DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
1333 ISAAC HULL AVE SE
WASHINGTON NAVY YARD DC 20376-0001

IN REPLY REFER TO
4730
Ser 04X/036
28 OCT 2020

From: Commander, Naval Sea Systems Command (SEA 04)

Subj: TAG-OUT USERS MANUAL, NAVSEA 0400-AD-URM-010, REVISION 08

Ref: (a) NAVSEA 0400-AD-URM-010 Rev 07

Encl: (1) NAVSEA 0400-AD-URM-010/TUM, Rev 08

1. Purpose. This letter issues the rewrite of the TAG-OUT Users Manual (TUM).

2. Discussion.

a. Enclosure (1) supersedes reference (a).

b. Interpretation issues and expectations have been clarified, and standardized procedures are incorporated into this revision.

c. This revision provides clarification for the operational differences between Electronic Shift Operations Management System (ESOMS) and ETAGOUT.

d. This revision to the TUM will be hosted electronically at: https://www.submepp.csd.disa.mil/jfmm/TUM.htm and at https://mercury.tdmis.navy.mil. Electronic forms are available at https://navalforms.daps.dla.mil/web/public/forms.

3. Action.

a. Replace reference (a) with enclosure (1) in its entirety.

b. If maintaining a hard copy of this manual, remove and destroy existing revision 7.

c. Request the Joint Fleet Maintenance Manual(JFMM) Manager at Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP) and the Naval Systems Data Support Activity update their applicable sites with this revision, and include it in the next editions of JFMM and Monthly Ship Initial Distribution CD-ROMs, respectively. The electronic file will be uploaded separately. Note that electronic and paper forms have different national stock numbers for the same form number.

d. Private Shipyards. The action taken by this manual revision is considered by the Naval Sea Systems Command (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.

4. Implementation. Fleet Forces, Naval Supervising Authorities and other work authorizing activities are to implement this change when operationally feasible. Both ships and repair activities working aboard should use the same revision.

5. Engineering Manager for the TUM is Mr. William (Bill) Gembach, SEA 04X6, at (202) 781-4345 or willaim.gembach@navy.mil.

P. Colahan

P T. COLAHAN
By direction

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S0400-AD-URM-010/TUM

NSN 0910-LP-110-8193 **REVISION 08**

NAVSEA TECHNICAL PUBLICATION

TAG-OUT USERS MANUAL

NAVSEA
NAVAL SEA SYSTEMS COMMAND

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NAVSEA TECHNICAL MANUAL CERTIFICATION SHEET

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Applicable TMINS/Pub. No. **NAVSEA S0400-AD-URM-010/TUM**

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Title: **TAG-OUT USERS MANUAL**

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CHANGES AND REVISIONS:

See next page.

Equipment Alteration Numbers Incorporated: N/A

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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	William Gembach	/s/ W.Gembach	NAVSEASYSCOM	04X6	28Oct20
Technical	William Gembach	/S/ W.Gembach	NAVSEASYSCOM	04X6	28Oct20
Printing Release	N/A	N/A	N/A	N/A	N/A

CHANGES AND REVISIONS:

The purpose of this revision is to incorporate multiple Advanced Change Notices (ACNs) and Technical Manual Deficiency/Evaluation Reports (TMDERs). Significant changes are as follows:

1. General – Updated List of Effective Pages.
2. General – Updated Table of Contents.
3. Added new reference (l) to include MIL-STD-1625, Safety Certification Program for Drydocking Facilities and Shipbuilding Ways for U.S. Navy Ships.
4. Added new reference (g) to include NAVSEA 0989-150-0000 Standard Navy Nuclear Valves.
5. Added Paragraph 1.2.b – Added guidance for tag-outs on "smart" ships.
6. Added Paragraph 1.2.c.(1) –Added guidance for U.S. Military Diving Commands per guidance established by OPNAVINST 3150.27 (series), which states that Dive Lockers, regardless of location, currently utilize the TUM for hazardous energy control when performing diving equipment maintenance.
7. Added Paragraph 1.2.c.(2) - Added guidance for "craft" where there are either no Ship's Force personnel assigned or not enough Ship's Force personnel assigned to do the maintenance to hang tags IAW the TUM. The TUM does not meet the requirements of reference (a) unless the "craft" has a Commanding Officer and assigned crew. If the TUM is used in situations for which there is NOT a crew, the command must take additional steps IAW reference (a). This change allows alternate methods that are currently in use at some commands, which meet the requirements of reference (a).
8. Previous Paragraph 1.3.3.a – Deleted. This requirement moved to Paragraph 1.4.1. Renumbered follow on paragraphs in 1.3.3.
9. Paragraph 1.3.3.a.3 – Added clarification to the expected RA required actions to verify that tag-outs are accurate and adequate.
10. Paragraph 1.4.1 – Added requirements of previous Paragraph 1.3.3.a to personnel indoctrination and training requirements.
11. Paragraph 1.5.2.b.(4).(b) – added to the definition of multiple line items to include if line items are from different databases (e.g. on CVNs Propulsion Plant and Topside)
12. Added Paragraph 1.5.2.g – Added a previous requirement that tags of color, size, and shape to danger or caution tags will not be used for any purpose onboard ships or craft.
13. Paragraph 1.6.a – Added amplifying guidance for when a temporary identification tag shall be used.
14. Paragraph 1.6.1.b – Adjusted line item numbering convention to allow for more space within the Electronic Tag-out Program for description of the work and made the date requirement optional as space in the data entry block in some electronic tag-out programs is limited.
15. Paragraph 1.6.1.f.(1).(c).4. – Substituted "Installed" for "Locked Shut" to more accurately indicate that the component locking device is installed.
16. Paragraph 1.6.4.a.(1) - Added amplifying guidance for when a temporary identification tag should be used.

17. Added Paragraph 1.6.4.a.(6) – Added procedure for hanging tags on five through sixteen inch parallel disc gate valves that require soft-seating. Renumbered follow on paragraphs in 1.6.4.a.

18. Deleted Paragraph 1.6.5.a.(4) Missed in Revision 07, labels for Caution Tag amplifying instructions and the LIRS statement are printed from the same electronic entry and, therefore, cannot be different.

19. Added NEW Paragraph 1.6.5.a.(4) – Added procedure for checking tags on a soft-seated parallel disc gate valve. Renumbered follow on paragraphs in 1.6.5.a.

20. Added Paragraph 1.7.3.a. NOTE – Added allowance for raising a mast with a danger-tagged clamp to perform a drift test.

21. Added Paragraph 1.7.4.b.(3) – Added allowance for auditing non-nuclear tags that are blocked by interferences, matching the exception in Appendix H Paragraph 5.b.(3) for nuclear tags. Renumbered follow on paragraphs in 1.7.4.b.

22. Added Paragraph 1.7.4.b.(6).(b) – Added requirement that tag-out audits involving typical Navy fuse panels include a visual inspection for the condition of the fuses. Renumbered follow on paragraphs in 1.7.4.b.(6).

23. Added Paragraph 1.7.6 – Clarified the requirement for the Shipyard/RMC to monitor SF execution of the tag-out program.

24. Paragraph 1.8.2.c.(2) – Modified to incorporate eTAG-OUT.

25. Paragraph 1.8.3 – Added requirement for the Authorizing Officer to verify all tag clearance was accomplished correctly prior to repositioning of components, unless immediate repositioning is required.

26. Added Paragraph 1.9 and 1.9.1 – Added to incorporate TUM Rev 07 ACN 1/A actions for validating database and correcting issues if "ghost" tags are found.

27. Appendix A – Added the terms ISIC, LMA, NSA, TYCOM, to the list of acronyms.

28. Appendix B – Added the definitions of LMA, NSA, Component Contractor, Certified Line Item/Certified Tag-out, and Smart Ship.

29. Appendix C – Added allowance for RA tag-out when transfer of system operational control is approved by SF. This allows the shipyard to perform required operations and tag-outs until the test is complete and turn the system back to SF. Project MOAs will define the strategies.

30. Appendix E Paragraph 1.b – Clarified when the RA representative will act as the diving activity for diver's tags. Clarified divers or RA representative responsibilities when another RA has already signed tags.

31. Appendix E Paragraph 1.f (1) – Clarified which underwater electrical equipment must be tagged. Added Reference (j) Appendix 1A for guidance.

32. Appendix E Paragraph 1.f – Moved the requirements for multi-zone Impressed Current Cathodic Protection (ICCP) to Appendix E Paragraph 1.g and renumbered subsequent paragraphs. Clarified the requirement to tag-out ICCP be per the US Navy Diving Manual.

33. Appendix E Paragraph 1.f (3) – Clarified the Diving Supervisor will determine what underwater moving equipment must be tagged.

34. Added Appendix E Paragraph 1.i – Added clarification of procedure used if diver's tags are hung prior to divers being onboard to perform RA checks of tags.

35. Appendix E Paragraph 8 split into two paragraphs (reformatted to para. 1.j and para. 1.k) to support independent statements.

36. Appendix F Paragraph 3.b(3) – Added clarification of procedure to be used when transitioning to a more restrictive component position.

37. Appendix F Paragraph 3.b(4) – Added clarification to lock wiring priority and basic requirements for using a lower "preferred" method of lock wiring a component.

38. Appendix F Paragraph 3.d(1)(d) – Added clarification of what components must be tagged to prevent inadvertent operation of a solenoid operated control valve.

