Automated Information System (RMAIS) electronically in accordance with this manual.
- b. For each Work Candidate that is brokered to the availability in NMD, ensure that the planning date, the "Deadline Date" and the "Availability Number" (in which an availability period can be entered) listed on the Work Candidate is correct, and also include a preliminary man-hour and material cost estimate. Work must be planned and estimated (man hours and material cost) with LLTM identified prior to being routed into any NMD execution availability. This planning estimate is necessary to more accurately predict, for a CNO availability, what percent of the package (in dollars), has been authorized at the 50%, 80% and 100% milestones, and for a CMAV (XAZ) and (XCM) availability, will allow us to know if we have adequate funding available in the budget. A minimum of **fourteen calendar days** should be allowed for planning unscheduled (XCM) availabilities before routing a job to an NMD execution availability.

2.6.2.3 Planning. With the creation of an SSP in NMD, the actual Planning start and stop dates for the execution of the work within that SSP will be established. The one exception to this will be the year long CMAV, Scheduled/Unscheduled CMAV (XAZ) and (XCM) (XEM) availabilities.

- a. All valid maintenance items will have a specification prepared in the NMD Planning module in accordance with this manual. All new work will also be written in the planning module of NMD.
- b. When a valid maintenance item is ready for brokering, review of the currently scheduled SSP availabilities in NMD Planning will then determine to which SSP the item should be added. All SSPs existing within NMD Planning will have a date established when that package should be "locked" per the advance planning milestones contained in Appendix D of this chapter. No valid work items can be added to an existing SSP if the current date is past the "lock" milestone date without providing a written detailed description of the rationale used to add it in the "Work Item" comments field.
- c. The priorities for the Planning Activity are then established by the next scheduled availability milestone that is coming due in accordance with Appendix F and G. This could be a CNO, the next scheduled CMAV (XAZ) or year long XCM availability. Process flowcharts appear in Appendices H₁ through H₄ of this chapter. The year long XCM SSP availability will be a work load leveling mechanism for the planning activity and the goal would be to have these items brokered, planned, material ordered, funded, scheduled and ready to start work within 14 calendar days prior to start. The valid maintenance items in the XCM SSP availability will become candidates for scheduled CMAVs and unscheduled

XCM execution availabilities (windows of opportunity) that are identified on short notice. These planned work items for PSIA contracts will be routed to NMD execution availabilities that branch off of this year long NMD XCM planning availability. Re-broker those remaining AWRs at the end of the fiscal year, into the next fiscal year long XCM and scheduled CMAV (XAZ) SSP availability. Refer to Appendices H₁ through H₄. Refer to Appendix F to assist in determining priority of planning work.

- d. If the urgency to accomplish any emergency maintenance repairs does not allow for development of a work item prior to the start of work and a work item does not exist in the MSC, then a work item will be prepared after completion of work to document it within NMD. Route these emergent Work Candidates to the applicable SSP planning availability, which can then be forwarded to the NMD execution availabilities where the emergency maintenance work was executed.
- e. The Project Manager will check NMD daily for AWRs received in NMD SSP planning availability, review and validate each AWR to determine scope of work. If the information contained in the AWR is insufficient to write a work item, the Project Manager shall coordinate and manage any required shipchecks.
- f. The RMC will determine who should plan a given availability (other than CNO) based on manpower available either at the PSIA contractor or the Government. (Check Contract Line Item Number verbiage for actual contract requirements.)

2.6.2.4 Planners and Estimators.

2.6.2.4.1 Key Terms. Key Terms as found in Volume VII, Chapter 4, Appendix 4-E of this manual.

- a. Standard Items: Mandatory and non-deviational. There are two types of Standard Items:
 - (1) Standard Items (SI)
 - (2) Local Standard Items (LSI)
- b. Templates: Work Items that can be modified and used for single or multiple ship classes. There are three types of Templates:
 - (1) Standard Work Templates (SWT)
 - (2) Class Standard Work Templates (CSWT)
 - (3) Local Work Templates (LWT)

2.6.2.4.2 Planning/Estimating Process.

- a. Determine if the information contained in the AWR is adequate enough to write a work item. If yes, continue development. If no, check the inadequate box and note reasons for inadequacy, then continue.
- b. Review for MSC Templates as follows:
 - (1) Identify appropriate Ship Work List Item Number that applies for AWR to be planned under.
 - (2) Check/search for an appropriate Master Specification Template such as a Class Standard Work Template, Standard Work Template or Local Work Template that addresses the scope of work identified in AWR.
 - (a) If no applicable template is found, check/search for a previously written work item that is applicable and addresses the scope of work identified in AWR.
 - (b) If no previously written work item is found that is applicable, check/search for a “basic” work item template/format.
- c. Select appropriate Master Specification Template, previously written work item or “basic” work item template/format and initiate planning the work item.
- d. Identify and validate all references, including Liaison Action Requests/Reverse Liaison Action Requests required to complete the work item.

