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DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-OOO1

IN REPLY TO:

4730
Ser 04X/337
24 OCT 2011

From: Commander, Naval Sea Systems Command

Subj: TAG-OUT USERS MANUAL (TUM), NAVSEA 0400-AD-URM-010, ADVANCE CHANGE NOTICE 1/A

Ref: (a) Code of Federal Regulations, 29 CFR 1915 Subpart F, Section 1915.89; Control of Hazardous Energy (Lock-out/Tags-Plus)
(b) NAVSEA ltr ser 04X/313 of 21 Sep 2011 (NOTAL)

Encl: (1) NAVSEA 0400-AD-URM-010/TUM, ACN 1/A to Rev 06

1. Purpose. This letter issues the enclosure (1) change to the subject manual.

2. Discussion.

a. Reference (a) established revised standards on general working conditions in shipyard employment including control of hazardous energy. Reference (a) allows specific exemptions for shipboard tag-outs when Navy Ship's Force personnel serve as the lockout/tags-plus coordinator and maintain control of the machinery per the Tag-out Users Manual (TUM). Reference (b) provides guidance for danger tagging the SSN 688 Class auxiliary seawater system push button fast speed switch during diving operations.

b. In order to meet the requirements of reference (a), the following TUM changes have been provided in enclosure (1):

(1) Added reference (a) as a new reference in the TUM.

(2) Removed the applicability option for non-reactor plant systems and equipment prior to system turnover to Ship's Force during new construction.

(3) Clarified that the repair activity component contractor training and qualification exception only applies to not being qualified in accordance with paragraph 1.4.2. Training is required to meet paragraph 1.4.1.

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(4) Section 1.4.1 was modified to delete the minimum training topics required for personnel indoctrination training on the use of danger tags. This list is unnecessary given that the first paragraph of this section requires all individuals who perform work on Navy vessels to be indoctrinated on the purpose, use and restrictions associated with the Tag-out Users Manual.

(5) Added a reactor plant exempted Note to Appendix C that allows the repair activity to perform tag-outs without Ship's Force involvement and exemptions for decommissioned ships and during new construction

(6) Revised Appendix D to add the new Danger and Caution Tag figures and their overviews including attachment device changes.

c. The reference (b) SSN 688 Class allowance for danger tagging push button switches which also have mechanical indication to ascertain switch position has been expanded for all ships and has been provided as a change to the electrical switches section of Appendix F.

d. The new more durable polyolefin material Danger and Caution Tags have new national stock numbers, 0116-LF-128-0400 and 0116-LF-127-9200, respectively. Each unit of issue order provides a roll of 500 tags and 500 50-pound unlocking strength nylon cable ties. Tied string cannot be used anymore as the attachment means. Monofilament line is an acceptable substitute for those applications that cannot receive cable ties. Tape is only an acceptable substitute if there is no feasible way to attach the danger tag. The tags were designed to be more compatible with Shift Operations Management System labels. A perforation has been incorporated in the tags for ease of voiding tags via destructive tearing.

e. This advance change notice will be incorporated into the TUM hosted electronically at http://www.submepp.navy.mil/jfmm/tum/tag_out.pdf and at https://mercury.tdmis.navy.mil. Electronic forms are available at https://navalforms.daps.dla.mil/web/public/forms.

3. Action.

a. If maintaining a hard copy of this manual, remove and destroy existing pages i, 1, 2, 4, 5, C-1, D-7, D-9, and F-4.

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Replace with enclosure (1) pages i, 1, 2, 4, 5, C-1, and F-4. Insert new pages D-6a, D-7a, D-8a and D-9a. Record this action in the Record of Changes on page iii.

b. Request the Joint Fleet Maintenance Manual Manager at SUBMEPP and the Naval Systems Data Support Activity update their applicable sites with this advance change notice, and include it on their next editions of JFMM and Monthly Ship Initial Distribution CD-ROMs, respectively. The electronic file will be emailed/uploaded separately. Note that electronic and paper forms have different national stock numbers for the same form number.

c. Private Shipyards. The action taken by this manual change notice is considered by NAVSEA to be within the scope of existing contracts, and no change in contract delivery or completion dates or in current negotiated price or amount of any Government contract is authorized. If the Contractor considers that implementation of this manual revision requires a contract change, the Contractor should not implement such part but should promptly, and in any event within 30 days of receipt of this manual revision, notify the Contracting Officer in writing via the Supervisor of Shipbuilding of the facts and reasons for considering that a contract change is required. In addition to revising local instructions, contractors are requested to review all NAVSEA approved documents under their cognizance and determine if changes are needed to fully implement this manual revision. Changes to NAVSEA approved documents should be recommended to this contract change where the base document is used.

d. Cable ties shall be installed loosely; do not over-tighten due to possibility of equipment damage when cutting to remove. The Shipboard Allowance Lists will be changed to reflect the new stock numbers for the new tags. 3,000 rolls of Danger Tags and 600 rolls of Caution Tags have been procured for initial stocking. Fleet Forces and Repair Activities are requested to limit their initial Caution Tag orders to allow all activities to be able to get the new stocked Tags.

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4. Implementation

a. Fleet Forces, Naval Supervising Authorities and other work authorizing activities are to implement this change by 31 October 2011 or when operationally feasible. Both ships and repair activities working aboard should use the same revision and advance change notice. Manual holders unable to implement this change by 31 December 2011 should notify NAVSEA in writing stating the reason for the inability to implement and the expected implementation date.

b. Once the new danger and caution tags of paragraph 2d are received in local inventory, existing local inventories of paper tags and attachment devices shall be purged with the exception that tags that are in use are not required to be replaced.

5. Engineering Manager for the TUM is Mr. Paul Mieszczanski, SEA 04XQ1M, at (202) 781-4472 or Paul.Mieszczanski@navy.mil.

P. Colahan
PAUL T. COLAHAN
By direction

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ADVANCE CHANGE NOTICE 1/A

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S0400-AD-URM-010/TUM

NSN 0910-LP-109-3768 **REVISION 06**

NAVSEA TECHNICAL PUBLICATION

TAG-OUT USERS MANUAL

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NAVSEA TECHNICAL MANUAL CERTIFICATION SHEET

Certification Applies to: New Manual ☐ Revision ☒ Change ☐

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CHANGES AND REVISIONS:

See next page.

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Continue on reverse side or add pages as needed.

CERTIFICATION STATEMENT

This is to certify that responsible NAVSEA activities have revised the above identified document for acquisition compliance, technical coverage, and printing quality. This form is for internal NAVSEA management use only, and does not imply contractual approval or acceptance of the technical manual by the Government, nor relieve the contractor of any responsibility for delivering the technical manual in accordance with the contract requirement.

Authority	Name	Signature	Organization	Code	Date
Acquisition	P. Mieszczanski	P. Mieszczanski	NAVSEASYSCOM	04XQ	5 Nov 09
Technical	P. Mieszczanski	P. Mieszczanski	NAVSEASYSCOM	04XQ	5 Nov 09
Printing Release	NA	NA	NA	NA	NA

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CHANGES AND REVISIONS:

Paragraph 1.2a – Revised to clarify that the requirements of this manual also apply to naval craft when manned by Ship's Force.

Paragraph 1.3.2c – Revised to clarify that the Authorizing Officer is designated by the Department Head by billet or watchstation.

Paragraph 1.6.3d(6) – New paragraph (6) to include "Monitoring and interior communications equipment" to the list of examples.

Paragraph 1.8.4a – Added sentence to clarify that when multiple RAs share the same tagged items, the RA clearing the last RA line item will sign in block 20b.

Appendix G, paragraph 6d – Added new paragraph to provide Commanding Officers the option to use a standing order when authorizing the connection/disconnection of in-place calibration equipment with the instrument isolation (hoke) valve shut but not tagged to prevent working on a danger tagged component.

Appendix I, section 7.6, is revised to provide instructions to address condition conflicts on currently hanging tags (e.g., the component is currently tagged 'shut' but the new Line Item requires it to be tagged 'locked shut'). Supporting changes were made to paragraphs 1.5.2f, 1.8.2a, 1.8.2b, and Appendix I, paragraph 3.6.

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LIST OF EFFECTIVE PAGES

Page Numbers	Change in Effect
i	1/A
ii thru iv	Rev 06
1 and 2	1/A
3	Rev 06
4 and 5	1/A
6 thru 24	Rev 06
A-1 thru A-2	Rev 06
B-1 thru B-2	Rev 06
C-1	1/A
C-2	Rev 06
D-1 thru D-6	Rev 06
D-6a	1/A
D-7	Rev 06
D-7a	1/A
D-8	Rev 06
D-8a	1/A
D-9	Rev 06
D-9a	1/A
D-10 thru D-14	Rev 06
E-1 thru E-2	Rev 06
F-1 thru F-3	Rev 06
F-4	1/A
F-5 and F-6	Rev 06
G-1 thru G-4	Rev 06
H-1 thru H-2	Rev 06
I-1 thru I-10	Rev 06

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RECORD OF CHANGES

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY (INITIALS)
1/A	24 Oct 2011	Appendix C Note added to address when RA tag-outs are used they must meet the standards of CFR 1915.89	EWB (PSNS C246)

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NAVSEA/SPAWAR TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)

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TAG-OUT USERS MANUAL

REFERENCES.

(a) OPNAVINST 3120.32 - Standard Organization and Regulations of the U.S. Navy, Section 630.17, Equipment Tag-Out Bill
(b) NAVSEA S9002-AK-CCM-010/6010 - Industrial Ship Safety Manual for Submarines
(c) NAVSEA 0989-028-5000 - Manual for the Control of Testing and Plant Conditions
(d) OPNAVINST 5100.19 - Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat
(e) NAVSEA S9213-41-MAN-000/(R) - Engineering Department Manual for Naval Nuclear Propulsion Plants
(f) NAVSEA SS521-AG-PRO-010/0910-LP-708-8000 - U.S. Navy Diving Manual
(g) NAVSEA S9086-KC-STM-010 - Naval Ships' Technical Manual, Chapter 300, Electric Plant General
(h) COMFLTFORCOMINST 4790.3 - Joint Fleet Maintenance Manual
(i) NAVSEA 0348-159-1000 - Freeze Sealing Manual
(j) NAVSEA 0989-018-1000 - Manual for the Control of Refueling
(k) Code of Federal Regulation, 29 CFR 1915 Subpart F, Section 1915.89, Control of Hazardous Energy (Lock-out/Tags-Plus)

LISTING OF APPENDICES.

A List of Acronyms
B Glossary of Terms
C Repair Activity Tag-outs
D Tag-out and Calibration Forms
E Tag-out Process Amplifications for Divers
F Tag-out Standards
G Barrier Criteria
H Tag-out Process Amplifications for the Manual for the Control of Testing and Plant Conditions
I Shift Operations Management System

1.1 PURPOSE. The purpose of this manual is to:

a. Provide for personnel and ship safety and prevent damage to equipment.

b. Prevent improper operation when a component, equipment, system or portion of a system is isolated or in an abnormal condition.

c. Prevent improper operation when a freeze seal is applied to a system or when other safety devices such as blank flanges are installed for testing, maintenance, or casualty isolation.

d. Provide a procedure for use when an instrument is unreliable or not in its normal operating condition.

e. Provide standard tag-out procedures.

f. Provide a procedure for control of hazardous energy.

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1.1.1 Administrative Considerations.

a. Appendix A contains the listing of acronyms used throughout this manual. Acronyms will be defined at their first appearance in the manual. Appendix B contains the glossary of terms used throughout this manual.

b. Formal change requests to this manual may be submitted using the Technical Manual Deficiency/ Evaluation Report (TMDER) attached to the end of this manual. Change requests submitted either by mail, facsimile or E-mail must contain all of the information required on the TMDER and sufficient justification should be provided to support the change request.

1.2 APPLICABILITY.

a. The requirements of this manual apply to equipment tag-outs and instrument labels on all systems and components on naval ships and craft when manned by Ship's Force. Appendix F, paragraph 4.f, provides specific requirements to be followed when performing simple electrical troubleshooting and maintenance without a tag-out.

b. The requirements of this manual are intended for use with systems that are under the operational control of Ship's Force. Appendix C applies to reactor plant systems and equipment during testing prior to system turnover during new construction and to reactor plant support systems and test equipment connected to ship's systems that are not under the operational control of Ship's Force. For non-reactor plant systems and equipment prior to system turnover during new construction, hazardous energy control shall be per reference (k).

c. This manual meets the requirements of and is based on references (a), (b), (c), and (d).

d. This manual was developed with Fleet and Repair Activity (RA) inputs and contains technical requirements from OPNAV, NAVSEASYSCOM and Fleet documents, for ship operations and maintenance. Fleet concurrence will be obtained for any subsequent changes to this manual.

e. In case of conflicts with other manuals, address the conflict to NAVSEA, via appropriate chain of command, for resolution.

f. When specific valve position verification procedures are provided in the applicable reactor plant manual, steam and electric plant manual, or valve technical manual, those procedures take precedence over the general valve position verification procedures specified in this manual.

1.3 RESPONSIBILITIES.

1.3.1 Ship's Force.

a. The Commanding Officer/Officer in Charge is responsible for the safety of the entire command, and is required to ensure that all persons concerned know applicable safety precautions and procedures and to ensure compliance with this manual. Ship's Force Department Heads are responsible for ensuring that personnel assigned to their respective areas understand and comply with this manual.

b. The Authorizing Officer shall supervise the tag-out log and will assist in obtaining Commanding Officer authorization of tag-outs when needed.

c. Supervisory watchstanders shall review associated tag-out logs during watch relief and shift turnover.

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d. Ship's Force is responsible for ensuring the adequacy and accuracy of all tag-outs, including those proposed by the RA. They shall also verify that tags, which are no longer needed, are removed as soon as possible after the operation/work item(s) has been cleared from the Tag-out Record Sheet (TORS). Ship's Force is responsible for system restoration (e.g., valve/switch lineups) after tags are cleared.

1.3.2 Authorizing Officer. Each tag-out log is administered by an Authorizing Officer. The Authorizing Officer:

a. Is responsible for the administration of their cognizant tag-out log.

b. Is Ship's Force except for RA tag-outs per Appendix C.

c. Is designated by the Department Head by billet or watchstation (for non-propulsion plant).

d. Is the Watch/Duty Officer for the propulsion plant tag-out log(s).

e. For submarines underway on the surface, the Officer of the Deck (OOD) may designate the officer or Petty Officer in Charge (POIC) of the control room as the Authorizing Officer. During this time no tag will be issued or cleared without the verbal concurrence of the OOD. The officer or POIC of the control room, when designated the Authorizing Officer, will ensure compliance with the provisions of this manual. In this case the OOD, upon relief, will review the TORS initiated or cleared during his watch. Any discrepancies shall be immediately resolved.

f. The Ship's Commanding Officer may authorize, in writing, a qualified watch officer, designated as the Assistant Authorizing Officer, to be responsible for confirming the adequacy and accuracy of a tag-out. Two examples of when assignment of an Assistant Authorizing Officer might be beneficial are; 1) During periods of heavy maintenance, to unburden the on-watch duty officer and, 2) when the cognizant division officer is acting in this capacity to review tag-outs for work on systems under his/her cognizance. These individuals shall be designated for only those tag-out logs they are qualified to supervise. The Assistant Authorizing Officer shall sign in the left-hand margin by the line item on the TORS signifying the adequacy and accuracy of the tag-out. The Authorizing Officer shall sign the TORS as Authorizing Officer signifying agreement that any associated system status changes and installation of tags are compatible with ship and plant conditions. The Assistant Authorizing Officer may also sign as Authorizing Officer on the tags after the Authorizing Officer has authorized the tag-out on the TORS. The Authorizing Officer must be informed prior to changes to system status. The Assistant Authorizing Officer can process changes to add work within the existing tag-out and can sign as Authorizing Officer on the TORS for the added work. Similarly, the Assistant Authorizing Officer can clear line items within a tag-out (for Completed work) that would not result in the clearing of any tags.

1.3.3 Repair Activity.

a. The RA employee will be provided the opportunity to review isolations and system conditions established for their work.

b. The RA is responsible for:

(1) Ensuring personnel understand and comply with this manual including their sub-contractors.

(2) Reviewing tag-outs associated with RA work.

(3) Ensuring the accuracy and adequacy of tag-outs before signing the TORS. When local instructions allow, the documented verification signature made by a qualified repair activity individual proposing the tagout may be used as the repair activity's validation of the adequacy and accuracy of a tagout. This allowance only applies when the proposed tagout and the authorized tagout are identical. The RA Representative authorizing the tagout in block 10 of

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the TORs remains responsible for ensuring the tagout is compatible with system status and ship/plant conditions.

(4) Ensuring tags that are no longer needed are authorized for removal as soon as possible after the operation/work item has been cleared from the TORS.

(5) Ensuring qualified personnel act as the RA Representative for tag-out procedures.

c. The RA:

(1) Acts as the Authorizing Officer for RA tag-outs (see Appendix C).

(2) Signs TORS associated with RA work.

(3) Witnesses or verifies checking of posted tags, signs tags and initials TORS.

d. Exceptions:

(1) Component contractors who are not qualified in accordance with paragraph 1.4.2 of this manual shall perform their duties as RA in the following manner:

(a) Signature in block 10 of the TORS is based on a direct report or briefing they receive from Ship's Force. The contractor's signature represents confirmation by the contractor that, based on this briefing, the contractor understands the hazards presented by the ship's systems on which the contractor will be working, including receiving assurance that appropriate isolations have been performed.

(b) Signature in block 7 of the Danger Tag and corresponding initials in block 18b of the TORS are based on the contractor having been shown the installed tag and the means to ensure the component is in the position/condition specified on the tag and TORS per paragraph 1.6.5.a of this manual.

(c) Signature in block 7 of the Caution Tag and corresponding initials in block 18b of the TORS are based on the contractor having been shown the installed tag and that the amplifying instructions on the tag match block 3 of the TORS.

(d) Signature in block 12 (and date in block 13) of the TORS is based on the contractor's knowledge that the work item/operation is complete.

(e) When requested by the Authorizing Officer, the contractor signs block 20b of the TORS to indicate that the contractor portion of the work/operation is complete and the tags are no longer needed for the contractor's work.

(f) As an alternative, the contractor may specifically agree via their contract or MOA, that all RA responsibilities as defined in this manual are assigned to the lead RA. In all cases, appropriate information should be provided to the contractor prior to initiating work to ensure that the contractor understands the hazards involved and does not remove existing tags or take any action that changes the position of tagged components.

(2) Naval activities who are required to follow this tag-out manual, such as ships, Naval intermediate-level fleet maintenance activities (e.g., Fleet Maintenance Activities (FMA)) and Naval shipyards, should normally not be permitted to assign their tag-out review and signature responsibilities to another activity since Naval activities have sufficient knowledge to perform a proper review. The only exception is if a shipyard or FMA is performing work where another shipyard is the lead RA. In this case, the MOA between these activities may assign the

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lead shipyard the tag-out responsibilities. However, provisions should be included for the lead shipyard to work with the shipyard or FMA performing the work to ensure the tag-out adequacy and accuracy.