39. Appendix F Paragraph 3.e – Added clarification of when a remote operator for a valve should reflect the position of the remote operator and the valve it operates.

40. Appendix F Paragraph 3.f – Added clarification to determine when temporary equipment are considered "safety measures/devices" and therefore, should be danger tagged.

41. Added Appendix F Paragraph 3.g – Added clarification to the requirement to danger tag hand operated equipment if the worker does not have exclusive control of the hand pump/operator during the maintenance.

42. Appendix F Paragraph 4.c.(1) – Added clarification of the requirement to hang tags on electrical breakers that can be operated locally and remotely.

43. Appendix F Paragraph 4.c.(3) – Added requirement to have electrical breakers with spring charged operating mechanisms, are to have fuses removed, tagged, and closing springs discharged, as required by Reference (h).

44. Appendix F Paragraph 4.d – Removed requirement for switches to be tagged for awareness, which is not an inherent safety function, if they cannot exercise control of equipment once that equipment is tagged out and electrically isolated by other means.

45. Appendix F Paragraph 4.g – Added clarification that the exception for troubleshooting and simple maintenance.

46. Appendix F Paragraph 5.b - Added amplifying guidance for when a temporary identification tag shall be used.

47. Appendix G Paragraph 2.b – Added "valve orientation verification" to the applicability of this appendix for nuclear powered ships and prototypes.

48. Appendix G Paragraph 4.k – added "shaft seal inflatable boot (when properly inflated)" as an allowable pressure barrier. Added new paragraph 4.k to describe the preferred method of isolation when using shaft seal inflatable boots as a pressure boundary.

49. Appendix G Paragraph 4.l. – Added paragraph 4.1 to address valve orientation verification steps and corrective actions required for an improperly oriented valve.

50. Appendix G Table 1 – Added temporary seawater systems that have an unlimited water supply that cannot be secured by a pump with a siphon break or have two valves capable of securing flow to prevent flooding of a space or drydock to the list of systems that require double barrier protection.

51. Appendix G Paragraph 8 – Added clarification for when a barrier is and is not required between an atmospheric pressure system and a worksite.

52. Added Appendix G Paragraph 8.a, 8.b, and 8.c – Added the necessary level of guidance for establishing and maintaining atmospheric pressure systems and clarifies where barriers are and are not required.

53. Appendix G Paragraph 9 – Added clarification for when danger tagging valves for protection from sea is not required in a dewatered drydock.

54. Appendix H Paragraph 1 – Added clarification of when a special MOA for work on non-nuclear components that require tagging nuclear components would be required.

55. Appendix H Paragraph 2.a, 2.a(1) – Added allowance for the RA Representative to be a non-nuclear tag-out qualified individual that tags nuclear components when allowed by MOA.

56. Appendix I Paragraph 3.a - Added amplifying guidance for when additional information to be used on the Component ID.

57. Appendix I Paragraph 3.e – Added to discuss tagging requirements for breakers with spring charged operating mechanisms.

58. Appendix J – Moved the second paragraph of 1.1 to now reformatted paragraph 3.a. Added paragraphs 2.6, 2.7. 3.5, (reformatted as paragraphs 2.e, 2.f and 3.e) to provide additional clarification to the use of Master Tag-outs that are linked to other Master Tag-outs to safely isolate work areas.

59. Appendix L (Planned Maintenance System Tag-out Procedure) is no longer applicable and has been removed. Appendix M (Out of Calibration/Out of Commission Labels) has been re-labeled as Appendix L.

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TAG-OUT USERS MANUAL

LIST OF EFFECTIVE PAGES

Page Numbers	Change in Effect
i thru vi	Rev 08
1 thru 25	Rev 08
A-1 thru A-2	Rev 08
B-1 thru B-4	Rev 08
C-1 thru C-2	Rev 08
D-1 thru D-14	Rev 08
E-1 thru E-2	Rev 08
F-1 thru F-6	Rev 08
G-1 thru G-6	Rev 08
H-1 thru H-2	Rev 08
I-1 thru I-4	Rev 08
J-1 thru J-4	Rev 08
K-1 thru K-16	Rev 08
L-1 thru L-2	Rev 08

TAG-OUT USERS
MANUAL RECORD OF
CHANGES

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY (INITIALS)

TAG-OUT USERS MANUAL TABLE OF CONTENTS

Page No.

Appendices

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TAG-OUT USERS MANUAL

REFERENCES

(a) Code of Federal Regulations, 29 CFR 1915 Subpart F, Section 1915.89; Control of Hazardous Energy (Lock-out/Tags-Plus)
(b) OPNAVINST 3120.32 - Standard Organization and Regulations of the U.S. Navy, Section 630.17, Equipment Tag-Out Bill
(c) NAVSEA S9002-AK-CCM-010/6010 - Industrial Ship Safety Manual for Submarines
(d) NAVSEA 0989-028-5000 - Manual for the Control of Testing and Plant Conditions
(e) OPNAVINST 5100.19 - Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat
(f) NAVSEA S9213-41-MAN-000/(R) - Engineering Department Manual for Naval Nuclear Propulsion Plants
(g) NAVSEA 0989-150-0000 – Standard Navy Nuclear Valves
(h) NAVSEA S9086-KC-STM-010 - Naval Ships' Technical Manual, Chapter 300, Electric Plant General
(i) COMFLTFORCOMINST 4790.3 - Joint Fleet Maintenance Manual
(j) NAVSEA SS521-AG-PRO-010/0910-LP-708-8000 - U.S. Navy Diving Manual
(k) NAVSEA 0348-159-1000 - Freeze Sealing Manual
(l) MIL-STD-1625 – Safety Certification Program for Drydocking Facilities and Shipbuilding Ways for U.S. Navy Ships
(m) NAVSEA 0989-018-1000 - Manual for the Control of Refueling

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.

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.

c. This manual is written for execution of tag-out using an electronic tag-out program. Appendix K provides guidance for using manual tag-outs in situations where the electronic tag-out program is not used.

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.g, provides specific requirements to be followed when performing simple electrical troubleshooting and maintenance without a tag-out.

b. For "smart" ships and submarines, electrical and mechanical isolation shall be accomplished in accordance with Appendix F. Procedures for placing components out of service in the "smart" system and restoring components to service are not considered to be an integral part of the tag-out process, but are required for computer alignment and visual indication. Appendix F requires that an "air gap" be used in the tag-out of "smart" components. When isolating a smart ship component/system ensure the component/system is isolated such that, the computer/touch screen no longer has an effect on that component/system. Ship specific procedures for securing, placing out of service/Out-of-Commission (OOC), tagging, and restoring "smart" components are contained in the ship's operating procedures (submarines) or Engineering Department Organization and Regulations Manual (surface ships).

c. The requirements of this manual are intended for use with systems that are under the operational control of Ship's Force. For reactor plant system tag-outs by Repair Activities (RA), see Appendix C. For non-reactor plant systems and equipment prior to system turnover during new construction, hazardous energy control shall be per reference (a).

(1) Military Diving Commands shall utilize this manual when performing diving equipment maintenance. Applicable requirements of reference (a) shall also be met.

(2) Craft. At the Commanding Officer's (CO's) discretion, commands may choose to utilize a locally developed hazardous energy control program compliant with reference (a). This program may be in lieu of the requirements of this manual when performing maintenance on craft (e.g. barges, floating cranes, lighters, and small boats) where there are no Ship's Force or insufficient Ship's Force assigned to hang tags in accordance with this manual. When utilizing the requirements of this manual aboard craft for which there is not assigned Ship's Force personnel, commands shall ensure the additional regulatory requirements of reference (a) are met.

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

e. This manual was developed with Fleet and 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.

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

g. When specific valve position verification procedures are provided in the applicable reactor plant manual, steam and electric plant manual, propulsion 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 (AO) 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.

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 line item(s) has been cleared. 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 line item(s) 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 (AAO), to be responsible for confirming the adequacy and accuracy of a line item. Two examples of when assignment of an Assistant Authorizing Officer might be beneficial are during periods of heavy maintenance, to unburden the on-watch duty officer, and when the cognizant division officer is acting in this capacity to review tag-outs for work on systems under his/her cognizance.

(1) These individuals shall be designated for only those tag-out logs they are qualified to supervise.

(2) The Assistant Authorizing Officer shall sign in the **Accuracy/Adequacy Check** block for the line item signifying the adequacy and accuracy of the tag-out.

(3) The Authorizing Officer shall sign the **Authorizing Officer Issued** block of the line item signifying agreement that any associated system status changes and installation of tags are compatible with ship and plant conditions.

(4) The Assistant Authorizing Officer may also sign as Authorizing Officer on the tags after the Authorizing Officer has authorized the line item. The Authorizing Officer must be informed prior to changes to system status.

(5) The Assistant Authorizing Officer can process line items to authorize work using previously hung tags and can sign as Authorizing Officer on the line item. Similarly, the Assistant Authorizing Officer can sign the Work Center Supervisor (**WCS) or POIC (Work Complete)** block to 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 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 **Repair Activity Rep** block of the line item. This review 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. Approved system diagrams or circuit schematics shall be used to determine the adequacy of all tag-out actions. When local instructions allow, the documented verification signature made by a qualified repair activity individual proposing the tag-out may be used as the repair activity's validation of the adequacy and accuracy of a tag-out. This allowance only applies when the proposed tag-out and the authorized tag-out are identical. The RA Representative authorizing the line item remains responsible for ensuring the tag-out 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 line item has been signed as completed.

