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## **SUBSECTION 4-1 INTRODUCTION TO SHIPALT DESIGN AND DEVELOPMENT PROCESS**

### **4-1.1 Scope of Section 4**

This Section of the Fleet Modernization Program (FMP) Management and Operations Manual details the policies for all design, development, and documentation associated with the alteration of ships, beginning with identification of proposed improvements and concluding with the update of Ship Selected Records (SSRs) incident to installations (see Figure S4-1). Figure S4-2 shows responsibilities for managing and accomplishing each of the steps in the process. Figure S4-3 provides a summary of Ship Alteration (SHIPALT) development milestones.

### **4-1.2 Nuclear Ship Alteration (SHIPALT) Exception**

Nuclear SHIPALTs under the cognizance of the Naval Sea Systems Command (NAVSEA) 08 are exempt from the procedures of Subsections 4-2 through 4-12 of this manual. Nuclear alteration policies and responsibilities are in accordance with Subsection 4-12, and references S4(a) through S4(c).

### **4-1.3 References for Section 4**

S4(a) NAVSEA 0989-058-1000, Subj: Destroyer Tender & Submarine Tender Nuclear Support Facility Overhaul & Repair Specification

S4(b) NAVSEA 0989-LP-037-2000, Subj: Commissioned Submarine Ships General Reactor Plant Overhaul & Repair Specification

S4(c) NAVSEA 0989-LP-043-0000, Subj: Commissioned Surface Ships General Reactor Plant Overhaul & Repair Specification

S4(d) NAVSEAINST 5400.97, Series, Technical Authority Principles and the Responsibility, Accountability and Authority of the NAVSEA Chief Engineer

S4(e) NAVSEAINST 5400.57, Series, Engineering Agent Assignment and Technical Authority

S4(f) NAVSEAINST 5400.61, Series, Headquarters Engineering and Technical Authority Policy

S4(g) NAVSEAINST 5400.95, Series, Shipyard, SUPSHIP, and Fleet Engineering and Technical Authority Policy

S4(h) NAVSEAINST 5400.98, Series, Warfare Center Engineering and Technical Authority Policy

S4(i) CINCLANTFLT/CINCPACFLTINST 4720.3, Series, Management of Afloat Combat Systems and C4I Installations and Improvements

S4(j) Appendix B , Subj: Planning Yard (PY) Assignment Matrix

S4(k) NAVSEA Technical Specification 9090-700, Series, Subj: Ship Configuration and Logistics Support Information System

S4(l) NAVSEAINST 7000.9, Series, Subj: Financial Management Manual for Command Headquarters

S4(m) Appendix A, Subj: NAVSEA Technical Specification 9090-210, Series, Justification/Cost Form

S4(n) Appendix A, Subj: NAVSEA Technical Specification 9090-500, Series, Ship Alteration Record

S4(o) NAVSEAINST 7300.14, Series, Subj: Classification of Cost Estimates for Ships

S4(p) Appendix A, Subj: NAVSEA Technical Specification 9090-600, Series, Ship Alteration Drawing Preparation

S4(q) Appendix A, Subj: NAVSEA Technical Specification 9090-100, Series, Liaison Action Record

S4(r) MIL-HDBK-61, Series, Configuration Management Guidance

S4(s) NAVSEAINST C9210.4, Series, Subj: Changes, Repair and Maintenance to Nuclear Powered Ships

S4(t) NAVSEA Technical Specification 9090-1500, Series; Provisioning, Allowance and Fitting Out Support (PAFOS) Manual

S4(u) Appendix A, Subj: NAVSEA Technical Specification 9090-310, Series, Alterations Accomplished by Alteration Installation Teams (AIT)

S4(v) NAVSEAINST 4720.11, Series, Subj: Alterations to Ships Accomplished by Alteration Installation Teams.

S4(w) Appendix C, Subj: Ship Selected Records

S4(x) NAVSEAINST 9210.29, Series, Procedure G-1, Subj: Nuclear Powered Ships - Maintaining: Reactor Plant Manuals, Reactor Plant Component Technical Manuals and Tender Nuclear Support Facilities Manuals

S4(y) NAVSEAINST 9210.25, Series, Subj: Policy and Responsibility for Naval Reactor Plant Supply Support

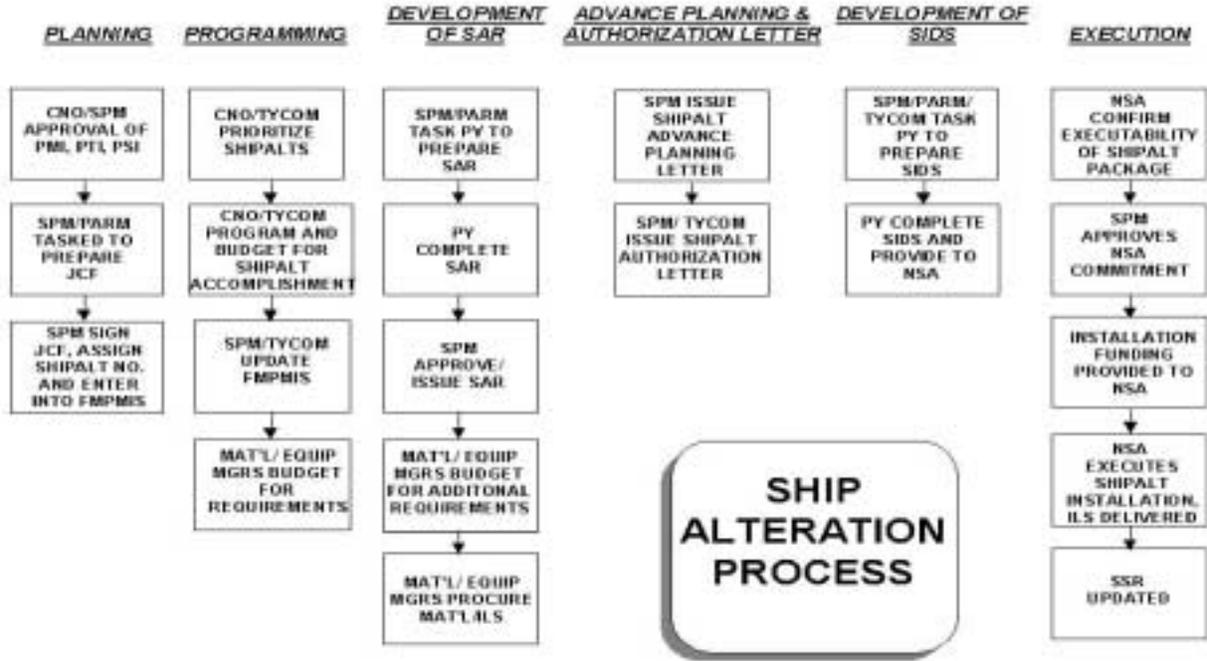


Figure S4-1 Ship Alteration Development Process

**Figure S4-2 Ship Alteration Development Responsibilities**

<u>FUNCTION</u>	<u>FINANCIAL MANAGE MENT</u>	<u>FUNDING ACCOUNT</u>	<u>PROGRAM MANAGER</u>	<u>TASKING INITIATOR</u>	<u>TASKING MECHANISM</u>	<u>TASKING RECIPIENT</u>	<u>LUMP SUM/ PARTICULAR TASK</u>
C&F (*) STUDIES	SPM/PARM	OPN/ O&MN	SPM	N43	TASKING LTR TO SPM/PARM	PLANNING YARD	
JCF (*) DEVELOP MENT	SPM/PARM	OPN/O&MN DSA LINE ITEM/EQUIP. LINE	SPM	SPM/PARM	SPM/PARM TASKS PY	ENGINEERING AGENT	
SAR DEVELOP MENT	SPM/PARM	OPN/O&MN DSA LINE ITEM	SPM	SPM/PARM	SAR TASKING LETTER	PLANNING YARD	LUMP SUM
SID DEVELOP MENT	SPM/PARM	OPN DSA /O&MN LINE ITEM	SPM	SPM/PARM	TASKING LETTER	PLANNING YARD	BY HULL
MDS SERVICES	SPM/PARM	OPN/O&MN DSA LINE ITEM	SPM	SPM/PARM	LTR/MSG	PLANNING YARD	LUMP SUM
SSR MAINT ENANCE UPDATE	SPM	OPN/O&MN DSA LINE ITEM	SPM	SPM	SHIPALT AUTHORIZA TION LETTER	PLANNING YARD	BY HULL

**Note (\*)**

**C&F Studies:** As requested by CNO. Normally completed with NAVSEA internal resources. Formal tasking and separate funding are required for farm-out.

**JCF Development:** CNO directs JCF Development for PMI's & PSI's & the SPM for the PTI. JCFs are normally completed with SPM/PARM internal resources.

**Figure S4-3 Summary of SHIPALT Development Milestones** (Note: Milestone dates shown **reflect latest acceptable dates** to ensure inclusion into CNO availability. All stakeholders are strongly encouraged to accelerate SHIPALT Planning milestones whenever possible.)

Milestone	Date	Comments
JCF Submitted	A-16	A-16 equates to 16 months before start of availability
JCF Approved	A-14	SPMs shall adjudicate JCFs within 2 mo. of submittal
Task/Fund Development of SAR Data	A-14	The SPM shall designate the activity responsible for the development of SAR data, normally the Planning Yard
ICD's Delivered to SAR Developer / Planning Yard	A-14	
PARM Developed SAR Information Submitted to SAR Developer	A-13	The cognizant PARM shall submit required SAR data within one month of JCF approval by the SPM
Complete Development of SAR Data	A-12	The SAR developer shall complete the development of SAR data within two months of tasking/funding
SPM Authorization Letter	A-12	Authorization to proceed with planning for Availability may include non-mature/currently non-funded SHIPALTs at SPM option.
Task/Fund SID Development	A-12	
Approval of SAR	A-11	The SAR shall be approved by the SPM or other activity designated at JCF approval within one month of SAR data completion
Issue Drawings	A-12 to A-6 (AIT dwgs NLT A-4)	1) Drawings for AIT installations do not need to be delivered to the NSA at A-6. Drawings shall be delivered NLT A-4 . 2) Drawings shall be delivered incrementally from the Planning Yard to the NSA. In cases where a contract award is required prior to A-3, a drawing delivery schedule shall be negotiated between the PY and NSA. 3) In cases where drawing concurrence/approval is required (SPAWAR, RPPY, etc.), either a note shall be placed on the drawing indicating that production work may not commence without concurrence/approval or the drawings shall be clearly marked as preliminary and provided to the NSA NLT A-6. Final drawings and/or drawing revisions with the necessary concurrences/approvals shall be issued NLT A-4.
Final FMPMIS Material Reconciliation	A-6	Update FMPMIS based on drawing Bill of Material
Identification of AIT Support Service Requirements	A-4.5	A-135 days as defined by NSTS 9090-310D – “The AIT Manager is responsible for providing advance notification of alteration accomplishment requirements/impacts and making arrangements (including funding) for any required support services not being provided by the AIT.”
Delivery of Drawings to the NSA	A-4	Delivery of <b>all</b> drawings to NSA.
ILS Cert Plan approved by SPM	A-4	SPM reviews and provides final approval of ILS plan
Start of Availability	A	

## **SUBSECTION 4-2 ORGANIZATION RESPONSIBILITIES**

### **4-2.1 Scope of Subsection 4-2**

This subsection details the responsibilities of each organization involved in the FMP process.

### **4-2.2 Background for Subsection 4-2**

The Commander, Naval Sea Systems Command (COMNAVSEASYS COM) acts as executive agent for the Chief of Naval Operations (CNO) in the execution of the FMP. The NAVSEA Integrated Warfare Systems Directorate (NAVSEA 05) ensures the technical integrity of the SHIPALT development process by establishing technical policies and procedures for SHIPALT development, and design. In accordance with reference (d), NAVSEA 05 is designated the NAVSEA Chief Engineer (CHENG) and is responsible for Technical Authority and accountability of technical decisions made throughout NAVSEA. In accordance with references (d) through (h), NAVSEA 05 delegates Technical Authority to headquarters and field activity Engineering Agents (EAs) based on their areas of responsibility, technical integrity and expertise. The EAs are assigned the responsibilities, accountability and technical authority within a specific technical area, system or mission and typically reside in warfare centers, shipyards and other activities. EAs are accountable to NAVSEA 05 and the Ship Program Manager (SPM) for the development of SHIPALTs in accordance with technical policy, standards and processes as outlined herein. EAs are tasked and funded by the SPMs as required in the development, review or approval of SHIPALTS.

As NAVSEA Life Cycle Managers (LCM) the EAs will perform engineering analysis and develop design criteria, standards and policy for their respective functional area, systems and equipment. The SPMs act as the LCMs of all assigned ships. In concert with the Ship Design Managers (SDMs) and EAs, they act as the advocate for application of advanced technology and design concepts to ships under their cognizance and must approve technical matters affecting their ships. Communication, coordination, and cooperation between SPMs, SDMs and the EAs is essential in enabling them to fulfill their respective FMP responsibilities.

Most alterations are planned for installation throughout a ship class, or baseline/flight within a class, and are installed by the executing activity (typically a shipyard, occasionally an Alteration Installation Team (AIT)) during a CNO or scheduled availability. Installation of these alterations is focused on CNO availabilities and timelines for milestones will be designated as months before start of the availability, for example A-12 meaning availability start date minus 12 months. Most Command, Control, Communications, Computers /Intelligence Surveillance and Reconnaissance (C4/ISR) and combat system alterations are proposed by individual Participating Managers (PARMs) as early as 30 months before Deployment (D-30) of the Battle Force, as part of the D-30 Process, see reference S4(i). Milestone timelines for interoperability alterations are designated as months before Battle Force deployment, for example D-30 meaning deployment date minus 30 months. Thirty months before deployment nominally equates to A-14 on the FMP Milestone timeline. The proposed alterations may not always be mature and may not be scheduled as part of a CNO or fleet scheduled availability. The PARM and SPM have an opportunity at D-28 and D-25, to resolve alteration-scheduling issues on any proposed alterations the SPM determines are ready for installation in accordance with Figure S4-3. The SPM authorization letters should be updated to reflect these additions/deletions, to support accurate

planning for the CNO availabilities.

When the alterations are installed by an AIT in a CNO availability, the PARM is responsible for funding the installation, including any support services required. Integrating the AIT-installed interoperability alteration into the CNO availability is the responsibility of the SPM. To support this the SPM may obtain funding from the PARM (all activities within a CNO availability are under the cognizance of the SPM).