- e. Identify test requirements needed to complete work item. If test procedures are required, obtain from execution site design group, planning yard contractor or In-Service Engineering Activity.
- f. Identify security and certification requirements. Develop technical requirements and Planning Estimate.
- g. Identify repair material required to include long lead-time items and submit to material specialist for procurement.
- h. Determine if there is Hazardous Material involved with the work item.
- i. Review the completed work item for candidacy as a new or revised template for inclusion into the MSC. If a candidate, submit the new or revised template to the local NSA Standards Person for review and subsequent routing to the MSCMO for processing and inclusion into the catalog.
- j. Route completed work item in its preliminary state to the Program Manager queue in NMD to be included in a final review work package compiled in NMD.

2.6.2.5 Maintenance Team Program Manager.

- a. Route review work package of work items to Pre-lim Spec review web site. Web Site Address: <https://www.spear.navy.mil/onlineSpecReview.aspx>.
- b. Review and respond to comments on pre-lim work item review web site.
- c. Route and approve work items to “APPROVED” work item review web site.
- d. Process entire work package and issue.

2.6.2.6 Advanced Planning Manager. The **PSIA** Contractor will publish the CNO **PSIA** Package in NMD at A-60 and the CMAV **PSIA** at A-25. This is an important milestone/metric captured within NMD.

2.6.2.7 Scheduled Availabilities.

- a. Scheduled XAZ availabilities are normally 3 to 6 weeks in duration and are nominally scheduled once per non-deployed quarter during a period when the ship will be in port at least three continuous weeks. The ship, via the ISIC, will schedule XAZ availabilities. RMC requirements will be addressed to the ship via the maintenance team. Adjustments to XAZ availability start dates are inevitable; however, the start dates may not move “forward” if package preparation and work package “lock” milestone dates would be violated by the new start date. In this case, the applicable XAZ CMAV availability must be rescheduled to support the entitled process milestone dates. In general, CMAVs will be scheduled to start on the first weekday after arriving in port and will be scheduled to complete one week prior to the scheduled underway day. The minimum length of a ship’s uninterrupted period will be three weeks if an XAZ availability is to be scheduled, with the XAZ availability preferably being a minimum length of three weeks. Any XAZ availability that is scheduled without adhering to these minimums should be avoided and work required during that timeframe will be conducted as XCM. Ships and ISICs shall ensure that other in port requirements (training, inspections, etc.) are not scheduled concurrent with an XAZ availability if these requirements will impede scheduled production.
- b. CMAVs will not normally start on weekends or holidays when support for tag-outs and availability start up is limited, and will not be the same day the ship arrives in port. As a result of requiring the XAZ availability to complete one week prior to getting underway, a reduction in premiums is expected by eliminating the last minute rush to complete work to support the scheduled underway. Maintenance teams must ensure that work scheduled for an XAZ availability can realistically be accomplished in the production window. When operational schedule changes occur early enough to allow the scheduling of an additional XAZ availability without violating the milestones discussed in paragraph 2.5 of this chapter, a new XAZ availability should be scheduled when possible rather than executing maintenance in the unscheduled XCM availability. Additionally, the length of an existing XAZ availability may be increased to accommodate changes in operational schedules provided none of the scheduling rules are violated.

NOTE: XCM AVAILABILITIES ARE NOT TO BE USED AS HOLDING QUEUES FOR MAINTENANCE ITEMS.