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

b. The RA:

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

(2) Signs line items associated with RA work.

(3) Witnesses or verifies checking of posted tags, signs tags and initials in the **Repair Activity Witnes**s block on the Tags to be Hung Sheet (THS) or Line Item Record Sheet (LIRS), if the LIRS is being used to capture RA Witness initials.

c. Exceptions:

(1) 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 the **Repair Activity Rep** block of the line item 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 the **Repair Activity Witness** block of the Danger Tag and corresponding initials in the **Repair Activity Witness** block of the THS/LIRS, 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 the **Tagged Position/Condition** block of the THS per paragraph 1.6.5.a of this manual.

(c) Signature in the **Repair Activity Witness** block of the Caution Tag and corresponding initials in the **Repair Activity Witness** block of the THS/LIRS are based upon the contractor being shown the installed tag and the amplifying instructions on the tag.

(d) Signature and date in the **Repair Activity Rep (Work Complete)** block of the line item is based upon the contractor's knowledge that the work item/operation is complete.

(e) When requested by the Authorizing Officer, the contractor signs the **Clearance Authorized – Repair Activity** block of the Tags to be Removed Sheet (TRS) 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 Memorandum of Agreement (MOA) that all RA responsibilities as defined in this manual are assigned to the lead RA. In all cases, appropriate information shall 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, will 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 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. Additionally, personnel indoctrination and training shall include that the RA employee will be provided the opportunity to review isolations and system conditions established for their work.

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 User's 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 User's Manual means that the person assigned to perform a tag-out function is knowledgeable about the requirements of this manual and is knowledgeable about the involved system/equipment.

c. Ship's Force qualification in this Tag-out User's 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 User's 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 manual.

1.5 PLANNING TAG-OUTS.

1.5.1 Tag-out Logs and Records

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 maintained for various ship classes, and where the logs will be maintained.

b. The number of tag-outs shall 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.

c. 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:

   (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.

d. The electronic tag-out program maintains an index of line items.

e. The binder for storing records produced from the electronic tag-out program shall be maintained in the vicinity of the computer terminal used by the Authorizing Officer. The binder shall be marked appropriately. The binder shall be maintained in the following format:

   Part 1 - A copy of the Tag-out User's Manual.

   Part 2 - Active LIRS (if not utilizing electronic signatures). Include draft LIRS if documenting CO's concurrence per paragraph 1.6.2.c or documenting additional RA Witness for shared tags.

   Part 3 - Active Tags to be Hung Sheets.

   Part 4 - Cleared LIRS (if not utilizing electronic signatures)/Cleared Tags to be Hung Sheets/Completed Tags to be Removed Sheets.

   Part 5 - Instrument Log sheet(s) (see Appendix D, Figure 9)

   Part 6 - Record of audits.

f. 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). 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.

g. 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 a revision has been made to existing line items. An example of this would be EE01-1234[PMS](1) or if a description and/or date are used, EE01-1234[PMS] Megger Check #2 R-114 Motor 02 Jan 02(1). Other variations such as alphabetic (i.e., a, b, c, etc.) will only be recognized by the "eTAG-OUT" tag-out program but will not be recognized by "ESOMS" tag-out program. Numbers shall be used to provide consistency between Fleet/RA and be placed at the end of the line item nomenclature.

h. The 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 to allow for remote auditing, but this index need not be maintained with the log binder.

i. Figures of Appendix D and Appendix K are illustrations of NAVSEA forms and/or formats. Appendix D, Figures 10 and 11 provide a template for standardization of an audit record sheet. Forms produced by NAVSEA 04X 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 and Appendix K. Minor changes made by NAVSEA 04XQ (e.g., change in material used or layout) to the tags depicted in Appendix D and K are acceptable as long as there is no change in content.

1.5.2 Use of Line Items and Tags

a. Use line items:

(1) For work or casualty isolation.

(2) For indicating the presence of safety devices required for safety of personnel or equipment not consistent with normal operations, except as excluded in Appendix F, paragraph 3(f).

(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 line items are used:

(1) Use enough tags to prevent injury to personnel and damage to 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 tags used through careful work planning in an effort to maintain better control of the tag-out process.

(4) A work item Work Authorization Form (WAF) may be supported by more than one line item when different parties are cognizant of the items being tagged.

(a) When only one electronic tag-out database is being used, multiple line items may be used on a single WAF (e.g., tags in plant #1 may be needed to isolate work in plant #2 or when both nuclear and non-nuclear components are tagged for work using separate line items). These line items are both represented, and visible, to each other in the database and database reports will see all the components in both line items.

(b) Ships that have more than one electronic tag-out databases, (e.g. CVNs have one for Propulsion Plant and a separate one for non-propulsion plant) may require isolation of components from both databases, and therefore multiple line items, for a single WAF. Since the components of these line items are not represented, or visible, in both databases, careful consideration and coordination is required to ensure all line items remain in a hanging status until Block 16 on the WAF (Work Complete) is signed. The WAF is the only document linking the multiple line items since there is no visibility between the electronic databases.

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 actions must be exercised to operate equipment. Caution tags must state the specific reason the tags are installed. Use of a phrase such as "DO NOT OPERATE WITHOUT EOOW PERMISSION" is not appropriate since equipment or systems are normally 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 all line item(s) listing a component are cleared. Only tags not shared with other line items and listed on the Tags to be Removed Sheet (TRS), may be removed.

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

(3) Not be reused.

g. Tags of color, size, and shape similar to danger or caution tags will not be used for any other purpose onboard ships or craft.

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, the **System Component ID/*Location** block of the Tags to be Hung Sheet (THS) and System/Component ID block on the tag 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 on the tag 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 due to an incorrect or inadequate unique component identifier (e.g. Sample Cooler Chill Water Supply), contact the Authorizing Officer for resolution. Appendix I provides the administrative procedures for naming components when creating, updating and maintaining the electronic tag-out program. Appendix F paragraph 5.b provides direction for temporary component ID tags until a permanent label plate is installed. **Never hang a danger tag on a component without a proper label as described above.**

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

b. Line items prepared for diver's operations shall follow the guidance of Appendix E.

1.6.1 Creating a Line Item. 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 line items. Normally the preparer is the Ship's Force POIC of the operation/work item. During shipyard Chief of Naval Operations (CNO) availabilities, the shipyard will normally propose the tag-out to Ship's Force (but not necessarily prepare the line items) for shipyard work. 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. If the

Repair Activity is preparing the line item for proposed RA work within the electronic tag-out program, ensure all appropriate information is entered and all repair activity blocks are electronically signed as follows:

a. 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, and today's date (description and date optional. The date is automatically added in eTAGOUT), followed by (revision number). An example of this would be EE01[PMS] Megger Check #2 R-114 Motor 02 Jan 02(1). 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 the electronic tag-out program as operators.

NOTE: If using the ESOMS Tag-out Program, 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.

b. **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.

NOTE: If using the ESOMS Tag-out Program, and 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 electronic tag-out program 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.

c. If using the ESOMS Tag-out Program, 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 and enter statement "see Reason block".

d. If using the ESOMS Tag-out Program, and 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.

e. Perform a **Conflict Check** if a conflict is indicated with an issued tag. Perform a **Conflict Check Un-Issued** to determine if there are any conflicts between the line item being developed and other line items being prepared. Conflicts with issued line items must be resolved before the Authorizing Officer issues the line item. In the case of a conflict with another un-issued line item, coordinate with the division responsible for the conflicting line item to resolve conflicts.

(1) 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:

(a) 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.

(b) 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 new line item may use the more restrictive tagged position.

(c) 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 is as follows:

1. Prepare a line item for the new maintenance action per Paragraph 1.6.1.
2. Add the affected component to the line item tag list. Select the current tagged position (e.g., "shut") for the affected component.
3. Add a new component to the database. The component name shall be the same as the original component plus locking device (e.g., MS-1 LOCKING DEVICE).
4. Add the new component to the line item. Select the new more restrictive condition-position (e.g., "Installed") for this component.

NOTE: The affected component will have TWO tags when the new maintenance action item is issued, the original tag, and the new tag on the Locking Device.

f. If the line item is not associated with any RA work, RA review of tags and line item is not required. The **Repair Activity Rep** blocks of the line item and the **Repair Activity Witness** block of the THS and tags shall be left blank.

g. After the line item is filled out, the **Petty Officer In-Charge** block is signed. The signer, normally the Ship's Force POIC of the work, shall ensure the adequacy and accuracy of the line item. The signer shall request another qualified person perform an independent review.

h. Cross Check. When a line item created by one department/division affects another department/division equipment, a cross check shall be used. (For ESOMS selection of this feature in the line item attributes activates two additional verification signatures on the Line Item Verification tab). These **Cross** Check signatures are signed by the second division/department signifying concurrence with the proposed tag-out. These additional signatures must be entered prior to the Authorizing Officer issuing the line item.