#### **4-2.3 NAVSEA 05 Overview**

NAVSEA 05, assisted by NAVSEA 53, interprets command policies and provides technical policy, standards, and processes for hull, mechanical, electrical (HM&E), electronics, and ordnance systems. NAVSEA 05/53 and the EAs provide technical evaluation and technical approval of all improvements/SHIPALTs for the SPMs. The SDMs, NAVSEA 05/53 functional groups and the EAs also provide technical direction and guidance for Design Agents, Planning Agents, and Planning Yards (PYs) in the development of SHIPALTs for the SPMs.

##### **4-2.3.1 Technical Functions**

Technical functions of NAVSEA 05 and 53 are:

- Assist in the definition of Combat System Level Architecture across warfare areas.
- Total ship integration engineering, which includes: Assessing the projected cumulative impact of SHIPALTs on a ship's stability, weight, moment, displacement, operating ability, electrical power, cooling requirements, space allocations, equipment locations, shipboard interfaces, cabling/WG restriction, Interior Communications (IC), navigation and Topside.
- Develop and technically approve Combat System Block Diagrams and Compartment Arrangement of Equipment Drawings.
- Conduct studies and investigation to identify the cost and feasibility of specific SHIPALTs and SHIPALT packages.
- Act as primary NAVSEA point of contact for technical matters in the SHIPALT development process.
- Conduct technical studies in support of development work on the Justification/Cost Form (JCF) and Ship Alteration Record (SAR).
- Conduct special design baseline studies relating to systems, subsystems, and equipment integration within a class or group of ships.
- Provide technical guidance to all tasked supporting activities for specific SHIPALTs.
- Approve technical aspects of SHIPALT development efforts and selected design efforts.
- Technically review and approve Engineering Change Proposals (ECPs).
- Technically review and approve Ordnance Alterations (ORDALTs).
- Present the proposed ship class alteration to the appropriate Ship level Configuration Control Board (CCB).
- Provide technical input and review for Interface Design Specifications (IDSs).

#### **4-2.4 Management Functions of NAVSEA 04M**

- Develop NAVSEA FMP policy and procedures in concert with all cognizant activities and direct implementation thereof, in accordance with CNO and NAVSEA direction.
- Manage the Navy Data Environment-Navy Modernization (NDE-NM) Fleet Modernization Program Management Information System (FMPMIS); the official database in support of the

FMP.

- Focus all participants on improving the process for controlling configuration changes.
- Manage modernization process improvement and provide FMP metrics.

#### **4-2.5 Funding Coordination - Life Cycle Managers (LCMs)/Participating Managers (PARMs)**

- Program, budget, and procure all Headquarters Centrally Provided Material (HCPM) and corresponding installation requirements.
- Coordinate with SPMs and AIT/Program Support Managers to ensure matching of HCPM procurements with installations.
- Maintain NDE-NM/FMPMIS Material Dictionary (Material IDs) current, allowing for lead P-1 calculation for the budget.
- Keep current the Procurement Lead Time (PLT) and material cost in FMPMIS Material Dictionary.
- Monitor material delivery and maintain current in NDE-NM the delivery status (Best Estimated Delivery Date (BEDD), Military Standard Requisitioning and Issue Procedures (MILSTRIPs), etc.).
- Notify SPM whenever substitution of NDE-NM material is being considered or accomplished.

#### **4-2.6 Ship Program Manager (SPM) Overview**

Functions of the SPM:

- Approve or delegate approval for all JCFs and SARs.
- Plan, schedule, task preparation and/or review and approve SHIPALT Installation Drawings (SIDs) (SID approval may be delegated by the SPM to the ship class Planning Yard), task SSR updates and approve Liaison Action Records (LARs).
- Coordinate SHIPALTs installed by AIT into CNO or scheduled availabilities. Funding for such coordination is to be provided to the SPM by the PARM.
- Task, negotiate, and line manage all SHIPALT design and development efforts. However, the cognizant SPM will rely on the NAVSEA 05/53 and the EAs for engineering guidance and support.
- Administer the execution of SHIPALTs.
- Review and approve all nominated Proposed Technical Improvements (PTI) for SHIPALT program qualification.
- Review and endorse to CNO Platform Sponsors all nominated Proposed Military Improvements (PMIs).
- Review and endorse to CNO Platform Sponsors all nominated Proposed Survivability Improvements (PSIs) for SHIPALT program qualification.
- Manage the Cost & Feasibility (C&F) Studies including development and submission of budget submittals and submittal of Quarterly Reports to CNO.
- Assign a SHIPALT number and ensuring the number, the SHIPALT brief and the applicable JCF data elements are entered into the FMPMIS after JCF approval.
- Conduct liaison with non-NAVSEA technical activities to obtain needed guidance and direction for execution of Design Services Allocation (DSA) tasks.
- Develop and adjust planning estimates on all tasking documents based on information from

cognizant design activities, FMPMIS reports, Ship Departure Reports, experience from similar SHIPALTs, and historical data sources.

- Develop projected SHIPALT drawing requirements (at the SHIPALT level), budget year Configuration Overhaul Planning (COP) requirements, and execution year SSR requirements (at the hull level) of DSA budget development and planning.
- Request funding for tasked development activities subsequent to or concurrent with the issuance of tasking documents.
- Generate tasking documents and amendment requests, as well as specifying cost estimates and completion dates for all DSA development efforts.
- Maintain current SHIPALT Bill of Material (BOM) in FMPMIS.
- Identify all previously developed or required documentation, technical data, and drawings maintained in-house when tasking design efforts.
- Identify compensation or requesting reprogramming to fund development efforts that exceed established cost estimates and cannot be otherwise funded.
- Monitor SHIPALT development tasks to ensure that they are executed, completed, and delivered, with acceptable quality, within specified timeframes and in accordance with guidelines delineated in tasking documents.
- Review all SHIPALT design efforts for conformance to material identification requirements as delineated in the Section 7 of this manual of this manual.
- Ensure that emergent requirements designated by CNO are given highest visibility to ensure that material and plans are available within specified timeframes and in accordance with tasking document guidelines.
- Review and approve LAR requests, and coordinate Naval Supervising Activity (NSA), PY, and NAVSEA 05/53 efforts in this area.
- Ensure compliance with all relevant procedures for any contracted effort, especially in the area of weight control.
- Availability completion.
- Provide overall responsibility for execution of Integrated Logistics Support (ILS) requirements in support of SHIPALTs.
- Resource Financial Manager (RFM) for budget and execution of FMP under their cognizance.
- Participate in the D-30 Process as required, to ensure successful planning and execution of the Ship baseline established at D-24.
- Ensure authorization letters are updated in accordance with the CINC approved baseline.

**Note: The SPM may task selected functions to Naval activities or private contractors. This in no way diminishes the SPM management control or responsibility for the timeliness and quality of the SHIPALT products.**

#### **4-2.7 PY Responsibilities**

The Planning Yard (PY), as the Ship Class DA, has a life cycle responsibility for assigned ships (PY assignments are listed in reference S4(j)). PY responsibilities in support of SPMs and NAVSEA 05/53 involve providing support throughout a SHIPALT's life cycle from SHIPALT conceptualization through design resolution, integration, and accomplishment to testing and proofing. Non-Reactor Plant PY (RPPY) responsibilities in the SHIPALT process include

(Reactor Plant PY responsibilities are described in Subsection 4-12):

- Provide guidance and engineering design in support of C&F studies.
- Provide detailed technical support for JCF development efforts as tasked and funded by the cognizant SPM.
- Develop SARs for ship classes under their cognizance as tasked by the cognizant SPM.
- Submit alteration, major arrangement, and system interface drawings to the SPM for review and approval when specified in the related SARs.
- Define necessary installation/support material and ILS requirements to the cognizant SPM throughout SHIPALT development and design.
- Participate in planning conferences, design reviews, and problem reviews with the SPM, Type Commanders (TYCOMs), etc.
- Provide LAR services, including on-site engineering field services, to NSAs/IAs for clarification of requirements, review and approval of minor changes.
- Provide Miscellaneous Documentation Support (MDS) as required.
- Proof SPM specified first-time or complex SHIPALTs throughout accomplishment, and providing the associated proofing report (Proofing is to include validation of design and logistics support as defined in the SAR and ILS Certification Form, respectively).
- Maintain, modify, and distribute SSR.
- Maintain a weight control baseline system.
- Provide configuration control and maintaining configuration data.
- Develop test requirements for complex SHIPALTs when specified in the SARs.
- Develop, review and approve SIDs as tasked by the SPM/PARM.
- Provide a complete set of SIDs to the NSA and the ship receiving the SHIPALT installation.
- Consider material standardization priorities to make recommendations or initiate action to achieve intra-class, intra-Navy and intra-ship standardization.
- Provide SHIPALT design information to the Configuration Data Manager (CDM) for COP development.
- Prepare purchase specifications of all non-standard material required for the SHIPALT except for items being procured by the Hardware System Commands (HSCs). Purchase specifications must be completed No Later Than (NLT) A-10. The PY is also responsible for updating purchase specifications by incorporating all changes necessary from the revisions to planning documentation (see Subsection 4-7.4.2).
- Provide technical services to the TYCOMs and other activities responsible for maintenance/operation of ships.
- Accomplish verification shipchecks for complex or high-risk first-time SHIPALTs. Schedule verification shipchecks on Phased Maintenance Availability (PMA) ships to coincide with the contractor's pre-overhaul production shipcheck.
- Prepare rapid development SARs for ship classes under their cognizance as tasked and funded by the cognizant TYCOM.

#### 4-2.7.1 Weight Control

The cognizant PY will establish and maintain a weight control program which ensures that each assigned ship remains within its Naval Architectural Limits. When necessary, the PY shall propose weight and/or vertical moment compensation, including the installation of ballast. The PY's proposed removals and/or ballasting plan shall be forwarded to the cognizant SPM for

approval prior to forwarding to the Overhauling Yard for Public Yard availabilities and the Planning Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) for Private Yard availabilities.

As part of the PY's weight control program, the PY will compile an Estimated Weight and Moment Report and an Actual Weight and Moment Report for each availability. The Estimated Weight and Moment Report shall be based on SHIPALT drawings and/or the latest data available prior to the ship's availability. The Actual Weight and Moment Report shall be based on updated SHIPALT drawings and include any Alterations Equivalent to Repair (AERs) and/or other work items. Both reports shall be forwarded to the cognizant SPM, cognizant Ship Availability Planning and Engineering Center (SHAPEC) activity, TYCOM, NAVSEA 05P, NSA and ship. The Estimated Weight and Moment Report shall be forwarded not later than A+1 and the Actual Weight and Moment Report shall be forwarded NLT C+2.

#### **4-2.7.2 Configuration Control**

PYs, as directed by their cognizant SPM for specific ship classes and/or systems, will maintain a ship configuration control system. The development of installation drawings by PYs maintaining configuration control will require the addition of a note on the drawings. This note, in accordance with reference S4(k), will state that no engineering changes, waivers, or deviations will be allowed without the explicit approval of the cognizant SPM. The PY will maintain configuration control by limiting variation of design in installation drawings for ships of a class. Several mechanisms to facilitate this are listed below:

- a. PY control and maintenance of the LAR system through responses to drawing change, waiver, or deviation requests.
- b. Selection and maintenance of material identification criteria and procedures.
- c. Review of all SHIPALTs under their cognizance.

#### **4-2.7.3 Private Sector PYs**

In certain instances, private shipyards or design contractors may possess special knowledge or expertise relative to a group or class of ships. In these cases, NAVSEA may contract directly with private shipyards or design contractors to serve as Class PYs for selected ship classes. A SUPSHIP will be assigned to administer each such contract. Private sector PY contracts require complete justification, and prior written approval of NAVSEA 09, with requests submitted by the SPM via NAVSEA 04X.

##### **4.2.7.3.1 Contractor Responsibilities**

The contract with a private sector PY or Design Agent will specify requirements for all functions discussed in this manual. Projected levels of effort for indefinite tasking (e.g., MDS or LAR services) will be established as line items in each contract. Contracts for private sector PYs will include the policies and requirements of this manual that apply to PYs. The contractor will be responsible for fulfilling all PY functions, as directed by the cognizant SUPSHIP. Where contracts also pertain to non-PY functions, the PY tasks will be separately priced and funded.

Contracts will contain clauses requiring the contractor to transfer the complete design database to a designated Navy activity as directed by NAVSEA. The database will include all originals and masters of engineering drawings, technical manuals, key design calculations and data, computer

software, etc.

#### **4.2.7.3.2 Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) Responsibilities**

The assigned SUPSHIP will be responsible for administering private sector PY contracts for NAVSEA; monitoring LARs between the contractor and other Navy activities.

#### **4-2.7.4 PY Assignments**

PY assignments and changes thereto are effected by the SPM after coordination with NAVSEA 04X and after approval by NAVSEA 09. Specific assignments covering conventional, as well as nuclear-powered ships, are contained in reference S4(j). For nuclear-powered ships, two PYs are assigned in some cases, one for the hull and one for the reactor plant.

##### **4-2.7.4.1 Reactor Plant PY**

The Reactor Plant PY is responsible for PY functions related to the reactor plants. The detailed requirements and responsibilities for these services are contained in Subsection 4-12.

##### **4.2.7.4.2 Hull PY**

The Hull PY is responsible for PY functions related to systems, components, and structures other than reactor plants.

##### **4.2.7.4.3 Hull and Reactor Plant PY Interface**

The interface between the Hull PY and Reactor Plant PY areas of responsibility is normally indicated on the drawings that cross the interface.

#### **4-2.8 Naval Supervising Activity (NSA) Responsibilities**

The NSA is the single Naval activity charged with the responsibility of oversight of work being accomplished on U.S. Naval ships during any type of availability. The NSA can be a Naval Shipyard (NSY) or a SUPSHIP (for CNO scheduled availabilities) or when work is conducted during periods in which the NSY or SUPSHIP offices do not have oversight, NSA assignment and functions will be designated by the cognizant TYCOM. The planning responsibility for specific ship availability is assigned to the specific SHAPEC, if one exists for the availability class.

#### **FOR PURPOSES OF THIS CHAPTER, REFERENCES TO THE NSA WILL APPLY ONLY TO THE NSA FOR CNO SCHEDULED AVAILABILITIES.**

NSAs are responsible for detailed planning of industrial availabilities under their cognizance. Specific functions of the NSA for CNO scheduled availabilities are:

- Provide Surveyor Quality Assurance (QA) waterfront support.
- Interface with Integrated Logistics Overhaul (ILO) and CDM in updating ship configuration and logistics records in accordance with reference S4(k).
- Prepare updates to COP for all configuration changes accomplished during the availability, if specifically tasked and funded.
- Update non-nuclear SSRs for nuclear powered ships as tasked by the PY.
- Verify (in accordance with Section 8 that all ILS products is available as needed for installation and checkout of systems and equipment by Start Of Availability (SOA). All ILS

products are delivered by the End Of Availability (EOA).