2.6.2.8 Unscheduled Availabilities.

- a. The unscheduled XCM availability is a single yearlong availability, for the period of 01 October through 30 September, scheduled for each ship every fiscal year. This yearlong availability is used to accomplish maintenance when a ship is not in a scheduled XCM availability or CNO availability. Since the XCM CMAV Windows Of Opportunity (WOO) are potentially short notice, a reduced set of D level milestones is established. Read in three columns as follows:

<u>TASK</u>	<u>RESPONSIBLE ACTIVITY</u>	<u>MILESTONE</u>
WORK SPECS DEVELOPED	RMC OR MSR	WOO-14
WORK PACKAGE DEFINITIZED	RMC OR MSR	WOO-7

- b. No length requirement exists for an XCM availability. These are accomplished as WOOs become available. If a work item is determined to require more than one WOO to accomplish in its entirety, then it may be executed during multiple WOOs provided that it can be broken into several shorter period requirements.

2.6.3 Continuous Maintenance Availability Applicability. The CMAV business rules apply to all XAZ availabilities and XCM. Since the potential exists for CMAVs to become increasingly more complex, an NSA will be assigned for every CMAV. The NSA will typically be the applicable RMC, or naval shipyard (if applicable).

2.6.4 Work Included in Continuous Maintenance Availabilities. All levels of work (organizational, intermediate and depot) shall be included in a single CMAV for a specific availability period regardless of the executor (Ship’s Force, RMC production personnel or contractor). The intent is to integrate all types of work into a single production schedule for a specific CMAV. Separate intermediate and depot availabilities will not be established for the same period of time. Dependent upon complexity of the scheduled maintenance and/or modernization and the number of maintenance activities involved, the Ashore Ship’s Maintenance Manager may include a work item for production scheduling and integration in the work package or bid specifications. If this work item is not used, then the Ashore Ship’s Maintenance Manager will perform this function.

2.6.5 Concurrent Continuous Maintenance Availabilities. It is incumbent upon the Ashore Ship’s Maintenance Manager to ensure that two non-emergent availabilities are not in progress at the same time. Additionally, CMAVs are not to be scheduled concurrently with CNO availabilities. As required, XCM work items meeting the requirements of paragraph 2.6.2.8 of this chapter that are being accomplished in WOOs may overlap with XAZ and CNO availabilities.

2.6.6 Ship Movement During a Continuous Maintenance Availability. In order to maintain focus on the maintenance work package and minimize premium costs, no ship shall get underway during a CMAV other than to support the maintenance availability or to complete sea trials. Maintenance that prevents a ship from being ready for sea within 96 hours will normally only be screened to XAZ availabilities. Ships will notify their ISIC of any production item that will prevent the ship from getting underway within 96 hours. If this work is being conducted within a scheduled XAZ availability, a waiver is not required. It is imperative that the ISIC take a proactive role in ensuring that the integrity of the scheduling process be maintained as it relates to CMAVs. CMAVs must be incorporated into the ship’s operational schedule and must remain as a priority for completion.

2.6.7 Continuous Maintenance Availability Metrics. In order for accurate metrics to be obtained, it is imperative that all CMAVs be planned and executed utilizing the appropriate IT systems. The following placement and oversight metrics will be collected to measure the effectiveness of the CMAV process. This is not a complete listing of all CMAV metrics. Volume VI, Chapter 36 of this manual provides additional guidance and discussion on the metrics topic.

- a. Award on time delivery (XAZ only). Scheduled CMAV “on time award” is defined as the percentage of time contract award is made on time or early.
- b. Completion on time delivery (XAZ only). The CMAV completion on time delivery metric calculates the percentage of occasions when a CMAV availability is completed on or before the CMAV end date as recorded in the appropriate maintenance database.

- c. Availability churn (XAZ only). The CMAV availability churn percentage is a monthly capture of the dollar value of work items changed, deleted or added in a CMAV work package from contract award until availability completion versus the dollar value of the work package at award for all CMAV availabilities that ended in the current measurement month and the previous two months. This metric is collected by availability and reported in the month the availability completes.
- d. Growth and New Work Premiums. The Growth and New Work Premiums metric is a measure of late work premiums paid as a percent of growth and new work monthly. It does not include authorized work included at the start of the availability as growth reserves for specific work items or execution of pre-priced option items if executed within the scope and schedule as pre-priced. This metric is collected weekly with each change to the original contract award (FFP) or definitization (PSIA) work package transaction being reported one time in the data call for the week in which it was settled for scheduled CMAVs.

2.6.8 Continuous Maintenance Availability Late Work Premium (XAZ only). The CMAV late work premium metric is a measure of the total dollar value of late work premiums paid for CMAV availabilities completed in the current month divided by the sum of the execution contract award (FFP) or definitization (PSIA) and the settled cost of all Request for Contract Changes for that availability.