1.4 TRAINING AND QUALIFICATIONS.

1.4.1 All individuals who perform work aboard Naval Vessels shall be indoctrinated in basic purpose, use and restrictions associated with this manual.

1.4.2 Personnel assigned to prepare tag-outs, review tag-outs, position equipment, post (attach) tags, check posted tags, clear (remove) tags, or perform tag audits, shall be qualified on this tag-out manual. Formal notices, which list qualified personnel by name, are not required by this manual. The Authorizing Officer is responsible for ensuring that Ship's Force personnel assigned to make a tag-out are qualified to perform the duties under this manual.

a. Tag-out Users Manual training topics shall be included in the ship's and RA continuing training program.

b. The term qualified as used in this Tag-out Users Manual means that the person assigned to perform a tag-out function is knowledgeable about the requirements of this Tag-out Users Manual and is knowledgeable about the involved system/equipment.

c. Ship's Force qualification in this Tag-out Users Manual should be done by the completion of 3M 301 Personnel Qualification Standard, and if required, completion of departmental qualifications.

d. RA personnel are qualified in this tag-out manual by successful completion of the activity's training program. A formal system should be in place at the RA for performing and tracking qualifications of personnel on this Tag-out Users Manual.

1.5 PLANNING TAG-OUTS.

1.5.1 Tag-out Logs.

a. The number of tag-out logs maintained by a ship will depend on ship size and needs. Individual Type Commanders shall specify the number of logs to be maintained for various ship classes, and where the logs will be maintained.

b. On nuclear-powered ships, a separate tag-out log for each propulsion plant shall be maintained in addition to other ship's tag-out logs. This log:

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(1) Is administered by the Watch/Duty Officer.

(2) Is used for propulsion plant systems and equipment, and for other systems and equipment in the engineering spaces under the cognizance of propulsion plant divisions.

(3) Is maintained in the Maneuvering Area, or Enclosed Operating Station, as applicable.

c. Each tag-out log shall include:

(1) A copy of this manual (including any amplifying instruction for administering the tag-out process).

(2) Index sheet(s) (see Appendix D, Figure 1).

(3) Active TORS (see Appendix D, Figures 2 and 3).

(4) Instrument Log sheet(s) (see Appendix D, Figure 9).

(5) Cleared TORS and index sheet(s), until removed following completion of the next tag-out audit.

d. Figures 1 through 9 of Appendix D are illustrations of Naval Sea Systems Command (NAVSEA) forms. Appendix D, Figure 10 provides a template for standardization of an audit record sheet. Forms produced by approved automated tag-out systems are acceptable substitutes for all forms (except tags) required by this manual. Tags should normally be limited to the standard tags in Appendix D.

1.5.2 Use of Tag-outs and Tags.

a. Use tag-outs:

(1) For work or casualty isolation.

(2) For indicating the presence of safety devices required for safety of personnel or equipment that are not required by procedure or plan during normal operation.

(3) For controlling status of equipment or components placed Out-of-Commission /service.

(4) To indicate the presence of electrical jumpers unless specifically controlled by other formal methods such as troubleshooting records, wire removal forms, or written procedures.

(5) When required by operating procedures.

b. When tag-outs are used:

(1) Use enough tags to prevent injury or damage to personnel and equipment by completely isolating the work area.

(2) The use of tags is not a substitute for other safety measures such as chaining or locking valves, removing fuses, or racking out circuit breakers. However, tags shall be attached to the fuse panel, racked out circuit breaker cabinet, or locked valve to indicate such action.

(3) Minimize the number of TORS and tags used through careful work planning in an effort to maintain better control of the tag-out process.

(4) A work item may be listed on more than one TORS (e.g., electrical and mechanical isolation provided by separate TORS).

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c. Use danger tags to prohibit the operation or removal of equipment that could jeopardize safety of personnel or endanger equipment, systems or components.

d. Use caution tags to provide temporary special instruction(s) or to indicate that unusual action must be exercised to operate equipment. Caution tags must state the specific reason that the tag is installed. Use of a phrase such as "DO NOT OPERATE WITHOUT EOOW PERMISSION" is not appropriate since equipment or systems are not operated unless permission from the responsible supervisor has been obtained. A caution tag is not used if personnel or equipment can be endangered while performing evolutions using normal operating procedures. A danger tag is used in this case.

e. Any person having knowledge of a situation requiring tags or labels should request that they be issued and applied.

f. Tags should:

(1) Be removed as soon as possible after the operation/work item(s) has been cleared from the TORS, except as allowed by Appendix I.

(2) Never be used for component identification or to mark leaks.

(3) Not be reused, except as authorized in Section 1.9 for Planned Maintenance System (PMS) procedures.

1.6 ESTABLISHING TAG-OUTS.

a. Use enough tags to completely isolate the system, piping, or circuit being worked on and to prevent operation of a system or component from all stations that could exercise control. As a minimum, system diagrams or circuit schematics shall be used by preparers and reviewers to determine the adequacy of all tag-out actions. The system/component identification (for example, 1MS-V1, HYDRAULIC PUMP BKR @ 1S-4P-F(1)) and position/condition (for example, OPEN, SHUT, BLANK FLANGE INSTALLED) of the tagged item should be indicated by the most easily identifiable means. As a minimum, block 2 on the tag and block 15 on the TORS must include the actual label-plate component identifier (e.g., valve number or circuit designation). If slight differences between the identifiers are noted, (e.g., 64-4P-K(1) LO PMP #3 in block 2 when label-plate identifier reads 64-4P K(1) L.O. PUMP No. 3, etc.) it is not necessary to re-create and hang a new tag provided that there is no doubt that the correct component has been tagged. If doubt exists, contact the Authorizing Officer for resolution.

NOTE: APPENDICES F AND G SHOULD ALSO BE CONSIDERED IN DETERMINING THE ADEQUACY OF THE TAG-OUT.

b. Tag-outs prepared for diver's operations shall follow the guidance of Appendix E.

1.6.1 Preparation. Evaluate if the danger tagged component is located in a high traffic area. If yes, take action per Appendix F, paragraph 3.b.(2). Any qualified Ship's Force person may prepare tags and TORS. Normally the preparer is the Ship's Force POIC of the operation/work item. During shipyard Chief of Naval Operations availabilities, the shipyard will normally propose the tag-out to Ship's Force (but not necessarily prepare the related forms) for shipyard work.

a. The preparer shall:

(1) On the TORS, fill in block 1, 3-5 and 14-16 (see Appendix D, figures 2 and 3). To distinguish which type of tag is used, line out the type of tag not used and circle the one used on the top of the TORS.

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(2) On tags, fill in the prefix and tag number in block 1 and fill in blocks 2 and 3 (see Appendix D, figures 4 and 5).

(3) If the tag-out is not associated with any RA work, RA review of tags and TORS is not required. In those instances, blocks 10, 12, RA block 13, and block 18b of the TORS and block 7 of the tags shall be left blank.

b. Do not use ditto marks or similar short cut devices such as arrows on TORS. Do not correct an error on a tag; prepare a new tag.

c. After tags and TORS are filled out, block 7 of the TORS is signed. The signer, normally the Ship's Force POIC of the work, shall ensure the adequacy and accuracy of the TORS and tags. The signer shall present the tags and TORS to another qualified person for an independent review.

1.6.2 Independent Review.

a. A second qualified person shall independently determine the adequacy and accuracy of the TORS and tags. This individual shall ensure that enough tags are used to completely isolate the system, piping, or circuit being worked on or to prevent operation of a system or component from all stations that could exercise control. System diagrams or circuit schematics shall be used to determine the adequacy of all tag-out actions.

b. When the independent review is complete and the reviewer is satisfied with the adequacy and accuracy of the tag-out plan, that reviewer shall sign block 8 of the TORS indicating concurrence. The TORS and tag(s) shall then be presented to the Authorizing Officer.

1.6.3 Authorization.

a. When authorizing tags to be posted, the Authorizing Officer shall ensure:

(1) Blocks 1-4 of the index sheet are filled in.

(2) Blocks 2 and 6 of the TORS are filled in.

(3) The log serial number is added to block 1 of the caution or danger tag(s).

(4) If manned, notify Damage Control (DC) Central and annotate top of TORS for tag-outs affecting DC capabilities.

b. When required, the Ship's Force Authorizing Officer shall obtain review by the RA.

(1) RA review is required for tag-outs associated with RA work.

(2) The RA Representative shall independently review the tag coverage for adequacy, and review the tag(s) and TORS for completeness and accuracy. When local instructions allow, the documented verification signature made by a qualified repair activity individual proposing the tagout may be used as the repair activity's validation of the adequacy and accuracy of a tagout. This allowance only applies when the proposed tagout and the authorized tagout are identical. The RA Representative authorizing the tagout in block 10 of the TORs remains responsible for ensuring the tagout is compatible with system status and ship/plant conditions. When satisfied with the tag-out plan, the RA Representative shall sign block 10 of the TORS.

(3) The RA shall sign block 10 of the TORS prior to the Authorizing Officer authorizing posting of the tag-out except, on a case basis, it is allowable for Ship's Force to prepare, review, and post the tag-out for RA work prior to receiving the RA signature in block 10 of the TORS, unless the maintenance involves safety of ship work when reference (b) is invoked or when

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restricted by Appendix H or by an MOA. However, in all cases, the RA must sign block 10 of the TORS and verify/witness component position/condition and tag attachment, including initialing block 18b of the TORS and signing block 7 of the tags, prior to authorization of RA work.

c. Before authorization, the Authorizing Officer shall check the tag coverage for adequacy, and check the tag(s) and TORS for completeness and accuracy (see section 1.3.2.e).

d. When more than one tag-out log is maintained, an exchange of information concerning tag-out actions is required between Authorizing Officers. When tag-out actions affect another Authorizing Officer, the initiating Authorizing Officer will obtain verbal concurrence from each affected Authorizing Officer before taking tag-out action. Examples of systems that may require such coordination are:

(1) Ship's service and high pressure air systems.

(2) Fire main systems that supply cooling or backup cooling.

(3) Systems supporting the Reactor Plant.

(4) Reactor or propulsion plant systems that contain cross-connect lines between plants.

(5) Electronic Cooling loops.

(6) Monitoring and interior communications equipment.

e. When the check of paragraph 1.6.3.c is complete (and RA review when required), the Authorizing Officer shall:

(1) Sign block 9 of the TORS.

(2) Sign block 6 of the tag(s) (see section 1.3.2.e).

(3) Notify affected watchstanders of the tag-out authorization.

(4) Assign a person to post the tag(s).

1.6.4 Posting (Attachment).

a. The person assigned to post tags shall ensure:

(1) The correct component is tagged. If component identification is missing, post permanent identification, or post temporary identification per Appendix F, paragraph 5.b., to support completion of the tag-out.

(2) The component is as specified on the tag and TORS. For caution tags, the poster shall ensure the amplifying instructions match block 3 of the TORS. For danger tags, the poster shall ensure each component is in the position/condition specified on the tag and TORS.

(3) The Authorizing Officer has given permission for repositioning components. Permission may be given at the time the tag-out is signed, or the Authorizing Officer may require permission be obtained just before the component is repositioned (e.g., in order to control sequencing).

(4) For valves where no locks are involved, the poster should position or confirm the valve's position per the instructions in the valve manual, if applicable, including visual inspection of the valve position (e.g., position indicator and throw operator position) and, for manual valves other than ball valves, attempting to turn the handwheel/operator a small amount in the shut

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direction. For manual valves with a detent mechanism or other similar device, slightly move the valve operator (not more than 5 degrees) to verify proper engagement.

(5) If the component to be tagged is required to be locked by the tag-out or has a previously installed lock, perform the following:

(a) If a locking device is already installed, it is not necessary to remove the locking device provided the poster can verify the component position via a formal valve/switch lineup that was previously accomplished on the component and the documentation is available to verify the component's position, by checking available position indication, and, in the case of manual valves other than ball valves, where the locking device permits, by attempting to turn the handwheel/operator a small amount in the shut direction. For manual valves with a detent mechanism or other similar device, slightly move the valve operator (not more than 5 degrees) to verify proper engagement.

(b) If a locking device is not previously installed or it is removed to check the position of/reposition the component, and a lock is required by the tag-out, the locking device should be installed after the poster verifies the position/repositions the component. For non-nuclear valves, installation of the locking device depends on the type of locking device and whether it restricts movement of the valve. If the locking device will allow sufficient valve stem movement such that the checker can verify the locked valve's position and torque (if applicable) by attempting to turn it in the shut direction, then the poster may proceed with installation and verification of the locking device. If the locking device will not allow stem movement, a formal valve lineup (or equivalent) must be performed to ensure that two operators verify and document the valve's position and torque (if applicable) prior to installing the locking device. For nuclear valves, the valve lineup procedure in reference (e) should be followed to ensure that two operators verify the valve's position prior to installing the locking device.

(6) Evaluate whether the danger tagged component is located in a high traffic area. If this is the case, inform the Authorizing Officer.

NOTE: LANYARD LOCKING CLIP DEVICES ARE NOT ACCEPTABLE FOR USE AS LOCKING DEVICES FOR TAG-OUTS.

b. If a component to be tagged has previously been danger-tagged (i.e., another danger tag is hanging on the component), verification of the component's position/condition by the person posting the new tag shall consist of:

(1) A comparison check to confirm that the position/condition specified on the new danger tag is identical to the position/condition stated on the posted danger tag. There may be situations where a valve may have to be locked shut for one work item and only shut for a different work item covered by a separate TORS. It is acceptable for both tags to be installed on the valve. A locking device installed on a valve that is tagged as shut is not a violation of this manual.

(2) When a valve or switch position is specified, visually check, if possible, that the component is in its proper position.

c. The person posting the tags must post them such that they are apparent to anyone who may attempt to operate or remove the component. Tags should be posted on breaker operators whenever possible. Tags must not be posted on fixtures adjacent to the item being tagged-out. Specific amplifications are:

(1) All applicable electrical safety precautions/requirements shall be observed when performing tag-outs in electrical panels and/or switchgear.

CAUTION: WHEN POSTING TAGS, DO NOT RENDER SPRAY-TIGHT ENCLOSURES INEFFECTIVE.

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(2) When necessary for electrical safety, it is permissible to post tags on electrical panel covers. However, tags should be posted directly on circuit breakers and switches whenever possible.

(3) When the prescribed position or condition for an item is Fuses Removed, dead front/removable fuse holders/carriages shall also be removed.

(4) When necessary to preclude damage to tags subject to wet environments, it is permissible to enclose them in clear plastic envelopes (or sleeving) that permits the tags to be observed. For those tags installed in clear envelopes, only the danger/caution tag shall be inside the envelope. This is to ensure the tag is visible from both sides of the envelope.

(5) To ensure that a tag posted on a manually operated valve is readily apparent to anyone who may attempt to operate or remove the valve once tagged, the tag should be posted on the valve operator, if installed, or the valve stem. If these locations are inappropriate for some reason, the tag may be attached to the valve yoke or bonnet or another readily apparent location.

(6) If a switch or a valve has multiple operating stations, all operating controls shall be tagged to prevent operation.

(7) Posting of tags for hull fittings/flanges or blanks installed outboard below the waterline shall be in accordance with Appendix G.

(8) Nothing shall be attached to a posted Danger tag (e.g., removed fuses or spare parts shall not be taped to the tag).

d. After each tag is posted, the person posting the tag shall:

(1) Sign block 4 of the tag, and

(2) Initial block 17 of the TORS for that tag.

e. When posting is complete, the person posting shall present the TORS to a second qualified person who will independently check (verify) that tags were correctly posted.

1.6.5 Check of Posted Tags.

a. After tag posting is complete, a second person shall independently ensure that the correct component is tagged, and check (verify) proper component positioning and tag attachment. This checker shall not accompany the person(s) posting the tag. If the RA concurred in the tag-out, they shall verify/witness the check in accordance with paragraph 1.6.5.b (3). The checker (and witness) shall be qualified on tag-outs and shall ensure proper positioning and tag attachment as follows:

(1) For checking a danger tag on a component not currently tagged by another TORS (i.e., another danger tag is not hanging on the component), the checker shall ensure the component is in the position/condition specified on the tag and TORS. For valves which are not locked, check the valve's position per the instructions in the valve manual if applicable, including a visual inspection of the valve position (e.g., position indicator and throw operator) and, for manual valves other than ball valves, attempting to turn the handwheel/operator a small amount in the shut direction. For manual valves with a detent mechanism or other similar device, slightly move the valve operator (not more than 5 degrees) to verify proper engagement. For electrical isolations, check for switch or breaker position or fuse removal. A RA Witness shall never physically check the position/condition of a component. Evaluate whether the danger tagged component is located in a high traffic area. If this is the case, inform the Authorizing Officer.

(2) If an item to be tagged has previously been danger-tagged (i.e., another danger tag hanging on the component), verification of the component's position/condition shall consist of:

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(a) A comparison check to confirm that the position/condition specified on the new danger tag is identical to the position/condition stated on the posted danger tag. There may be situations where a valve may have to be "locked shut" for one work item and only "shut" for a different work item covered by a separate TORS. It is acceptable for both tags to be installed on the valve. A locking device installed on a valve that is tagged as shut is not a violation of this manual.

(b) When a valve or switch position is specified, visually check, if possible, that the component is in its proper position.

(3) To check proper positioning on a component which is locked and not currently tagged, the checker can verify the component position via a formal valve/switch lineup that was previously accomplished on the component when the documentation is available to verify the component's position, checking the installed position indicator and, in the case of manual valves other than ball valves where the locking device permits, by attempting to turn the handwheel/operator a small amount in the shut direction. For manual valves with a detent mechanism or other similar device, where the locking device permits, slightly move the valve operator (not more than 5 degrees) to verify proper engagement.

NOTE: LANYARD LOCKING CLIP DEVICES ARE NOT ACCEPTABLE FOR USE AS LOCKING DEVICES FOR TAG-OUTS.

(4) For checking a caution tag on a component, the checker shall ensure that amplifying instructions on the tag match block 3 of the TORS.

(5) Any doubt about the position of the tagged component shall be immediately brought to the attention of the Watch/Duty Officer.

b. After checking each component:

(1) The checker shall sign block 5 of the tag.

(2) The checker shall initial block 18a of the TORS.

(3) When required, the RA Witness should normally accompany Ship's Force, witness the second check of the tag installation, sign block 7 of the tag and initial the TORS in block 18b prior to commencement of the RA work. If the RA was not available to witness the checking of posted tags, the RA will independently visually verify the tag installation and component position/condition, sign block 7 of the tag and initial the TORS in block 18b prior to commencement of the RA work. If during this visual verification the RA cannot verify the component position or a question arises regarding component position, the RA shall, with the assistance of Ship's Force, follow the procedures in paragraph 1.7.4.b(2)(b) for checking the position of a danger-tagged component. A RA Witness shall never physically check the position/condition of a component. Evaluate whether the danger tagged component is located in a high traffic area. If this is the case, inform the Authorizing Officer.