- Perform inclining experiments/trim dives as required and funded by the SPM.
- Ensure that customers authorized work is accomplished in a quality manner within approved funding and schedule.
- Participate in selected planning conferences, design reviews, and problem reviews with SPM, TYCOMs, etc.
- Provide design/engineering feedback to SPM/TYCOM and PYs concerning SHIPALT installation problems.
- Attend Work Package Integration Conferences (WPICs) or equivalent.
- Attend all major progress conferences.
- Conduct progress reviews (% complete) for in-process ship availabilities, as tasked by the SPM.

#### **4-2.8.1 PY-NSA Interaction**

Activities responsible for detailed availability planning will interact with the PY on a regular basis during preparation for, and execution of, assigned availabilities. The required tasking/documentation/information transfers are as follows:

- SIDs - When tasked by the SPM, NLT A-12, the PY will provide an integrated package of SIDs in accordance with Figure S4-3.
- LARs - LARs provide the structure for resolution of waivers, deviations, and changes identified by the industrial activity during availability execution. LAR procedures are discussed in Subsection 4-9.

##### **4-2.8.1.1 PY On-Site Representative (OSR)**

In accomplishing its responsibility as SHIPALT DA, the PY, is required to provide on-site technical support to industrial activities accomplishing the SHIPALT installation as tasked by the SPM. On-site support shall be continuous throughout a given ship availability and shall be sufficient to assure that effective technical liaison is established and maintained throughout the availability. Technical liaison shall be through the accomplishing activities' design division, which is responsible for basic waterfront support. Specific on-site functions required of the PY, when tasked by the SPM, include:

- Attend the WPIC or equivalent meeting.
- Attend the Pre-arrival Conference/ Arrival Meeting.
- Attend all major Progressing Conferences, i.e., 25%, 50%, 75% and delivery conferences.
- Being on call to provide on-site engineering expertise, within 24 hours of an NSA's request, on all pertinent installation and testing events associated with accomplishment of a SHIPALT, including proofing as required.
- Coordination and initial resolution of SHIPALT installations to insure that the integrity of the SHIPALT designs are not violated.
- Monitor LAR and reverse LAR activity.
- When tasked and funded by the SPM, assume the NSA responsibilities for updating ships configuration and logistics records with alterations accomplished information.

##### **4-2.8.2 -NAVSEA 05/NSA Interaction**

Normally, interaction between NAVSEA 05 and the NSA is via the SPM and PY through review

and approval of LAR requests, review of specified drawings for the complex SHIPALTs, and support of particular proofing and certification requirements.

#### **4-2.8.3 SPM/NSA Interaction**

The SPM acts as the primary point of contact with the NSA for tasking, guidance, and coordination. The SPM acts as entry point and final programmatic approval authority for all LARs, waivers, and deviations for their cognizance platforms.

## **SUBSECTION 4-3 INITIAL IDENTIFICATION AND INVESTIGATION OF PROPOSED SHIP IMPROVEMENTS**

### **4-3.1 Scope of Subsection 4-3**

This subsection details the beginning steps involved in the identification and investigation of proposed Ship improvements. It also details the process by which C&F studies are conducted by NAVSEA at the direction of the CNO, to provide additional technical/cost information on PMIs, PSIs and PTIs.

### **4-3.2 Initial Identification of Proposed Ship Improvements**

A proposed improvement to ships and their equipment/systems may originate from sources inside and outside the Navy. Upon receipt, proposed improvements will be categorized and evaluated for possible inclusion in the FMP. There are three types of ship improvements: military, survivability, and technical. Machinery Alterations (MACHALTs), Field Changes (FCs) and Engineering Changes (ECs) are developed and programmed separately from SHIPALTs. ORDALTs that are conjunctive with a SHIPALT will be covered as part of the SHIPALT.

### **4-3.3 Types of Ship Improvements**

#### **4.3.3.1 Proposed Military Improvements (PMIs)**

PMIs are forwarded to CNO for approval via the cognizant SPM, and are intended to increase the ability of the ship to perform its Required Operational Capabilities (ROC). PMIs can originate from a number of sponsors: industry, Navy Research and Development (R&D) Programs, project and program managers, hull or equipment sponsors, or the Fleet. PMIs describe the improved equipment/system/capability to be installed, its purpose, and its relationship to existing equipment systems. The PMI format is illustrated in Figure S4-4.

#### **4.3.3.2 Proposed Survivability Improvements (PSIs)**

A PSI is a document that describes a proposed improvement in passive fire protection, fire fighting, Electromagnetic Protection (EMP), Chemical/Biological/Radiological (CBR) warfare, shock protection, damage control and carrier Anti-Ship Capable Missile (ASCM) side protection. The CNO is the approving authority for PSIs. The PSI format is illustrated in Figure S4-5.

#### **4.3.3.3 Proposed Technical Improvements (PTIs)**

SPMs receive PTIs for approval, usually from Type Commanders TYCOMs and Engineering Activities. PTIs will improve the safety of personnel and equipment and/or provide increased reliability, maintainability, and efficiency of installed equipment. A PTI must contain enough information concerning cost, material requirements, equipment/system, ship class applicability, etc. to provide an adequate vehicle for evaluation. The JCF format should be used to provide the SPM with data needed for initial considerations of the improvement.

### **4-3.4 Cost and Feasibility (C&F) Initiation**

Chief of Naval Operations (OPNAV) on occasion, may task the SPMs to conduct C&F studies on specific PMIs and/or PSIs. CNO (N43) will serialize the approved PMI/PSI for the purpose of control and identification, and request that they be advised of the estimated completion date or

its status thereof. The cognizant SPM will forward the document to NAVSEA 05/Ship's Design Manager as applicable. The document will include a statement requesting details of tasking and funding requirements, with an anticipated completion date after receipt of funds in the event that a contractual effort is required.

#### **4-3.4.1 C&F Tasking**

Where possible, C&F studies will be accomplished with NAVSEA PY resources. Where expertise is not sufficient to complete a C&F study, tasking will be issued, on a case-by-case basis, for contractual effort or to an appropriate activity charging an FMP line item established for that purpose.

#### **4-3.4.2 C&F Funding**

C&F studies will be funded on a case-by-case basis as they are tasked (see Section 6 for details).

#### **4-3.5 C&F Execution**

C&F studies will include a review of all pertinent information including the PMI/PSI and special design baseline studies. The study's primary function is to provide additional material requirements information, installation cost estimates, technical feasibility assessment including impact on existing systems, and cost/benefit trade-offs. This is done through, but not limited to, an investigation of the following elements:

- a. Equipment to be removed and replaced.
- b. Positioning or repositioning required for other equipment.
- c. Changes in weight, weight distribution, or moment of the ship.
- d. Changes to ship's power/cooling requirements.
- e. Changes to ship's functional and operational capabilities.
- f. Impact on existing SHIPALTs, MACHALTs and AERs.
- g. Impact to Ship Interoperability capabilities.

The above classifications should lead to a formal definition of the proposed improvement's benefits and feasibility. Costs must be described in terms of installation man day and material cost estimates. The precision for the C&F study should be Class F, "ballpark" estimates (reference S4(1) provides details on estimate classification). Finally, the required materials listed in the PMI/PSI will be reviewed. The cognizant engineer should identify all known major/integral equipment not appearing in the PMI/PSI for annotation to the document. Where possible, standard stock numbers should be identified for material required. If additional data or material requirements are known, they should be entered into the PMI/PSI to reduce the variance between estimated and actual cost.

#### **4-3.6 C&F External Interfaces**

Because ship class configuration detail, including configuration variations within classes, is a PY area of expertise, the PY may be requested to provide engineering design support services. In support of the development effort, the PY may be tasked to prepare:

- a. New technical data documentation.
- b. Preliminary designs.
- c. Preliminary tests.
- d. Preliminary and special studies, including mockups.

Additionally, on an exception basis when the PY workload permits, the SPM may task accomplishment of the C&F study to the cognizant PY. The PY may not initiate development efforts until it is in receipt of funding documents.

#### **4-3.7 C&F Review/Approval**

Once the C&F Study is completed and the results reviewed by NAVSEA 05/53 or cognizant EA, the SPM(s) will forward the study results recommending its feasibility to CNO (N43) and to the appropriate OPNAV Sponsor.

### **FIGURE S4-4 SAMPLE PROPOSED MILITARY IMPROVEMENT (PMI)**

1. TITLE:
2. ORIGINATOR:
3. ORIGINATOR'S ORGANIZATION/ADDRESS:
4. CNO SPONSOR:
5. PURPOSE: (include mission area, estimate of system effectiveness, and probable change to military characteristics of ships on which installed.)
6. PHYSICAL DESCRIPTION OF EQUIPMENT: (include power requirements, possible interference with existing equipment, known installation constraints, and possible duplication or near duplication of installed equipment.)
7. EQUIPMENT OR SYSTEM STATUS: (include procurement costs, development status, equipment availability, or contractor delivery capabilities.)
8. SUPPORT REQUIREMENTS: (include requirements for power, cooling, stowage of special test equipment and repair parts, etc.; also include reductions of existing support that might occur.)
9. ILS IMPLICATION: (include additional requirements for test equipment, Maintenance Requirement Cards (MRCs), technical manuals, spares, etc.)
10. MANPOWER PERSONNEL AND TRAINING IMPLICATIONS: (include requirements for additional manpower (rate, rating, NEC) to install, operate, maintain, repair, and overhaul equipment, as well as for associated training.)
11. HABITABILITY REQUIREMENTS: (include berthing, messing, sanitary, laundry, locker space, recreation/lounge, and climate control requirements incurred by additional manpower anticipated; also include reduction of existing habitability support that might occur.)
12. SHIP CLASSES TO WHICH APPLICABLE: (include estimate of FY of desired installation.)
13. SIGNATURE OF SPONSOR

## **FIGURE S4-5 SAMPLE PROPOSED SURVIVABILITY IMPROVEMENT (PSI)**

1. TITLE:
2. ORIGINATOR:
3. ORIGINATOR'S ORGANIZATION/ADDRESS:
4. COGNIZANT SPM(s): COGNIZANT CNO SPONSOR:
5. PURPOSE: (include estimate of the proposed improvement's effectiveness and probable change to the survivability of personnel, equipment or systems of ships on which installed.)
6. PHYSICAL DESCRIPTION OF EQUIPMENT: (include procurement costs, development status, equipment availability or contractor delivery capabilities.)
7. EQUIPMENT OR SYSTEM STATUS: (include procurement costs, development status equipment availability, or contractor delivery capabilities.)
8. SUPPORT REQUIREMENTS: (include requirements for power, cooling, stowage of special test equipment and repair parts, etc.; also include reductions of existing support that might occur.)
9. ILS IMPLICATION: (include additional requirements for test equipment, Maintenance Requirement Cards (MRCs), technical manuals, spares, etc.)
10. MANPOWER, PERSONNEL AND TRAINING IMPLICATIONS: (include requirements for additional manpower (rate, rating, NEC) to install, operate, maintain, repair, and overhaul equipment, as well as for associated training.)
11. HABITABILITY REQUIREMENTS: (include berthing, messing, sanitary, laundry, locker space, recreation/lounge and climate control requirements incurred by additional manpower anticipated; also include reduction of existing habitability support that might occur.)
12. SHIP CLASSES TO WHICH APPLICABLE: (include estimate of FY of desired installation.)
13. SIGNATURE OF CNO SPONSOR:

## **SUBSECTION 4-4 JUSTIFICATION/COST FORM (JCF)**

### **4-4.1 Scope of Subsection 4-4**

This subsection details tasking, funding and preparation of the JCF. The JCF document is used by the cognizant SPM to arrive at a management decision of whether or not to proceed with development of the SHIPALT. The JCF identifies the top-level requirements, critical material requirements and the estimated costs for SHIPALT installation. All JCFs will be developed using the forms and procedures delineated in reference S4(m).

### **4-4.2 JCF Initiation**

JCFs are typically initiated by the SPM or LCM/ PARM at the approval of a PMI, PSI and/or a PTI. JCFs may also be initiated for completed ships of a new construction ship program by the approval of an ECP for the ships under contract. As a condition of approval of the ECP, the applicability and necessity of back fitting the change into Fleet Operational ships of the class will be addressed. If the approved change is to be considered for back fitting, the ECP will be attached to the approved JCF form. JCF data requirements contained in the ECP need not be repeated in the JCF form.

#### **4-4.2.1 JCF Tasking**

For approved PMIs and PSIs, the CNO (N43) will direct the cognizant Systems Command (SYSCOM) to initiate SHIPALT development. The cognizant SYSCOM PARM/LCM will develop a JCF for all approved PMIs, PSIs and PTIs. Both the EA and the SPM shall approve and sign the JCF prior to the SPM tasking the development of a SAR.

#### **4.4.3 JCF Development**

JCFs may be prepared by the PARM, In-Service Engineering Agent (ISEA), LCM or PY as tasked by the SPM. The SPM provides supplies requisite documentation to prepare the JCF (e.g., the related PMI, PSI or PTI or a Cost and Feasibility (C&F) Study, if prepared). The SPM also assesses the priority of the JCF, identifying the relative priority of his tasks with the SDM. Completed JCFs are to be provided to the SPM for consideration and approval NLT A-16.

#### **4.4.4 JCF Review/Approval**

The SPM is responsible for formal review and approval of the JCF. Formal approval of the JCF is accomplished through a CCB or other SPM approval process. Approval signature is at the level of the SPM or its delegated authority. The SPM will forward all Title "D" and "F" SHIPALT JCFs to the (TYCOM for review and comment regarding likelihood of funding, essentiality and level of accomplishment.

##### **4-4.4.1 Proposed Alteration Tracking Process**

This process requires all SPM, SYSCOM and TYCOM proposed Title "D" and "F" SHIPALT JCFs and AER requests be entered in the Proposed Alteration (PA) Module of the NDE-NM system as soon as they are identified, so they may be visible to all parties involved in design, planning and execution decisions. SYSCOM proposed Title "K" SHIPALT JCFs may be entered if additional upfront planning notification is required before final JCF approval. Decisions and concurrence dates are recorded and conveyed within the database thereby providing a means of tracking authorizations. The NDE-NM system will automatically assign a

sequence number to all proposed alterations entered into the system. Appropriate parties will be notified via email that a request has been entered.