1.6.2 Independent Reviews. In addition to the **Second Person** verification, which is always mandatory, independent reviews may be required by cross checkers and/or the Assistant Authorizing Officer. The following steps apply to all independent reviewers:

a. A second qualified person shall independently determine the adequacy and accuracy of the line item and isolation. To check an active line item, open the line item to be verified and review all of the information in the Line Item Details tab (Line Item Detail in ESOMS), the Line Item Attributes tab (ESOMS only), and the Line Item Tags tab. 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. 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, note who prepared the line item, select “Back to Draft” (eTAG-OUT), or select the last line that has been signed for in the "User" column, and electronically sign off the line item (ESOMS). Notify the preparer that the line item has been rejected and give the specific reason for doing so. For RA proposed line items, during a CNO Availability, discuss the reason for rejecting a line item with the preparer prior to selecting “Back to Draft” (eTAG-OUT), or electronically signing off the line item (ESOMS).

c. The Commanding Officer may sign concurrence electronically when required (or a user with the CO permissions and authorization could perform this signature). If using ESOMS, and the CO’s electronic signature function is not available, print the LIRS to obtain the Commanding

Officer's concurrence.

d. 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 the applicable block (first **Cross Check**, **Second Person,** second **Cross Check** or **Accuracy/Adequacy Check** block) indicating concurrence. The line item shall then be presented to the Authorizing Officer.

1.6.3 Authorization

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

(1) Review the **Line Item Details** tab. (Line Item Detail tab in ESOMS)

(2) Review the **Line Item Attribute** tab (ESOMS only).

(3) Review the **Line Item Tags** tab for adequacy of tag-out coverage.

(4) If manned, notify Damage Control (DC) Central of line items affecting DC capabilities.

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

(1) RA review is required for line items associated with RA work.

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

(3) On a case basis, it is allowable for Ship's Force to prepare/review a safety line item and post the tags for upcoming RA work, unless the maintenance involves safety of ship work when reference (c) is invoked or when restricted by Appendix H or by an MOA. However, in all cases, the RA must review the line item and sign the **Repair Activity Rep** block of the line item. The RA must verify/witness component position/condition and tag attachment, including signing the **Repair Activity Witness** block of the tags and initialing the **Repair Activity Witness** block of the THS/LIRS (as applicable), prior to authorization of RA work.

c. 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.

d. To issue an active line item, open the line item to be issued and review all of the information in

the **Line Item Details** (Line Item Detail in ESOMS) tab, the **Line Item Attributes** tab (ESOMS only), and the **Line Item Tags** tab. When review is completed, select the **Line Item Verification** tab (ESOMS only). 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 in paragraph 1.6.2.b. When the check is complete (and RA review when required), the Authorizing Officer shall:

(1) Sign the **Authorizing Officer (Issued)** block of the line item. Print the LIRS (optional unless required to document other non-electronic signatures such as Commanding Officer permissions or RA Witness initials for shared tags), THS, and tag labels. For Caution tags, also print the caution statement labels.

NOTE: Shared tags already issued will not be shown on the THS and labels will not be printed.

(2) Sign the **Authorizing Officer** block of the tag(s) (see section 1.3.2).

(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, or has an incorrect or insufficient unique component identifier, post permanent identification, or post temporary identification per Appendix F, paragraph 5.b, to support completion of the tag-out. Appendix I provides the administrative procedures for naming components when creating, updating and maintaining the electronic tag-out program. **Never hang a danger tag on a component without a proper label as described in paragraph 1.6.a**

(2) The component is as specified on the tag and the THS. For danger tags, the poster shall ensure each component is in the position/condition specified on the tag and THS.

(3) The Authorizing Officer has given permission for repositioning components. Permission may be given at the time the line item is issued, 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 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. The documentation shall be 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 (f) shall be followed to ensure that two operators verify the valve's position prior to installing the locking device.

(6) Five through sixteen inch parallel disc gate valves, used in the steam and feed water systems in most propulsion plants, are closed by positioning the valve a few turns counterclockwise from the hard stop position.

(a) This method of positioning is known as position-seating or soft-seating the valve.

(b) The component technical manual, reference (g), and Reactor Plant/Steam Plant/Propulsion Plant manual will specify the specific number of turns open from the fully shut position required to soft-seat a particular valve.

(c) When tagging these valves, two operators shall go to positon the valve. Document the valve positioning using a two-party valve line up sheet annotating number of turns required for seating the valve. One will position and soft-seat the valve and the other will witness the positioning and post the tag.

(7) 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., danger tag already 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. 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) Since the electronic tag-out program is set up to cross-reference a single tag to multiple work authorizations, the generation of a second tag in the same folder/tag series should not occur and would be an indication of a problem with the program or a nomenclature problem with the entry. If the person posting a tag finds another tag in the same folder/tag-out serial number on the component, the person should stop and notify the Authorizing Officer for further instructions. The Authorizing Officer shall perform a conflict check per paragraph 1.6.1.e.

(3) 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 shall 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.

(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 Fuse(s) 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 the **Person Attaching Tag** block of the tag, and

(2) Initial the **Posted By** block of the THS for that tag.

e. When posting is complete, the person posting shall present the THS/LIRS 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 line item (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 THS. 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. An 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. danger tag already hanging on the component), verification of the component's position/condition shall consist of 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. 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.

(a) Since the electronic tag-out program is set up to cross-reference a single tag to multiple work authorizations, the generation of a second tag in the same folder/tag-out serial number should not occur and would be an indication of a problem with the program or a nomenclature problem with the entry. If the person posting a tag finds another tag in the same folder/tag-out serial number on the component, the person should stop and notify the Authorizing Officer for further instructions. The Authorizing Officer shall perform a conflict check per paragraph 1.6.1.e.

(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 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). 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) When checking the position of a soft-seated parallel disc gate valve, the second checker shall not be one of the two operators who positioned the valve and will rely only on the two-party valve line up, the tag and available indications to verify valve position.

(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 the **Person Checking Tag** block of the tag.

(2) The checker shall initial the **Posting Checked By** block of the THS.

(3) When required, the RA Witness should normally accompany Ship's Force, witness the

check of the tag installation, sign the **Repair Activity Witness** block of the tag and initial the **Repair Activity Witness** block of the THS/LIRS, as applicable, prior to commencement of the RA work. If the RA was not available to witness the checking of posted tags, or the tags were previously hung on a non-RA line item, the RA will independently visually verify the posted tag and component position/condition. The RA will sign the **Repair Activity Witness** block of the tag, and initial the **Repair Activity Witness** block of the THS/LIRS, 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(6)(c) for checking the position of a danger-tagged component. An 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.

(4) When an RA line item is issued that shares tags with an RA line item approved by another RA, the RA shall verify installation of the tags that apply to their work item. The RA adding work initials on the **Repair Activity Witness** block of the LIRS. Signatures on existing tag(s) are not required.

(5) The RA is not required to sign the **Repair Activity Witness** block of the tag nor initial the **Repair Activity Witness** block of the THS/LIRS for a new line item 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 the **Repair Activity Witness** block of the new tags and initial the corresponding **Repair Activity Witness** block of the THS/LIRS, as applicable. All other requirements for the RA to verify the adequacy and accuracy of the tag coverage must be performed.

c. After checks (and witnessing if done concurrently) are complete, the checker shall return the THS/LIRS to the Authorizing Officer. The Authorizing Officer shall verify from the THS/LIRS that all required tags are hanging, including verification that all tags used by the line item have been RA Witnessed when applicable, and sign on to the **Authorizing Officer Verified Hung** block of the line item.

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

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. When modifying a line item that was created prior to implementation of step 1.8.2.c.(1)(b), all tags on the existing line item are to be verified physically hanging prior to commencement of work.

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 (e.g. system drained, depressurized, restrained and/or de-energized). The Authorizing Officer is the final authority for commencement of work.

c. The THS and LIRS (if not using electronic signatures, the electronic system does not support the use of the THS for RA Witness or to document multiple RA's witnessing shared tags) are then filed in the active section of the appropriate tag-out log.

1.6.7 Iterative Tag-outs. The function for issuing iterative multiple tag sets in support of repeated tag-out

requirements is not available in the electronic tag-out program. Pre-reviewed repetitive line items can be established using the electronic tag-out program to help facilitate timely establishment of repeated isolation. In those cases where the Commanding Officer or designated representative determines an on-scene Authorizing Officer using an iterative tag-out is required, the manual iterative tag-out process of Appendix K shall be used.

1.6.8 Certified Line Items. Certified line items 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 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 tag-out for adequacy and accuracy prior to their use.

a. Preparation

(1) The certified line item 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.c and 1.6.3.d(2) through 1.6.3.d(4) are not applicable.

(2) The certified line item must be approved by the Department Head prior to initial use. Copies of approved certified LIRS shall be filed and maintained for reference.

b. Use of Certified Line Items

(1) Using the certified line item as a reference, the preparer creates a new line item for the specific work item. The new line item should reference the certified line item in the **Personnel/Equipment Hazards Involved** block. The preparer signs the **Petty Officer In Charge** (POIC) block of the line item and an independent reviewer signs the **Second** Person block to certify that the work item, ship/system conditions, and maintenance boundaries on the new line item are identical to those specified on the certified LIRS.

NOTE: If using the eTAG-OUT program, when using an unchanged certified line item, the First Check field, or **Petty Officer In Charge** (POIC) block, is automatically filled in with the Department Head's name that certified the line item.

(2) The Authorizing Officer shall also verify the work item, ship/system conditions, and maintenance boundaries on the new line item are identical to those specified on the certified LIRS and authorize the line item for use per paragraph 1.6.3 of this manual. All other Ship's Force roles in the tag-out process, except as noted above in 1.6.8.b.(1), 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 Line Items

(1) Certified line items 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 LIRS shall be revalidated by accomplishing the actions specified in paragraph 1.6.a of this manual.

d. Use of Standard Line Item Function in Electronic Tag-out Program. The standard line item

function within the electronic tag-out program may be used to create and maintain a certified line item. The line item must meet all requirements above to be utilized as a certified line item (e.g., documented Department Head approval, periodic validation reviews, etc.).