2.6.9 Continuous Maintenance Planning. Continuous maintenance is the process of scheduling and accomplishing work outside of CNO availabilities. PSIA contracts create a long-term relationship with the EA that accomplishes the continuous maintenance to maintain the ship at an acceptable readiness level. The Ashore Ship's Maintenance Manager will use every scheduled in-port period as an opportunity to accomplish continuous maintenance. Funding for continuous maintenance is included in the ship's Maintenance and Modernization Business Plan. In order to prevent premiums from being accrued, a minimum of 30 days will be allotted between the time depot level work is brokered to the EA and the time work is scheduled to start. A minimum of 40 days will be allotted for work brokered to I-Level activities. This will provide for adequate time to plan the work and acquire the necessary material in an efficient manner. This will allow a Work Package Execution Review to take place and for all work to be definitized in accordance with the milestones listed in Appendix D of this chapter for Surface Force Ships and Appendix E of this chapter for Aircraft Carriers. If these minimum thresholds cannot be complied with, the work should be postponed until the next continuous maintenance opportunity. The Ashore Ship's Maintenance Manager may run a business case analysis if there are other factors that might justify the addition of work inside these preferred windows.

2.7 ADVANCE PLANNING STATUS MESSAGES. The Advance Planning Status Messages required by reference (a) should continue to be issued by the activity responsible for planning the ship's CNO availability. Messages should commence at the completion of the Integrated Planning Conference. These messages play a vital role in keeping all concerned parties informed of the status of the planning effort. The messages document the successful accomplishment or failure to achieve milestones and produce deliverables. The Work Package Execution Review meeting, held to review the integrated work production schedule that has been prepared by the EA, is the final opportunity to resolve any work interface or production support issues between the different activities before actual production work begins.

2.8 MAINTENANCE TEAMS EXECUTING MAINTENANCE WITH FIRM FIXED PRICE CONTRACTS. PSIA contracts are not in place for all surface force ships in the Navy's inventory. Some classes of ships will not receive PSIA contracts as they will be decommissioning soon, others have such a small number in their class that it is not worthwhile to do this. A modified planning milestone table for FFP contracts is included in Appendix D.

APPENDIX A

PRORATE ITEMS WITH EXPLANATIONS

- A. The following items may be shared by all parties participating in the availability. The share will be based upon installation manhours. The manhours will be the sum of Prime (PSIA), Prime Subcontractor and AIT manhours for each maintenance or modernization work item. These are then subtotaled to arrive at the equitable distribution weight for each participating organization. If the total manhours for an AIT work item is less than 2% of the total work package, then the AIT will not be assigned a share of the prorates. Each prorated item below is followed by a brief description.
1. Production Planning (813-10-XXX): The PSIA contractors are required to develop and maintain an integrated production plan for the availability. The plan integrates all repair and modernization work, including AIT work items. All parties gain benefit from the plan which assists in manhour and material planning for the PSIA contractor as well as the repair and Participating Acquisition Resource Managers (PARM). AITs will not be included in the share of prorates for this item.
 2. Temporary Services (863-50-XXX): These include ventilation air, compressed air, fire main, cooling water, potable water, shore power, sewer connections and welding leads as examples. These items benefit all and are appropriate for equitable sharing.
 3. Housekeeping (864-90-XXX): Housekeeping includes trash disposal, deck coverings, post workday tidying and final cleaning during the compartment closeout process. Every participant benefits from this service.
 4. Integrated Test Plan (894-90-XXX): The Integrated Test Plan is closely associated with the Production Plan. The Integrated Test Plan benefits every participating repair and modernization manager by showing when they can expect various equipment and services to be ready for use and when their own equipment must be ready for testing. Examples include ship's power which must be available to complete combat systems testing.
 5. Program Management (897-00-XXX): Every PSIA contractor has a small staff which manages the overall availability. These include the availability manager and principle assistants. Every participant benefits from this team.
- B. The costs of the following will be charged to the individual work items.
1. Provisioning Technical Documentation (PTD) (830-21-XXX): PTD is the source document notifying the Supply System that new equipment is being installed on the ship. PTD typically arises from a modernization installation or in repair cases where original equipment is beyond repair, or repair parts are not available, and a substitute must be installed. In all cases the PTD is generated for an individual work item and will be charged accordingly.
 2. Waterfront Liaison Engineering Services (838-10-XXX): Waterfront Liaison Engineering Services are typically required when the Ship Installation Drawings (SID) for a modernization installation have an error or there are interferences not accounted for in the SIDs. It is also possible to need Waterfront Liaison Engineering Services if there are deteriorated structural members/sections which must be analyzed to see if replacement is mandatory or advisable. In all cases the work is tied to an individual work item.
 3. Test Memorandum Development (841-10-XXX): This item is for individual work item testing as compared to the total ship Integrated Test Plan which is shared by all. The individual Test Memoranda are charged to the respective work items.
 4. Technical Support (861-00-XXX): This is technical support such as Original Equipment Manufacturer on-site assistance provided for individual work items. In all cases the support is charged to the individual work item.
 5. Condition Report Estimating (862-30-XXX): Condition reports are typically required for "open and inspect" repair items and for emergent requirements during a modernization installation. In all cases the cost will be assigned to the individual work item.