This PA process is not intended to bypass the normal process of submitting and/or approving JCFs and AER requests, but only to provide increased visibility of the changes that have been proposed and are in the approval process. The expected benefits include:

- Increased visibility of all, proposed and approved, Title “D” and “F” SHIPALTs and AER requests.
- Increased visibility of selected proposed Title “K” SHIPALTs.
- Improved communication, coordination and utilization of limited available resources.
- Improved accountability. With all alterations in a single database, design, planning and execution decisions can be made and action can be tasked within one system.
- The TYCOMs will be made aware of what Title “D” and “F” SHIPALTs and AER requests other originators are working.
- Synergy with the Top Management Attention/Top Management Initiative (TMA/TMI) process.

#### **4-4.4.2 Proposed Alteration Responsibilities**

The TYCOM will enter their proposed Title “D” and “F” SHIPALT JCFs and request for AERs into NDE-NM. At the same time, the data entry is made for the PA; the data can be programmed into the Proposed Program Alteration of Ship (ALT SHIP) table, which will contain the Fiscal Year (FY) during which the alteration is to be performed, if known. This will require that there be an existing Availability during which the Alteration will be executed.

The TYCOM remains responsible to submit separate JCFs and AER requests to the SPM for review and approval.

The SPMs and LCMs/PARMs will enter proposed title “K” SHIPALT JCFs into the NDE-NM when additional upfront planning notification is required before final JCF approval. At the same time, the data entry is made for the Proposed Alteration; the data can be programmed into the Proposed Program ALT SHIP table, which will contain the FY during which the alteration is to be performed, if known. This will require that there be an existing Availability during which the alteration will be executed. This table will be virtually the same as the ALT SHIP table. The proposed Alteration programming data will be reflected in the TP report available for review of proposed alterations.

The SPM will enter proposed Title “D” and “F” SHIPALT JCF and requests for AER into NDE-NM when proposed by other than the TYCOM. The SPM remains responsible to review, approve, or disapprove, all proposed alterations provided by the TYCOM or other activities.

When the SPM has approved the proposed Title “D”, “F” OR “K” SHIPALT JCF or AER, the proposed alteration data will be automatically moved to the ALT table and the programming data will be automatically moved to the ALT SHIP table by the system.

## **SUBSECTION 4-5 SHIP ALTERATION RECORD (SAR)**

### **4-5.1 Scope of Subsection 4-5 SAR**

This subsection details the tasking, funding, and preparation of the SAR, which are required for all SHIPALTs installed under the FMP. The SAR is the official record document defining the approved changes to be made by the SHIPALT. The SAR builds upon the JCF, providing greater details, a more complete Alteration Material List (AML), if there are ILS products impacts and a list of equipment removals. Ship level ILS products impacted (i.e. SSRs) are identified in the SAR. The ILS Certification Form discussed in Section 8 of this manual identifies the actual equipment level ILS products impacted. The SAR shall be developed in accordance with reference S4(n).

### **4-5.2 SAR Initiation**

Normally, the PY will develop or complete the SAR. In some cases, the NAVSEA 05, SPM or LCM/PARM will develop the draft SAR. In these cases, the draft SAR will be submitted to the SPM who will task PY to complete the SAR. Unless the OPNAV Platform Sponsor or the TYCOM has classified the alteration as an emergent requirement, the SPM will not task SAR development efforts until a JCF has been approved and released. Development of the SAR is not authorized unless the OPNAV Platform Sponsor/TYCOM has programmed or committed to program the alteration in FMPMIS for installation.

#### **4-5.2.1 SAR Tasking**

The cognizant SPM will task the cognizant PY NLT A-14 by letter/message/memorandum to prepare or complete development of the SAR. The tasking document includes the alteration brief, anticipated costs for development, and expected completion date. This will require those organizations, such as the LCM/PARMs, developing a draft SAR to submit them to the SPM NLT A-13. Equipment Interface Control Drawings (ICDs) are normally required for PY to complete a SAR - in this case, the PARM or SEA 05 will deliver ICDs not later than A-14.

#### **4-5.2.2 SAR Funding**

For alterations for which the SPM receives Design Services Allocation (DSA) funds, the SPM has budget development and financial management responsibilities for SAR efforts. For alterations for which the PARM receives DSA funding, the SPM has responsibility for tasking SAR development regardless of who funds the SAR. Financial management is in accordance with Section 6 and reference S4(1).

### **4-5.3 SAR Execution**

The ship class PY is normally tasked to prepare the SAR and any subsequent revisions. SPAWAR or the cognizant EA is responsible for supplying technical requirements, identifying SHIPALT documentation requiring SPM approval, specifying proofing requirements (see Subsection 4-8), and noting any requirements for in-process reviews.

The SAR will not identify incidental and consumable material normally procured by the NSA. Standard material items that are stocked on a recurring demand basis are identified in the SAR but need not be identified in FMPMIS. All Logistically Significant Material (LSM) should be reflected in the SAR (see Section 7). Material should be identified, to the fullest extent possible,

at the National Stock Number (NSN) level. The SAR will also define material that is to be removed and the associated disposition status, if known.

The SAR developer specifies if the SHIPALT impacts ILS products, and impacts on the ship's weight and moment characteristics. Those SARs initiated outside the PY will be forwarded to the cognizant PY for review, approval and completing the development of a cost estimate if required. The PY will return the finished SAR, and all revisions to previously approved SARs, to the cognizant tasking activity for further review and approval.

#### **4-5.4 SAR External Interfaces**

Once the development of a SAR is tasked, the cognizant SPM will monitor to assure sufficient progress towards completion and conformance to standard practices. The cognizant EA will provide additional technical assistance and guidance as required by the PY.

#### **4-5.5 SAR Review/Approval**

The cognizant PY, LCM/PARM, SDM, NAVSEA 05/53 or EA, SPM shall approve the prepared SAR. Subsequent to this approval, the SPM will obtain the required concurrences (e.g., NAVSEA 08 concurrence is mandatory for SHIPALTs affecting equipments, systems and spaces associated with nuclear power plants; and Director, Strategic Systems Program (SSP) for SHIPALTs affecting strategic weapons systems or spaces. The SPM or their designee will then conduct the final review of the SAR. Final approval of the SAR by the SPM is required before issuance of the SIDs. Final approval is required NLT A-11 to support a first time SHIPALT installation. A SAR not approved at A-11 or earlier could impact SID development, therefore, if the SAR has not been approved by A-11, consideration must be given to deferral of the first installation at that time. The SPM will update FMPMIS with the latest SHIPALT status and material requirements.

##### **4-5.5.1 PY Approvals**

When the PY has completed preparation of the SAR and has prepared a SHIPALT Cost Estimate Sheet, the PY Chief Design Engineer, or a designated representative, shall sign and date the SAR. The PY approval signature on the SAR indicates that the SAR has been reviewed for completeness, technical, logistics and material requirements adequacy and accuracy, impact on existing equipment and spaces, and consistency with other SHIPALTs, and based on the information available to the PY, the SAR is correct as written.

##### **4-5.5.2 Naval Air Systems Command (NAVAIR)/Space and Naval Warfare Systems Command (SPAWAR)/PARM Approval**

When the accomplishment of a SHIPALT affects the configuration of or installs or removes systems or equipments under the cognizance of NAVAIR, SPAWAR or another activity outside NAVSEA that activity shall review and approve the technical, material requirements and logistics data in the SAR prior to issue. The NAVAIR/SPAWAR/Other approval signature on the SAR indicates that the SAR has been reviewed for completeness, technical, material requirements and logistics adequacy and accuracy, impact on existing equipment and spaces and consistency with other SHIPALTs and, based on the information available to the reviewing activity, the SAR is correct as written.

**4-5.5.3 NAVSEA Engineering Approval**

The lead NAVSEA EA shall review the SAR prior to issue. The cognizant SDM or EA signature on the SAR indicates that the SAR has been reviewed for completeness, technical, material requirements and logistics adequacy and accuracy, impact on existing equipment and spaces and consistency with other SHIPALTs and, based on the information available to the EA, the SAR is correct as written. The cognizant EA approval signatures shall be at the division head level or higher.

In some cases where the engineering life cycle management responsibilities have been transferred from NAVSEA to another activity, the SPMs will assign technical approval authority to that activity.

**4-5.5.4 TYCOM Review of Title "D" and "F" SHIPALTs**

The TYCOMs will review Title "D" and "F" SHIPALTs in order to make an accurate assessment of the requirements necessary to install the alteration including technical feasibility, level of accomplishment, special material or capability requirements, and inclusion in special TYCOM program initiatives (i.e. Type Commander Kit (TYKIT), AIT) (see Section 12 of this manual).

**4-5.5.5 SPM Approval**

When all other approval signatures have been provided on the SAR, the cognizant SPM shall sign and date the SAR. The SPM approval signature on the SAR indicates that all required reviews have been conducted, all required approvals have been received, indicates concurrence with engineering design impact on existing equipment and spaces and consistency with other SHIPALTs, and ILS and, based on the information available to the SPM, the SAR is correct as written. The SPM can elect to delegate the approval of the SAR to the cognizant Planning Yard (in which case the Planning Yard signature will appear in this block).

## **SUBSECTION 4-6 SHIP ALTERATION (SHIPALT) COST ESTIMATING**

### **4-6.1 Scope of Subsection 4-6**

This subsection defines policies, procedures, and assigns responsibilities for the establishment and updating of man day estimates, man day cost estimates, and material cost estimates for SHIPALT installations. Funding problems caused by poor quality SHIPALT cost estimates can seriously impact execution of the FMP. These problems result from unsatisfactory estimates of man-days required to accomplish the alteration and the utilization of man-day rates that are not reflective of actual market areas.

### **4-6.2 Cost Estimating Policy**

Man-day and material cost estimates shall be of the highest level of accuracy possible. The estimates are to be reviewed and updated as additional information becomes available. All estimates are to be annotated to identify the degree of uncertainty in accordance with reference S4(o). An official set of man-day rates for both public and private yards are to be established and maintained current. Only the established rates are to be used for determining SHIPALT installation man-day cost estimates.

### **4-6.3 Cost Estimating Responsibilities**

#### **4-6.3.1 Ship Program Manager (SPM)**

The SPM is the sole authority and is responsible for the following:

- Quality and timeliness of SHIPALT installation man day estimates and material cost estimates. The SPM shall establish or confirm the initial estimates at time of approval of the JCF and shall include these estimates with the JCF.
- Entering and updating SHIPALT estimates in the FMPMIS.

#### **4-6.3.2 Planning Yards (PYs)**

The PYs are responsible for providing formal estimates at the time the SAR is submitted for approval and again when the SIDs are completed. The estimates are to be provided to the cognizant SPM utilizing a standard estimating record sheet. The SPM shall retain the estimating record sheets as part of the official SHIPALT file.

#### **4-6.3.3 Naval Sea Systems Command (NAVSEA) Comptroller Directorate (NAVSEA 01) and Logistics, Maintenance & Industrial Operations Directorate (NAVSEA 04)**

NAVSEA 04 develops man-day rates for Private and Public sector yards. Based on these individual rates, NAVSEA 04 develops the weighted average port and east/west coast weighted rates, as applicable, applies escalation factors to develop the out-year rates, and issues the final approved rates to the Fleet, NAVSEA 013, and other FMP customers for budget development. With NAVSEA 013 concurrence, man-day rates are entered into the FMPMIS Program Module by NAVSEA 04.

### **4-6.4 Cost Estimating**

Estimates are usually developed by the planning yard. The SPM must enter an estimate in FMPMIS based on development information after the completion of each of following stages in the SHIPALT development:

- JCF
- SAR
- SID
- Return costs after the accomplishment of the SHIPALT

The man-day estimate to be entered into FMPMIS includes those listed in reference S4(n) with overview to identify basic process explanation.

#### **4-6.5 Factors to be Considered in SHIPALT Cost Estimating**

##### **4-6.5.1 First Time Accomplishment of a SHIPALT**

Determine if any of the following exist:

- a. C&F study installation man-day estimate
- b. JCF installation man day estimate
- c. Incidental Material costs
- d. SAR installation man day estimate prepared by an activity other than the PY
- e. PY installation cost/man-day estimate
- f. Return costs for the accomplishment of a similar SHIPALT on another class of ships

##### **4-6.5.2 Other Than First Time Accomplishment of a SHIPALT**

- a. If a recent return cost exists for the SHIPALT, apply common sense evaluation (Does the estimate appear reasonable for this application?).
- b. If a recent return cost does not exist for the SHIPALT in question or a similar SHIPALT, or the return cost does not appear valid for this application (unique situation for current or previous ship, design refinements since previous accomplishment, etc.), obtain cost/man day estimate from the PY.

##### **4-6.5.3 Other Factors to be Considered**

- a. Is the SHIPALT planned to be accomplished in the public or private sector on the ship under consideration?
- b. If the SHIPALT is planned to be accomplished in the private sector on the ship under consideration, is the availability likely to be cost-plus or fixed-price?
- c. Region of the country where availability is planned?
- d. Is the SHIPALT a complex alteration or require the use of new or high technology skills or does it require equipment not normally used by most shipyards?
- e. Does the SHIPALT require the concurrent or prior accomplishment of other SHIPALT ?
- f. Does accomplishment of the SHIPALT require major rearrangement of existing spaces?
- g. Does accomplishment of the SHIPALT have significant impact on ship's services, i.e. power, lighting, Heating, Ventilation and Air Conditioning (HVAC), electronic equipment cooling water, habitability, etc.?
- h. Does accomplishment of the SHIPALT require weight and moment compensation not provided by the accomplishment of conjunctive SHIPALT?
- i. Does accomplishment of the SHIPALT require the use of shelters or other special environmental protection measures?
- j. Does accomplishment of the SHIPALT require the use or disposal of hazardous waste?
- k. Does accomplishment of the SHIPALT require special hull access cuts to remove/install

the SHIPALT material?

- l. Does accomplishment of the SHIPALT require dry-docking of the ship?
- m. Does accomplishment of the SHIPALT require gas freeing of one or more spaces?

## **SUBSECTION 4-7 SHIP ALTERATION (SHIPALT) INSTALLATION DRAWINGS (SIDS)**

### **4-7.1 Scope of Subsection 4-7**

This subsection details the tasking, funding and preparation of SIDs which are utilized by a shipyard or other activity, including Ship's Force, for the accomplishment of all non-nuclear SHIPALT work.