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 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 each discrepancy/conflict and the resolution in their log(s).

1.7.2 Missing or Damaged Tags

a. Missing or damaged tags shall immediately be reported to the Authorizing Officer (and RA Representative, if applicable) 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(6)(c) 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) Print a replacement tag label and THS. The replacement tag label will have the same tag number as the tag being replaced. For Caution tags, also print a replacement Caution Statement label. If the tag is shared by more than one activity, the Authorizing Officer will notify each RA of the need to witness the replacement of a missing or damaged tag to sign the THS/LIRS, as applicable, for documentation of the RA Witness for the posted tag.

(4) Review the entries on the replacement tag and the THS/LIRS 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(6)(c).

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

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

(2) Print a replacement tag label and THS. The replacement tag label will have the same tag number as the tag being replaced. For Caution tags, also print a replacement Caution Statement Label. If the tag is shared by more than one activity, the Authorizing Officer will notify each RA of the need to witness the replacement of a missing or damaged tag to sign the THS/LIRS, as applicable, for documentation of the RA Witness for the posted tag.

(3) Review the entries on the replacement tag and the THS/LIRS 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) and subsequent removal of the damaged tag. If verification of the affected component's position is required, follow the procedure of paragraph 1.7.4.b(6)(c).

(5) After the replacement tag is posted, remove the damaged tag. Document the damaged tag removal on the new THS (e.g., Damaged tag removed. Date _____ Initials _____).

d. Upon completion of tag posting, checking and witnessing, the THS/LIRS (as applicable) are returned to the Authorizing Officer. The Authorizing Officer reviews the new THS/LIRS 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 annotated in **Replaced** Tag column as replaced (e.g., "damaged-replaced", "missing-replaced") on the original THS for that tag. The Authorizing Officer then initials and dates the **Replaced Tag** column on the original THS. File the new THS behind the original.

e. 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.

NOTE: Raising a mast with a danger-tagged clamp attached, to perform a drift test, does not constitute operating a danger-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) Print audit sheets.

(2) During tag-out audits, determine which THS/LIRS 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 and comparing this listing to the tag(s) listed on the active THS/LIRS in the active section of the MASTER tag-out log.

(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 log.

(4) 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.

(5) Check all outstanding tags on each audit sheet for correct posting. Do this by visually comparing the information on the tag and on the posted component.

(6) When a component status is specified, visually check that the component is in its proper position unless this requires an operation such as the removal of a cap, closure, or fuse panel cover to ensure fuses have been removed. 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.

(b) Tag-out audits of typical Navy fuse panels will include a visual inspection for verification the correct fuses were removed, except if conditions exist where there is increased risk of contacting energized conductors during visual inspection of equipment (e.g. when the equipment is in a hard to access area, high sea state exists, etc.). Auditing personnel shall adhere to the requirements of reference (h), paragraph 300-2.5.5.

(c) 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 check sheet in accordance with reference (f).

(d) 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.

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

(7) Record results of tag audits by a line entry on an Audit Report Cover Sheet (see Appendix D, Figure 10). Record the date completed, the discrepancies noted, and the signature of person doing the audit on the Audit Report (see Appendix D, Figure 11).

c. Ship's Force audit of LIRS (if not using electronic signatures).

(1) The Line Item Record Sheets will be audited against the electronic tag-out program (if not using electronic signatures, required for RA Representative Signatures, or RA Witness Initials).

(2) Record the results of the audit by a line entry on the Audit Report Cover Sheet (see Appendix D, Figure 10). Record the date completed, the discrepancies noted, and the signature of the person doing the audit. The Authorizing Officer shall annotate on the audit report cover sheet once completed audits are returned.

(3) Completed LIRS will be routed to the cognizant department representative (Department Head/Principle Assistant) for review.

d. Following correction of all discrepancies discovered during the audit process, the cleared line items may be archived. The frequency of electronically archiving line items is at the discretion of the ship. Upon completion of the audit, discard cleared THS/LIRS (as applicable) and TRS records.

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 the **Replaced Tag** block on the original THS/LIRS.

(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 U.S. Naval Shipyards/Regional Maintenance Centers (RMC). During CNO availabilities, including ship's construction periods when the TUM is invoked, the tag-out process shall be monitored by the Shipyard/RMC. During non-CNO availabilities/upkeep periods, the NSA shall ensure the tag-out monitoring is conducted, as applicable, for the availability/upkeep period. The Shipyard/RMC will establish a process that reviews the tag-out log and ensures proper posted tag checks. 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/RMC document per local guidance.

1.8 CLEARING TAG-OUTS.

1.8.1 General. Remove danger and caution tags immediately when the operation/work line item(s) requiring the tag(s) has been corrected and clearing of tags has been authorized by the Authorizing Officer and RA Representative (when applicable).

1.8.2 Completion of Operation/Work Items

a. As operations/work items are completed, the associated line item shall be cleared. To clear an active line item, open the line item to be cleared. Have the Repair Activity Representative sign the **Repair Activity Rep. (work complete)** block, if applicable. The Authorizing Officer electronically signs the **WCS or POIC (work complete)** block for authorization to clear the line item.

b. If completing the line item results in no tags to be cleared, the Authorizing Officer will concur with the line item clearance and sign for completion of tag removal.

NOTE: 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.

c. If the electronic tag-out program determines that any of the tags are not referenced by open line items, **Tags To Be Removed** (ESOMS) or **Approve to Remove** (eTAG-OUT) window will open. Clicking the **Authorize Removal** (ESOMS) button will print the TRS and will change the status of the line item to **Work Complete,** or clicking **Sign** (eTAG-OUT) then manually printing the TRS and the status of the line item will change to **Clearance Authorized**.

(1) Review the TRS to identify the tags to be cleared. However, if using the ESOMS Program:

(a) The TRS cannot be the sole source for determining readiness to clear tags. After signing for work complete, verify all of the tags on the TRS have turned blue under the Line Item Tags tab.

(b) Refresh the electronic tag-out program database and verify the Clearances (Tag-out) module tag series "Tagged Components", no longer list the tags in the active section. If tags are still listed in the active section of the "Tagged Components" tab, take actions per paragraph 1.9.1.b.

(2) Continue with clearing tags per the following paragraphs.

1.8.3 Position/Condition. The Authorizing Officer shall fill in the appropriate **Clearance Position/Condition** on the TRS for each of the tags to be removed. If immediate re-positioning of components is required, then specific consideration must be given to the sequence of any valve repositioning and the type, size, and rating of any fuses being reinstalled. Otherwise, repositioning of components shall be accomplished after the Authorizing Officer has verified all tag clearance was accomplished correctly. 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 danger tags is never authorized until all danger tags have

been cleared.

1.8.4 Authorization

a. When all line items requiring a tag are cleared as indicated by the tag being listed on the TRS, authorization to remove a tag and intent to reposition the previously tagged item is indicated by signature of the Authorizing Officer in the **Clearance Authorized Authorizing Officer** block of the TRS. If the tag supported Repair Activity work (e.g., Repair Activity Witness block on the THS/LIRS, as applicable, is initialed) then the RA Representative signs the **Clearance Authorized Repair Activity** block. 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 the **Clearance Authorized Repair Activity** block on the TRS as "RA Not Available".

b. The Authorizing Officer will sign the TRS for clearing tags and to approve the component be placed in the position or condition specified in **Clearance Position/Condition** block of the TRS. The Authorizing Officer shall inform the person clearing the tag if the Authorizing Officer's permission shall be obtained just prior to repositioning the component, in order to sequence the operation of several components.

1.8.5 Removal

a. Issue the TRS for clearance of tags.

b. The person assigned shall remove the tag. If immediate repositioning is required and briefed, the person assigned shall place the previously tagged component in the position or condition specified on the TRS. Enter the date/time in the **Date/Time Cleared** block and enter initial in the **Cleared By** block of the TRS. 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.

c. Remove all temporary devices that were installed during tag posting per paragraph 1.6.4.a.(5) above.

d. 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

a. Upon return of the TRS and the individual tags, the Authorizing Officer must verify that the proper tags were removed and that documentation of their removal was completed on the TRS.

b. 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 (issued by another tag-out log/folder), or it may not be in the normal position specified on the applicable valve status board. The position/condition specified on the TRS for each removed tag must be used for updating the valve status board.

c. Open the line item to be cleared,

(1) For ESOMS, select the **Line Item Verification** tab, sign on for **Tags Removed** line and click the **Sign On** button.

NOTE: Once the line item is updated as **Work Complete**, all tags for that line item will be 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.

(2) For eTAG-OUT, Once Ship's Force (and RA, if applicable) state Work is Complete, the AO will select the **Approve Tags Removed** button. Tags not used by another line item can then appear on the **Tags to Remove** list.

1.8.7 Completion of Line Item Record Sheet and Tags to be Removed Sheet

a. When all actions for a LIRS/TRS have been completed, all tags have been cleared and destroyed, and the applicable valve status board(s) updated, the Authorizing Officer will:

(1) Notify DC Central, if applicable, that work has been completed.

(2) File the completed LIRS (if not using electronic signatures) in the cleared section of the tag-out log binder.