6. Dry docking (863-40-XXX): Dry docking may be required for maintenance of the hull or underwater appendages or there may be needs for access cuts low on the hull to install modernization items. Unlike most of the items in this section, the costs will typically not be charged to a single work item. It is much more likely that the costs will be distributed between parties that require use of the dock. The equitable distribution weight factor will be manhours.
7. Hazardous Waste Disposal (863-50-XXX): This item is tied to specific work items. Examples include asbestos from propulsion space piping replacements. Lead abatement when sand or water blasting or doing preparations for welding. In all these cases charging the cost to an individual work item is appropriate.
8. Temporary Access Cuts (863-60-XXX): In many cases the cuts are for general access to reduce time to get both people and equipment in and out of high intensity work areas such as main machinery spaces. These cases will probably be charged to the TYCOM. In other cases, cuts must be made for a specific repair or modernization work item and they will be charged accordingly.
9. Gas Free and Maintenance of Gas Free (864-42-XXX): The requirement to gain access to a tank or void is usually job specific and will be charged to the individual work item. Exceptions will be evaluated on a case-by-case basis.
10. Crane Services (865-20-XXX): The crane services requirement will be estimated and assigned to individual work items that require the service.
11. Rigging Services (865-30-XXX): This is for rigging for the cranes and is assigned to individual work items.
12. Material Handling (865-20-XXX): This charge is for the “yellow gear” forklifts that support material handling on the pier, dock or main deck of the ship. The cost is assigned to individual work items that require the service.
13. Fire Watch Services (865-70-XXX): The fire watch personnel are estimated and assigned to individual work items.
14. Quality Assurance Support (866-20-XXX): In keeping with ISO 9000, each PSIA contractor maintains its own Quality Assurance. The cost of Quality Assurance will be assigned to individual work items.
15. Production Supervision (897-00-XXX): Every PSIA contractor has a small staff which manages the accomplishment of repairs and the installation of the alterations. The costs will be assigned to the appropriate work items.

C. The TYCOM will pay for the following items:

1. Armed Security Guards and Waterway Security Barrier (042-27-XXX): The security guards and the water barrier are designed to stop terrorist attacks similar to the events at the Marine Barracks in Beirut and the small craft attack upon USS Cole. The security guards are supported by land obstacles which are designed to stop unauthorized boats from approaching the ship.
2. Compartment Closeout Schedule (813-00-XXX): The Compartment Closeout Schedule is developed in conjunction with the Production Plan. The Compartment Closeout Schedule shows when each of the ship compartments will be completed in every respect. This includes all work as well as painting, labeling and final cleaning. The closeouts are usually done by a team of PSIA and Navy (civilian and/or military) personnel who sign the closeout form.
3. Weight and Moment Change Data (843-10-XXX): Every significant availability requires compilation of weight and moment changes to ensure long term damaged stability of the ship is maintained. Though many repair items, and some modernization alterations, have negligible impact upon weight and moment, it is impractical to try to fractionalize the weight and moment costs to individual jobs.
4. Ship's Force Parking (863-70-XXX): This is a TYCOM item.
5. RMC Office Space (863-70-XXX): When the TYCOMs assumed responsibility for the repair RMCs, the cost of personnel and spaces became a TYCOM responsibility.