NOTE: TWO BLOCK 18b's ARE PROVIDED ON THE TORS TO ALLOW CHECKS OF TAGS BY A SECOND RA, AS DELINEATED IN PARAGRAPH 1.6.7, AND AS SUCH, THE UNUSED BLOCK 18b SHOULD REMAIN BLANK FOR POSSIBLE FUTURE USE.

c. After checks (and witnessing if done concurrently) are complete, the checker shall return the TORS to the Authorizing Officer.

d. Checking of tags for hull fittings/flanges or blanks installed outboard shall be in accordance with Appendix G.

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1.6.6 Beginning Work.

a. When checking of posted tags is complete, the Authorizing Officer must conduct a check to ensure that, when applicable, the valve/equipment status board(s) accurately reflect(s) the conditions of the tag-out.

b. Work shall not be permitted to start until the Authorizing Officer and RA (when applicable) have determined that plant/system conditions are adequate to begin work (i.e., system drained, depressurized, and/or de-energized). The Authorizing Officer is the final authority for commencement of work.

c. The TORS is then filed in the active section of the appropriate tag-out log.

1.6.7 Additions. The process for adding operations/work items to a tag-out parallels the process for original preparation of tags and TORS. When adding a line item to an active TORS, re-perform the applicable steps of paragraphs 1.6 through 1.6.6. Exceptions are as follows:

a. Review and update block 1 of the TORS as needed for the addition.

b. When a RA adds a work item to an active TORS that has been approved by another RA, the RA adding the work item shall indicate the review of the tag-out adequacy and accuracy by signing block 10 of the TORS. The RA adding the work item shall verify installation of the tags that apply to their work item. The RA adding work initials on the back of the TORS in block 18b. Signatures on existing tag(s) are not required. If more than two RA(s) perform work under the same active TORS, the method for documenting RA witnessing/verification by the third and subsequent RA will be delineated in an MOA.

c. The RA is not required to sign block 7 of the tag nor initial block 18b of the TORS for a new line item added to an active TORS whose tag(s) have already been witnessed by the same RA. If the new line item requires additional tags to be hung, the RA shall sign block 7 of the new tags and initial the corresponding block 18b of the TORS. All other requirements for the RA to verify the adequacy and accuracy of the tag coverage must be performed.

1.6.8 Iterative Tag-outs. The Commanding Officer may designate an individual to act as the on-scene Authorizing Officer for repetitive tag-outs associated with specific iterative tests or maintenance evolutions. This individual could be the work supervisor. Examples of such evolutions include weapons elevator operability testing requiring numerous inspection points and steam driven propulsion plant equipment testing requiring iterative adjustments of balance valves, speed limiting governors, over-speed trips, etc., which require repetitive isolations. On-scene administration of such tag-outs will be accomplished as follows:

a. A TORS (see Appendix D, Figures 2 and 3) dedicated to the specific test or maintenance procedure will be prepared. The TORS will include multiple work items for equipment isolation over several iterations. Multiple sets of tags will also be prepared in advance for the isolation corresponding to the multiple work items in the TORS. These actions will be accomplished in accordance with standard tag-out procedures.

b. The normal Authorizing Officer will authorize posting tags for the initial isolation using standard tag-out procedures. When clearing and posting tags to support subsequent iterations, the designated on-site Authorizing Officer will sign the TORS and tags at the work site. Tags will be posted and cleared using standard procedures. The normal Authorizing Officer will be informed prior to isolating and unisolating any equipment.

c. When the last iteration is complete, the normal Authorizing Officer will clear the TORS from the Tag-out Index.

1.6.9 Certified Tag-outs. Certified tag-outs are tag-outs that have been approved for use for a specific work item with a specific set of ship/system conditions. The Commanding Officer is responsible to determine the scope and use of certified tag-outs. During CNO-scheduled availabilities or for specific systems affected by complex

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evolutions (e.g., system flushes), certified tag-outs may be invalidated due to system design changes and temporary systems used. Prior to and following their use for these types of availabilities or evolutions, certified tag-outs shall be evaluated for changes required due to system design or configuration changes, or installed temporary power sources or equipment that could alter isolation boundaries. If used for repair activity work, the repair activity will perform an independent 100% validation of any certified tagout for adequacy and accuracy prior to their use.

a. Preparation

(1) The certified tag-out must be prepared, independently reviewed and authorized per paragraphs 1.6, 1.6.1, 1.6.2 and 1.6.3 of this manual, except that paragraphs 1.6.3.b, 1.6.3.d and 1.6.3.e(2) through 1.6.3.e(4) are not applicable.

(2) The certified tag-out must be approved by the Department Head prior to initial use. Copies of approved certified tag-outs shall be filed and maintained for reference.

b. Use of Certified Tag-outs

(1) Using the certified tag-out as a reference, the preparer creates a new tag-out for the specific work item. The new tag-out should reference the certified tag-out in block 3 of the TORS. The preparer signs block 7 of the TORS (block 8 should be NA'd) to certify that the work item, ship/system conditions, and maintenance boundaries on the new tag-out are identical to those specified on the certified tag-out.

(2) The Authorizing Officer shall also verify the work item, ship/system conditions, and maintenance boundaries on the new tag-out are identical to those specified on the certified tag-out and authorize the tag-out for use per paragraph 1.6.3 of this manual. All other Ship's Force roles in the tag-out process as specified in this manual are unchanged.

(3) For Repair Activity work, all Repair Activity roles in the tag-out process as specified in this manual are unchanged.

c. Maintenance of Certified Tag-outs

(1) Certified tag-outs shall be reviewed periodically to validate the tag-out. Prior to use following a system design change, installation/removal of a temporary system, or change in maintenance procedure that could affect the adequacy and accuracy of the tag-out, the certified tag-out shall be revalidated by accomplishing the actions specified in paragraph 1.6.9.a of this manual.

1.7 MAINTAINING TAG-OUTS.

1.7.1 Tag-out Discrepancy and Conflict.

a. If any discrepancy and/or conflict (e.g., missing signatures, wrong component) is noted with a posted tag, the Authorizing Officer and the RA Representative (if applicable) shall be notified immediately.

b. Violation of any tag compromises the entire tag-out system and could in itself have serious consequences. The Authorizing Officer and RA Representative shall take prompt action to resolve the problem. Based on their evaluation of the circumstances, they should recommend action to the responsible Ship's Force Department Head and cognizant RA supervisor.

c. The Authorizing Officer shall fully document such discrepancies/conflicts and the resolution in their log(s).

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1.7.2 Missing or Damaged Tags.

a. Missing or damaged tags shall be immediately reported to the Authorizing Officer (and the RA Representative) so that prompt corrective action can be taken. Specific amplifications are:

(1) Immediate action shall include taking appropriate preventive measures to preclude changes to the item until it can be re-tagged.

(2) A verification check shall be performed similar to the check in paragraph 1.7.4.b if the position/condition of a valve is in doubt.

(3) The Authorizing Officer and the RA Representative (when applicable) are responsible for taking action and/or recommending to their supervision further action be taken based on their evaluation of the circumstances surrounding a missing or damaged tag.

(4) The Authorizing Officer and the RA Representative (when applicable) shall verify plant conditions/system status and determine any effects on plant conditions/system status that may have resulted from changes to the item while the tag was missing/damaged.

b. Missing Tag Actions. The Authorizing Officer and RA Representative (when applicable) shall take the following actions for a missing tag:

(1) If tag is missing, stop affected work and take appropriate action to ensure continued protection of personnel and equipment until replacement tag is posted.

(2) Evaluate and take appropriate actions of paragraph 1.7.2.a.

(3) Cause a replacement tag to be filled out and added to the associated TORS. Instead of using the next sequential number, a replacement tag for a missing tag will be assigned the same number as the original tag.

(4) Review the entries on the replacement tag and TORS for adequacy, completeness, and accuracy and sign the associated blocks on the replacement tag.

(5) Cause posting of the replacement tag (see paragraphs 1.6.4 through 1.6.6). If verification of the affected component's position is required, follow the procedure of paragraph 1.7.4.b(2)(b). When a manual tag-out system is used, after the replacement tag has been posted, write "Next Tag Number is _____," on the next line containing blocks 14-22. This will assist in preventing reuse of tag numbers when new tags are added to a tag-out that has a replacement tag added.

(6) Indicate that the tag was missing on the tag line using blocks 19 through 20b. For example, "missing – replaced."

(7) For the missing tag, the Authorizing Officer shall fill in block 21 and initial block 22 of the TORS.

c. Damaged Tag Actions. The Authorizing Officer and RA Representative (when applicable) shall take the following actions for a damage tag:

(1) Evaluate and take appropriate actions of paragraph 1.7.2.a.

(2) Cause a replacement tag to be filled out and added to the associated TORS. Instead of using the next sequential number, a replacement tag for a damaged tag will be assigned the same number as the original tag.

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(3) Review the entries on the replacement tag and TORS for adequacy, completeness, and accuracy and sign the associated blocks on the replacement tag.

(4) Cause posting of the replacement tag (see paragraphs 1.6.4 through 1.6.6). If verification of the affected component's position is required, follow the procedure of paragraph 1.7.4.b(2)(b). When a manual tag-out system is used, after the replacement tag has been posted, write "Next Tag Number is _____," on the next line containing blocks 14-22. This will assist in preventing reuse of tag numbers when new tags are added to a tag-out that has a replacement tag added.

(5) Indicate that the tag was damaged in block 19 on the tag line. For example, "damaged – replaced".

(6) After the replacement tag is posted, fill in blocks 20a and 20b of the TORS to authorize clearing the damaged tag per paragraph 1.8.

d. Relocating Tag Actions. The steps of paragraph 1.7.2.c above may also be used to relocate a tag on a component (for example relocating a tag from a breaker cover to a breaker) provided positive controls are in place per paragraph 1.7.3.

1.7.3 Work on Tagged Components. Work on any component that has a danger tag or caution tag attached is prohibited unless specifically authorized by the Department Head and, when required, the appropriate RA supervisor. When work on a tagged component has been authorized, the following restrictions must be complied with:

a. Never remove or operate a danger-tagged component. Never remove a caution-tagged component.

b. Work that would be likely to affect component position or position indication, or result in breaching the isolation boundary, is not allowed under any circumstances while working on a tagged component.

c. Tags shall not be removed while working on a tagged component.

1.7.4 Audits by Ship's Force.

a. Responsibility.

(1) The Department Head shall ensure that audits are performed every two weeks. For ships that are in overhaul, conversion, or restricted availability, conduct audits of the propulsion plant tag-out log(s) weekly.

(2) The Authorizing Officer shall report the results of tag-out audits to the applicable Department Head.

b. Ship's Force audit of outstanding tags.

(1) Check all outstanding tags on each TORS for correct posting. Do this by visually comparing the information on the tag, on the TORS, and on the posted component.

(2) When a valve, switch position, or fuse status is specified, visually check that the component is in its proper position unless this requires an operation such as the removal of a cover, cap, or closure. Amplifications of this requirement are:

(a) The position of some valves and switches cannot be verified due to the design and construction of the item. No operation of a valve or switch is authorized as part of a routine tag-out audit.

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(b) When the actual position of a danger-tagged valve is in doubt, the Authorizing Officer, with specific permission from the responsible Ship's Force Department Head and from the RA Representative, when applicable, may authorize two persons to independently check the position of the specific valve.

1 Check the valve's position per the instructions in the valve manual if applicable, including a visual inspection of the valve position (e.g., position indicator and throw operator position), and, for manual valves other than ball valves, attempting to turn the handwheel/operator a small amount in the shut direction. For manual valves with a detent mechanism or other similar device, slightly move the valve operator (not more than 5 degrees) to verify proper engagement. Locking devices should be manipulated or unlocked as necessary to check the position of the valve.

2 This valve position check shall be performed using the applicable approved procedures for valve lineup checks and, in the propulsion areas of nuclear powered ships, shall be documented on a valve lineup checksheet in accordance with reference (e).

(c) Report all discrepancies in the check of actual position at once to the Authorizing Officer (and RA Representative) before proceeding any further with the tag audit. Appropriate action shall be taken to ensure the continued protection of personnel and equipment.

(d) Evaluate whether the danger tagged component is located in a high traffic area. If this is the case, inform the Authorizing Officer.

(3) Record results of tag audits on the back of the TORS under the last tag listed or on an Audit Record Sheet (see Appendix D, Figure 10). Record the date completed, the discrepancies noted, and the signature of person doing the audit.

c. Ship's Force audit of TORS.

(1) Audit all outstanding TORS against the index sheet (see Appendix D, Figure 1). Check each TORS for completeness and verify all tags were checked per paragraph 1.7.4.b.

(2) Record the results of the TORS audit by a line entry on the index sheet, or on an Audit Record Sheet (see Appendix D, Figure 10). Record the date completed, the discrepancies noted, and the signature of the person doing the audit.

(3) Upon completion of the audit, discard cleared TORS and index sheets.

1.7.5 Danger Tagged Components Found Out of Position or Wrong Component Tagged. When a danger tagged component is found out of position or a danger tag is found on the wrong component, the following actions shall be taken:

a. Report the condition immediately to the Authorizing Officer and RA Representative (if applicable).

b. Stop affected work, notify Department Head and appropriate RA supervision (if applicable) and take appropriate action to ensure continued protection of personnel and equipment.

c. Replace the tag using the damaged tag process of paragraph 1.7.2.c, except:

(1) Indicate the component was "out of position" or the tag was "on wrong component" in block 19 of the tag line;

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(2) Before the replacement tag is posted, the Authorizing Officer shall ensure that the deficient tag is cleared and the component is placed in the appropriate position.

d. Conduct an investigation to determine the circumstances surrounding a danger tagged component found out of position or wrongly tagged.

e. The Authorizing Officer and the RA Representative (when applicable) shall verify plant conditions/system status and determine any effects on plant conditions/system status.

f. Recommence work when authorized by appropriate Ship's Force Department Head and appropriate RA supervision.

1.7.6 Monitoring by Shipyards. During Chief Of Naval Operations availabilities, the tag-out process shall be monitored by the shipyard. The shipyard shall review the tag-out log and check to ensure Ship's Force is properly posting tags. The goal of the monitoring is to provide timely data on tag-out performance so emerging adverse trends can be quickly addressed. Any deficiencies found during the monitoring shall be recorded by date, description and signature entry in a formal shipyard document.

1.8 CLEARING TAG-OUTS.

1.8.1 General. Remove danger and caution tags immediately when the situation requiring the tag-out has been corrected and clearing of tags has been authorized on the TORS.

1.8.2 Completion of Operation/Work Items.

a. As operations/work items are completed, they shall be cleared from the TORS. Before tags are cleared and removed, the completed work item listed in the "OPERATION/WORK ITEMS INCLUDED IN TAG-OUT" section of the TORS is cleared (i.e., blocks 11 and 12 are signed, and block 13 is dated). RA signature in block 12 indicates tags are no longer needed. The process of Appendix I, section 7.6, is an authorized exception to these requirements for clearing line items.

b. When removal of individual tags requires modification of the work item isolation boundary listed in block 5 of the TORS, a new work item shall be initiated to ensure a two-person review of the new isolation boundary is documented. Except as allowed by Appendix I, the new work item shall be approved by the Authorizing Officer and RA (when applicable) prior to authorizing clearance of the affected tags.

1.8.3 Position/Condition. The Authorizing Officer shall specify in block 19 of the TORS the desired position or condition of the tagged item after the tag has been removed. Specific consideration must be given to the sequence of any valve repositioning and the type, size, and rating of any fuses being reinstalled. If a tag is to be removed from a component that has more than one tag attached, the specified position/condition must be compatible with the tagged/position condition. Repositioning of a component with multiple tags is never authorized until all tags have been cleared.

1.8.4 Authorization.

a. When all line items requiring a tag are cleared, authorization to remove a tag and intent to reposition the previously tagged item is indicated by signature of the Authorizing Officer in block 20a. If block 18b is filled in for a tag indicating the tag was used for RA work items, then the RA Representative signs block 20b. When multiple RAs share the same tagged items, the RA clearing the last RA line item will sign in block 20b. In situations where the RA Representative is no longer available (i.e., RA has completed work and left the geographical area or the ship has departed) the Authorizing Officer may authorize clearing the tag by marking block 20b "RA Not Available".

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b. The Authorizing Officer will sign for clearing tags, to approve the component to be placed in the position or condition specified in block 19 of the TORS.

(1) The Authorizing Officer shall review the tags required for all remaining work items prior to authorizing clearance of individual tags.

(2) The Authorizing Officer shall inform the person clearing the tag if the Authorizing Officer's permission should be obtained just prior to repositioning the component, in order to sequence the operation of several components.

1.8.5 Removal.

a. The person assigned shall remove the tag. If repositioning is required, the person assigned shall place the previously tagged component in the position or condition specified in block 19. Enter the date/time in block 21, and initial block 22 of the TORS. Specific amplifications are:

(1) If the person directed to remove a tag finds that the clearance position/condition specified would require repositioning an item which has more than one tag attached, all efforts to remove the tag shall be stopped. The discrepancy shall be reported immediately to the Authorizing Officer, and to the RA Representative.

(2) If upon removal of a tag the item is found out of its expected position, all tag removal/restoration efforts for the items shall be stopped. The discrepancy shall be reported immediately to the Authorizing Officer and RA Representative.

b. All tags should be returned immediately to the Authorizing Officer. If a tag is in a location that prevents returning the tag to the Authorizing Officer, such as a radiological or hazardous material containment, the tag may be destroyed and disposed of in the appropriate manner within the containment following an independent verification that the correct tag has been cleared. This independent verification shall be performed by another person assigned by the Authorizing Officer.

1.8.6 Completion of Tag Removal. The Authorizing Officer must check the removed tags against the TORS, update the applicable valve status board(s), and then destroy the removed tags. Exercise care when updating applicable valve status boards following removal of tags. A valve may still be tagged (by another TORS), or it may not be in the normal position specified on the applicable valve status board. The position/condition specified in block 19 for each removed tag must be used for updating the valve status board.

1.8.7 Completion of Tag-out Record Sheet.

a. When all actions for a TORS have been completed, all tags have been cleared and destroyed, and the applicable valve status board(s) updated, the Authorizing Officer will complete blocks 23 and 24. Additionally, the Authorizing Officer shall complete block 5 of the index sheet associated with the TORS. The Authorizing Officer shall then notify DC Central, if applicable, that work has been completed and annotate top of TORS "DC Central notified."

b. The Authorizing Officer shall ensure that the completed TORS is then filed in the cleared section of the tag-out log.

c. Any completed index pages should also be filed in the cleared section of the tag-out log for review and subsequently discarded following the next audit. Index pages with a few uncleared items remaining on old pages may be consolidated onto one index page. These old index pages and those with all tag-outs listed as cleared may be removed by the responsible department head/supervisor of the tag-out log.