### **4-7.2 Background for Subsection 4-7: SID**

SIDs will be prepared for all Title "K", "K-P," "D," and "F" SHIPALTs in accordance with reference S4(p). These drawings shall include, as required, system drawings, structural drawings, arrangement drawings, manufacturing drawings, ripout drawings, assembly and detail drawings, temporary access/egress drawings, diagrams, and cabling sheets. The drawings shall not rely on references to other drawings or other data sources to provide information, which the installation drawings should provide. NAVSEA hull, mechanical, electrical, and electronic Standard or Type Drawings may be referenced to eliminate redundancy and promote standardization.

#### **4-7.2.1 Class-Applicable SIDs**

Class-applicable SIDs are single sets of SIDs, which are prepared to accomplish a SHIPALT on an entire class or sub-class of ships. SHIPALTs which are candidates for utilization of class-applicable SIDs shall be selected based on the following criteria:

- At least the initial set of SID for the candidate SHIPALT shall be prepared based on a shipcheck of an applicable ship.
- Sub-class distinctions within the applicable class of ships are reflected in different sets of SIDs.
- Potential hull variations with the applicable class of ships are minimal in the area of the ship to be impacted by the accomplishment of the SHIPALT (i.e., no compartmentation changes).
- Requirements for accomplishment of concurrent SHIPALTs, field changes, MACHALTs, etc., are minimal.

### **4-7.3 Initiation of SID**

Development of SIDs is not authorized before an alteration has been programmed for installation on a specific hull in a particular year. Normally, the SPM initiates SID development by tasking and funding the cognizant PY to develop the drawings and associated engineering data package. SID development is normally funded with DSA funds. For alterations in which the LCM/PARM receives the DSA funds, the LCM/PARM shall fund SID development. For some AIT-installed alterations, SIDs are developed by EAs other than the PY - in such cases the PY shall approve the SIDs, and DSA funding shall be provided to PY to support the SID review and approval by whomever receives the DSA funding. The SPM shall task SID development and all required funding for SID development shall be in place not later than A-12.

#### **4-7.3.1 Tasking/Funding Letter for SID**

The Advance Planning Letter and Authorization Letter will include a list of all programmed SHIPALTs and identify those for which drawings are to be prepared. Each SHIPALT will have a separate and complete drawing package. With formal approval from the cognizant SDM and SPM, the drawings may integrate multiple SHIPALTs for efficiency and clarity. The tasking

letter will enclose or refer to relevant source documents. Possible sources are the JCF, the SAR, relevant SSRs and, upon request, data from NAVSEA 05.

Provided the extent of work for each SHIPALT is included in the drawing, the drawing package shall provide an integrated design of all SHIPALTs authorized for a specific availability and, as a result, may include work authorized by two or more SHIPALTs on the same drawing. This is particularly true of drawings such as system modification drawings, structural and foundation drawings, arrangement drawings, ripout drawings, and temporary access/egress drawings. The cognizant SPM will be immediately notified if adequate guidance is not available.

#### **4-7.4 Execution of SID**

Upon receipt of the SID tasking letter, the PY will confirm by letter/message, to the SPM, the ability to complete the design within the specified time frame and within the initial PY DSA requirement estimate. If the PY cannot meet the required completion date or the planning estimate, they must justify why completion is not possible or offer a revised cost estimate. If late tasking jeopardizes the ability to satisfactorily prepare the drawings for a SHIPALT or adversely impacts the ability to accomplish existing higher priority tasks, the PY will advise the SPM, TYCOM and the assigned NSA.

##### **4-7.4.1 Shipchecks for SID**

There are several types of shipchecks associated with the development and maintenance of SIDs. They include:

- The design information on SIDs is developed based on a shipcheck of the actual configuration of the ship.
- The design information presented on prepared SIDs may be verified by shipcheck.
- The total scope of work presented on SIDs (SHIPALT work) may be ship-checked together with anticipated repair work for possible impact.
- If SHIPALT proofing is required, (see Subsection 4-8) the SIDs are checked against the accomplished SHIPALT work to verify that the SIDs reflect the work actually accomplished.

##### **4-7.4.1.1 Design Shipchecks**

The PY conducts design ship checks before the development of SIDs to determine the actual configuration of the applicable ship. The engineering information presented on SIDs is based on this shipcheck. This shipcheck is generally conducted around A-18, or for AIT installed interoperability alterations, D-27 to D-24 (A-11 to A-8), depending on the availability of the ship, in order to provide sufficient time for the PY to develop the engineering design and produce the SIDs. To support development of specifications and contractual requirements, SID issue date shall be NLT A-6, or for AIT-installed interoperability alterations, (A-4).

##### **4.7.4.1.2 Verification Shipchecks**

The PY conducts verification ship checks for high risk or complex SHIPALTs in order to verify that the design information presented on the SIDs reflects the actual conditions on the applicable ship. This shipcheck is generally conducted after preparation of the SIDs but before the required issue date of A-6, or for AIT-installed interoperability alterations, D-20 (A-4).

#### **4-7.4.1.3 Production Shipchecks**

The NSA may conduct production shipchecks for non-competed availabilities to determine the extent of required repair work as well as the total scope of work indicated in the SIDs. For public/private competed availabilities, the bidder who receives Request for Bids can conduct shipchecks. The information gained from these ship-checks are used for workload integration, for manpower planning, and for the development of production job orders. This shipcheck, when required, is generally conducted after delivery of the SIDs and after the TYCOM's WPIC (or equivalent meeting).

#### **4-7.4.1.4 Proofing Shipchecks**

When proofing of a SHIPALT is required by a SAR (see Subsection 4-8) and tasked in the SHIPALT Authorization Letter, the PY performs special testing as part of the first accomplishment of the SHIPALT to verify that the intent of the SHIPALT has been met. Part of proofing includes verifying that the applicable SIDs accurately represent the work required to successfully accomplish the SHIPALT. The SIDs are ship-checked against the final ship configuration after accomplishment of the SHIPALT. Based on the information gained from this shipcheck, the PY updates the SIDs to reflect the actual "as-installed" configuration on the ship.

#### **4-7.4.2 Drawing Development**

Drawings are to be user-oriented by providing sufficient detail for manufacturing, assembling, testing, and installing. In addition, drawings will contain engineering support data to ensure design adequacy and to provide an engineering baseline for subsequent users.

Each SHIPALT drawing shall be assigned a unique NAVSEA drawing number. When the SHIPALT design affects the configuration of, or data on, other systems, compartments, equipment, etc., sufficient drawing modifications or system drawings shall be prepared to reflect these impacts. All revised or modified drawings must be clearly identified as such. Drawings will contain a general notes list; parts/materials/equipment lists; an engineering data package; weight, volume, and moment data; and required signatures. (see reference S4(p)).

Completion and approval of SIDs is to be accomplished NLT A-6, or for AIT-installed interoperability alterations, D-20 (A-4). This deadline must be strictly adhered to. No SID will be issued without an approved SAR. The PY should use all means available to remain on schedule. Should the PY project that the A-6 or the D-20 (A-4) for AIT installed interoperability alterations deadline cannot be met, the SPM, TYCOM (for Title "D" and "F" SHIPALTs only) and the NSA must be informed immediately with justification for the delay and any recommended resolutions.

#### **4-7.4.3 External Interfaces for SIDs**

Upon request, NAVSEA 05/53 or the EA will provide technical guidance. Liaison with the scheduled NSA regarding design work progress on SHIPALTs is encouraged. The NSA should be included as information addressee on all PY correspondence relating to design work.

#### **4-7.4.4 Review/Approval of SIDs**

SIDs which require review and approval by the SPM are specified in individual SARs. Copies of these SIDs are to be submitted to the cognizant SPM for review and approval prior to the

required SID issue date of A-6 or for AIT-installed interoperability alterations, D-20 (A-4) as directed by the SPM. The SPM coordinates the technical review of the SIDs with NAVSEA 05 and, if required, other activities such as, NAVAIR or SPAWAR. When all technical review comments are resolved, the SPM will issue a letter or message approving the SIDs and the PY will indicate the approval document in the approval block on the applicable SIDs and then issue the SIDs NLT A-6 or for AIT-installed interoperability alterations, D-20 (A-4).

#### **Section 4-7.4.4.1 Resubmission of SIDs**

When SIDs are disapproved, they shall be corrected and resubmitted by the PY to the SPM for approval and issuance of the SID approval letter to the SPM.

#### **4-7.4.4.2 Revision of NAVSEA Approved SIDs**

When revisions are made to SIDs which have been previously approved by SPMs, the SIDs do not require further NAVSEA review or approval unless the revisions result in a change of the technical design details indicated on the SID (revisions which add ship applicability, correct reference listings or stock numbers, or clarify details on the SID which do not change the technical design do not require further NAVSEA review or approvals). Revisions to SIDs which are made as a result of NAVSEA responses to (LARs) do not require further NAVSEA review or approval unless otherwise required by the cognizant SPM. Completion of revised SIDs (as built drawings) shall be accomplished NLT EOA+3.

#### **4-7.5 Drawing Schedules**

For each scheduled availability the PY will maintain a complete schedule of all SIDs and associated support drawings which are required by the NSA to accomplish the scheduled SHIPALTs. The drawing schedule shall contain the following information as a minimum (the form and format are left to the discretion of the PY):

- a. Issue date of drawing schedule.
- b. Issuing activity.
- c. Applicable ship.
- d. Scheduled ship availability dates.
- e. All applicable SHIPALTs.
- f. All required drawings listed by drawing number.
- g. Applicable revision of each drawing listed (see note below). \*
- h. Title of each drawing listed.
- i. Estimated date of delivery to NSA.
- j. Actual date of delivery/shipment to NSA.

Note: An asterisk (\*) or similar notation on the drawing schedule shall identify all adds, deletes and changes made since previous drawing schedule was issued.

\* When a drawing is issued and later revised, the drawing revision shall be listed on the drawing schedule as a separate entry and the original entry shall not be removed from the schedule.

A preliminary drawing schedule shall be issued to the NSA at A-12 and the final schedule is to be issued NLT A-6 with the formal issue of the SIDs. The drawing schedule is to be updated and issued to the NSA at least monthly after A-12 or for AIT installed alterations, D-20 (A-4) until

all drawings and revisions are completed and issued.

#### **4-7.6 SID Material Support Requirements**

Once the SIDs have been developed, drawing material requirements must be reviewed to ensure that proper material and material quantities are identified to the various supply activities.

##### **4-7.6.1 SAR Material Listing**

The PY shall review the SARs against the applicable SIDs to verify consistency of material specified in the SAR AML and the SID Lists of Material (LOMs). The SPM or the designee shall be notified if the SID LOMs modify previously identified material on the SAR AML. The SPM shall then update NDE-NM Logistics Application to identify the actual material requirements for the accomplishment of the applicable SHIPALT on the specific ship and change the Alteration Bill of Material Source Code (IBOM) indicator, if necessary.

##### **4-7.6.2 Material Procurement Specifications**

As directed by the SPM, procurement specifications shall be prepared by the PY for all SID required non-standard material (material which cannot be ordered by NSN, which is not being provided by a HSC (NAVSEA, NAVAIR, SPAWAR, etc.) as part of the SHIPALT. The specifications shall be as self contained as possible and tailored to reflect only those requirements necessary for the designated ship. The specifications shall be provided to the NSA at the same time the SIDS are issued.

## **SUBSECTION 4-8 PROOFING OF SHIP ALTERATIONS (SHIPALTs)**

### **4-8.1 Scope of Subsection 4-8**

This subsection of the addresses the process referred to as "Proofing". It is performed as a part of the accomplishment of the SHIPALT(s) on the first ship scheduled to receive the SHIPALT or combination of SHIPALTs.

### **4-8.2 Background for Subsection 4-8**

In the accomplishment of high visibility, major, or complex SHIPALTs or the integration of several major or complex SHIPALTs, which are accomplished during the same availability, it may be desirable to assure that the accomplishment of the SHIPALT or combination of SHIPALTs achieves the desired results. When required the decision to conduct proofing is made during the SHIPALT development process and is a specifically funded event which is noted in the applicable Advance Planning and Authorization Letters issued by the SPM for the first ship scheduled to receive the SHIPALT(s). Only those SHIPALTs which indicate "PROOFING REQUIRED" in the respective SAR shall be proofed.

### **4-8.3 Proofing Process**

Proofing of a SHIPALT or a combination of SHIPALTs is normally conducted by the cognizant PY or, in some cases, by another activity with the participation of the PY. The applicable SAR(s) provides basic information on specifically what functions are to be proofed, the rationale for proofing, and the activity responsible to conduct of the proofing (normally the PY).

#### **4-8.3.1 Planning Requirements for Proofing**

As soon as the PY receives an Advance Planning Letter from the SPM which indicates that proofing of one or more SHIPALTs is required as part of the availability, the PY should begin planning for the proofing event, usually conducted near the end of an availability. The planning includes making a determination of the technical characteristics which are to be demonstrated (from the applicable SAR(s) and contacts with the HSC Technical Point(s) of Contact indicated on the SAR(s)) and then determining what methods are to be used to demonstrate the specific characteristics (generally, special testing is developed which demonstrates the specific characteristics). If a SAR indicates that the proofing is to be conducted by an activity other than the PY (generally a system or equipment ISEA), the PY will establish points of contact with the designated activity and provide assistance as required to insure that the required technical characteristics will be adequately demonstrated by the proofing.

#### **4-8.3.2 Proofing Documentation**

The activity designated to perform the proofing will develop all documentation (generally special tests or operational demonstrations necessary to demonstrate the characteristics which are required to be proofed in accordance with the applicable SAR(s)). NAVSEA 05 shall approve the methods selected for proofing before the actual development of documentation. The final proofing procedure shall be reviewed, and may be required to be approved by, the cognizant NAVSEA 05 prior to performance of proofing. In cases where the at-sea participation of the ship is required, the approval of the Commanding Officer of the applicable ship and the applicable TYCOM is required.

#### **4-8.3.3 Performance of Proofing**

The performance of proofing requires coordination between the activity responsible for the proofing, the NSA overseeing the assigned ship availability, and the cognizant LCM/PARM. The NSA is responsible for the scheduling and integration of all testing to be performed in support of a given availability and shall schedule all tests or demonstrations in support of SHIPALT proofing. In some cases proofing may be conducted during sea trials or after the EOA. For example, weapons systems demonstrations (target tracking, gunnery and missile demonstrations, etc.), have special support or operational requirements for proofing (e.g., airborne or submerged targets, live fire testing, use of gunnery or missile ranges, support ships or aircraft). In these cases, coordination with the applicable TYCOM and support activities will also be required prior to the proofing.