- h. Ensure Template Paragraph 4 “Notes” conforms to Volume VII, Chapter 4, Appendix 4-E of this manual B.5. If non-conforming, correct proposed template.
- i. Ensure Template Paragraph 5 “Government Furnished Material (GFM)” conforms to Volume VII, Chapter 4, Appendix 4-E of this manual B.6. If Government Furnished Material is listed in paragraphs 5.1 - 5.3 insure Government Furnished Material information is correct.
- j. Ensure Attachments are correct and open properly in NMD. If errors are found, correct errors.
- k. Review template for conformance to Volume VII, Chapter 4, Appendix 4-E of this manual. If non-conforming, correct proposed template.
- l. Ensure proposed template estimate is completely filled out, estimated as a minimum to the lead paragraph level, and accurate. Templates that are silent in paragraph 1.3 (where the equipment has no identification or specific quantity listed) do not have a true and accurate estimate on file reflecting the actual work within the template. Insert a Planner’s Note in the template to reflect a unit of (One EA) for estimating purposes.
- m. Is the proposed template complete and in conformance with Volume VII, Chapter 4, Appendix 4-E of this manual and the MSCMO Guidelines? If yes, submit proposed template.

2.2 Submission of Change.

- a. Recommended changes to the MSCMO Guidelines shall be submitted to the MSCMO for consideration. Approved changes to the Guidelines will be forwarded by the MSCMO to the Joint Fleet Maintenance Manual Program Manager for inclusion in the next scheduled Joint Fleet Maintenance Manual release, utilizing the Joint Fleet Maintenance Manual Change Request Form.
- b. Recommended changes, to Volume VII, Chapter 4, Appendix 4-E, of this manual shall be submitted to the SSRAC, for consideration of adding to reference (b), through the SSRAC proposed change process. See Volume VII, Chapter 4, Appendix 4-E of this manual for the SSRAC website and e-mail addresses and phone number.
- c. Recommended Enhancements to the NMD program shall be submitted to the Automated Information Service Center through the Configuration Control Board process.

2.3. Internal Review (Planner to Supervisor). Initiating activity shall perform an internal review of proposal to ensure template candidate is appropriate and conforms to Volume VII, Chapter 4, Appendix 4-E of this manual and meets the MSCMO Guidelines. Upon completion of review, template candidate is routed to the Regional RMC/NSA Standards Coordinator.

NOTE: CONTRACTOR GENERATED PROPOSALS MUST BE ROUTED FROM THE CONTRACTOR’S LOCAL STANDARDS COORDINATOR TO THE REGIONAL RMC/NSA STANDARDS COORDINATOR IN THEIR GEOGRAPHIC AREA.

2.4 Command Review. The Regional RMC/NSA shall review proposal to ensure proposed template candidate is appropriate and conforms to Volume VII, Chapter 4, Appendix 4-E of this manual and the MSCMO Guidelines. Upon completion of review, proposed template candidate is:

- a. Routed to the MSCMO for review; or
- b. Prior to routing to the MSCMO for review, the RMC/NSA for that class of ship shall review proposed Class Standard Work Template candidate. This shall be initiated by an e-mail notification from the submitting Regional RMC/NSA MSC Standards Coordinator to the cognizant class RMC/NSA MSC Standards Coordinator. The e-mail notification shall include the file number of the new proposal. The cognizant class RMC/NSA MSC Standards Coordinator receiving the notification shall review proposed template for technical accuracy, current applicable phraseology, conformance to Volume VII, Chapter 4, Appendix 4-E of this manual and the MSCMO Guidelines, estimate information, and submit a response to the submitting Regional RMC/NSA Standards Coordinator via e-mail within 10 days of receipt of notification. Responses shall be provided for all templates submitted for review.

2.5 Master Specification Catalog Maintenance Office.

- a. The MSCMO shall review proposal to ensure template conforms to Volume VII, Chapter 4, Appendix 4-E of this manual and the MSCMO Guidelines. If there are no issues, MSCMO activates new template. If there are significant issues with proposal, MSCMO initiates dialog with local standards person or originator of proposal to resolve issues. Once issues are resolved, MSCMO activates new template.
- b. The MSCMO will return a template if there is no estimate or if the proposed template is a duplicate of an existing template.
- c. Processing Changes to Existing Template. The MSCMO is responsible for maintaining templates (Class Standard Work Templates and Standard Work Templates) up to date. When a user finds an active MSC template that needs to be updated (as a result of changes through Lessons Learned, error, outdated requirements, etc.), a proposed change shall be initiated in accordance with these Guidelines and processed for review in accordance with paragraph 2.4 of this appendix.