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1.9 PLANNED MAINTENANCE SYSTEM TAG-OUT PROCEDURE.

NOTE: PMS TAG-OUT PROCEDURES SHALL NOT BE USED IN SUBMARINES, SUBMARINE TENDERS, SUBMARINE RESCUE VESSELS, IN PROPULSION AREAS OF NUCLEAR-POWERED AIRCRAFT CARRIERS, FOR NUCLEAR SUPPORT FACILITIES EQUIPMENT, OR WITHIN RA TAG-OUT BOUNDARIES.

1.9.1 Purpose. The purpose of this section is to provide separate procedures for use when accomplishing certain designated PMS maintenance actions in non-nuclear surface ships/craft and non-nuclear, non-propulsion areas of nuclear surface ships.

1.9.2 Information.

a. Procedures prescribed herein apply only to those PMS maintenance actions specifically approved by the Department Head as indicated on the Tag Guide List (TGL). Specifically excluded from these procedures are PMS actions, which require participation of two or more work centers and those requiring more than one working day for completion. In these cases the tag-out procedures described in paragraph 1.6 will be used.

b. Type Commanders will provide guidance concerning applicability of these procedures to various categories of PMS maintenance actions, subject to restrictions addressed above.

1.9.3 Definitions. As used in the PMS tag-out procedures, the following apply:

a. Danger Tag (see Appendix D, Figure 4). A red tag prohibiting operation or removal of equipment that could jeopardize safety of personnel or endanger equipment, systems, or components. Laminated danger tags, intended for repeated use, are authorized only for designated PMS maintenance actions addressed in this procedure. These laminated tags shall be serialized by the work center.

b. TGL (see Appendix D, Figure 6). A card similar in size to a PMS Maintenance Requirement Card (MRC), which contains the information necessary to properly and effectively place tags to prevent improper operation when a component, equipment, system, or portion of a system is isolated for the accomplishment of PMS maintenance requirements. A TGL contains the number of tags required for the tag-out, the location of each tag, the position of the tagged item (e.g., open, shut, off, on, etc.) and the permission and notification requirements for the maintenance and tag-out action. TGLs will be laminated after final approval and will be attached to applicable MRCs in the same manner as Equipment Guide Lists.

c. Work Center PMS Red Tag Record. This record, maintained in the work center, will be a notebook in which the issue of laminated red tags used for designated PMS maintenance actions will be recorded. At the top of the first page, the number of laminated danger tags issued to the work center will be noted for inventory purposes. A copy of PMS tag-out procedures and any amplifying actions shall be a part of the Work Center PMS Red Tag Record. Additionally, the record will have provisions for recording:

(1) The tag serial number(s) issued.

(2) Date of issue.

(3) The MRC for which the tag was issued.

(4) Name of person to whom the tag was issued.

(5) Date and time returned.

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1.9.4 Tag Guide List Preparation.

a. Initial preparation of the TGL is a vital element of the PMS tag-out procedure. Accordingly, extreme care must be exercised in TGL preparation to ensure that sufficient tags are included to completely isolate the section of piping or circuit being worked on and to prevent operation of the system or component from all stations which could exercise control. As a minimum, system diagrams or circuit schematics shall be used to determine the adequacy of tag-out actions in preparing the TGL. Equal care must be given to ensuring that permission and notification actions indicated on the TGL are consistent with safety and with sound management practices.

b. TGLs are to be prepared by the Work Center Supervisor (WCS), reviewed independently by the Division Officer, and approved by the Department Head prior to use.

1.9.5 Procedures. The procedures set forth in this paragraph apply only to designated PMS maintenance actions. When a requirement for tags for PMS maintenance has been identified and a TGL has been prepared and approved by the Department Head, the following procedures will be followed:

a. When a PMS maintenance action is to be performed, the WCS will obtain permission from the person or watch specified on the TGL.

b. Upon receiving permission, the WCS will sign in grease pencil on the tag in block 6 and issue the appropriate number of tags as the Authorizing Officer to the maintenance person and record the issue in ink in the Work Center PMS red tag record sheet.

c. Using grease pencil, the maintenance person will fill in the appropriate data on the tag (SYSTEM/COMPONENT/IDENTIFICATION, POSITION, OR CONDITION OF ITEM TAGGED), position the tagged items as specified on the TGL, affix the tags, and sign the tags.

d. A witness designated by the WCS will independently check the tag-out action for compliance with the TGL and, if satisfied, sign the tags. The WCS is responsible for ensuring that persons assigned to make or witness the tag-out are qualified to perform the duties under this manual.

e. The maintenance person will then perform the maintenance action. If the MRC is applicable to several items listed on an Equipment Guide List, and those actions are consecutively scheduled, the tag-out process of paragraphs 1.9.5.a through 1.9.5.d above will be repeated for each separate maintenance action.

f. If the maintenance action requires an operational test of the equipment, either during the maintenance action or upon completion of it, the danger tags will be removed and retained by the person performing the PMS maintenance action and tag-out action. If the tags are to be reinstalled upon completion of the operational test, a qualified witness must recertify that the position of the isolation component(s) and the placement of the tags are in compliance with the TGL. The TGL will state if permission is required to conduct the test. Upon completion of an operational test, the maintenance person shall not be authorized to reinstall tags for the purpose of accomplishing other maintenance actions without obtaining new approval from cognizant authority unless specifically approved otherwise on the TGL.

g. Upon completion of the maintenance action, the maintenance person will remove all tags and restore the equipment to its normal or desired condition. The maintenance person shall then wipe the tags clean and return them to the WCS.

h. The WCS shall record the return of the tags in the Work Center PMS Red Tag Record by lining out and initialing the tag issue entry, and shall report completion of the maintenance action to the person or watch from whom permission was originally obtained (as indicated on the TGL).

1.9.6 Enforcement. A daily inventory by serial number of all Work Center PMS tags should be conducted by the cognizant WCS and deficiencies reported to the cognizant division officer or duty officer.

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1.10 OUT OF CALIBRATION/OUT OF COMMISSION LABELS.

1.10.1 Planning.

a. The decision to use an Out of Commission (OOC) or Out-Of-Calibration (CAL) label must be made on a case basis. In general:

(1) If the instrument error is small and consistent, use a CAL label so instrument operations may continue. When used, the magnitude, sign, and units of the required correction should be marked on the label. CAL labels should not be used to identify instruments that have exceeded their calibration periodicity but have no known error.

(2) If the instrument error is large or inconsistent, use an OOC label. When an OOC label is used, the instrument should not be used for plant/equipment operation. When an entire system is placed OOC, it is not necessary to put OOC labels on all instruments associated with the system.

b. Missing or damaged labels should be immediately replaced upon discovery. The Instrument Log should be maintained per the directions on it (see Appendix D, Figure 9). Labels similar to those shown in Figures 7 and 8 of Appendix D should be used for instruments and indicating systems.

1.10.2 Preparation.

a. Any qualified person may prepare the Instrument Log and label(s).

b. The preparer shall fill in blocks 1 through 4 and block 7 of the Instrument Log and block 1 (and 5 for CAL) of the label(s).

c. Do not use ditto marks, arrows, or similar short cut devices to make corrections on an Instrument Log. Do not correct an error on a label; prepare a new label.

1.10.3 Review and Authorization. When the appropriate information has been entered, normally by Ship's Force, on the label and the Instrument Log, the Authorizing Officer shall:

a. Review the entries for adequacy, completeness, and accuracy ensuring that entries on the label agree with associated entries on the Instrument Log.

b. Authorize the label by signing block 2 of the label and block 5 of the Instrument Log.

c. Ensure that RA concurrence in block 3 of the label and in block 5 of the Instrument Log next to that of the Authorizing Officer has been obtained (when associated with RA work on reactor plant systems and reactor plant support systems) before causing the label to be attached (affixed) to the instrument.

1.10.4 Attachment.

a. Only personnel who have operational control of the system or component, are qualified on this tag-out manual, and are knowledgeable of the instrument (system) being labeled, shall attach or remove labels.

b. When attachment of a label has been authorized, the person assigned shall:

(1) Attach (affix) the label to the exterior surface of the affected instrument in such a fashion that operators can easily determine the status of the instrument's operability or accuracy.

(2) Sign block 4 of the label.

(3) Initial block 6 of the Instrument Log.

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1.10.5 Checks. Second checks are not required of labels or the Instrument Log.

1.10.6 Removal.

a. Labels shall be promptly removed and destroyed when appropriate corrective action has been completed (e.g., the instrument has been satisfactorily repaired, replaced, aligned, or calibrated and returned to service).

b. When the Authorizing Officer, and the RA Representative (if applicable), have signed block 9 of the Instrument Log, the person assigned shall:

(1) Remove and destroy the label.

(2) Initial block 10 and add the date in block 8 of the Instrument Log.

1.10.7 Completion.

a. If desired, the Authorizing Officer may line out cleared (completed) entries in the Instrument Log. When all entries on the log sheet are cleared, that sheet shall be placed in the cleared section of the tag-out log.

b. Cleared section of the tag-out log shall be removed and discarded following the audit.

1.10.8 Audit. A monthly audit will be performed of the Instrument Log and associated labels. The results of the audit shall be documented on the Instrument Log. Record the date, any discrepancies, and the signature of the person who performed the audit.

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APPENDIX A

LIST OF ACRONYMS

CAL	Out-of-Calibration
CTE	Chief Test Engineer
DC	Damage Control
EOOW	Engineering Officer of the Watch
FMA	Fleet Maintenance Activity
JTG	Joint Test Group
LIRS	Line Item Record Sheet
MOA	Memorandum of Agreement
MRC	Maintenance Requirement Card
NAVSEA	Naval Sea Systems Command
OOC	Out-of-Commission
OOD	Officer of the Deck
OPNAV	Office of the Chief of Naval Operations
PMS	Planned Maintenance System
POIC	Petty Officer in Charge
RA	Repair Activity
SOMS	Shift Operations Management System
STE	Shift Test Engineer
TGL	Tag Guide List
TORS	Tag-out Record Sheet
TWD	Technical Work Document
WAF	Work Authorization Form
WCR	Work Center Representative
WCS	Work Center Supervisor

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APPENDIX B

GLOSSARY OF TERMS

TERM	DEFINITION
Assistant Authorizing Officer	The individual designated in writing by the ship's Commanding Officer to assist the Authorizing Officer by confirming the adequacy and accuracy of a tag-out.
Authorizing Officer	The person with the authority to sign for issuing or clearing tags and labels. Department Heads shall designate Authorizing Officers by billet or watchstation.
Caution Tag	A yellow tag used as a precautionary measure to provide temporary special instruction or to indicate that unusual action must be exercised to operate equipment.
Component	A valve, switch, etc.
Danger Tag	A red tag prohibiting operation or removal of equipment that could jeopardize safety of personnel or endanger equipment, systems, or components.
Electrical Jumper	A temporary wire used to modify a circuit, such as by completing or bypassing the circuit.
Index Sheet (Danger/Caution Tag-Out Index and Record of Audits)	A sequential list of all tag-outs issued. It provides a ready reference of existing tag-outs, ensures sequential issuing of tag-out serial numbers, and assists auditing of the tag-out log.
Instrument Log	The control document for administering labels (OOC and CAL). It provides sequential listing of all OOC and CAL instruments.
Maximum Anticipated Waterline	As used in Appendix G, Barrier Criteria, the maximum calculated draft during the period of the maintenance action(s) that requires the barrier(s) for protection. The calculation is based upon the worst-case cumulative effect at any one time of all expected weight changes during the period of the maintenance action(s). (Submarines will use the condition "N" diving trim waterplane unless the maximum calculated draft during the period of the maintenance action(s) is greater.)
Out-of-Calibration Labels	An orange label used to identify instruments that are out of calibration and will not accurately indicate parameters.
Out-of-Commission Labels	A red label used to identify instruments that will not correctly indicate parameters because they are defective, or isolated from the system. This label indicates that the instrument cannot be relied on and must be repaired and re-calibrated, or reconnected to the system, before use.
Repair Activity	A RA is any activity other than Ship's Force involved in the construction, testing, repair, overhaul, refueling, or maintenance of the ship.
Repair Activity Representative	The individual authorized to concur in the accuracy and adequacy of proposed tag-outs by signing the TORS.
Repair Activity Witness	A qualified individual authorized by the RA Representative to witness proper tagging of components.
Safety Devices/Measures	Items installed for the purpose of protecting personnel or equipment. Examples of safety devices/measures are chaining or locking valves, removing fuses, racking out circuit breakers, freeze seals, blank flanges, mast clamps, and breaker clips.

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Sea Connected System	A system with a connection open to the sea and the connection is located below the maximum anticipated waterline.
Ship's Force	Personnel assigned to the ship who are responsible for maintenance and operation of ship's systems and equipment.
Tag-out Log	A control document for administering tag-out procedures and a record of authorization for each active tag-out action. The log contains this manual, a Tag-out Index and Record of Audits, TORSs (active and cleared) and an Instrument Log.
Tag-out Record Sheet	A record of all tags associated with the tag-out. a. Active TORS are those in effect and are kept in a separate section of the Tag-out Log. b. Cleared TORS are those not in effect and are kept in another section of the Tag-out Log.
Watch/Duty Officer	The Ship's Force person responsible for supervising the tag-out log.
Work Center Representative	The Work Center Representative is normally the POIC of a specific work item or the WCS of the work center performing the work item. Where a work center representative signature is required by this manual, the signature also may be made by the Authorizing Officer or a superior in the performing WCS's chain of command who has personal knowledge that the work item is complete.

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APPENDIX C

REPAIR ACTIVITY TAG-OUTS

1. Purpose. The purpose of this appendix is to provide a procedure for a RA to perform tag-outs on ship support systems, shipboard test equipment, ship systems for decommissioned ships and during new construction.

2. Applicability.

a. This tag-out process shall be used for shipyard support systems and test equipment connected to the reactor plant under the operational control of the RA. For new construction testing prior to system turnover to Ship's Force, the procedure used for reactor plant systems and equipment, and for support systems and test equipment connected to the reactor plant, shall be equivalent to this process.

b. This tag-out process may be used for ship support systems and shipboard test equipment under the operational control of the RA that are not connected to the reactor plant.

c. This tag-out process may be used for decommissioned ships.

d. An MOA will be issued, if needed, to cover special cases where Ship's Force participation in tag-outs on systems and equipment not under the operational control of Ship's Force is desired.

NOTE: Where Repair Activity (RA) tag-outs are hung by civilian personnel in support of work execution, the RA must ensure local requirements are in place to meet all reference (k) requirements without application of the exception notes in reference (k); which apply only when the tag-out is executed by Navy Ship's Force personnel. (This note does not apply to tag-outs performed on reactor plant systems and equipment, and for support systems and test equipment connected to the reactor plant.)

3. Process. When this tag-out process is used:

a. Qualified RA personnel perform the Ship's Force tag-out roles described in this manual.

b. Since a representative of the RA acts as the Authorizing Officer, the RA Representative blocks shall be left blank.

c. On commissioned ships, the RA shall maintain a separate tag-out log, which will be made available for Ship's Force review.

d. The RA shall audit the tags and tag-out log per paragraph 1.7.4 of this manual.

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APPENDIX D

TAG-OUT AND CALIBRATION FORMS

INDEX SHEET

DANGER/CAUTION TAG-OUT INDEX AND RECORD OF AUDITS				
LOG SERIAL	**DATE ISSUED**	**TYPE (DANGER/ CAUTION)**	**DESCRIPTION (SYSTEM OR COMPONENT)**	**DATE CLEARED**
1	**2**	**3**	**4**	**5**

Figure 1
(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 3120/12)

1. LOG SERIAL: **DANGER/CAUTION TAG-OUT INDEX AND RECORD OF AUDITS** (Index sheet) shall be used for assigning log serial numbers. Each TORS is assigned a log serial number in sequence using the next sequential number. To differentiate between tag-out logs, a prefix system approved by the Commanding Officer shall be used with the log serial number. For example, on nuclear submarines, in order to differentiate between ship's tags and propulsion plant tags, ship's tags shall be prefixed S and propulsion plant tags P. Another example of tag-out prefixes is P1 for a propulsion plant tag-out in the first plant of a multi-plant ship.

2. DATE ISSUED: Filled out during tag-out authorization. Must agree with the corresponding entries on the TORS (block 6 of items listed during initial issue of the TORS).

3. TYPE (DANGER/CAUTION): Generally, TORS do not mix danger and caution tags. Specify which type of tags are being used, danger, caution, or both.

4. DESCRIPTION: Describe the system or component using wording similar to the technical manual description or installed label plate. This description should be compatible with block 1 of the TORS.

5. DATE CLEARED: Dated by the Authorizing Officer when all actions for a TORS have been completed, all tags cleared and destroyed, the system returned to normal operation (or other specified condition), and lineup checks complete. (Use the same date as on the TORS, block 24).