The proofing is generally witnessed by representatives of the SPM, PY, LCM/PARM, ship's force, and other activities as required.

#### **4-8.3.4 Proofing Report**

The activity responsible for the proofing shall prepare a Proofing Report which describes the results of the proofing, overall technical evaluation of the SHIPALT, and recommended changes/corrections to the SARs, SIDs, or other SHIPALT documentation which would improve the performance or accomplishment of the SHIPALT(s). The report shall be submitted to the cognizant SPM.

#### **4-8.4 Proofing Follow-up**

After successful proofing, the PY shall shipcheck the applicable ship and verify that the applicable SIDs accurately reflect the "as-installed" configuration of the SHIPALT. The applicable SID master files are then revised to reflect the actual ship configuration. The SIDs which may have been prepared for follow-on ships of the class receiving or scheduled to receive the proofed SHIPALT(s) are reviewed against these corrected drawings for possible corrections/revisions to insure successful accomplishment of the SHIPALT(s) in follow-on ships.

## **SUBSECTION 4-9 LIAISON ACTION RECORD (LAR)**

### **4-9.1 Scope of Subsection 4-9**

This subsection of the addresses the preparation of the LAR which is the formal documentation tool for technical communications among PYs, NSAs/Installing Activities (IAs), and the SPMs in the installation of SHIPALTs. LARs shall be used to facilitate the resolution of design questions and change requests regarding drawings, changes to technical documentation and tasking assignments, and the transmittal of waivers and deviations and shall be the only vehicle used by NAVSEA for the transmittal of technical requirement changes to PYs after approval of a SAR. LARs are not to be used to authorize work or deal with programmatic changes. Reference S4(q) states "cost and impact information should not be included in the LAR, but should be provided in supplementary documentation".

### **4-9.2 Initiation of LARs**

At A-15, the NSA shall establish points of contact with the applicable PY. In situations where the availability is being offered to the private sector, the Planning SUPSHIP shall establish initial contact. The NSA will establish contact with the PY as soon as the industrial activity is selected. Each activity will designate individuals as points of contact and supply the names, codes, telephone numbers, and functional areas of these individuals. Each activity will also maintain a log of all LARs and LAR responses applicable to a specific availability.

### **4-9.3 Execution of LAR**

#### **4-9.3.1 NSA Generated LARs**

An NSA may generate LARs to:

- a. Request clarification of information provided on SARs, SIDs, test requirements, specifications, etc., provided by the PY.
- b. Request modifications to design information provided by the PY.
- c. Request on-site engineering support.
- d. Request deviations and waivers from installation design requirements (see Subparagraph 4-9.3.4).

#### **4-9.3.2 PY Generated LARs**

A PY may generate LARs to:

- a. Request SPM clarification of information provided on SARs, SHIPALT guidance drawings, test requirements, specifications, etc., after a SAR is issued.
- b. Request on-site engineering support from the SPM.
- c. Request modifications to or reassignment of SPM tasking related to SHIPALT design or accomplishment.
- d. Request deviations and waivers from SHIPALT design requirements imposed by the SPM (see Subparagraph 4-9.3.4).
- e. Provide advance notification to the NSA of urgent and mandatory or new requirements which may impact on-going production work.

#### **4-9.3.3 Ship Program Manager (SPM) Generated LARs**

A SPM may issue a LAR to forward SHIPALT requirements changes to a PY after the

applicable SAR(s) has been approved and issued.

The LAR shall be developed and processed in accordance with reference S4(q). The initial request may be made by telephone, message or fax when urgency demands, but must subsequently be followed up with a written serialized LAR.

#### **4-9.3.4 Deviation and Waiver LARs**

A LAR may be utilized to forward a request for major and minor critical departures from specified requirements per reference S4(r). For nuclear-powered vessels, all minor departures on propulsion plant systems or support systems shall be in accordance with reference S4(s). Deviations from non-reactor plant, non-deviation submarine drawings must be submitted on Form DD 1694 Request for Deviation/Waiver as an attachment to the LAR. The completed Form DD 1694 shall be sent directly to the cognizant SPM by the activity requesting the departure (i.e., PY or NSA). If a request is developed by a NSA, a copy of the request shall also be forwarded to the applicable PY for information.

Excepting minor departures covered by reference S4(s) and deviations from non-reactor plant, non-deviation submarine drawings, minor departures (per reference S4(r)) may be approved at the local NSA level. The NSA will forward copies of all locally approved departures to the applicable PY at end of availability plus two months (EOA+2). A LAR shall be used as the forwarding document for these departures.

#### **4-9.4 Review/Approval of LARs**

NSA generated LARs that do not involve waivers and deviations will be routed to the PY or on-site representative for action. Unresolvable LARs and those initiated by the PY will be forwarded to the cognizant EA via the appropriate SPM. The EA will respond via the SPM with a copy to the NSA and the PY. Replies to LARs should normally occur within ten (10) working days from time of receipt for routine requests, and five working days for urgent requests. The action addressee will notify the originating activity of the date of response, particularly when a response will require more than fourteen days or will exceed the requested response date. The response to a LAR will be communicated by letter/message to the originating activity. LARs generated by the SPAWAR, LCMs, equipment managers, etc., to reflect requirements changes, will be forwarded via the cognizant SPM for approval.

## **SUBSECTION 4-10 EMERGENT REQUIREMENTS**

### **4-10.1 Scope of Subsection 4-10**

This subsection of the addresses modernization requirements which are identified out of phase with the normal programming and budgeting cycle. Such Title "K" SHIPALTs are programmed, funded and installed during the execution year. These emergent requirements may be candidates for accomplishment by AIT. Emergent requirements are those alterations which require an immediate reprioritization of tasking and reallocation of resources to support accelerated development and installation. Such unplanned reprioritization is inefficient in alteration development and should be reserved for unusually compelling needs and not as a normal process for AIT-installed alterations.

### **4-10.2 Background for Subsection 4-10**

The responsibilities and procedures contained in this manual have been designed to provide orderly and systematic accomplishment of necessary design and documentation functions in support of the FMP. These procedures, however, may not be sufficiently responsive to the FMP where, because of military or technical necessity for emergent SHIPALT accomplishment, deviation from specified procedures and responsibilities is required.

### **4-10.3 Initiation of Emergent Requirements**

Once the OPNAV Platform Sponsor has classified a Title "K" SHIPALT as an emergent requirement, the SPM will issue a serialized escrow change and add the requirement to the execution document.

### **4-10.4 Execution of Emergent Requirements**

The SPM will indicate the SHIPALT's high priority to all SHIPALT development and design activities. The SDM and the SPM will review the SHIPALT development status and reprioritize schedules to best facilitate the development of the emergent SHIPALT within the specified time period. This may include delaying the development of lower priority JCFs, providing extra manpower or material resources, and closely monitoring the status of all related products within the design phase.

The SPM will be informed of any problems in meeting completion dates by development activities or the cognizant EA. The SPM will approve, through the LAR system, procedural changes and deviations it deems necessary to ensure the satisfactory completion of the emergent requirement. Should the SPM determine that sufficient resources or materials will not be available, they will advise the OPNAV Platform Sponsor and revise or cease the SHIPALT development process for the emergent requirement.

The NSA will take all possible actions to accomplish the tasking within the completion date specified by the SPM. It is mandatory that the PY be prepared to support the NSA with added design support. In addition, the SPM will define SHIPALT execution steps that need not be fulfilled. The appropriate PY or NSA will immediately notify the SPM when delays, interruptions, or lack of required guidance are evident.

The SPM will ensure that appropriate actions are taken, in accordance with Section 8 of this manual, to provide logistics support for emergent requirements. SHIPALTs will not be installed

without logistics support. Interim support will be provided in those cases when lead times preclude full Navy support. This will be in accordance with reference S4(t).

#### **4-10.5 Alteration Installation Team (AIT) Efforts on Emergent Requirements**

The assigned PY is responsible for the installation design of ship and ship system modifications and shall normally be tasked to develop installation design. On the occasions where, due to urgency, an AIT is tasked to develop installation design for a SHIPALT, the SHIPALT installation design must be submitted to the PY for review and approval prior to SHIPALT accomplishment. The PY will review the drawings for technical adequacy and accuracy and provide approval. The installation drawings developed for AIT installations are to be in accordance with references S4(u) and S4(v). Upon OPNAV approval for AIT installation of a Title "K" SHIPALT, the applicable SPM will coordinate with the TYCOM or OPNAV to create an availability, if required, in FMPMIS. The SPM will program the SHIPALT into the availability and process the necessary escrow changes.

## **SUBSECTION 4-11 SHIP SELECTED RECORDS (SSRs)**

### **4-11.1 Scope**

This section addresses the tasking and preparation of SSR Drawings and Data. SSRs are specifically designated by the CNO and are maintained throughout the life of the ship. SSR items and update procedures are detailed in reference S4(w).

### **4-11.2 Background for Subsection 4-11**

SSRs are documentation of design or characteristics of HM&E systems, and related information by hull. They are selected because of their value for operational, maintenance, modernization, training, and consulting purposes to individual ship's forces, fleet commands, shipyard personnel, training centers, and other naval activities.

SSR Drawings and Data are updated by the PY for non-nuclear powered ships and by the PY and NSA for submarines and nuclear powered ships, as tasked by the SPM. The update is to be done during the scheduled availability's year and is to be funded NLT A-12 from the DSA execution year funds except that follow year funds may be used for availabilities extending into the next fiscal year. Use of prior year funds will be considered on a case basis for short duration availabilities beginning early in the fiscal year. The update will be reflected in two products. These products are the interim "printers proof copies" delivered to the ship prior to the end of the ship's availability (or Fast Cruise, if applicable) and the final copies provided to the ship by EOA+3, except Training Aid Booklets (TABs) which should be delivered by EOA+6. During periods of budget constraints, the delivery schedule for SSRs may be modified by the SPM. The PY or NSA, as applicable, will verify the update of the SSR Drawings and Data with the interim SSR package. The NSA will verify the delivery status of the Selected Record Drawings (SRDs) and Data at the designated milestones for all ships.

### **4-11.3 Initiation of SSRs**

Except as noted in reference S4(w), the PY has life cycle responsibility for SSRs for those ships assigned to it. The PY maintains custody of the SSR Masters (vault copies) and maintains the SSRs configuration on a continuing basis. Naval Surface Warfare Center, Carderock Division-Ship Systems Engineering Station (NSWCCD-SSES), Standard General Markup Language (SGML) Repository is the custodial location of Electronic Master Copies used by the PYs to support the individual ships.)

#### **4-11.3.1 Tasking for SSRs for SHIPALTs Installed During Scheduled Availabilities**

Tasking for SSR maintenance and update incident to an industrial availability is accomplished through the SHIPALT Authorization Letter. The Technical Instruction (TI) is used for private PYs. The PY may, in turn, task SSR work to Technical Manual Maintenance Activities (TMMAs) or ISEAs as necessary but retains the responsibility for accuracy of the final product. The task will require that the work be done during the availability.

#### **4-11.3.2 Tasking for SSRs for SHIPALTs Installed Outside Scheduled Availabilities**

If a significant SSR update is required as the result of an availability not covered by a SHIPALT Authorization Letter, the NSA must inform the cognizant SPM and PY of the circumstances, including the scope of work and an estimate of funds required for accomplishment. All SSR

operations not incident to a scheduled industrial availability are separately funded by SHIPALT sponsor as directed by the SPM.

#### **4-11.4 Execution of SSRs**

The PY insures the incorporation of all required changes and/or modifications to SSR Drawings and Data. Changes from any source may impact PY maintained documents and necessitate revision. Sources of changes are:

- Maintenance activities performing industrial availabilities.
- SHIPALTs accomplished by forces afloat or AIT for assigned ships.
- RPPY's modifications to reactor plant and associated systems for nuclear-powered ships.

##### **4-11.4.1 SSR Changes Between Availabilities**

Changes affecting SSR that are accomplished between industrial availabilities are received through changes recorded on a marked-up "Ship's Master Copy" of the drawing or data. The PY must assess the "Ship's Master Copy" technical quality, notify the cognizant SPM of any unsatisfactory mark-ups received, and recommend remedial action and any associated cost estimate to correct. Excessively modified drawings are to be redrawn and assigned a revision number. An updated "Ship's Master Copy" will be returned to the ship 60 days after receipt, or at a mutually agreeable date.

##### **4-11.4.2 Non-Nuclear Powered Ship Availabilities**

For industrial availabilities of non-nuclear powered ships, the PY is responsible for providing a ship's SSR update to reflect all known configuration changes previously accomplished and the SHIPALTs authorized for accomplishment during the availability. The PY includes any changes indicated in the marked-up Ship's Master Copies, which are furnished to the PY representative by the Ship's Force at the SOA. The PY provides interim SSR Drawings and Data to the ship at EOA-1, or by Fast Cruise, if applicable.

##### **4-11.4.3 Submarine and Nuclear Powered Ship Availabilities**

For industrial availabilities of submarines and nuclear powered ships, the PY is responsible for providing to the cognizant NSA two copies of the ship's SSR update reflecting all known configuration changes previously accomplished and the SHIPALTs authorized for accomplishment during the availability. The cognizant NSA forwards a request for SSR NLT A-4 and the PY provides them prior to SOA.

##### **4-11.4.4 SSR Update/Changes**

The PY will identify the SHIPALTS being installed during the availability along with the impacted SSRs. Document change activity will be captured in the revision block or via the change page listing of the impacted documents. The PY is responsible for incorporating all changes resulting from the availability in the SSR. The NSA will assist the PY on updates involving nuclear ships and submarines. In this case, the PY will provide the SSR drawings to include the planned SHIPALT installation. For nuclear ships, the NSA will mark-up any in-process deviations (additions, deletions) from the planned SHIPALT profile and furnish Interim SSR to the ship and a mark up to the PY for final SSR printing and distribution.

Drawings affected by SHIPALTs or other authorized configuration changes will be reprinted for the ship's availability. Selected Record Data will be reprinted at major availabilities (overhauls, drydockings) and changed by printed insert pages or sheets for non-drydocking industrial availabilities (Selected Restricted Availability (SRA), PMA, Phased Maintenance Firm Fixed Price (PMF), etc.). Additional guidance on reprinting drawings and data is found in reference S4(w).