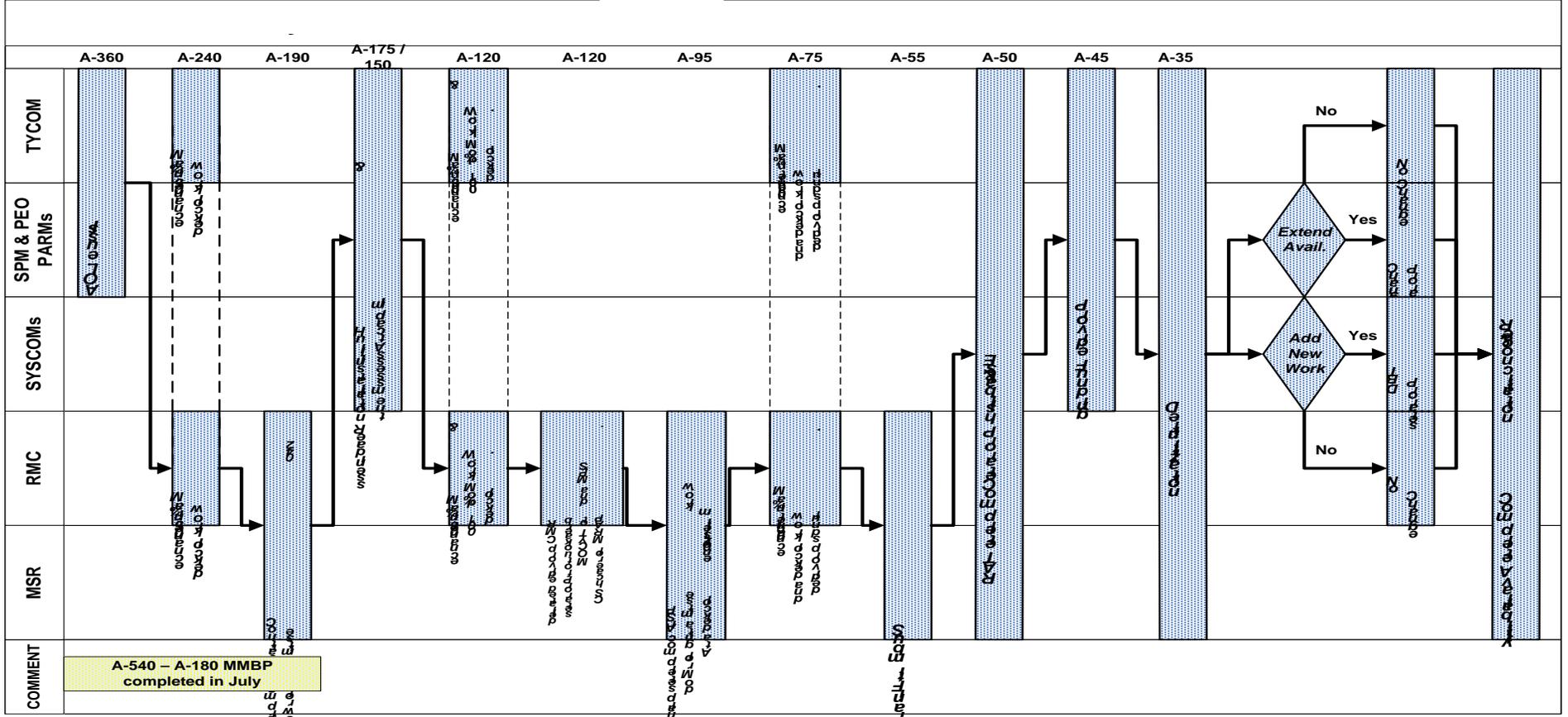
3. Naval Supervisory Authorities and Class Assignment Responsibilities.