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Tag-Out Record Sheet (TORS) (Front)

DANGER/CAUTION TAG-OUT RECORD SHEET

1. SYSTEM OR COMPONENT 1	2. LOG SERIAL NO. 2
3. AMPLIFYING INSTRUCTIONS (MANDATORY FOR CAUTION TAGS)	
3	

OPERATIONS/WORK ITEMS INCLUDED IN TAG-OUT

4. REASON FOR TAG-OUT AND APPLICABLE DOCUMENTATION (E.G, TWD, JSN, WAF, ETC.)	5. TAG NUMBERS USED	6. DATE/ TIME ISSUED OR ADDED	7. PETTY OFFICER IN CHARGE (SIGNATURE)	9. AUTHORIZING OFFICER (SIGNATURE)	WORK COMPLETE	
					11. WORK CENTER REPRESENTATIVE	13. DATE
			8. INDEPENDENT REVIEWER (SIGNATURE)	10. REPAIR ACTIVITY REP. (SIGNATURE) (WHEN REQD)	12. REPAIR ACTIVITY REP. (WHEN APPROP)	13. DATE
4	5	6	7	9	11	13
			8	10	12	13

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9210/9) ☐ CHECK BOX IF CONTINUED ON ADDITIONAL SHEET

Figure 2

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Tag-Out Record Sheet (TORS) Overview (Front)

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	SYSTEM OR COMPONENT	Preparer describes system(s) or component(s) being worked. This description should be compatible with block 4 of the index sheet.
2	LOG SERIAL NO.	The Authorizing Officer ensures that block 1 of the index sheet is used for assigning the next sequential log serial number. If more than one tag-out log is being used, include a describing prefix.
3	AMPLIFYING INSTRUCTIONS (mandatory for caution tags)	For caution tags, the preparer clearly states instructions that must be considered when operating the component to which the tag is attached. The amplifying instructions shall be sufficiently detailed to give watchstanders reviewing the tag-out log a clear understanding of the purpose and necessity for each tag-out action and shall match wording on the caution tag. For danger tags, this block can be used to provide any amplifying information.
4	REASON FOR TAG-OUT AND APPLICABLE DOCUMENTATION	Describe, by number and title, the document requiring the tag-out. The description has to be clear enough so reviewers, checkers, and workers can fulfill their responsibilities. Ensure that the reason for each particular operation/work item listed is clear. It is inappropriate to simply list items such as "tag-out instruction" or "EOOW" without an associated reason and/or amplifying instruction. The TORS shall include reference to any documents that apply; such as, work authorization forms, test procedures, technical work documents, technical manuals, etc. For availabilities where WAFs are not being used, the RA shall be identified.
5	TAG NUMBERS USED	The number of each tag (from block 14) used. Enough tags should be used to completely isolate the system, piping, or circuit being worked on, and/or prevent operation of a system or component from all stations that could exercise control. It is acceptable to group tag numbers (e.g, 1, 3, 5-12).
6	DATE/TIME ISSUED OR ADDED	Filled out during authorization. This block indicates the date/time the work item was issued or added.
7	PETTY OFFICER IN CHARGE	Signed by the preparer of the TORS and tags. The POIC is responsible for ensuring the accuracy and adequacy of the tag-out plan.
8	INDEPENDENT REVIEWER	An independent review is done to ensure the adequacy of tag-out isolation and to ensure the correctness of the TORS and tags. Signed when satisfied with the accuracy and adequacy of the tag-out plan.
9	AUTHORIZING OFFICER	Signed when satisfied with adequacy, completeness, and accuracy of tags and TORS. Sign block 6 on tags at same time.
10	REPAIR ACTIVITY REP.	When required, signed when satisfied with adequacy, completeness, and accuracy of tag-out. When local instructions allow, the documented verification signature made by a qualified repair activity individual proposing the tagout may be used as the repair activity's validation of the adequacy and accuracy of a tagout. This allowance only applies when the proposed tagout and the authorized tagout are identical. The RA Representative authorizing the tagout in block 10 of the TORs remains responsible for ensuring the tagout is compatible with system status and ship/plant conditions.
11	WORK CENTER REPRESENTATIVE	Signed when work item/operation is complete and tags are no longer needed. Will be signed before tags are cleared and removed. Add date in block 13.
12	REPAIR ACTIVITY REP.	When required, signed when work item/operation is complete and tags are no longer needed. Add date in block 13.
13	DATE	The date signatures are made in blocks 11 and 12 for completed work item operation.

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Tag-Out Record Sheet (TORS) (Back)

14. TAG NO.	15. SYSTEM/ COMPONENT ID	16. TAGGED POSITION/ CONDITION	17. POSTED BY (INITIAL)	18a. POSTING CHECKED BY (INITIAL)	18b. RA WITNESS (INITIAL)		19. CLEARANCE POSITION/ CONDITION	20. CLEARANCE AUTHORIZED (SIGNATURE)		21. DATE/ TIME CLEARED	22. CLEARED BY (INITIAL)
								a. AUTHORIZING OFFICER	b. REPAIR ACTIVITY		
14	**15**	**16**	**17**	**18a**	**18b**	**18b**	**19**	**20a**	**20b**	**21**	**22**
23. SIGNATURE OF WATCH OFFICER/DUTY OFFICER **23**					24. DATE/TIME **24**			☐ CONTINUED ON ADDITIONAL SHEET (CHECK IF APPLICABLE)			

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Figure 3

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Tag-Out Record Sheet (TORS) Overview (Back)

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
14	TAG NO.	The sequential number of each tag. Each tag is given its own sequential number as it is entered on the TORS.
15	SYSTEM/ COMPONENT ID	Describe the location of each tagged component using the most easily identifiable means, which uniquely identifies the component being tagged. Normally identical to the component label plate (see chapter text). Shall be identical to the information in block 2 of the tag.
16	TAGGED POSITION/CONDITION	Describe the tagged position and any required condition of each tagged item using the most easily identifiable means. When the condition of a tagged valve is “Locked”, the tag/TORS entry is “Locked” followed by the position of the valve (e.g., “locked shut”). For danger-tagged items, the position/condition shall be identical to block 3 on the tag. For caution-tagged items, this column may be left blank or have the abbreviation "SAI", which means “see amplifying instructions”, entered.
17	POSTED BY	Initialed after position/condition is verified and tag is attached. Block 4 of tag is signed at the same time.
18a	POSTING CHECKED BY	Initialed by a person who independently verifies component position/condition and tag attachment. Block 5 of the tag is signed at the same time.
18b	RA WITNESS	For tags being witnessed/verified by the RA, block 18b should be initialed by the RA Witness. Block 7 of the tag is signed at the same time. Note: This block is designed for witnessing/verification by two RA(s). If the second RA Witness block is not used, leave blank. For tag-outs that require witnessing by more than two RA(s), the method of documenting witnessing/verification by the third and subsequent RA(s) will be delineated in an MOA with these RA(s).
19	CLEARANCE POSITION/CONDITION	The Authorizing Officer annotates the desired position or condition of the tagged item when authorizing tag removal.
20a	AUTHORIZING OFFICER	Signs to approve clearance of tag, grants permission to place the component in the clearance position/condition. If the Authorizing Officer requires his permission just prior to repositioning the component in order to sequence the operation of several components, he shall so inform the person clearing the tag.
20b	REPAIR ACTIVITY	When required, signs to approve clearance of tag.
21	DATE/TIME CLEARED	The person removing the tag enters the date/time cleared as each tag is removed and block 22 initialed.
22	CLEARED BY	Initials indicate that the tag has been removed and, if repositioning was performed, that the position/condition of the previously tagged item matches that listed in block 19.
23	SIGNATURE OF WATCH OFFICER/ DUTY OFFICER	Signed by the Authorizing Officer when all actions for a TORS have been completed, all tags cleared and destroyed, the system or component returned to normal operating (shutdown) or other specified condition, and the applicable valve status board (s) updated.
24	DATE/TIME	Date/time entered by Authorizing Officer when block 23 is signed. Same date as block 5 on index sheet.

Note: Continuation Boxes (front and back). Mark these boxes if additional sheets are necessary to provide more space for listing tags or adding operations/work items.

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Danger Tag

SERIAL NO. 1		
	SYSTEM/COMPONENT IDENTIFICATION 2	
	POSITION OR CONDITION OF ITEM TAGGED 3	
	DANGER DO NOT OPERATE	
	SIGNATURE OF PERSON ATTACHING TAG 4	SIGNATURE OF PERSON CHECKING TAG 5
	SIGNATURE OF AUTHORIZING OFFICER 6	SIGNATURE OF REPAIR ACTIVITY WITNESS 7

(FRONT)

	DANGER DO NOT OPERATE OPERATION OF THIS EQUIPMENT WILL ENDANGER PERSONNEL OR HARM THE EQUIPMENT. THIS EQUIPMENT SHALL NOT BE OPERATED UNTIL THIS TAG HAS BEEN REMOVED BY AN AUTHORIZED PERSON.

(BACK)

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Figure 4

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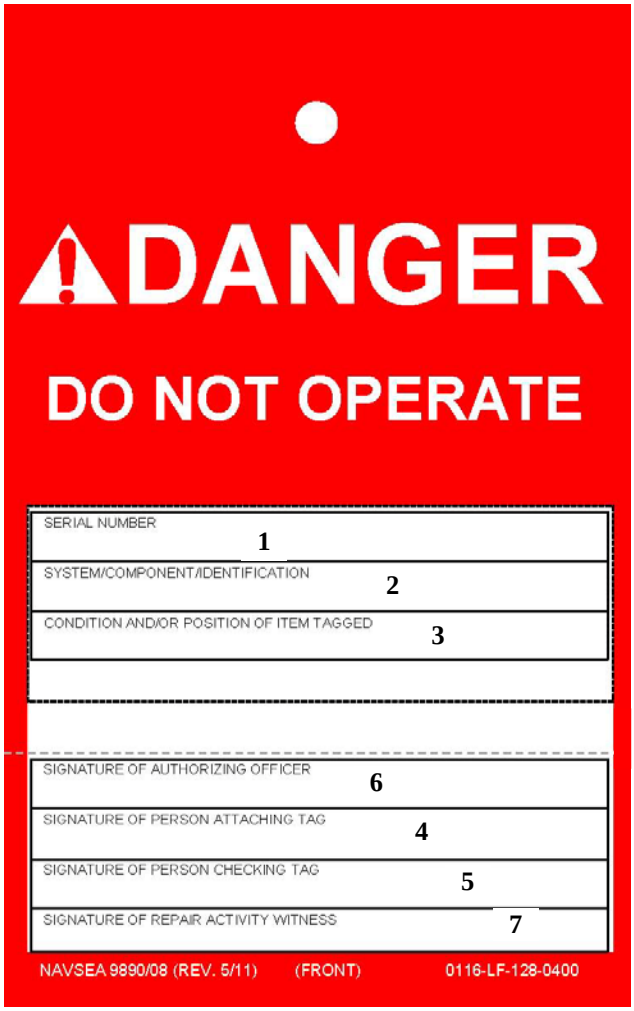
DANGER TAG EXAMPLE (NEW)



(Front) (Back)

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9890/08)

Figure 4b

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Danger Tag Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	SERIAL NO.	The Log serial number from the index sheet is used to identify each tag associated with the given purpose. Each tag is given its own sequential number as it is entered in the TORS. For example, Tag 70-16 would be the sixteenth tag issued on a single record with the log serial number seventy.
2	SYSTEM/COMPONENT IDENTIFICATION	Identical to block 15 on TORS.
3	POSITION OR CONDITION OF ITEM TAGGED	Identical to block 16 on TORS.
4	SIGNATURE OF PERSON ATTACHING TAG	Signed after position/condition is verified and tag is attached. Block 17 of the TORS is initialed at the same time.
5	SIGNATURE OF PERSON CHECKING TAG	Signed by a person who independently verifies component position/condition and tag attachment. Block 18a of the TORS is initialed at the same time.
6	SIGNATURE OF AUTHORIZING OFFICER	Signed when satisfied with adequacy and completeness of tags and TORS. Block 9 of the TORS is signed at the same time.
7	SIGNATURE OF REPAIR ACTIVITY WITNESS	Signed (when tag-out is required to support RA work) by the RA person who verifies/witnesses component position/condition and tag attachment. Block 18b of the TORS is initialed at the same time.

NOTE: Danger Tag NAVSEA 9890/8 provides an attachment device with a minimum 50 pound pull strength. Where other attachments are substituted, they should be of equivalent pull strength.

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Danger Tag Overview (Figure 4b)

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	SERIAL NO.	The Log serial number from the index sheet is used to identify each tag associated with the given purpose. Each tag is given its own sequential number as it is entered in the TORS. For example, Tag 70-16 would be the sixteenth tag issued on a single record with the log serial number seventy.
2	SYSTEM/COMPONENT IDENTIFICATION	Identical to block 15 on TORS.
3	CONDITION AND/OR POSITION	Identical to block 16 on TORS.
4	SIGNATURE OF PERSON ATTACHING TAG	Signed after position/condition is verified and tag is attached. Block 17 of the TORS is initialed at the same time.
5	SIGNATURE OF PERSON CHECKING TAG	Signed by a person who independently verifies component position/condition and tag attachment. Block 18a of the TORS is initialed at the same time.
6	SIGNATURE OF AUTHORIZING OFFICER	Signed when satisfied with adequacy and completeness of tags and TORS. Block 9 of the TORS is signed at the same time.
7	SIGNATURE OF REPAIR ACTIVITY WITNESS	Signed (when tag-out is required to support RA work) by the RA person who verifies/witnesses component position/condition and tag attachment. Block 18b of the TORS is initialed at the same time.

NOTE: Danger Tag NAVSEA 9890/08 provides an attachment device with a minimum 50 pound unlocking strength. Where other attachments are substituted, they should be of equivalent unlocking strength (monofilament line is an acceptable substitute for those applications that cannot receive cable ties). Cable ties shall be installed loosely; do not over-tighten due to possibility of equipment damage when cutting to remove.

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Caution Tag

	SYSTEM/COMPONENT IDENTIFICATION **2**	
	CAUTION DO NOT OPERATE THIS EQUIPMENT UNTIL SPECIAL INSTRUCTIONS ON REVERSE SIDE ARE THOROUGHLY UNDERSTOOD	
	SIGNATURE OF PERSON ATTACHING TAG **4**	SIGNATURE OF PERSON CHECKING TAG **5**
1	SIGNATURE OF AUTHORIZING OFFICER **6**	SIGNATURE OF REPAIR ACTIVITY WITNESS **7**

(FRONT)

CAUTION DO NOT OPERATE THIS EQUIPMENT UNTIL SPECIAL INSTRUCTIONS BELOW ARE THOROUGHLY UNDERSTOOD	3	

(BACK)

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9890/5)

Figure 5

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CAUTION TAG EXAMPLE (NEW)

(Front) (Back)

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Figure 5b

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Caution Tag Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	SERIAL NO.	The Log serial number from the Index is used to identify each tag associated with the given purpose. Each tag is given its own sequential number as it is entered in the TORS. For example, Tag 70-16 would be the sixteenth tag issued on a single tag-out record with the log serial number seventy.
2	SYSTEM/COMPONENT IDENTIFICATION	Identical to block 15 on TORS.
3	SPECIAL INSTRUCTIONS	These instructions must state the specific reason the tag is installed. Use of a phrase such as "Do not operate without EOOW permission" is not appropriate, since equipment is not operated unless permission from the responsible supervisor is obtained. These instructions must be identical to the amplifying instructions in block 3 of the TORS.
4	SIGNATURE OF PERSON ATTACHING TAG	The poster shall sign after ensuring that amplifying instructions match block 3 of the TORS and the tag is attached. Block 17 of the TORS is initialed at the same time.
5	SIGNATURE OF PERSON CHECKING TAG	The checker shall sign after ensuring that amplifying instructions match block 3 of the TORS and the tag is attached. Block 18a of the TORS is initialed at the same time.
6	SIGNATURE OF AUTHORIZING OFFICER	Signed when satisfied with adequacy and completeness of tags and TORS. Block 9 of the TORS is signed at the same time.
7	SIGNATURE OF REPAIR ACTIVITY WITNESS	Signed (when required) by a RA person who ensures that amplifying instructions match block 3 of the TORS and the tag is attached. Block 18b of the TORS is initialed at the same time.

NOTE: Caution Tag NAVSEA 9890/5 provides an attachment device with a minimum 50 pound pull strength. Where other attachments are substituted, they should be of equivalent pull strength.

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Caution Tag Overview (Figure 5b)

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	SERIAL NO.	The Log serial number from the Index is used to identify each tag associated with the given purpose. Each tag is given its own sequential number as it is entered in the TORS. For example, Tag 70-16 would be the sixteenth tag issued on a single tag-out record with the log serial number seventy.
2	SYSTEM/COMPONENT IDENTIFICATION	Identical to block 15 on TORS.
3	SPECIAL INSTRUCTIONS	These instructions must state the specific reason the tag is installed. Use of a phrase such as "Do not operate without EOOW permission" is not appropriate, since equipment is not operated unless permission from the responsible supervisor is obtained. These instructions must be identical to the amplifying instructions in block 3 of the TORS.
4	SIGNATURE OF PERSON ATTACHING TAG	The poster shall sign after ensuring that amplifying instructions match block 3 of the TORS and the tag is attached. Block 17 of the TORS is initialed at the same time.
5	SIGNATURE OF PERSON CHECKING TAG	The checker shall sign after ensuring that amplifying instructions match block 3 of the TORS and the tag is attached. Block 18a of the TORS is initialed at the same time.
6	SIGNATURE OF AUTHORIZING OFFICER	Signed when satisfied with adequacy and completeness of tags and TORS. Block 9 of the TORS is signed at the same time.
7	SIGNATURE OF REPAIR ACTIVITY WITNESS	Signed (when required) by a RA person who ensures that amplifying instructions match block 3 of the TORS and the tag is attached. Block 18b of the TORS is initialed at the same time.
8	CONDITION AND/OR POSITION	Identical to Block 16 on TORS.

NOTE: Caution Tag NAVSEA 9890/05 provides an attachment device with a minimum 50 pound unlocking strength. Where other attachments are substituted, they should be of equivalent unlocking strength (monofilament line is an acceptable substitute for those applications that cannot receive cable ties). Cable ties shall be installed loosely; do not over-tighten due to possibility of equipment damage when cutting to remove.

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Tag Guide List

Figure 6

TAG GUIDE LIST	NUMBER OF TAGS PER EQUIP		
NAVSEA 4790/12			
MIP & MRC NO. _____	NOTIFICATION DATA		
	COLD IRON	INPORT STEAMING	UNDERWAY
EQUIPMENT _____			

EQUIPMENT SERIAL NO.	SERIAL NO. SWITCH/VALVE	LOCATION OF TAGGED ITEM	POSITION OF TAGGED ITEM	AMPLIFICATION DATA

VERIFICATION/APPROVAL SIGNATURES		
WCS	DIV OFF	DEPT HEAD

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OUT OF COMMISSION	
SERIAL NO. 1	DATE
AUTHORIZED BY 2	CONCURRENCE BY 3
TAG BY 4	

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Figure 7

OUT OF CALIBRATION	
SERIAL NO. 1	DATE
AUTHORIZED BY 2	CONCURRENCE BY 3
TAG BY 4	
CORRECTION 5	

(FOR ILLUSTRATION ONLY – USE FORM NAVSEA 9210/6)

Figure 8

Overview of Figures 7 and 8

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process description)
1	SERIAL NO. AND DATE	A sequential number from the Instrument Log. Enter the date the label is prepared.
2	AUTHORIZED BY	Signed by Authorizing Officer when satisfied with adequacy, completeness, and accuracy of label and Instrument Log. Signs block 5 of Instrument Log at same time.
3	CONCURRENCE BY	Signed by RA Representative when associated with RA work on reactor plant systems and reactor plant support systems, otherwise leave blank.
4	TAG BY	Signed by person affixing label. Corresponds to block 6 of Instrument Log.
5	CORRECTION	When instrument error is small and consistent, the correction factor shall be listed for continued instrument use. Mark the label with the magnitude, sign and units of the correction. Use the same values as shown on the Instrument Log.