(3) File the completed TRS in the cleared section of the tag-out log binder until after completion of the audit of paragraph 1.7.4.b(2).

1.9 VALIDATING THE ELECTRONIC TAG-OUT PROGRAM DATABASE (ESOMS only).

1.9.1 General. If using the ESOMS electronic tag-out program, it may be necessary to move the electronic tag-out program database and/or server during maintenance or upgrade periods or it may be necessary to restore the program database in the event of a server crash. Experience has shown that moving or restoring the database/server has the potential to corrupt the database and cause tags that were previously cleared to appear in the database as active tags ("ghost" tags). The following action is necessary after the electronic tag-out program database and/or server is moved/restored, prior to resuming tag-out processing:

a. Perform a validation of the electronic tag-out program database to verify there are currently no "ghost" tags. Accomplish this validation by comparing the list of "tagged components" from the electronic tag-out program database to all active line items' associated tags on the Active Tags to be Hung Sheets in the tag-out binder of paragraph 1.5.1.e , verifying that all "tagged components" are associated with active line items. Upon completion of the electronic tag-out database validation, perform a tag-out audit to verify that all active line item tags are actually hanging per paragraph 1.7.4.

b. If a "ghost" tag(s) is found during the electronic tag-out program database validation or tag-out audit, perform the applicable following situational steps to resolve the "ghost" tag issue.

(1) If the "ghost" tag is not part of an active line item, administratively create, hang and clear a line item containing the "ghost" tag to clear the tag from the database per paragraphs 1.6 and 1.8.

(2) If the "ghost" tag is part of an active line item, take missing tag actions per paragraph 1.7.2.

NOTE: In both cases, report any "ghost" tag(s) found and corrective action taken via naval message to Immediate Supervisor in Command (ISIC) and Type Commander (TYCOM). ISIC/TYCOM will arrange for any required assistance to the affected unit.

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
ISIC	Immediate Superior in Command
JTG	Joint Test Group
LIRS	Line Item Record Sheet
LMA	Lead Maintenance Activity
MOA	Memorandum of Agreement
MRC	Maintenance Requirement Card
NAVSEA	Naval Sea Systems Command
NSA	Naval Supervisory Authority
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
STE	Shift Test Engineer
TGL	Tag Guide List
THS	Tags to be Hung Sheet
TORS	Tag-Out Record Sheet (Manual Tag-out System
TRS	Tags to be Removed Sheet
TWD	Technical Work Document
TYCOM	Type Commander
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.
Certified Line Item/Certified Tag-out	A line item/tag-out that has been prepared and approved in advance for situations of routine evolutions or where time is critical (e.g. casualty response) as directed/approved by the Commanding Officer.
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. For ESOMS, if the tags are not referenced by any other line item, the electronic tag-out program will status the tags no longer required as cleared and print a Tags to be Removed Sheet (TRS) to inform the Authorizing Officer to direct removal of the hanging tags. For eTAG-OUT, the tags are statused as **Clearance Authorized** and do not become "cleared" until the AO enters the tags have been physically removed.
Component	A valve, switch, etc.
Component Contractor	A commercial ship maintenance provider contracted directly by the Government to accomplish work on an individual component, or limited number of like components.
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.

Danger Tag	A red tag prohibiting operation or removal of equipment that could jeopardize safety of personnel or endanger equipment, systems, or components.
Draft Line Item	Tag-out line item generated with "DRAFT" appearing in the STATUS column for each component listed on the line item. 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. Used to document Commanding Officer concurrence (if required).
Electrical Jumper	A temporary wire used to modify a circuit, such as by completing or bypassing the circuit.
Hanging	This is an Authorizing Officer function. When a line item status is "hanging", the Authorizing Officer has verified by receipt of the Tags to be Hung Sheet (THS) and LIRS (if shared tags are required to be used for RA Representative signatures, RA Witness Initials, or there is more than one RA) with **Posted By, Posting Checked By** and **RA Witness** initialed (if required), that tags are hanging on all components referenced on that line item.
Index Sheet (Danger/CautionTag-Out Index and	A sequential list of all tag-outs issued using the manual process of Appendix K. 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.
Issued	Authorizing Officer function. When a tag-out line item is "issued", tag numbers are assigned to the components referenced on the line item. 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 print the THS and tag labels and issue the new tag(s) to personnel for hanging (if applicable).
Lead Maintenance Activity (LMA)	The single activity responsible for integrating all maintenance and modernization on U.S. Naval ships during any type of availability.
Line Item	An individual entry in a tag-out that details the isolation, hazards, and work required for completion of a specific job.

Line Item Record Sheet (LIRS)	Provides necessary information required for isolating equipment for work including a list of required tags and verifying signatures. 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 and/or for documenting CO concurrence or RA Witness check of shared tags are required to be used for RA Representative signatures, RA Witness Initials, or there is more than one RA.
Master Tag-out	As used in Appendix J, the master tag-out is a concept used to provide for the isolation of multiple work items within a common boundary of a Master WAF.
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 water plane unless the maximum calculated draft during the period of the maintenance action(s) is greater.)
Naval Supervisory Authority or Supervisory Authority (NSA)	The officer designated to represent the Navy Department at an industrial activity; normally a Supervisor of Shipbuilding (new construction), Regional Maintenance Center (Conversion and Repair), or the Commander of a Naval Shipyard.
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.
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. Some example of safety devices/measures are chaining or locking valves, removing fuses, racking out circuit breakers, freeze seals, blank flanges, mast clamps, securing devices/pins for Hatches (not in their normal operational condition) and breaker clips.

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.
Smart Ship	A generic term for components or systems that can be controlled by computer (microprocessor) based equipment. These components/systems may be able to be controlled via a computer monitor or "touch screen". When isolating a smart ship component/system ensure the component/system is isolated such that, the computer/touch screen no longer has an effect on that component/system.
Tags to be Hung Sheet (THS)	Provides a consecutive listing of tags to be hung for a particular line item. Personnel use this sheet to hang new tags. This sheet will not list shared tags; it will only print if there are new tags to hang for a new line item. A LIRS must be printed to document RA Witness checks when more than one RA shares the tag(s) or when the software does not support the RA Witness on the THS.
Tag-out	a. A process of hanging danger or caution tags to isolate a system or equipment to protect personnel or equipment. b. The container (folder) where individual line items are stored in the electronic tag-out system.
Tag-out Log	a. Each electronic tag-out log (topside, central control station, etc.) contains all tag-outs in effect in that plant/space/department as applicable. Also includes the Tag-Out Binder per paragraph 1.5.1.e. b. When using the manual tag-out system of Appendix K, this control document is used for administering tag-out procedures and a record of authorization for each active tag-out action.
Tag-out Record Sheet (TORS)	A record of all tags associated with the tag-out when using the manual tag-out system of Appendix K. 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
Tags to be Removed Sheet(TRS)	A document generated by the electronic tag-out system when the Authorizing Officer clears a line item. This sheet lists only those components no longer referenced on any active line item and is used to authorized and document tag clearance.

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

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. This requires a Memorandum of Agreement (MOA) between the RA and the ship when a system transfer Work Authorization Form (WAF) is being utilized per reference (i).

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 on decommissioned ships, during new construction and on commissioned ships (CNO and Non-CNO Availabilities).

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 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 (a) requirements without application of the exception notes in reference (a); 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 or Appendix K, paragraph 4.2 (if manual tag-out).

4 System Transfer WAFs. This section pertains to RA tag-outs performed on non-reactor plant systems on commissioned ships under a system transfer WAF established per reference (i) or other contractual invoked system transfer document. Specific details concerning these RA tag-outs shall be included in a MOA between Ship's Force and the RA. Ship's Force participation in the RA tag-out process is required to ensure the Commanding Officer has the ability to exercise responsibility for the safety of the entire command.

a. RA tag-outs shall be performed with Ship's Force involvement as follows:

(1) Ship's Force concurs with the overall scope of RA tag-out authority by authorizing a System Transfer authorizing WAF/document, with tag-out control, as identified per reference (i).

(2) Ship's Force shall be informed of the scope and purpose of RA tag-outs. A single briefing may be used to cover multiple tag-outs which cover the same general scope and purpose.

(3) Ship's Force shall be informed immediately on any RA tag-out problems which occur and shall concur in problem resolution and RA tag-out continuation.

(4) Ship's Force has the authority to suspend RA tag-out actions, at any time deemed necessary, due to problems or changes in ship or system conditions.

b. Where the RA uses a tag-out process that is not consistent with this manual, such process will be reviewed for adequacy by the Naval Supervising Authority (NSA)/LMA prior to use.

c. Deviations in the use of the process of this manual, such as Ship's Force retaining operational control and RA administering tag-out control must be covered in detail in the MOA and the System Transfer authorizing WAF/document.