#### **4-11.4.5 Expanded SSR Drawing Baselines**

The number of SRDs required for each ship varies with the ship class (see reference S4(w)). The required size of the drawing baseline has been increased for most ships. The PYs will produce the additional drawings on a ship-by-ship basis as tasked by the SPM. The PY will assume the full maintenance responsibility, storage, update, validation, certification, and distribution for each ship's total SRD suite.

As tasked by the SPM, the PY either forwards SSR Drawings and Data to the local Defense Automated Printing Service (DAPS) for printing or reproduces the documentation in house and ensures the distribution of final printed copies by EOA+3. During periods of budget constraints, the delivery schedule for SSRs may be modified by the SPM. For computerized Damage Control Plates, the PY ensures distribution of final printed copies within 45 days following EOA.

Forty-five days after EOA, the PY provides the ship with a delivery status report/letter indicating, for each SSR item, the anticipated delivery date and the transmittal identification of any item being forwarded. All deliveries of corrected copies must be completed NLT EOA+3, or notification of delay is required, in writing, to the cognizant SPM identifying the document and cause of delay. During periods of budget constraints, the delivery schedule for SSRs may be modified by the SPM. SSN 688, DD 963, FFG 7, CG 47 and DDG 51 Class SSR are maintained on a continual basis by the PY. The PY has the primary responsibility to maintain and update SSR. However, it is essential for the industrial activity to establish close liaison with the PY before, during, and after all availabilities to ensure that accurate and timely exchange of information takes place to facilitate periodic update of all SSR.

#### **4-11.5 Verification of SSR**

The PY, for non-nuclear powered ships, will verify to the ship that SSR affected during the availability have been updated and reflect the current ship configuration. This verification of accuracy and currency is made in writing by the PY with the preprinted SSR update package delivered to the ship at EOA-1 or by Fast Cruise, if applicable.

For submarines and nuclear powered surface ships, the NSA is required to verify to the ship that SSRs affected during the availability have been updated. This verification of accuracy and currency is made in writing by the NSA with the preprinted SSR package delivered to the ship prior to Fast Cruise. Copies of this verification are to be forwarded to the cognizant SPM, the cognizant PY, and the TYCOM.

For Industrial Availabilities of all ship types the PY/NSA will verify the delivery status of the SSRs at the EOA milestone, and will also verify that the Coordinated Shipboard Allowance List (COSAL) has been updated, in accordance with the verification requirements of reference S4(t)

and Section 8 of this manual.

#### **4-11.6 External Interfaces for SSRs**

TYCOMs maintain and provide to the cognizant PYs and SPMs, at A-2, a listing of all Title "K", "D", "F", and "K-P" SHIPALTs, MACHALTs, AIT and TYCOM issued alterations and changes accomplished since the last availability. Changes made after A-2 are to be reported to the PY at the start of an availability for non-nuclear powered ships or to the cognizant NSA for submarines and nuclear powered surface ships.

Ship's Force SSR maintenance actions are as follows (TYCOMs determine mandatory actions and issue implementing instructions):

- a. Designate Ship's Master Copies of each SRD or Selected Record Data item. These copies should be maintained to reflect actual ship configuration at all times.
- b. Designate one ship's coordinator responsible for all matters pertaining to SSR.
- c. Forward master SSR copies to the ship class PY for reprinting when corrections and updates render the masters illegible with follow-up to ensure receipt of corrected masters.
- d. For AIT efforts or non-industrial availabilities, assure that impacted Ship's Master Copies are marked-up (i.e. Intermediate Maintenance Activity (IMA), Ships Force) by the installing activities.
- e. For overhauls and drydocking availabilities, provide the NSA or PY representative, as applicable, with the Ship's Master Copies of SSR at SOA.
- f. Maintain a listing of all ship's drawings that must be delivered to the NSA or PY upon entering an availability. This listing may be a marked-up Ship Drawing Index (SDI).
- g. Forces afloat responsibilities and procedures for Reactor Plant and Tender Nuclear Support Facility SSRs are specified in references S4(a), S4(b) and S4(c).

#### **4-11.7 SSR Transfer for PY Assignment Changes**

When notified by NAVSEA of pending changes in the PY assignments (see reference S4(d)), the current PY will be responsible for establishing orderly SSR transfer procedures and carrying out the transfer in a timely manner. When the new PY is identified, it shall make a formal request to the "old" PY for documentation transfer. All documentation is to be forwarded within 30 days of receipt of a valid and authorized request. The cost of SSR transfer is not chargeable to MDS, but will be absorbed in PY overhead.

## **SUBSECTION 4-12 NUCLEAR SHIP AND NUCLEAR SUPPORT FACILITY**

### **4-12.1 Scope**

This subsection of the addresses the policies and procedures for reactor plant Ship Alterations (SHIPALTs) in nuclear-powered ships and Nuclear Support Facility alterations in tenders as delineated in references S4(a), through S4(c).

### **4-12.2 Policies Observed by Reactor Plant and Nuclear Support Facility Planning Yards (PYs) and Design Agencies**

To support the alteration and maintenance of reactor plants of nuclear-powered ships, certain design services and related work must be performed. They include the following:

- a. Because of reactor safety implications inherent in alterations to nuclear propulsion plants, it is essential that designated design activities experienced in nuclear propulsion plant work perform design services and related work.
- b. NAVSEA 08 defines the specific responsibilities of a PY for Naval nuclear reactor plants and nuclear support facilities in this subsection, and in reference S4(a) for nuclear support facilities in submarine tenders, in reference S4(b), for submarines and reference S4(c) for nuclear-powered surface ships.
- c. When considered necessary and appropriate on a case-by-case basis, NAVSEA 08 will assign a Design Agency. When applicable, Design Agents will be specifically identified in SHIPALTs or other NAVSEA 08 correspondence.

Reference S4(j) shows the Reactor Plant PY/Nuclear Support Facility PY assignments.

### **4-12.3 Reactor Plant PY/Nuclear Support Facility PY Responsibilities**

The RPPY/Nuclear Support Facility PY will provide the following reactor plant design services and related work as directed by NAVSEA 08, following receipt of written technical instructions from NAVSEA 08:

- a. Design studies.
- b. Detailed alteration work drawings, installation procedures, and test requirements or test procedures checked as required on the applicable ships and coordinated with other activities as necessary. Drawing preparation shall commence on issuance of the SHIPALT unless otherwise authorized by NAVSEA.
- c. SHIPALT packages and proposals.
- d. Engineering work packages.
- e. Corrections to Reactor Plant/Nuclear Support Facility Selected Record Drawings.
- f. Corrections to Reactor Plant/Nuclear Support Facility Selected Record Data.
- g. Provide the following Reactor Plant/Nuclear Support Facility design services and related work, on a routine basis:
  - 1) Periodic status reports and other special reports on a frequency dictated by the necessity to disseminate the information.
  - 2) Liaison services to repair and overhaul activities, Naval Inventory Control Point-Mechanicsburg (NAVICP-M), and forces afloat (per references S4(a), through S4(c)). NAVICP-M LARs shall be resolved per NAVSEA letter Ser 08H-0820 of 29 October 1987.

- 3) Custody and maintenance of all drawings identified as reactor cognizance in the SDI or listed in the Cumulative Booklet and all reactor plant Selected Record Data.
- 4) Files of all engineering and design information developed in conjunction with reactor plant work including photographic negatives and selected piping X-rays.
- 5) Preparation, maintenance, and updating of Overhaul and Repair Specifications, material documents, designated component technical manuals, Nuclear Support Facilities Manuals and other manuals as may be assigned by NAVSEA 08.
- 6) Preparation, maintenance, and updating of selected standard drawings and diagrams.
- 7) Engineering studies and services including cost estimates as specifically requested by NAVSEA 08.
- 8) Establishment and maintenance of an information retrieval file of all PY documents in a suitable media as approved by NAVSEA 08. Reproduction and distribution services as authorized by NAVSEA 08.
- 9) Assignment of reactor plant/nuclear support facility component numbers and titles.
- 10) Preparation and maintenance of as-built drawings, and technical variance documents, in accordance with references S4(a), S4(b) or S4(c).
- 11) Provide provisioning and technical documentation and Individual Repair Part Ordering Data (IRPOD) to NAVICP-M for reactor plant repair parts Allowance List development and procurement.
- 12) Material identification and, specifically, identification of NSNs where applicable as well as sources of supply.

#### **4-12.4 Design Agency Responsibilities**

When directed by a SHIPALT or other written technical instructions from NAVSEA 08, a Design Agent will provide the following reactor plant design services and related work:

- a. Design studies.
- b. Detailed alteration working drawings, installation procedures, and test requirements coordinated with other activities as necessary.
- c. Engineering services.
- d. Cost estimates.
- e. Reproduction and distribution services.
- f. Liaison services for cognizant SHIPALTs as specified in references S4(a), S4(b) and S4(c).

#### **4-12.5 Supervisor of Shipbuilding, Conversion and Repair (SUPSHIP) Responsibilities**

The cognizant SUPSHIP will provide the following:

- a. Approve and validate Reactor Plant/Nuclear Support Facility PY or designated DA work in accordance with the procedures outlined in this section or as directed by correspondence from NAVSEA 08.
- b. Schedule, coordinate, and monitor shipchecks as directed by NAVSEA 08.
- c. Assist the Reactor Plant/Nuclear Support Facility PYs or DA as required for material identification and, specifically, identification of NSNs where applicable.
- d. Provide recommendations and contractual action in connection with SHIPALT packages.
- e. Authorize drawings and information dissemination to other Navy activities in accordance with applicable security requirements.
- f. Assist the RPPY/Nuclear Support Facility PY in maintaining an up-to-date library of

Navy Publications, Instructions, and Operating Instructions.

g. Resolve SSR discrepancies identified by Reactor Plant/Nuclear Support Facilities PY with Hull PYs.

h. Provide local government approval, validation, and other services connected with the work performed by the Reactor Plant PY/Nuclear Support Facilities PY or other designated Design Agency.

#### **4-12.6 Design Services and Related Work**

The RPPY/Nuclear Support Facilities PY or designated Design Agency will perform all required shipyard design services and related work to support accomplishment of SHIPALTs on reactor plants of nuclear-powered ships/nuclear support facilities during overhaul periods, post shakedown availabilities, restricted availabilities, and other work periods. This work will be performed under the direction of NAVSEA 08.

##### **4-12.6.1 Authorization**

The Reactor Plant PY/Nuclear Support Facilities PY or designated Design Agency will provide design services and related work upon receipt of a SHIPALT or other written technical instructions from NAVSEA 08 or its designated agent. In addition, the RPPY/Nuclear Support Facilities PY will provide such other services as specifically directed by the cognizant SUPSHIP, such as requests from other naval activities for copies of drawings and other information.

##### **4-12.6.2 Farm Out**

The RPPY/Nuclear Support Facilities PY or designated Design Agent will not "farm out" reactor plant/nuclear support facility design services and related work to other activities without prior approval of NAVSEA 08.

##### **4-12.6.3 Approval**

Reactor Plant/Nuclear Support Facility alteration design work will normally be forwarded to NAVSEA 08 for approval unless specified otherwise in SHIPALT or other technical instructions from NAVSEA 08.

##### **4-12.6.4 Validation**

All Reactor Plant Alteration Drawings are to be validated by the cognizant SUPSHIP for issue to and use by other activities after such drawings have been approved in accordance with paragraph 4-12.6.3 and any comments have been incorporated by the Reactor Plant PY or designated Design Agent. Other alteration design work such as installation procedures, test procedures, or test requirements, and other documents prepared by the PY or designated Design Agency, will be validated by the cognizant SUPSHIP when specifically requested in SHIPALTs or other written technical instructions from NAVSEA 08.

##### **4-12.6.5 Security Classification**

The RPPY/Nuclear Support Facilities PY or designated Design Agency will ensure that all security classification requirements of CG-RN-1, Energy Research and Development Administration- Department of Defense (ERDA-DOD) Classification Guide for Naval Nuclear Propulsion Program and other applicable instructions are adhered to in the performance of reactor plant design services and related work.

#### **4-12.6.6 Schedules and Priority**

Completion of reactor plant/nuclear support facility design work will be scheduled to support orderly planning and accomplishment of work during overhauls or availabilities. NAVSEA 08 and installing activities will provide lists of reactor plant SHIPALTs and other work planned for specific nuclear-powered ship overhauls and availabilities. The PY or Design Agent will review this information to ensure proper scheduling of design work and compliance with required completion dates. SHIPALT design work will be scheduled to support Target Ready for Accomplishment dates specified in Ship Alteration Approval Records.

#### **4-12.6.7 Liaison and Feedback**

Reactor Plant/Nuclear Support Facilities design work requires effective liaison among the RPPY/Nuclear Support Facilities PY, NAVSEA 08, Reactor Plant Prime Contractors, designated Design Agencies, Forces Afloat, and repair or overhaul activities. The Reactor Plant/Nuclear Support Facility PY/ or designated Design Agency will coordinate design work as follows, and will send copies of all correspondence relating to such work to NAVSEA 08:

- a. Coordinate design work with cognizant Reactor Plant Prime Contractors whenever appropriate. Where SHIPALTs issued by NAVSEA 08 are based on design proposals made by prime contractors, necessary information concerning these SHIPALTs will be obtained by the RPPY or designated Design Agency from the prime contractors.
- b. Coordinate with equipment vendors the correction of design problems identified in shipbuilder-furnished reactor plant components in conjunction with the performance of engineering services or when directed by NAVSEA 08.
- c. Obtain specifications required to perform engineering services assignments from appropriate nuclear power organizations in other shipyards.
- d. Provide engineering assistance as required by forces afloat and by repair or overhaul activities to ensure proper and timely accomplishment of reactor plant work.
- e. Review information provided by repair or overhaul activities and NAVSEA 08 on the usefulness and accuracy of design information furnished and incorporate corrections and improvements into subsequent design work. Feedback from operating ships and tenders will be provided through NAVSEA 08 or the cognizant SUPSHIP.
- f. Ensure that sketches or other information provided by installing activities reflect current installations on ships and are recorded in Reactor Plant/Nuclear Support Facility SSR, as appropriate.

#### **4-12.6.8 Periodic Status Reports**

The RPPY/Nuclear Support Facilities PY will provide a periodic report(s) containing detailed status of design work in progress for all nuclear-powered ships or classes of ships or nuclear support facilities under its cognizance. These reports should contain sufficient descriptive information to identify the work items and should identify action completed, action being taken on each aspect of the design work, and the activity responsible for the next action. Reports are to be furnished to NAVSEA 08 and other specified activities.