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INSTRUMENT LOG

LABEL CONDITION CODE AND NO.	DATE	INSTRUMENT NAME OR NUMBER	CONDITION AND/OR CORRECTION FACTOR	AUTHORIZED BY (SIGNATURE)	ATTACHED BY (INITIALS)	WORK NECESSARY TO CLEAR	DATE CLEARED	CLEARANCE AUTHORIZED BY (SIGNATURE)	REMOVED BY (INITIAL)
1	2	3	4	5	6	7	8	9	10

LABEL CONDITION CODE: OOC - OUT OF COMMISSION
CAL - OUT OF CALIBRATION

Figure 9

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9890/10)

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Instrument Log Overview

BLOCK NO.	BLOCK TITLE	OVERVIEW
1	LABEL CONDITION CODE AND NO.	Each label is assigned an Instrument Log serial number in sequence by the label preparer. Use the next sequential number in the Instrument Log for assigning label numbers. The label condition code is OOC for out of commission and CAL for out of calibration.
2	DATE	Date that the label is prepared.
3	INSTRUMENT NAME OR NUMBER	The nomenclature used for this entry must normally be identical to the actual component label plate descriptions. Check technical manuals and label plates. Avoid the use of jargon.
4	CONDITION AND/OR CORRECTION FACTOR	The condition for the label shall be sufficiently detailed to give watchstanders reviewing the Instrument Log a clear understanding of the label's purpose. When an instrument's error is small and consistent, the correction factor shall be listed for continued instrument use. Corresponds with block 5 on CAL labels.
5	AUTHORIZED BY (SIGNATURE)	Signed by the Authorizing Officer when satisfied with adequacy, completeness, and accuracy of the Instrument Log and label. Signs block 2 of the label at the same time. (Also signed by a RA Representative when associated with RA work on reactor plant systems and reactor plant support systems).
6	ATTACHED BY (INITIALS)	Initialed by person affixing label. The label shall be affixed so operators can easily determine the status of the instrument's operability or accuracy. At this time, block 4 of the label is signed.
7	WORK NECESSARY TO CLEAR	This information should be extracted from referenced documents or from personnel requesting the work. It must be a clear statement of what needs to be accomplished before the label can be cleared.
8	DATE CLEARED	Enter date as each label is removed.
9	CLEARANCE AUTHORIZED BY (SIGNATURE)	Signed by the Authorizing Officer (and RA Representative when associated with RA work on reactor plant systems and reactor plant support systems) when appropriate corrective action has been completed.
10	REMOVED BY (INITIALS)	Initialed by person who removes and destroys the label.

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AUDIT RECORD SHEET

NAME (print)	SIGNATURE	DATE	DISCREPANCY

Figure 10

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APPENDIX E

TAG-OUT PROCESS

AMPLIFICATIONS FOR DIVERS

1. All divers' tag-outs shall be on a separate TORS for manual tag-out systems or separate line item for automated tag out systems (SOMS). Additionally, the applicable TORS or separate line item within SOMS shall not be shared between respective diving activities (i.e., Contracted hull cleaning divers and Navy Divers) even if the same equipment is being tagged out.

2. The RA representative will be the diving activity unless another activity is assigned per a MOA. The proposed diver's tag-out shall be reviewed by the Diving Activity supervisor and the RA representative, if a MOA is applicable. The RA representative will then have responsibility for signing the applicable tags and TORS or SOMS line item. The RA representative must authorize clearance of all diving related tag-outs.

3. If a tag-out for divers affects several tag-out logs, the tag-out must be cross-referenced to each tag-out log. For example, the applicable documentation (e.g., Work Authorization Form (WAF)) will reference each TORS or SOMS line item.

4. If so requested by a member of the diving team, Ship's Force shall escort a diving team member while that member sights all applicable tags before signing the Diving Safety checklist.

5. Ship's Force shall brief the Diving Activity supervisor or designated representative on all tags and work area isolation devices (e.g., hull blanks, cofferdams, bellybands, etc.) or other operations that could affect the tag-out that will be in place during the dive, with a caution not to disturb these devices except as directed by the work documents.

6. The Ship Organization Manual (SORM) provides details as to equipment tag-out requirements. Exceptions will be listed on the Diving Safety Checklist. The following equipment shall be included in the tag-out as a minimum:

a. All underwater electrical equipment (e.g., Sonar, fathometers, transducers, etc.).

b. All suctions and discharges located within 50 feet of the dive location and diver transit routes to and from the worksite as identified by the docking print item number, (e.g., actual sea chest or repair location and frame number, etc.).

c. Multi-zone, Impressed Current Cathodic Protection (ICCP) systems in the areas affected by the diving operations.

d. Underwater moving equipment (control surfaces, torpedo tube doors, etc.).

7. Inter-departmental tag-outs must be accomplished for sea chests that provide common suction for more than one Pump (e.g., AEGIS weapons cooling pump suctions, etc.).

8. Appendix G, paragraph 5.c provides specific requirements for use of tethers/lanyards on temporary hull fittings. See reference (f), Volume 2, Chapter 6 for further guidance on Diving Operations.

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APPENDIX F

TAG-OUT STANDARDS

1. Purpose. The purpose of this appendix is to provide Ship's Force and RA personnel the expectations and standards for tag-outs.

2. Definition. Locked Components. When the condition of a tagged component is "Locked", the term "Locked" shall mean "Lockwired", "Padlocked" or locked with other similar locking devices (lockwired pins, etc.) that prevent inadvertent operation. It is not necessary to specifically define the type of locking device(s) on the tag/TORS; the preferred tag/TORS entry is "Locked".

3. Mechanical.

a. Tag/TORS Nomenclature for System/Component Identification.

(1) Normally only include valve number on the tag and TORS which typically consists of the system letter designation and unique number (e.g., AHP-26, AHP 26, 1-MS-V1, 1MS-V1, etc.).

(2) For valves/operators with no valve number on the label plate, like mechanical hand crank operator for main ballast tank vent valves, the function of the component and its location shall be used (e.g., MBT No. 4 Vent Valve Operating Cylinder Ratchet Gear and Pawl Locking Device in aft engine room upper level).

b. Locking Valves.

(1) Lockwire shall be of sufficient strength. Normally installed lanyard locking clip devices are not acceptable. It is not necessary to specifically define the type of locking device on the tag/TORS.

(2) Components shall be "Locked" into the required position when required by Appendix G or if inadvertent operation is possible (e.g., high traffic areas). For high traffic areas, an option to remove the handwheel/operator may be used to prevent inadvertent operation. Any time this manual requires a component to be locked, danger tag(s) associated with the locking requirement (all tags for high traffic, those supporting single barrier) shall reflect the more restrictive "locked" condition.

(3) Locking a component into a position in which the component is already positioned and danger tagged (although not in the locked condition) is authorized provided the original danger tagged position cannot be changed while installing the locking device.

(4) The preferred priority of lock wiring a component shall be: (1) lock wired to its own body, (2) lock wired to the piping it is installed on and (3) lock wired to a structural member of the ship (e.g., foundations), excluding piggy-back piping hangers.

(5) Valves may be locked with a pin locking device provided the valve is designed for use of these pins and the pin is secured to the valve operator with lockwire. Lockwire is necessary to prevent inadvertent removal of the pin due to the high failure rate of the locking pin spring mechanism.

(6) For components that have an installed lanyard with a locking clip/pin and an informational label-plate with the component's normal position annotated, DISREGARD the informational label-plate when posting a danger tag. Taping over the informational label-plate is not required even though repositioning results in it no longer matching the installed label-plate. The normal position label-plate is for informational purpose only and shall not be misinterpreted or confused with the valve's actual position or position indicator.

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(7) For components that have an attached locking clip/pin, it is permissible to have the component in the required danger tagged position (e.g., danger tagged in the "Shut" position) and still have the attached locking clip/pin installed (e.g., "Locked" condition in the danger tagged "Shut" position). The intent of the danger tagged position is met (e.g., valve is "Shut") and clip/pin installation will prevent the valve from being accidentally repositioned if bumped, will prevent the unprotected attached clip/pin from getting lost and will be less of a hanging/dangling hazard.

c. Manual Valves.

(1) Ensure the tag posted is readily apparent to anyone who may attempt to operate or remove the valve once tagged; the tag should be posted on the valve operator, if installed, or the valve stem. If these locations are inappropriate for some reason, the tag may be attached to the valve yoke, bonnet or another readily apparent location. Tags attached to Quick Throw type valve handles must be securely attached to prevent the tag from sliding off the smooth, untapered handle.

(2) For valves with multiple operating handwheel/stations, danger tags must be posted at each location.

d. Control Valves:

(1) Control valves, such as hydraulic directional control valves, may be used to provide control fluid isolation to secure a system valve operator, such as a hydraulic actuator of a main seawater system valve, in a required position (e.g. shut, open, port C to A, etc.). Ensure the control valve is in the required position and all modes (e.g., manual, mechanical, electrical, etc.) of operation are secured and danger tagged to prevent inadvertent repositioning.

(a) For control valves with manual operating lever, post the tag on the associated control valve-operating lever to provide control fluid isolation to the associated component/actuator (e.g., HP-580 with the required position of neutral for control fluid isolation of ASW-28 actuator).

(b) For mechanically operated control valves, means must be provided to secure (e.g., detent mechanism) and tag the valve mechanical operator to prevent inadvertent operations.

(c) For pilot operated control valves, appropriate means must be provided to secure the valve in the required position. Pilot operated valves without a means of securing the valve spool in the desired position shall not be used to provide control fluid isolation.

(d) For solenoid operated control valves, the electrical input must be disconnected by a positive means, such as disconnection of the electrical connector or removal of the fuses from the solenoid circuit. To prevent inadvertent operation of the solenoid, the following must be tagged: (1) Manual overrides for the solenoid operator; and (2) the disconnected amphenol connection on the control valve or fuse panel.

(e) For control valves with one or more manual overrides on the control valve, the posting of one danger tag on the control valve as "Not Overridden" is all that is required. To ensure that the tag posted is readily apparent to anyone who may attempt to operate/override or remove the control valve once tagged, the tag should be posted on the control valve body.

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(2) Control valves may be used as the second pressure barrier if they have a position with the required port (s) blocked and caution is used to ensure the leakage does not adversely affect personnel or equipment during the maintenance. Control valves cannot be used as the upstream pressure barrier. Additionally, all requirements identified in paragraph (1) above apply.

(3) Hydraulic control valves that are used for tag-out isolation that have operating levers in high traffic areas that can be easily bumped or mistakenly grabbed, must have the levers physically secured in the required position with lockwire or pin.

e. Remotely Operated Equipment with Control Fluid (Hydraulic/Air/Water). When utilizing remotely operated valves for pressure barriers, the tag must reflect both the position of the remote operator and the valve that it operates. For example, to prevent operation of ASW-28, post tag on associated manual operator on the control valve HP-580. The tag should be filled out as follows: HP-580 in block 2 and HP-580 Neutral/ASW-28 Shut in block 3.

f. Temporary Equipment (Blanks, Freeze Seals, Restraining Devices such as mast shoring and clamps, etc.). Danger tags will be used to indicate the presence (status) of and the requirements for all mechanical safety devices required for safety of personnel or equipment that are not required by procedure or plan during normal operation.

4. Electrical. Electrical systems only require a single isolation point in each conductor path (e.g., open circuit breaker, removed fuses, disconnected plugs/wires, etc.)

a. Fuses.

(1) Follow the applicable section of reference (g) when removing fuses for electrical isolation.

(2) For Dead Front fuse installations, the removable fuseholders/carriages shall also be removed and the fuseholder receptacle taped over, or non-conductive plastic plugs installed in accordance with reference (g).

b. Breakers.

(1) Electrical breakers with remote operating capabilities shall be tagged both at the breaker and at all remote operating stations.

(2) Breaker clips or covers may be used to prevent inadvertent operation of tagged breakers. Use of breaker clips or covers should be reviewed on a case basis to determine if use of such devices is warranted and appropriate. Ships and Repair Activities should agree on where breaker clips or covers will be installed, as part of their pre-availability agreements. Reference (g) provides methods for attachment and National Stock Numbers for available clips.

c. Switches. The term “switches” includes rotary switches, snap action switches, pushbutton switches, and other types of mechanical switches. A Danger tagged switch shall not normally be used for electrical isolation or as a single means for preventing operation. If the circuit requiring isolation cannot be de-energized by other means, e.g., opening circuit breakers or removing fuses, without significantly affecting current operational requirements, a tagged switch may be used except as prohibited in paragraph 4.c.(1). In addition to danger tagging required circuit breakers and/or fuse holders, tags may also be attached to a switch to indicate that the associated circuit is danger tagged, and to prevent inadvertent operation of that switch.

(1) Use of a tagged switch for electrical isolation or as a single means for preventing operation is expressly prohibited in the following cases:

(a) The switch’s physical location makes it subject to inadvertent operation.

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(b) The switch is a pushbutton or touch pad whose external appearance without electrical power cannot be used to positively ascertain its position (this includes spring return pushbuttons with illuminated position indicators, and all flat panel displays or touch screens). Subject to not meeting the conditions of paragraph (a) above, mechanical indication (e.g., a pump differential pressure indication) in the immediate vicinity of the pushbutton satisfies the ability to positively ascertain the component's energy status. This allowance does not apply to voltage or current indications.

(2) For switches that have multiple positions that control multiple circuits (such as the electric plant control panel ground detection switch), individual circuits shall be de-energized (e.g., fuses removed and Danger tagged) to allow the switch to operate the remaining circuits. If that is not possible (due to system configuration or current operational requirements) and the work requiring the tag-out cannot be reasonably deferred, then the switch shall be tagged in a position that will isolate the required circuit.

(3) Tagging of Ground Isolate Switches that are located internal to a panel shall be minimized. Caution shall be used to ensure that the close proximity of the panel internals and the presence of the tag does not present a repositioning hazard of the respective switch when the internal tag may actually push/reposition switches upon the closure of the panel cover/sub-assembly reinstallation. Ground isolate switches, located internal to a panel, could possibly be operated when the panel is closed after attaching the danger tag to the switch. To ensure that the close proximity of the panel internals and the presence of the tag do not present a repositioning hazard, the tags may be attached to the external portion of the panel following the requirements of paragraph 1.6.4 of this manual.

d. Electrical Jumpers. Per paragraph 1.5.2.a(4), electrical jumpers which are not controlled by formal methods, such as troubleshooting records, wire removal forms, or written procedures, shall be tagged to indicate their presence.

e. Electrical Connectors. Post the tag at one end of the disconnected electrical connector. For cord and plug connected equipment, danger tagging the plug is only required for situations in which the worker does not have exclusive control of the cord during the maintenance.

f. Troubleshooting and Simple Maintenance. The Department Head may authorize specific maintenance and troubleshooting situations that can be performed without a tag-out. The Authorizing Officer and Repair Activity (when applicable) may authorize simple electrical maintenance or troubleshooting action such as equipment drawer or circuit card removal/installation, test point measurements, and fuse removal/replacement without the use of a danger tag, providing all of the following are met:

(1) The work area is verified deenergized.

(2) The component(s) providing isolation is within arms-reach and in sight of the worker such that the worker can directly prevent operation of the component(s).

(3) Access to the work area is limited.

(4) The worker remains continuously in the area until isolation is no longer required.

(5) The work takes no longer than one shift.

(6) The work is covered by a TWD or other formal procedure which specifies the isolation.

When these conditions are met, this simple electrical maintenance or troubleshooting is considered work on deenergized equipment per reference (g).

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g. In general, tag-outs should not rely on solid state devices (voltage-current control devices) to provide a safe means of circuit isolation. All applicable power sources should be tagged. The tagout boundary should be a device that provides a physical "air gap" within the circuit (e.g., circuit breaker, switch, fuse, disconnected solid state relay, lifted terminal lead, etc.).

5. Common tag-out situations during industrial maintenance periods.

a. Multiple tag-outs for a single work item/WAF. During normal ship's maintenance, Ship's Force is accustomed to seeing the situation that for every work item, there is only one (1) associated tag-out. But to better coordinate large number of jobs/tag-out actions and minimize the amount of redundant danger tags posted on the same component(s), it is not unusual for a RA Representative/Work Control Group to propose system oriented tag-outs. The RA's Work Control Group (if invoked) will normally only post one tag on a component and assign that tag to other applicable line/work items on the TORS as required. Therefore, a single work item/WAF may require an open line item on several Tag-out Record Sheets to provide proper isolation for the single work item/WAF. The respective work item/WAF will be annotated with all the active tag-outs that cover the work item/WAF. When revising an individual tag-out, the impact of the revision on all TORS line items must be addressed to ensure any changes do not adversely impact other work items/WAFs.

b. Temporary Label-Plate/Tag (for commissioned ships only). If a permanent label-plate is not installed, a temporary label-plate/tag shall be installed with a two party independent check/verification based on plans and/or shipcheck of system/component by knowledgeable parties (both parties may be from the same activity). The temporary label-plate/tag must have sufficient information (checked/verified based on plans and/or shipcheck of system/component) to clearly identify the component. The temporary label-plate/tag must be installed, signed and dated by the first knowledgeable party and independently verified, signed and dated by the second knowledgeable party. A danger tag may be posted only after the required component is properly labeled.

c. For availabilities involving shipyards, work items may be added to an existing Work Authorization Form rather than to the TORS if the item is within the boundaries and scope of the WAF (see reference (h)).

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APPENDIX G

BARRIER CRITERIA

1. Purpose. To provide the minimum criteria for maintenance barriers on shipboard systems.

2. Scope.

a. All ships will comply with the requirements of this appendix to ensure appropriate barriers are established and maintained during the performance of maintenance. Submarines will additionally comply with the requirements of Chapter 3 of reference (b) (when applicable) and the Volume IV, Chapter 10, Barrier Criteria for Submarine Hull Penetrations Appendix of reference (h) as applicable to ensure watertight integrity during maintenance.

b. For nuclear powered ships and prototypes, with the exception of provisions contained in this appendix concerning temporary hull fittings, blanks, and flanges installed waterborne, follow reactor plant barrier criteria for systems contained in the applicable reactor plant manuals.

3. Discussion. A pressure barrier prevents the escape of pressurized liquid or gas from a system, from one part to an adjacent part of a system, or to adjacent connected systems. Pressure barriers are necessary when conducting maintenance on piping systems to prevent personnel injury and/or equipment damage. These dangers include personal injury from high temperature, escape of flammable fluid and impingement on hot surfaces resulting in a fire, displacement of breathable air, toxic gasses, projectiles from high pressure systems, wetting of electrical equipment, or inadvertent draining or venting of adjacent systems. Specific requirements of onboard systems, component operating and technical manuals, should be observed.