APPENDIX D

TAG-OUT AND CALIBRATION FORMS

Example Line Item Record Sheet (LIRS)

DANGER/CAUTION 1		**LINE ITEM SHEET** 2		
SYSTEM OR COMPONENT	3	4		**Page of __**
REASON FOR TAG-OUT 5				
PERSONNEL/EQUIPMENT HAZARDS INVOLVED (or AMPLIFYING INSTRUCTIONS for Caution Tag-outs) 6				
WORK NECESSARY TO CLEAR TAG(S) (INCLUDING TEST) 7				

APPLICABLE DOCUMENTATION (I.E., JOB ORDER, S/P, ETC.)	DATE/TIME ISSUED OR ADDED	PETTY OFFICER IN CHARGE	ACCURACY/ADEQUACY CHECK	REPAIR ACTIVITY REP. (WORK COMPLETE) (WHEN APPROPRIATE)
		CROSS CHECK (WHEN REQ.)	REP. ACT. REP. (WHEN APP.)	
		SECOND PERSON	AUTH. OFFICER (ISSUED)	WCS OR POIC (WORK COMPLETE)
		CROSS CHECK (WHEN REQ.)	AUTH. OFFICER (HUNG)	AUTH. OFFICER (TAGS REMOVED)
8	9	10	13	17
		11	14	
		12	15	18
		11	16	19

TAG	STATUS	RA Required (# Line Items)	RA Witness (Initial)	COMPONENT	LOCATION	POSITION
20	21	22	23			

Figure 1

Line Item Record Sheet (LIRS) Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	DANGER/CAUTION	System will print out with appropriate header for the type of tag-out.
2	NA	The line item number is shown in this area when the line item is created.
3	SYSTEM OR COMPONENT	The exact name (as it appears in the Equipment Database) of the equipment to be worked.
4	N/A	Tag-out serial number normally consisting of a department/division (multi-plant ships may include a numeric designation for each tag-out with a department) followed by a "hyphen" and then a sequential number (e.g., ENG-DANGER-0001).
5	REASON FOR TAG-OUT	Describes, by number and title, the document requiring the tag-out if not fully documented in the Applicable Documentation Block. 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.
6	PERSONNEL/ EQUIPMENT HAZARDS INVOLVED (or AMPLIFYING INSTRUCTIONS for Caution Tag-outs)	For Danger tag-outs, lists any personnel and/or equipment hazards associated with the maintenance action (e.g., electrical shock, flooding, rotating machinery, etc.). For CAUTION tag-outs, the amplifying instructions will be printed in this block and on labels and placed on the back of the caution tags. Commanding Officer's signature indicating approval for maintenance requiring single valve isolation to a high energy system or single valve to sea will be entered into this block.
7	WORK NECESSARY TO CLEAR TAG(S) (INCLUDING TESTS)	Enter the work that must be completed prior to clearing the line item. This can be a step in a procedure or WAF, completion of an inspection or QA check, or returning the equipment to a ready condition. For PMS, a general statement such as "complete maintenance IAW MRC" is adequate. Tags may be removed without completing the steps listed in this field if changes in the scope of the work or failure to complete the work listed in this field occur. In this case, the Authorizing Officer shall ensure the system or component will be in a safe condition when tags are removed before authorizing clearing the line item.
8	APPLICABLE DOCUMENTATION (I.E., JOB ORDER, S/P, ETC.)	Include reference to any documents that apply; such as, work authorization forms, test procedures, technical work documents, technical manuals, etc. in this block or in the **Reason for Tag-out** block. Use the Reason for Tag-out block if there is not enough space in this field. If the documentation is entered in the reason field, "See Reason Block" will be entered in this block.
9	DATE/TIME ISSUED	Electronically filled in when the line item is issued. This block indicates the date/time the work item was issued.
10	PETTY OFFICER IN CHARGE	Signed by preparer of the line item and tags. The POIC is responsible for ensuring the accuracy and adequacy of the tag-out plan.
11	CROSS CHECK (WHEN REQ'D)	Optional signatures for additional independent reviews for line items involving equipment maintained by different work centers.
12	SECOND PERSON	An independent review is done to ensure the adequacy of tag-out isolation and to ensure the correctness of the line item and tags. Signed when satisfied with the accuracy and adequacy of the tag-out plan.
13	ACCURACY/ ADEQUACY CHECK	An optional independent review by the Assistant Authorizing Officer to ensure the adequacy of tag-out isolation and to ensure the correctness of the line item and tag-out plan.
14	REP. ACT. REP. (WHEN APP.)	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 tag-out may be used as the repair activity's validation of the adequacy and accuracy of a tag-out. This allowance only applies when the proposed tag-out and the authorized tag-out are identical. The RA Representative authorizing the tag-out remains responsible for ensuring the tag-out is compatible with system status and ship/plant conditions.

15	AUTH. OFFICER (ISSUED)	Signed when satisfied with adequacy, completeness, and accuracy of tags and line item. Sign the Authorizing Officer block on tags at same time. When an AAO has signed in Block 13, the documented verification signature may be used as the AO's validation of the adequacy and accuracy of a tag-out. The AO authorizing the tag-out remains responsible for ensuring the tag-out is compatible with system status and ship/plant conditions.
16	AUTH. OFFICER (HUNG)	Signature by Authorizing Officer indicating the tags have been posted, posted checked, and witnessed by RA if necessary.
17	REPAIR ACTIVITY REP. (WORK COMPLETE) (WHEN APPROPRIATE)	When required, signed when work item/operation is complete
18	WCS OR POIC (WORK COMPLETE)	Signed by the Authorizing Officer when work item/operation is complete and authorizing the line item to be cleared. This signature causes the TRS to be printed for those tags no longer associated with a line item.
19	AUTH. OFFICER (TAGS REMOVED)	Signature by Authorizing Officer when all actions for the line item have been completed, all tags required to be removed have been removed and destroyed, the system or component returned to normal (shutdown) or other specified conditions, and the applicable status board(s) updated.
20	TAG	Field provides a listing of all tags, by serial number, used by the line item.
21	STATUS	Status field indicates if a tag is required to be hung (*), a tag is issued by another line item but is not reported hung (+), or a tag was hung by another line item (blank).
22	RA REQUIRED (# LINE ITEMS)	Indicates if RA signature is required on line item and tags. Provides the number (#) of RA line items that list this component.
23	RA WITNESS (INITIAL)	When a tag is shared by different RAs, or when the software does not support the RA Witness on the THS., the RA Witness will enter initials after verifying installation of the tag(s) that apply to their line item. The **Repair Activity Witness** block of the tag is signed at the same time.

EXAMPLE – TAGS TO BE HUNG SHEET (THS)

XXX-XXXX **Tags to be Hung Sheet** *Page___of _____*

1

TAG NO.	SYSTEM/ COMPONENT ID/*LOCATION	TAGGED POSITION/ CONDITION	POSTED BY (INITIAL)	POSTING CHECKED BY (INITIAL)	REPAIR ACTIVITY WITNESS (INITIAL)	REPLACED TAG AUTHORIZING OFFICER (INITIAL/DATE)
2	**3**	**4**	**5**	**6**	**7**	**8**

Figure 2

Tags to be Hung Sheet Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	XXX Tags to be Hung Sheet	The tag-out serial number and the line item number are printed in this block.
2	TAG NO.	The sequential number of each tag. Each tag is given its own sequential number when a line item is issued if the tag is not already shared.
3	SYSTEM/COMPONENT ID/*LOCATION	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). NOTE: The "location" portion of this block (designated by the asterisk) does not appear on the tag.
4	TAGGED POSITION/ CONDITION	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 entry is "Locked" followed by the position of the valve (e.g., "locked shut"). For caution-tagged items, this column may be left blank or have the abbreviation "SAI" (entered manually), which means "see amplifying instructions", entered.
5	POSTED BY (INITIAL)	Initialed after position/condition is verified and tag is attached. The **Person Attaching Tag** block of tag is signed at the same time.
6	POSTING CHECKED BY (INITIAL)	Initialed by a person who independently verifies component position/condition and tag attachment. The **Person Checking** block of the tag is signed at the same time.
7	REPAIR ACTIVITY WITNESS (INITIAL)	For tags being witnessed/verified by the RA, this block should be initialed by the RA Witness. The **Repair Activity Witness** block of the tag is signed at the same time. **Note**: If using the ESOMS electronic tag-out program, and it has not yet been updated to include this block; the RA may initial on the THS or LIRS as agreed to by MOA.
8	REPLACED TAG AUTHORIZING OFFICER (INITIAL/DATE)	Initialed/dated by the AO when replacing tags along with a statement as to why the tag was replaced (missing, damaged, etc.). **Note**: If using the ESOMS electronic tagout program and it has not yet been updated to include this block; the AO may signoff in the margin of the THS.

EXAMPLE – TAGS TO BE REMOVED SHEET (TRS)

Tags to Be Cleared for 1						Page of _	
TAG NO.	SYSTEM/ COMPONENT ID/*LOCATION	TAGGED POSITION/ CONDITION	CLEARANCE POSITION/ CONDITION	CLEARANCE AUTHORIZED AUTHORIZING OFFICER (SIGNATURE)	CLEARANCE AUTHORIZED REPAIR ACTIVITY (SIGNATURE)	DATE/TIME CLEARED	CLEARED BY (INITIAL)
2	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Figure 3

Tags to be Removed
Sheet Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	Tags to be Removed for	The tag-out serial number and the line item number are printed in this block.
2	TAG NO.	The sequential number of each tag to be removed. Only tags with all associated line items cleared and authorized for removal will be listed.
3	SYSTEM/ COMPONENT ID/*LOCATION	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). NOTE: The "location" portion of this block (designated by the asterisk) does not appear on the tag.
4	TAGGED POSITION/ CONDITION	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 entry is "Locked" followed by the position of the valve (e.g., "locked shut"). For caution-tagged items, this column may be left blank or have the abbreviation "SAI" (entered manually), which means "see amplifying instructions", entered.
5	CLEARANCE POSITION/ CONDITION	The Authorizing Officer annotates the desired position or condition of the tagged item when authorizing tag removal.
6	CLEARANCE AUTHORIZED AUTHORIZING OFFICER (SIGNATURE)	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.
7	CLEARANCE AUTHORIZED REPAIR ACTIVITY (SIGNATURE)	When required, signs to approve clearance of the tag.
8	DATE/TIME CLEARED	The person removing the tag enters the date/time cleared as each tag is removed.
9	CLEARED BY (INITIAL)	The person removing the tag enters initials to 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 the **Clearance Position/Condition** block.