#### **4-12.6.9 Records**

The RPPY/Nuclear Support Facilities PY will maintain files of completed design work and maintain custody of master drawings and documents as identified in subsection 4-12.3 and references S4(a) through S4(c). Master copies of reactor plant SSR, however, shall not be

transferred to overhaul and maintenance activities. All changes or corrections to reactor plant SSR will be made only by the RPPY or assigned DA as requested by NAVSEA 08. The Design Agency will provide to the Reactor Plant PYs full size reproducible, and/or suitable electronic media of each alteration drawing, working drawing, or Selected Record Drawing necessary for the Reactor Plant PY to comply with the requirements of this manual and references S4(a) through S4(c). The Design Agency shall maintain drawing originals and/or suitable electronic media along with design data used in development of Reactor Plant SHIPALTs until authorized by NAVSEA to either destroy them or transfer them to the PY.

#### **4-12.7 Design Services Requirements**

Reactor Plant/Nuclear Support Facility SHIPALTs generally require detailed design work by the RPPY/Nuclear Support Facilities PY or designated Design Agency. Specific requirements for such work are stated in SHIPALTs or other written technical instructions from NAVSEA 08.

##### **4-12.7.1 Design Studies**

For proposed SHIPALTs, NAVSEA 08 or its designated agents will request a design study when a technical proposal is required from the RPPY/Nuclear Support Facility PY or designated Design Agency. Such studies will be used to determine the feasibility of accomplishing proposed SHIPALTs or to evaluate the need for corrective action when reactor plant problems are reported. Other information such as the feasibility of Forces Afloat accomplishment of an alteration, estimated weight and moment changes, proposed Ready for Accomplishment dates, and cost estimates may also be requested. Detailed requirements for specific design studies will be provided in the correspondence requesting such studies.

##### **4-12.7.2 SHIPALTs**

SHIPALTs are normally issued for all Reactor Plant/Nuclear Support Facility alterations. Each SHIPALT identifies what information and/or material should be available at the time the alteration is scheduled for accomplishment, and who is responsible for providing the information and material. The RPPY/Nuclear Support Facility PY, designated Design Agency, or Reactor Plant Prime Contractor will provide alteration drawings, installation procedures, and test procedures or test requirements in the manner requested in each SHIPALT.

For SHIPALTs requiring significant work in high radiation areas, the RPPY/Nuclear Support Facilities PY, designated Design Agency, or Reactor Plant Prime Contractor may also be requested to provide additional elements of an "engineered work package" as described in Subsection 4-12.7.5.

SHIPALTs accomplished by forces afloat may require special material or other items to permit accomplishment. The RPPY/Nuclear Support Facility PY or designated Design Agency may be requested to provide additional elements of a "SHIPALT package" described in Subsection 4-12.7.6 for such SHIPALTs.

##### **4-12.7.3 Alteration Drawings**

###### **4-12.7.3.1 Preparation of Alteration Working Drawings**

Detailed Alteration Working Drawings will be prepared by the RPPY/Nuclear Support Facility

PY or designated Design Agency as required by SHIPALTs or other written technical directions from NAVSEA 08. Whenever practicable, drawings will be prepared for a Reactor Plant type or ship class; however, differences between ships of a class are to be clearly indicated on the drawings. The determination to revise existing drawings, or produce new alteration drawings, is the responsibility of the RPPY, or designated Design Agency; however, all drawings will comply with references S4(a) through S4(c).

#### **4-12.7.3.2 Ripout Drawings**

The RPPY/Nuclear Support Facility PY or designated Design Agency will prepare ripout drawings for SHIPALTs unless approved otherwise by NAVSEA 08.

#### **4-12.7.3.3 Compatibility Review of Alteration Drawings**

Design Agencies shall submit Alteration Drawings to the RPPY/Nuclear Support Facilities PY or Hull PY, as applicable, for compatibility review with current or planned SHIPALTs.

Reactor Plant/Nuclear Support Facilities PYs will request applicable Hull PY review and concurrence for Reactor Plant/Nuclear Support Facility alterations affecting areas under the cognizance of the Hull PY.

### **4-12.7.4 Installation Procedures, Test Procedures, and Test Requirements**

#### **4-12.7.4.1 Preparation**

Detailed installation procedures will be prepared by the RPPY/Nuclear Support Facilities PY or designated Design Agency as required by SHIPALTs or other written technical instructions from NAVSEA 08. Test procedures or test requirements will be provided for each Reactor Plant/Nuclear Support Facility alteration for which testing is required. SHIPALTs or other written technical instructions from NAVSEA 08 will request preparation of test procedures or test requirements by the RPPY/Nuclear Support Facility PY or designated Design Agency, as necessary.

#### **4-12.7.4.2 Content**

Installation procedures and test procedures or test requirements will be prepared separately for each alteration, assuming each alteration is to be accomplished on an individual basis (i.e., not in conjunction with, or at the same time as, other SHIPALTs) unless otherwise agreed to by NAVSEA 08. Installation procedures will include, as appropriate:

- a. Propulsion plant/support facility conditions necessary for the performance of an alteration.
- b. Drawings, documentation, special tools and test equipment, and engineering services required for SHIPALT installation.
- c. Special radiological control requirements and precautions.
- d. Special rip-out instructions, if required.
- e. Detailed procedures for accomplishing the installation, including inspection requirements.
- f. Procedures for returning the plant to normal operating condition.
- g. Test requirements identifying test(s) to be performed and the source of the test procedures(s). These sources are normally NAVSEA approved documents applicable to the

ship(s) being tested.

h. Test procedures for SHIPALTs written in the same format as test procedures for newly constructed nuclear-powered ships. NAVSEA 08 technical approval letters, when applicable, will be indicated on the final issue of installation procedures.

i. Instructions for obtaining on board repair parts.

#### **4-12.7.4.3 Compliance**

Test procedures, or test requirements, prepared by the RPPY/Nuclear Support Facilities PY or designated Design Agency must comply with applicable requirements contained in power plant or reactor plant manuals, reactor plant component technical manuals, or other NAVSEA approved documents and must be approved by NAVSEA 08 prior to final issue of the procedures and requirements to other activities.

#### **4-12.7.5 Engineered Work Packages**

Engineered work packages will include the following elements:

a. Those elements contained in installation procedures (Subsection 4-12.7.4).

b. Identification of special tooling, mockups, training, temporary shielding, clean areas, contamination enclosures, expected personnel radiation exposure, and other items required to permit accomplishment of the alteration as expeditiously as possible with minimum personnel radiation exposure. Actual special tooling and mockups required will be provided when requested by NAVSEA 08. The Reactor Plant PY or designated Design Agency will perform necessary work (such as mockup demonstration and shipchecks) to verify the adequacy of procedures and tools for work in a radioactive area. When required, mockup demonstrations are to include the suiting of personnel in anti-contamination clothing and mockups of any temporary shielding required in the immediate work area.

c. Additional elements as may be required by NAVSEA 08.

#### **4-12.7.6 SHIPALT Material Kits.**

A kit of material for a SHIPALT is normally centrally procured, assembled and held at NAVICP-M until requisitioned by the designated NSA. Requests for procurement of SHIPALT kits will be provided by in the SHIPALT or other correspondence from NAVSEA 08. If the material is not provided in a kit, direction for the NSA to obtain the material will be provide in the SHIPALT or other correspondence from NAVSEA 08.

#### **4-12.7.7 Shipchecks**

a. Alteration drawings are not normally ship checked by the RPPY/Nuclear Support Facility PY or designated Design Agency for each ship of a class. A more meaningful check of Reactor Plant Alteration Drawings for a particular ship can be made by the Installing Yard which will be responsible for accomplishing the SHIPALT and integrating this work with other nuclear and non-nuclear work items. To support this effort, Reactor Plant/Nuclear Support Facility Alteration drawings are normally provided to an Installing Yard in time for the pre-arrival ship check.

b. The RPPY/Nuclear Support Facility PY or designated Design Agency may request a ship check by Forces Afloat or repair or overhaul activity personnel to provide as-built configuration information for a particular ship. When such shipchecks are considered necessary, sketches noting critical dimensions to be verified and/or areas to be photographed must be designated by

the RPPY/Nuclear Support Facility PY or designated Design Agency. NAVSEA 08 concurrence is required for any shipchecks considered necessary and performed by other activities.

c. Should the RPPY/Nuclear Support Facility PY or designated Design Agency perform a ship check, arrangements with Forces Afloat typically will be made by the cognizant SUPSHIP following receipt of NAVSEA 08 concurrence.

#### **4-12.8 Related Work Requirements**

The RPPY/Nuclear Support Facility PY will maintain custody of all tracings of Reactor Plant/Nuclear Support Facility Working Drawings, Alteration Drawings, Reactor Plant/Nuclear Support Facility SSR, photographs, microfilms or other records for assigned ships, as described below.

##### **4-12.8.1 Working Drawings and Alteration Drawings**

See references S4(a) through S4(c).

##### **4-12.8.2 Reactor Plant Selected Record Drawings**

See references S4(a) through S4(c).

##### **4-12.8.3 Photographs and Microfilm**

See references S4(a) through S4(c).

##### **4-12.8.4 Reactor Plant Selected Record Data**

Reactor Plant/Nuclear Support Facility Selected Record Data consists of certain component technical manuals for shipbuilder-furnished Reactor Plant/Nuclear Support Facility equipment and Reactor Plant/Nuclear Support Facility portions of the SDI and Allowance Lists as specified below.

###### **4-12.8.4.1 Component Technical Manuals**

Reference S4(x) provides specific information on maintaining Reactor Plant/Nuclear Support Facility component technical manuals.

###### **4-12.8.4.2 SDI**

The SDI is described in reference S4(w). The SDI for nuclear-powered ships is under the custody of the Hull PY except that the Reactor Plant Supplement to the SDI for nuclear-powered surface ships, for USS PARCHE (SSN 683), and for Nuclear Support Facilities, is under the custody of the of the RPPY/Nuclear Support Facility PY.

###### **4-12.8.4.2.1 Nuclear-Powered Submarines**

Corrections and additions to Reactor Plant Drawings and related design information included in the SDI for nuclear-powered submarines are to be prepared by the RPPY in accordance with the following procedures: (Note: For USS PARCHE (SSN 683 “see the paragraph on Nuclear-Powered Surface Ships”).

a. The construction shipyard prepares an SDI for each nuclear-powered submarine and provides a reproducible copy of the SDI to the RPPY via the cognizant SUPSHIP following initial issue. A copy of the SDI is to be furnished to the RPPY via the cognizant SUPSHIP following initial issue.

b. The RPPY will review the SDI to determine if the drawings, including Reactor Plant SRDs, held by the Reactor Plant PY are marked appropriately. SDIs that have not been reviewed in the above manner are to be forwarded by the Hull PY to the RPPY for appropriate review.

c. The SDI is to be maintained in accordance with reference S4(w), except that all changes, corrections, and additions to Reactor Plant drawings and related design information will be prepared by the RPPY. To facilitate updating, the Design Agency developing alteration drawings will provide the Reactor Plant PY information which cross-indexes each Reactor Plant.

d. The RPPY will forward alteration drawing to the parent drawing(s) affected or changed by the design information to individual ships as necessary via the cognizant SUPSHIP to the Hull PY or Overhaul Yard, as appropriate, for inclusion in the regular issue of SDI corrections.

e. The RPPY shall identify to the applicable Hull PY, SUPSHIP, and NAVSEA 08 all instances of SDI revisions not being issued within six months of issuance of a request for change from the RPPY.

#### **4-12.8.4.2.2 Nuclear-Powered Surface Ships, USS PARCHE (SSN 683), and Nuclear-Powered Facilities**

The SDI for these ships is in two parts. Part I, the Non-Reactor Plant/Non-Nuclear Support Facility part is maintained by the Hull PY. Part II, the Reactor Plant/Nuclear Support Facility Supplement to the SDI is maintained by the RP/Nuclear Support Facility PY. The Reactor Plant/Nuclear Support Facility Supplement to the SDI for nuclear surface ships and these submarines (Part II of the SDI) contains cumulative and cross-reference data for all Reactor Plant/Nuclear Support Facility drawings that are under the cognizance of the RPPY/Nuclear Support Facility PY. This includes design drawings, as-built drawings, alteration drawings, and selected record drawings. The information in Part II of the SDI is not duplicated in Part I of the SDI.

#### **4-12.8.5 Allowance Lists**

Allowance lists for nuclear ship reactor plants are maintained current by installing and overhauling activities, forces afloat, and NAVICP-M in accordance with reference S4(y). The RPPY/Nuclear Support Facility PY is responsible for preparing and maintaining technical ordering documentation for shipbuilder furnished Reactor Plant components and system equipment and repair parts, except for equipment for which this responsibility has been specifically assigned to a Reactor Plant Prime Contractor. DAs for Reactor Plant SHIPALTs shall provide provisioning documents or other allowance list information to NAVSEA or NAVICP-M for material or component procured by them for SHIPALT packages in accordance with Subsection 4-12.7.6. Each NSA performing reactor plant work has the basic responsibility per reference S4(t) for ensuring that Allowance List changes are made to reflect work that they perform on a ship.

#### **4-12.8.6 Cost Estimates**

The RPPY/Nuclear Support Facility PY or designated Design Agency will provide NAVSEA 08, upon request, cost estimates for reactor plant SHIPALTs and other work, including estimates for design services required, material, and installation costs.

### **4-12.9 Distribution Requirement**

#### **4-12.9.1 Alteration Drawings and Procedures**

Distribution requirements are specified in applicable SHIPALTs or by NAVSEA 08 in separate correspondence.

**4-12.9.2 SHIPALT Packages**

Distribution requirements are specified in applicable SHIPALTs.

**4-12.9.3 Engineered Work Packages**

Distribution requirements are specified in applicable SHIPALTs.

**4-12.9.4 Reactor Plant/Nuclear Support Facility Selected Record Drawings**

Distribution requirements are provided by NAVSEA 08 in separate correspondence.

**4-12.9.5 Reactor Plant/Nuclear Support Facility Selected Record Data**

Distribution requirements are provided by NAVSEA 08 in separate correspondence.

**4-12.9.6 Periodic Reports**

Distribution requirements are provided by NAVSEA 08 in separate correspondence.

**4-12.10 Funding Responsibilities**

Reactor Plant and Nuclear Support Facility design services and related work are performed under various NAVSEA contracts with assigned RPPY/Nuclear Support Facility PYs and designated Design Agencies. Funding requirements for this work are stated in the terms of the contracts.