- a. **Mid-Atlantic Regional Maintenance Center (MARMC):**
AGF-3, AOE, ARS-50, LCC-19 & DD-963
- b. Norfolk Naval Shipyard (NNSY):
LHA & LHD
- c. Southwest Regional Maintenance Center:
LPD-4, LSD-41, LSD-49, MCM & MHC
- d. Southeast Regional Maintenance Center (SERMC):
FFG-7
- e. SUPSHIP Gulf Coast (SSGC):
CG-47
- f. SUPSHIP Bath (SBAT):
DDG-51

APPENDIX C

SURFACE SHIP PRORATE PROCESS

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APPENDIX F**PLANNING PRIORITY MATRIX**

The priority for work item planning completion is set by the required due date for the work accomplishment. This date is established by the Maintenance Team, based on the availability start date minus the required contracting time. The tables below provide guidelines for FFP and **PSIA** contract vehicles.

DEPOT PLANNING PRIORITY SCHEDULE (FFP)

PRI	TYPE WORK	SPEC EST DUE DATE	PRIORITY SET BY	PLNG SYS	AWARD INTERVAL	COMMENTS/REMARKS
1	EM	“ASAP”	MT-BASED ON EM SKED	NMd	N/A	<ul style="list-style-type: none"> ▪ CAN USE IDIQ IF AVAIL ▪ INCLUDES EM DOCKING (SUSTAIN IDIQ) ▪ OT USE AS NEEDED
2	CM	1-3 DAYS BASED ON SKED	MT-BASED ON CM SKED	NMd	N/A	<ul style="list-style-type: none"> ▪ CAN USE IDIQ IF AVAIL ▪ SMALL PKGS 5-10 SPECS FOR CM SKED AVAILS (10-21 DAYS)
3	CNO	PER ADV PLNG SKED	PLNG-LAST SPEC DUE DATE	NMd	A-60	<ul style="list-style-type: none"> ▪ INCLUDES FFG SHAPEC AVAILS ▪ PLNG START A-360 ▪ BID SPEC REVIEW (BSR) REQUIRED
4	IDIQ UPDATE AND NEW CONTRACTS	PER ADV PLNG SKED	PLNG-LAST SPEC DUE DATE	NMd	A-60	<ul style="list-style-type: none"> ▪ PLNG START A-360 BASED ON CONTRACT EXPIRATION/NEW START ▪ SEE IDIQ LIST FOR CONTRACT EXP DATES ▪ BID SPEC REVIEW (BSR) REQUIRED
5	SERVICE CRAFT	PER ADV PLNG SKED	PLNG-LAST SPEC DUE DATE	NMd	A-60	<ul style="list-style-type: none"> ▪ PLNG START A-360 TO 300 IF POSSIBLE ▪ USUALLY COASTWIDE SOL ▪ BID SPEC REVIEW (BSR) REQUIRED
6	OTHER (TRF, SUSTAIN, DECOM, ETC)	PER ADV PLNG SKED	PLNG-LAST SPEC DUE DATE	NMd	A-60	<ul style="list-style-type: none"> ▪ PLNG START A-360 TO 300 IF POSSIBLE ▪ BID SPEC REVIEW (BSR) REQUIRED

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APPENDIX G

DEPOT PLANNING PRIORITY SCHEDULE (PSIA)

PRI	TYPE WORK	SPEC EST DUE DATE	PRIORITY SET BY	PLNG SYS	AWARD INTERVAL	COMMENTS/REMARKS
1	EM	"ASAP"	MT-BASED ON EM SKED	NMd	N/A	<ul style="list-style-type: none"> ▪ INCLUDES EM DOCKING ▪ OT USE AS NEEDED
2	CM (SCHEDULED)	A-24	MT-BASED ON CM SKED	NMd	N/A	<ul style="list-style-type: none"> ▪ APPLICABLE TO ALL QTRLY CMAVS ▪ SMALL PKGS 5-10 SPECS FOR CM SKED AVAILS (10-21 DAYS)
3	CM (UNSCHEDULED)	A-14 days prior to start	MT-BASED ON CM SKED	NMd	N/A	<ul style="list-style-type: none"> ▪ APPLICABLE TO IN-PORT PERIODS WHEN SHIP IS AVAIL TO PERFORM REPAIRS ▪ CONTRACTOR NEEDS ADEQUATE NOTICE TO PERFORM PRODUCTION SCHEDULING & PLANNING
4	CNO	A-60	PLNG-LAST SPEC DUE DATE	NMd	N/A	<ul style="list-style-type: none"> ▪ INCLUDES ALL CNO AVAILS ▪ PLNG START A-360

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APPENDIX H₃
PROCESS FLOWCHART
FIRM FIXED PRICE PSIA CNO AVAILABILITY