4. Types of Barriers. When isolating piping for component repair or replacement, the type of pressure barrier used for isolation is an important consideration. Examples of allowable pressure barriers are a shut valve (single and double disc gate valves, ball valves, globe valves and any valve main seat with a positive seating force applied manually or with an operator), blind (blank) union, blind (blank) flange, or spectacle flange, all of which shall be capable of withstanding the system pressure and temperature during performance of the maintenance evolution.

a. Some valves are equipped with internal or external bypass features, and must be checked to ensure that they can be positively secured to allow the valve to be used as a barrier. For double disc gate valves with an internal bypass, the valve would be used for isolation in the direction for which it is designed to block flow when shut. For powered valves, the motive power shall be disabled.

b. Gagged relief valves may be used as pressure barriers for maintenance downstream of the valve. When using an ungagged relief valve as a barrier, the system or equipment the relief valve normally protects must be secured and depressurized.

c. Control valves may be used as second pressure barriers provided the requirements in Appendix F, paragraph 3.d (2) are met.

d. Check valves may be used as isolation barriers in the hydraulic system return lines, when cutout valves are not installed in the return line. In this case, the check valve used for isolation should not be tagged.

e. A valve that seats due to differential pressure assisted by a spring may be used as an isolation barrier (e.g., a check valve assisted by spring force, work upstream of a self-actuating relief valve is protected from downstream pressure sources).

f. Valves used for throttling can be used as pressure barriers, but are subject to erosion. Caution should be used when using throttle valves as the single pressure barrier to ensure that leakage does not adversely affect personnel or equipment during the maintenance.

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g. A valve backseat may be used as an isolation barrier.

h. Butterfly valves can be used as pressure barriers. Caution should be used when using butterfly valves as the single pressure barrier to ensure that leakage does not adversely affect personnel or equipment during the maintenance.

i. A freeze seal may be used as isolation barriers per reference (i).

j. Solenoid operated valves that fail shut, tend to seat with system pressure and do not have internal, unisolatable bypasses may be used as barriers for maintenance performed downstream in the direction in which pressure tends to seat the valve.

k. Unacceptable barriers:

(1) Do not use lift, swing, or stop check valves seated by pressure only unless the operator is engaged to shut the valve (except as identified above).

(2) Do not use four-way valves (except as indicated in Appendix F, paragraph 3.d).

(3) Do not use feed regulating valves and other valves that are designed to allow leakage.

(4) Do not use solenoid valves other than those described above.

5. Barrier Isolation Protection.

a. To prevent inadvertent or accidental operation, or removal of barrier protection (e.g., valves, blanks, locking devices, etc.), all barriers used for maintenance shall be danger tagged, except for check valves identified in paragraph 4.d, and surface ship temporary hull fittings/blanks/flanges as discussed in the note to paragraph 5.c below.

b. Disable and danger tag all valve control devices associated with the barrier valve. For example, if the control valve or an actuator is electrically operated, remove and danger tag the fuses from the circuit or disconnect and danger tag the electrical connector so that the control valve or actuator cannot be accidentally energized. When removal of fuses or disconnection of electrical connector is not practical, the use of a tagged-out switch is an acceptable means of isolation, except for the prohibitions in Appendix F, paragraph 4.c.1. If the control valve or an actuator is air operated, shut and danger tag the air supply isolation valve so that the control valve or actuator cannot be accidentally operated by air.

c. For temporary hull fittings/blanks/flanges installed (waterborne or installed just prior to going waterborne) outboard and used for maintenance isolation, a tether/lanyard will be attached to the hull fitting/blank/flange, run topside and securely fastened topside. A test hose installed to a hull fitting/flange may be used as the tether/lanyard for fitting/flange identification. At the topside attachment point the tether/lanyard shall be labeled 'Hull Fitting (Noun Name) Installed'. Ship's Force cannot independently verify by direct observation the correct installation of hull fittings/flanges or main ballast tank blanks installed external to the ship and below the waterline. Tag-out of hull fittings/flanges or main ballast tank blanks, below the waterline, shall be conducted as follows:

(1) After the hull fitting/flange/blank is installed and tethered, a danger tag shall be placed on the tether.

(2) The identification label affixed to the hull fitting/flange/blank by the divers shall be used by Ship's Force and RA for tether identification.

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(3) The danger tag shall indicate "____ hull fitting/flange/blank tether" or "____ Main Ballast Tank blank tether", as appropriate for system/component identification.

(4) The danger tag shall indicate "attached to ship" for position/condition of item tagged.

(5) Verify the hull fitting/flange/blank is on the correct hull penetration by venting the system inboard if possible. If venting is not possible, some other method is needed to ensure the blank is installed at the correct location (see reference (h)). When using a cofferdam, once the system is vented, equalization should not be allowed, to prevent the cofferdam from loosening.

NOTE: The lanyard attaching, labeling and danger tagging of external temporary hull fittings/blanks/flanges required by this paragraph (5.c) does not apply to surface ships if the ship and the RA use WAFs per reference (h) to control the installation of the external fitting/blank/flange, the work protected by the fitting/blank/flange, and the removal of the fitting/blank/flange.

d. Freeze sealing equipment shall be caution tagged to ensure that such equipment remains operational as long as the freeze seal is required. Caution tags shall be used on freeze sealing equipment such as, but not limited to, valves, compressor power supplies, quick-disconnects in piping or tubing, and other equipment, which, if improperly or inadvertently operated, could result in freeze seal failure. The freeze seal shall be danger tagged once established as a maintenance barrier.

e. If boundary valve leakage is noted following completion of draining, notify the Authorizing Officer for evaluation and corrective action.

6. Double Barrier Protection.

a. There shall be at least two pressure barriers between the maintenance area and any system medium/condition listed in Table 1. Where possible, a constant vent or drain path shall be opened between the two pressure barriers to warn if the upstream pressure barrier is leaking. Do not remove a plug to provide a constant vent or drain path. Vent and drain paths are not required to be tagged.

b. A single blank that is equivalent in design to the piping system in which it is installed (e.g., material, thickness, gasket material, fasteners, torque requirements, etc.) may be used in lieu of double barrier protection.

System Medium/Conditions
High temperature (200°F or more).
High pressure (1000 PSI or greater).
All sea connected systems (except lines less than 1/2 inch NPS inboard of the backup valves)
All hull penetrations below the maximum anticipated waterline (except mechanical and electrical penetrations designed for single closure (e.g., shaft or cable penetrations, etc.))
Fluids with flash point below 200°F.
Oxygen.
Hazardous, toxic vapor (dry cleaning fluid, photo-chemical fluids and phosphate ester hydraulic fluid).

Table 1

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c. If two barrier protection is not possible due to system design or for other considerations, then Commanding Officer /Officer In Charge permission shall be obtained for using single barrier protection.

(1) Where a single barrier is used in lieu of double barrier, a constant vent or drain path shall be open (if system configuration allows) to verify the integrity of the pressure barrier. The single barrier shall always be locked in the required position or continuously manned to prevent inadvertent operation.

Additional requirements that apply to the use of single barrier protection include:

(a) The integrity of the barrier is validated at expected conditions prior to being used for isolation.

(b) If the valve is operated by either a mechanical, hydraulic or electrical actuator, a positive means to prevent inadvertent operation by this actuator shall be provided (e.g., for a valve that is hydraulically operated, hydraulic supply to the valve actuator must be secured via locked shut ball valve or other means that positively isolates hydraulic supply to the actuator).

(2) Whenever single valve protection is authorized, consideration should be given to other forms of protection such as a first valve shut and a second valve open which:

(a) Can be quickly shut independent of the first barrier and

(b) Is verified operable before being placed in service

d. For in-place instrument calibration on high-energy systems, where system isolation may be established by hanging a single tag on the root valve with the instrument isolation (hoke) valve shut, it is not necessary to danger tag the instrument isolation valve which is providing the second barrier provided continuous positive control is maintained by the worker. Caution should be used when connecting/disconnecting the calibration equipment to not disturb the position of the instrument isolation valve. In instances where the instrument is removed for calibration, this exception does not apply. The Commanding Officer must permit this process either via a standing order or via the normal single barrier isolation permission process.

7. Single Barrier Protection. For liquid or gas systems not requiring two barrier protection per paragraph 6 and Table 1 of this appendix, at least one pressure barrier shall be established between the maintenance area and the system liquid or gas.

8. Atmospheric Pressure Systems. In those cases where the liquid temperature is less than 200°F and remains at atmospheric pressure, such as in a vented tank, a barrier is not necessary for personnel protection if work is to be performed above the highest liquid level in the system. A single barrier is required between a vented piping system and the maintenance area if work is to be performed below the liquid level in the piping system or if flow could occur due to relief valve venting or dumping system operation.

9. Isolation from Sea while in Drydock. Danger tagging valves for protection from sea is not required while in a dewatered drydock.

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APPENDIX H

TAG-OUT PROCESS AMPLIFICATIONS FOR

THE MANUAL FOR THE CONTROL OF TESTING AND PLANT CONDITIONS

1. Applicability. This appendix amplifies the provisions of the basic tag-out process during periods of shipyard work on nuclear cognizant systems when reference (c) is invoked. An MOA shall be issued, if needed, to cover special cases requiring additional shipyard participation in tag-outs. All tag-outs done in support of refueling/defueling work shall be performed in accordance with reference (j).

2. RA Representative.

   a. For nuclear cognizant systems, the Shift Test Engineer (STE) shall act as RA Representative, except when another individual is authorized (in writing) by the Chief Test Engineer (CTE) to add work items within existing isolation boundaries on active TORS.

      (1) This individual authorized to act as RA Representative shall be STE qualified on the plant type involved.

      (2) This individual shall inform the STE and Watch Officer of such actions before authorizing work items.

   b. When STE coverage is not provided, the CTE may (on a case basis) authorize a shipyard individual, qualified in the use of this manual, to serve as the RA Representative for limited tag-out changes for a specific job.

   c. For shipyard work, the shipyard is responsible for determining where tags shall be placed and for ensuring that tags no longer needed are removed.

3. Authorizing Officer.

   a. RA Representative signature on the TORS shall be obtained prior to authorizing a tag-out for shipyard work, including work on non-nuclear systems whose operation affects the reactor plant.

   b. For work items being added within existing isolation boundaries on the active TORS, the Ship's Force Joint Test Group (JTG) member may authorize (in writing) an individual other than the Watch Officer to be Authorizing Officer.

      (1) This individual shall be Watch Officer qualified.

      (2) This individual shall ensure the STE and Watch Officer are informed of such actions before authorizing the work items.

4. Posting.

   a. When the condition or position of items is to be changed when attaching or clearing tags, specific consideration must be given to the sequence of the changes. Permission to change an item to the prescribed condition or position for tagging shall be obtained from the EOOW/Propulsion Plant Watch Officer and concurred in by the STE (where required to be present).

   b. When installing a lock on a nuclear valve, a valve lineup check shall be performed in accordance with reference (e). The RA witness (if applicable) shall accompany the second checker. The RA witness will observe the second checker and check the valve position using any available visual indicators. The RA witness shall then initial the appropriate block on the valve lineup sheet and, if applicable, sign the tag and initial the TORS.

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5. Maintaining Tag-outs.

a. Tag-out Discrepancy/Conflict. The CTE or designated representative shall be informed of all tag-out discrepancies. When the actual position of a danger-tagged component is in doubt, the Watch Officer shall also obtain STE concurrence before authorizing an independent check of the valve's position. Additionally, the STE shall notify the CTE immediately any time this situation occurs.

b. Monitoring/Audits.

(1) The nuclear tag-out process shall be frequently monitored by the STE and CTE. Both are required to frequently review the tag-out log and check to ensure Ship's Force is properly posting tags. The goal of the monitoring is to provide timely data on tag-out performance so emerging adverse trends can be quickly addressed. The Shipyard shall monitor tag-out records as follows:

(a) The oncoming STE shall review TORS during watch turnover.

(b) The CTE should personally review the tag-out log frequently and check to ensure the tag-out process is properly enforced.

(2) When considered appropriate, the CTE should have responsible representatives of the shipyard conduct checks of tags and labels and audits of the tag-out log in addition to the checks and audits required to be conducted by Ship's Force. These checks shall include a mix of both old and newly posted tags.

(3) Interferences that preclude access to tagged components for auditing should be avoided. Where this is not practical, the tag(s) should be audited just before access is restricted and again when access is regained. Any such instances should be identified in the audit record.

(4) Any deficiencies found during checks of tags/labels, or during audits of the tag-out log shall be recorded by a date, description, and signature entry in a formal shipyard document such as the STE Log.

c. When a work item is listed on more than one TORS, a method shall be in place to reference the work item to all affected TORS such that all required tags for the work item may be clearly identified.

6. Removal. The STE shall concur with component repositioning after tag removal by signing block 20b of the TORS. The STE shall inform the Authorizing Officer if verbal permission from the STE must also be obtained before the component is repositioned. The STE may also issue a valve lineup per reference (e) to check repositioning.

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APPENDIX I

SHIFT OPERATIONS MANAGEMENT SYSTEM

1. Purpose. Provide tag-out directives for use with the Shift Operations Management System (SOMS) tag-out program (Windows NT version). When more than one organization is utilizing the SOMS system, the Ship's Force server shall be used and Ship's Force shall maintain the SOMS program exclusively. If the Ship's Force server is disabled during a maintenance availability, another server may be used.

2. Responsibilities.

2.1 A Ship's Force SOMS administrator shall be appointed. The administrator shall be an E-7 or above (unless waived by the Immediate Superior in Command), and be familiar with the operation of the SOMS program.

2.2 The SOMS administrator may have one assistant assigned to each division within a department. Each of these assistants will be instructed by the SOMS administrator in the operation of the SOMS program and have access rights as defined by the administrator.

2.3 Access to the NOMS.INI file shall only be granted to the SOMS administrator. This file shall be protected under Windows NT as "READ ONLY" for all personnel except the SOMS administrator and an assistant SOMS administrator. The NOMS.INI file will only be edited as directed by the program manager (individual possessing software functionality ownership). If the Ship's Force server is disabled and another server is provided to run SOMS (see paragraph 1), the administrator of the provided server may also need access to the NOMS.INI file.

2.4 The Repair Activity (RA) will connect their workstations to the ship's SOMS Local Area Network if required, as directed by Memorandum of Agreement (MOA). Each organization shall use compatible and functionally identical versions of the SOMS program. The ship's SOMS database, which existed prior to the availability, will be the only database used.

2.5 The RA shall provide to the Ship's Force SOMS administrator a list of all RA personnel requiring SOMS access and the security level at which access is required. The security access requested should be no higher than that required in performing the duties for which the individual is assigned. In cases where the RA is required to make isolation proposals to Ship's Force for RA work, these proposals shall normally be made using SOMS and need not be printed.

2.6 The Ship's Force SOMS administrator shall assign user identification numbers and passwords to all RA personnel requiring SOMS access. The security level assigned to RA personnel shall be at a level consistent with their duties.

2.7 Ship's Force shall establish a standard method of naming components such that duplicate names are avoided . Paragraph 4 of this appendix provides additional guidance for naming components.

3. Definitions.

3.1 Line Item Record Sheet (LIRS) - Provides necessary information required for isolating equipment for work. This sheet is similar to the front of the Tag-out Record Sheet (TORS) used in the manual tag-out system. This record sheet need not be printed if the ship is utilizing electronic signatures, but printed sheets may be maintained as a back-up to the electronic version.

3.2 Tag Record Sheet - Provides a consecutive listing of tags hanging on a particular tag-out. Personnel to hang and clear tags utilize this sheet. This sheet will only print if there are new tags to hang for a new line item. This sheet is similar to the back of the TORS used in the manual tag-out system.

3.3 Draft Line Item – Tag-out line item generated in SOMS with "DRAFT" appearing in the STATUS column for each component listed on the LIRS. This DRAFT status will remain until the line item is issued by the Authorizing Officer, after which, when printed, the "DRAFT" will no longer appear.

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3.4 Issued - Authorizing Officer function. When a tag-out line item is "issued", tag numbers are assigned to the components referenced on the LIRS. Some tags may have been issued by a previous line item and will be shared by the newly issued line item. For any tags that are not shared with a previous line item, the Authorizing Officer will issue the new tag(s) and tag record sheet(s) to personnel for hanging (if applicable).

3.5 Hanging - This is an Authorizing Officer function. When a line item status is "hanging" in SOMS, the AO has verified by receipt of the tag record sheet with first and second checks initialed, that tags are hanging on all components referenced on that line item.

3.6 Cleared - This is an Authorizing Officer function. When the line item is "cleared", the hanging tags are no longer referenced by that line item. The Assistant Authorizing Officer can clear line items within a tag-out (for Completed work) that would not result in the clearing of any tags. If the tags are not referenced by any other line item, SOMS will status the tags no longer required as cleared and print a Tags to be Removed Sheet to inform the Authorizing Officer to direct removal of the hanging tags using the appropriate tag record sheet(s).

NOTE: If performing the procedure of section 7.6 for transitioning between tags with conflicting positions, the Authorizing Officer shall not authorize removal of the original tag until the new tag is hung.

3.7 Cross check – The selection of this attribute (yes) will activate two additional signature requirements on the line item verification sheet. These additional signatures must be entered prior to the Authorizing Officer issuing the line item. This feature may be used when a line item created by one department/division affects another department/division's components.

3.8 Master WAF – The Master WAF is developed as an isolation for large quantities of work which share common and broad isolation boundaries thereby allowing for the authorization and release of numerous WAFs or line items within this boundary. Examples include Master Main Steam, Master Firemain, Master Electrical, etc. The Master WAF is not used to release any actual work items and is used only during the Master Tag-out process. The Master WAF must be revised each time the tag roll process is executed to verify establishment of all system conditions (draining, de-pressurization, electrical frisk, etc.) and to obtain watch officer/repair activity representative concurrence that remaining work is satisfactorily isolated within the rolled tag-out boundary.

3.9 Master tag-out – A concept used to provide for the isolation of multiple work items within a common boundary of a Master WAF. The Master Tag-out further facilitates the efficient execution of Tag Rolls throughout an availability without creating an unnecessary administrative burden.

3.10 Tag Roll – An isolation boundary change that occurs when plant conditions or scope of work changes, etc. warrant a line item to have its isolation changed or "rolled" from one set of boundaries to another. This action is performed using the Tag Roll function in SOMS.

3.11 Reference Component – A component that is generated in the SOMS component database to facilitate Tag Roll evolutions while using the Master Tag-out process. It is named similar to the Master WAF it will be representing.

3.12 Reference Tag – A tag generated in SOMS that represents a set of tags. The reference tag is placed in a "hanging" status, signifying that all components listed on the similarly named Master WAF have tags hung in the required position as indicated on the associated LIRS. The physical reference tag is not required to be created, posted or maintained.

3.13 Master Line Item – A line item established in the SOMS database representing the components tagged to isolate the boundaries of the Master WAF.

4. Component Naming Convention. The following provides requirements for naming components when creating, updating and maintaining a SOMS database. Existing databases that use a consistent component naming convention are not required to be changed to meet these requirements

4.1 The component name in SOMS (**Component ID**) must be unique. This is the field which prints out as block 2 on tags to uniquely identify the component being tagged and also populates tag-out sheets. If the component name is not already found in the database, add the component name using Section 1.6.a naming requirements. The

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description of the component (Component Description) is for user assistance, and does not appear on tags, Line Item Record Sheets, or Tag Record Sheets. The **Component Description** field typically corresponds to label plate detail, and may be entered at the Ship's discretion. Occasionally it is desirable to add extra information (e.g., location) on the **Component ID** to prevent confusion when the operator hangs tags.

4.2 For valves, **Component ID** should be entered using the system designation and valve number (e.g., MS-11). If the **Component Description** is entered, it is recommended that the label plate wording be used. For valves with multiple operators, separate **Component ID's** should be entered using the valve's system designation, valve number and method of operation (e.g., O-1 and O-1 REMOTE OPERATOR IN CONTROL). If the **Component Description** is entered, it is recommended that the label plate wording and method of operation be used.

4.3 For other mechanical components (e.g., pumps, periscopes, turbines, etc.) **Component ID** should be entered using nomenclature from the Ship System Manual (SSM) or label plate (e.g., NO. 1 SSTG, NO. 1 PERISCOPE UPPER CLAMP, etc.). If the **Component Description** is entered, it will normally be identical to the **Component ID**.

4.4 For breakers, **Component ID** should be entered using the label plate wording, keyword "BKR", and location (e.g., 5S-4P-A BKR @5S, MAIN FEED PUMP NO. 1). If the **Component Description** is entered, normally it will be identical to the **Component ID.**

4.5 For fuses, **Component ID** should be entered using the label plate wording, keyword "FUSE(S)", fuse number(s) if applicable, and location (e.g., F187 & F188 FUSES @ MS-2, PORT STEAM GEN CUTOUT VALVE CONTROL). If the **Component Description** is entered, normally it will be identical to the **Component ID**.

4.6 For switches, **Component ID** should be entered using the switch designation (if applicable), the label plate wording, keyword "SWITCH", and location (e.g., S383 SWITCH @ RPCP, STBD STM GEN CUTOUT VALVE MS-1 OPEN).

4.7 For cables/leads, **Component ID** should be entered using the cable/lead circuit designation, keyword "CABLE" or "LEAD," and location (e.g., R-CS640 CABLE @ SPCP, KPC-599 LEAD @ TERM NO. SOL-4 IN NO. 2 RPFW PUMP CONTROLLER). If the **Component Description** is entered, normally it will be identical to the **Component ID**.

5. Tag-out Logs and Records.

5.1 The SOMS terminal normally used by the Authorizing Officer shall be considered as part 1 of the MASTER tag-out log.

5.2 The binder for storing LIRS and tag record sheets produced from SOMS shall be maintained with part 1 of the MASTER tag-out log. The binder shall be marked appropriately. The binder shall be maintained in the following format:

a. Part 2 - A copy of the Tag-out Users Manual, including this appendix.

b. Part 3 - Active LIRS (if not utilizing electronic signatures).

c. Part 4 - Active tag record sheets.

d. Part 5 - Cleared LIRS (if not utilizing electronic signatures).

e. Part 6 - Cleared tag record sheets.

f. Part 7 - Record of audits.

5.3 Tag-out serial numbers shall normally consist of a department/division designator (multi-plant ships may include a numeric designation for each tag-out within a department) followed by a “hyphen” and then a sequential number (e.g., ENG-DANGER-0001).

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5.4 The number of tag-outs within SOMS should be kept to a minimum. Most line items can be prepared under a single tag-out (this includes both nuclear and non-nuclear work items). For the ease of administering tag-outs in multi-plant ships, a separate tag-out may be prepared for each plant or Department.

5.5 Hanging line items that have been modified due to changing work boundaries or other administrative reasons shall have the same serial number as the original line item followed by a series/repeat number in parentheses beginning with "(1)". This will indicate to users that modifications have been made to existing line items. Other variations such as alphabetic (i.e., a, b, c, etc.) will not be recognized by SOMS when using the Tag Roll feature.

5.6 The SOMS produced line item index shall be used as the official index record. There is no need to maintain a paper index in the tag-out log binder. For auditing purposes, the line item index may be printed from SOMS to allow for remote auditing, but this index need not be maintained with the log binder.

6. Standard Tag-out Procedures for SOMS, to be used in conjunction with this manual.

6.1 The cognizant Division Officer, Leading Chief Petty Officer, Leading Petty Officer or a qualified Authorizing Officer must approve any nomenclature to be used that does not exist in the database (see paragraph 4 of this appendix).

6.2 There is no requirement for the computer generated (when the line item is issued) dates and times to match the LIRS and/or tag(s) itself.

6.3 Only labels printed from the SOMS program will be used on any DANGER or CAUTION tag. Use of any other medium or other program-generated label is prohibited. Corrections on tag labels are not permitted. Line-outs to correct errors in the handwritten portions of the tag are also prohibited.

6.4 Electronic signatures may be utilized at the discretion of the ship. When an individual signs a line item as a "Petty Officer in Charge", "Second Person", "Authorizing Officer", or "Repair Activity" on a LIRS, his/her name will be placed in the blank provided for that "signature". Due to software engineering, once issued (authorized to be hanging), a line item record is not reversible and is a permanent record. Therefore, when a ship is utilizing electronic signatures, there is no need to print the LIRS.

6.5 At a minimum, system back-ups shall be performed weekly for operational ships and daily for ships in maintenance availabilities to ensure recoverability as often as required by system usage. The backup shall be verified by the SOMS administrator to ensure data is present.

6.6 Since SOMS is set up to cross-reference a single tag to multiple work authorizations, the generation of a second tag in the same tag series should not occur and would be an indication of a problem with SOMS or a nomenclature problem with the entry in SOMS. If the person posting a tag finds another tag in the same tag series on the component, the person should stop and notify the Authorizing Officer for further instructions.

7. Creating a Line Item. The following provides requirements for creating and updating line items. Existing databases that use a consistent line item numbering convention are not required to be changed to meet these requirements.

7.1 Line Item Numbering. The following numbering convention shall be used: Enter the work center, followed by square bracket ([ ), basic reason for tag-out, closed square bracket ( ]), description of maintenance, today's date, followed by (rev number). An example of this would be EE01[PMS] megger check #2 R-114 motor 02 Jan 02 (1). Note that once assigned, the line item number cannot be changed. Do not use apostrophes, quotes, colons or semi-colons in line item numbers as these are used by SOMS as operators.

7.2 In the **Component to be Worked** field, type the exact name (as it appears in the Equipment Manager) of the equipment to be worked. For multiple components, type the most appropriate system name (which must also appear as a component in Equipment Manager). If the equipment that is entered into the **Component to be Worked** field has any Danger or Caution tags currently hanging or issued to be hung, a warning will appear. This is for information and will not prevent issuing the line item.

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7.3 **Hazards/Amplifying Instructions:** any information entered in this field will print on the "PERSONNEL/EQUIPMENT HAZARDS INVOLVED" block on Line Item Sheets for Danger tag-outs, OR on the "AMPLIFYING INSTRUCTIONS" block for Caution tag-outs. If it is necessary to hang more than one caution tag on the same component, a separate Caution tag-out folder must be created by the SOMS administrator. This additional tag-out folder is created for the purpose of hanging additional caution tags with different Hazards/Amplifying Instructions and is usually temporary.

7.4 The **Applicable Documentation** field is limited to 31 characters or less. If there is insufficient space, use the **Reason** field to enter additional required information.

7.5 If a component added to the tag list is currently the **Component to be Worked** for another line item, a warning will occur. This is for information and will not prevent issuing the line item.

7.6 Perform a **Conflict Check** and a **Conflict Check Un-Issued** to determine if there are any conflicts between the line item being developed and any tags either currently hanging or on other line items being prepared. Conflicts with issued line items must be resolved before the Authorizing Officer issues the line item.

a. Transitioning Tagged Condition for Components. Maintenance requiring a component to be tagged in a different condition than the condition that it is already tagged will produce a tag conflict preventing issuing the new line item. This situation is managed in one of the following manners:

1. The new maintenance requiring a more restrictive condition may be delayed until all line items requiring the component to be tagged in a less restrictive condition are cleared.

2. The new tagged condition is less restrictive than the existing tagged condition (e.g., MS-1 is currently tagged "locked shut", and for the new maintenance action is just required to be tagged "shut"). The component may be tagged in the more restrictive position.

3. The new tagged condition is more restrictive than the existing tagged condition (e.g., MS-1 is currently just tagged "shut", and for the new maintenance action is required to be tagged "locked shut"). The process for transitioning a Component with a Tag Hanging from an Unlocked to a Locked Condition follows:

a) Prepare a line item for the new maintenance action per Paragraph 1.6.1.

b) Add the affected component to the line item tag list. Select the current tagged position (e.g., "shut") for the affected component.

c) Add a new component to the SOMS database. The component name shall be the same as the original component plus locking device (e.g., MS-1 LOCKING DEVICE).

d) Add the new component to the line item. Select the new more restrictive condition-position (e.g., "locked shut") for this component.

NOTE: THE AFFECTED COMPONENT WILL HAVE TWO TAGS WHEN THE NEW MAINTENANCE ACTION LINE ITEM IS ISSUED, THE ORIGINAL TAG AND THE NEW TAG ON THE LOCKING DEVICE.

e) Issue and manage the new maintenance action line item in the normal manner per Section 1.6.

8**.** Checking an Active Line Item.

8.1 To check an active line item, open the line item to be verified and review all of the information in the **Line Item Detail** tab, the **Line Item Attributes** tab, and the **Line Item Tags** tab. Complete all tag-out checks and reviews.

8.2 To concur with the line item as written, select the line that is to be signed. Electronically **sign on** for verification, and notify the next person in the verification chain. To reject the line item as written, make a note of

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who 1st Checked the line item, select the last line that has been signed for in the 'User' column, and electronically **sign off** the line item. Notify the original writer of the line item that it has been rejected and give the specific reason for doing so.

8.3 Use the DRAFT Line Item Sheet to document Commanding Officer's concurrence when required.

8.4 Assistant Authorizing Officers may be appointed in writing by the Commanding Officer. The SOMS Assistant Authorizing Officer feature will only be used for the functions described in this manual.

9. Issuing an Active Line Item.

9.1 The SOMS program only requires the first and second checkers to sign on for verification, but in cases where the line item contains isolation requiring cross checks, verification may involve first and second checks for both the line item initiator and the cross checkers. In addition, the SOMS program does not, by default, require Repair Activity Representatives to sign on for issuing or clearing tags. It is the Authorizing Officer's responsibility to ensure that all appropriate reviews are conducted and signed for.

9.2 To issue an active line item, open the line item to be issued and review all of the information in the **Line Item Detail** tab, the **Line Item Attributes** tab, and the **Line Item Tags** tab. When review is completed, select the **Line Item Verification** tab. Verify that all requirements for first and second checking for line item initiators (and cross checkers, if applicable) have been completed. Verify that the Assistant Authorizing Officer and Repair Activity Representative have signed on, if required. Either concur with the line item as written or reject the tag-out back to the original writer as described above. Print the Line Item Sheet, Tag Record Sheet, and tag labels. For CAUTION tags, also print the Caution Statement labels.

10. Clearing an Active Line Item and Tags.

10.1 To clear an active line item, open the line item to be cleared and select the **Line Item Verification** tab. Have the Repair Activity Representative sign on line item for work complete, if applicable. The Authorizing Officer electronically signs for authorization to clear the line item. The Assistant Authorizing Officer can also clear line items within a tag-out (for Completed work) that would not result in the clearing of any tags. Clicking the **Authorize Removal** button will print the Tags to be Removed sheet and will change the status of the line item to **Work Complete**.

10.2 Review the Tags to be Removed sheet to identify the tags to be cleared. However, the Tags to be Removed sheet cannot be the sole source for determining readiness to clear tags. After signing for work complete, verify all of the tags on the Tags to be Removed sheet have turned blue under the **Line Item Tags** tab.

a. Fill in the appropriate Clearance Position/Condition on the Tag Record Sheet for each of the tags to be removed. Take care to only fill in the Clearance Position/Condition for the tags listed on the Tags to be Removed sheet.

b. On the Tag Record Sheet(s), sign Block 20a for each of the tags that are to be removed. RA Representative signs in Block 20b for each tag used by the Shipyard (i.e., tags with RA witness initials in Block 18b on the Tag Record Sheet). Take care to only sign to clear the tags listed on the Tags to be Removed sheet.

c. Issue the Tag Record Sheet(s) to personnel clearing tags as well as the Tags to be Removed Sheet. The Tags to be Removed Sheet must be used by personnel clearing tags to ensure that only tags listed on the Tags to be Removed Sheet are cleared. The Tag Record Sheet(s) shall be used to authorize and document clearing of tags.

d. Upon return of the Tag Record Sheet(s), Tags to be Removed Sheet and the individual tags, verify that the proper tags were removed and that documentation of their removal was completed on the Tag Record Sheets.

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10.3 Open the line item to be cleared, select the **Line Item Verification** tab, sign on for **Tags Removed** line and click the **Sign On** button.

NOTE: ONCE THE LINE ITEM IS STATUSED AS TAGS REMOVED, ALL TAGS FOR THAT LINE ITEM WILL BE LISTED AS CLEARED ON THE ELECTRONIC LINE ITEM SHEET. THIS DOES NOT NECESSARILY MEAN THE TAGS ARE CLEARED; IT MEANS THEY NO LONGER APPLY TO THAT LINE ITEM.

11. Replacing a Missing or Damaged Tag.

11.1 To replace a missing or damaged tag, select **Print Lost/Damaged Tag** from the **Reports Module**. Select the Tag-out containing the lost or damaged tag, and print the replacement label for the lost or damaged tag. This replacement label will have the same tag number as the tag being replaced. Click on the **Tag Record Sheet Preview** button and print a replacement Tag Record Sheet. For Caution tags, also print a replacement Caution Statement Label using the **Caution Statement Label Preview** button. The Authorizing Officer issues the tag and Tag Record Sheet to hang the tag, and informs Ship's Force tag-out personnel if a RA witness is required. For Caution tag-outs, provide tag-out personnel with a Line Item Sheet for checking the Caution Statement.

11.2 Upon completion of tag posting, checking and witnessing, the Tag Record Sheet and Line Item Sheet are returned to the Authorizing Officer. The Authorizing Officer reviews the Tag Record Sheet for correctness and completeness, and ensures that all tags are indicated as posted, checked, and witnessed if required. The missing or damaged tag is then cleared on the Tag Record Sheet. File the new Tag Record Sheet behind the original.

12. Master Tag-outs

12.1 Establishing Reference Tags

a. Component names shall be established in the component database such as "Master XXXXX (e.g., Master Firemain Plant 1, etc.). These components are referred to as "Reference Components".

b. The Repair Activity and/or Ship's Force shall initiate a Master WAF and propose a Master Line Item that shall institute the use of "Reference Tag". This Master WAF description shall be broad enough to ensure the Master Line Item will cover the major portion of all known work during the availability or maintenance period.

c. The Master Line Item described in step (b) shall be named similar to the components that were placed in the component database in step (a) (e.g., #1 Master Main Steam-WAF-NNSY-01 and/or #2 Master Main Steam-WAF-NNSY-02). These line items are now known as "Reference Line Items". They are to be reviewed, concurred on and placed in a "hanging" status just like any other line item in SOMS.

NOTE 1: A copy of the Master Line Item will be maintained in the front of the tag-out log to enable review by all necessary personnel at any given time.

NOTE 2: No actual work is to be directly worked to a Master Line Item.

NOTE 3: Master Line Items can be changed due to changing conditions and will use a repeat number (i.e., (1), (2), (3), etc.) when such changes occur.

NOTE 4: The reference tag is N/A during the weekly Ship's Force audits. The audit results for the reference tag will be recorded as "Reference Tag not required to be posted IAW TUM". During the weekly audits, the Master Line Item should be verified to ensure that all components listed on the Master Line Item have their respective danger tags still listed in a "hanging" status.

NOTE 5: Any line item using the reference tag must be reviewed for adequate isolation just as any other line item would be prior to hanging. Use of this system in no way removes the responsibility to verify a line item for adequate and accurate isolation.

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d. When Master Line Items are in a "hanging" status, and the "Reference Tag" is placed in a "hanging" status in SOMS, the first line item for work may now be hung utilizing the "Reference Component" and any additional components that may be required for adequate isolation of that work. This occurs by picking the appropriate Reference Component from the component database, and then adding any additional components necessary for adequate isolation to the work line item.

e. All subsequent line items (WAFs) which use the Master Line Item for isolation boundary may now have their isolation established as explained above.

12.2 Tag Rolls

a. In the event that a tag roll using the Reference Tag (e.g., Master XXXXX Tag-out) is deemed necessary, the repair activity and/or Ship's Force will propose a revised Master Line Item named similarly with a "repeat number" (e.g., #1 Master Main Steam-01(1), #1 Master Main Steam-01(2), etc.). These new Master Line Items will provide adequate coverage for all existing work utilizing the old Master Line Items represented by the Reference Tag.

b. To ensure adequate isolation of all line items using the old Master Line Item represented by the Reference Tag, the Repair Activity and Ship's Force representatives shall review the New Master WAF description and supported work for adequate and accurate isolation provided by the new Master Line Item.

c. All required concurrences for the new Master Line Item will be obtained prior to placing the new Master Line Item in a "hanging" status.

d. Once the new Master Line Item is "hanging", the old Master Line Item may be cleared and any tags that appear on the SOMS "tags to be removed" sheet should be cleared.

NOTE 1: The previously existing line items for the individual WAF using the Reference Tag need not be altered, since the Reference Tag was not actually changed. The associated WAFs require no revisions.

12.3 Clearing the Master Line Item and Reference Tag. Upon clearing the last work line item that used the Reference Tag and verifying there is no additional upcoming work requiring its use, sign the Master WAF complete and clear associated Master Line Item, SOMS will allow clearing of the Reference Tag. This is the point at which the Master Line Item may be cleared from the front of the Tag-out Log.

13. Audits by Ship's Force.

13.1 The Line Item Sheets of this appendix will be audited against the SOMS program (if not using electronic signatures), in order to meet the Tag-out Record Sheets audit requirements of paragraph 1.7.4 of this manual.

13.2 The Authorizing Officer will conduct audits in accordance with paragraph 1.7.4 of the Tag-out Users Manual and the following:

a. Print audit sheets from SOMS.

b. During tag-out audits, determine which Tag Record Sheets are inactive and place them in the cleared section of the MASTER tag-out log. This determination shall be made by printing a sequential listing of active tags from SOMS and comparing this listing to the tag listed on the active Tag Record Sheets in the active section of the MASTER tag-out log.

c. Issue the audit sheets to personnel performing the audit. The person(s) assigned to conduct the audit will audit tags and return audit sheets with discrepancies to the Authorizing Officer. If personnel audit more than one tag in consecutive order on an audit sheet, they are only required to sign the first line in the "Verified" column. Then, they may place their initials in the "Verified" block for the remainder of the tags below the first tag checked.

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d. Correct discrepancies, if necessary, in accordance with paragraph 1.7 of this manual.

e. Following correction of all discrepancies discovered during the audit process, the cleared line items may be archived. The frequency of archiving line items is at the discretion of the ship.

f. Completed LIRS will be routed to the cognizant department representative (department head/principle assistant) for review.

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