Danger Tag Example

SERIAL NO.

P1-1000-00058 **1**

System/Component Identification:
1MS-V42 BYPASS

Position or Condition of Item Tagged:
SHUT

DANGER

DO NOT OPERATE

SIGNATURE OF PERSON ATTACHING TAG **2**	SIGNATURE OF PERSON CHECKING TAG **3**
SIGNATURE OF AUTHORIZING OFFICER **4**	SIGNATURE OF REPAIR ACTIVITY WITNESS **5**

(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)

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9890/8)

Figure 4

Danger Tag Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	LABEL affixed in this location	Label printed from the electronic tag-out program attached in this area of the tag that provides Serial No., System/Component Identification, and Position or Condition of Item Tagged.
2	SIGNATURE OF PERSON ATTACHING TAG	Signed after position/condition is verified and tag is attached. The **Posted By (Initial)** block of the THS is initialed at the same time.
3	SIGNATURE OF PERSON CHECKING TAG	Signed by a person who independently verifies component position/condition and tag attachment. The **Posting Checked By (Initial)** block of the THS is initialed at the same time.
4	SIGNATURE OF AUTHORIZING OFFICER	Signed when satisfied with adequacy and completeness of tags and line item.
5	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. The **Repair Activity Witness (Initial)** block on the THS/LIRS (as applicable) is initialed at the same time.

NOTE: Danger Tag NAVSEA 9890/08 provides an attachment device with a minimum 50 pound pull strength. Where other attachments are substituted, they shall have the general design and basic safety characteristics equivalent to a one-piece nylon cable tie that will withstand all environmental conditions, be non-reusable, attachable by hand, self-locking, and non-releasable.

Caution Tag

P1-2000-00012 1
SYSTEM/COMPONENT IDENTIFICATION
System/Component Identification:
IPR-V3A

CAUTION

DO NOT OPERATE THIS EQUIPMENT UNTIL SPECIAL INSTRUCTIONS ON REVERSE SIDE ARE THOROUGHLY UNDERSTOOD

SIGNATURE OF PERSON ATTACHING TAG 3	SIGNATURE OF PERSON CHECKING TAG 4
SIGNATURE OF AUTHORIZING OFFICER 5	SIGNATURE OF REPAIR ACTIVITY WITNESS 6

(FRONT)

CAUTION

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

2
Amplifying Instructions for Caution Tag (Caution Statement)

(BACK)

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

Figure 5

Caution Tag Overview

BLOCK NO.	BLOCK NAME	OVERVIEW (See basic text for process explanation)
1	LABEL affixed in this location	Label printed from the electronic tag-out program attached in this area of the tag that provides Serial No. and System/Component Identification of Item Tagged.
2	SPECIAL INSTRUCTIONS	These instructions state the specific reason the tag is installed as entered on the line item. 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.
3	SIGNATURE OF PERSON ATTACHING TAG	Signed by the poster after verifying the tag is attached. The **Posted By (Initial)** block of the THS is initialed at the same time.
4	SIGNATURE OF PERSON CHECKING TAG	Signed by a 2nd person after verifying the tag is attached. The **Posting Check By (Initial)** block of the THS is initialed at the same time.
5	SIGNATURE OF AUTHORIZING OFFICER	Signed when satisfied with adequacy and completeness of tags and line item.
6	SIGNATURE OF REPAIR ACTIVITY WITNESS	Signed (when required) by a RA person after verifying the tag is attached. The **Repair Activity Witness (Initial)** block on the THS/LIRS (as applicable) 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 shall have the general design and basic safety characteristics equivalent to a one-piece nylon cable tie that will withstand all environmental conditions, be non-reusable, attachable by hand, self-locking, and non-releasable.

Tag Guide List

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

Figure 6

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

(FOR ILLUSTRATION ONLY – USE FORM NAVSEA 9890/7)

Figure 7

OUT OF CALIBRATION	
SERIAL NO. DATE **1**	
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.

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)

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.

EXAMPLE - AUDIT REPORT COVER SHEET

Audit Report Cover Sheet			*Page of __*
Location	Tag Count	Issued To	Returned
Printed at (time) on (date)			

Figure 10

EXAMPLE - AUDIT REPORT

Date	**Audit Report**		*Page _ of _*
Tag Serial Number	Component	Tagged Position	Verified
Date/Time Complete:_____			*Page within location: /__*

Figure 11

APPENDIX E
TAG-OUT PROCESS
AMPLIFICATIONS FOR DIVERS

1 Purpose. The purpose of this appendix is to provide Ship's Force and RA personnel amplifying instructions for processing divers tag-outs.

a. All divers' tag-outs shall be on a separate line item for electronic tag out systems or separate TORS for manual tag-out systems. Additionally, the separate line item within the electronic tag-out program or applicable TORS 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.

b. The RA representative will be the diving activity unless another activity is assigned per an 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 line item or TORS. If tags are already signed by another RA, the divers or RA representative will verify tags are hanging per paragraph 1.6.5.b.(4). The RA representative must authorize clearance of all diving related tag-outs.

c. 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 line item or TORS.

d. 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.

e. 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.

f. Reference (b) 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:

(1) All underwater electrical equipment that affects diving operations (e.g., Sonar, fathometers, transducers, etc.). See reference (j), Appendix 1A Safe Diving Distances from Transmitting Sonar for further guidance.

(2) 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.).

(3) Underwater moving equipment that affects the diving operation as deemed necessary by the Diving Supervisor (control surfaces, torpedo tube doors, etc.).

g. Multi-zone, Impressed Current Cathodic Protection (ICCP) systems shall be secured and tagged-out, as appropriate, per the requirements of reference (j).

h. 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.).

i. To expedite the process of hanging diver's tag-outs, follow step 1.6.3.(b) for processing diver's tags prior to the diving activity being present.

j. Appendix G, paragraph 5.c provides specific requirements for use of tethers/lanyards on temporary hull fittings.

k. See reference (j), Volume 2, Chapter 6, Operational Planning and Risk Management, for further guidance on Diving Operations.

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) used; the preferred entry is "Locked".

3 Mechanical.

a. Nomenclature for System/Component Identification shall be per paragraph 1.6.a of the main body.

b. Locking Valves

(1) Lockwire shall be of sufficient strength. Normally installed lanyard locking clip devices are not acceptable.

(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 per paragraph 1.6.1.f.(1).

(4) The preferred priority of lock wiring a component is as follows: (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. In some cases, the construction or location of a component may make a less preferred method the better method to use.

(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.

(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 shall 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, non-tapered 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 Disconnected Amphenol connection at the control valve or other means of positive electrical isolation consistent with this manual.

(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 shall be posted on the control valve body.

(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 where the remote operator is the only means for valve operation and the position of the remote operator does not reflect or ensure the position of the valve that it operates, 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 the **System/Component/Identification** block and HP-580 Neutral/ASW-28 Shut in the **Position or Condition of Item Tagged** block.

f. Temporary Equipment. (e.g. Blanks, Freeze Seals, securing devices/pins/locking devices for Hatches, Restraining Devices such as mast shoring and clamps, etc.). Temporary equipment that is not consistent with normal operations will use danger tags to indicate the presence (status) of, all safety devices/measures required for safety of personnel or ship's equipment during maintenance.

(1) This does not apply to Lifting and Handling equipment utilized during rigging evolutions done in accordance with approved lifting and handling procedures (e.g. NAVSEA Corporate Lifting and Handling Manual or equivalent instruction). If Lifting and Handling equipment must remain in place for maintenance on the tied back/suspended ship's equipment and not constantly tended by certified lifting and handling personnel, it will be considered a safety device/measure and therefore requires a danger tag.

(2) Securing devices/pins/locking devices required to maintain a safe work area for access hatches, VLS/missile hatches, Weapons Hatches, etc., are considered a safety device/measure and not rigging/blocking gear. Securing devices will be installed and danger tagged when hatch maintenance affects the normal operation, counterbalance mechanisms, springs, hinges, hatch fairings, etc. Hatch maintenance that does not disable normal restraint against gravity doesn't require a securing device to be installed and danger tagged. Refer to the NAVSEA Corporate Lifting and Handling Manual or equivalent instruction for how to properly tie back/secure a piece of equipment.

(3) Components and ships equipment that can be secured using the ships normal operating procedure do not require a separate temporary equipment securing device to be installed and danger tagged. Danger tagging the ships installed securing device used for isolation (e.g. hydraulic valve, securing pins, operators etc.) is acceptable.

g. Hand Operated Equipment. Post the tag at the hand pump/operator. For hand operated equipment (e.g. hand operated press), danger tagging the hand pump/operator is only required for situations in which the worker does not have exclusive control of the hand pump/operator during the maintenance.

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. Nomenclature for System/Component Identification shall be per paragraph 1.6.a of the main body.

b. Fuses

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

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

c. Breakers

(1) Electrical breakers that have the means of being operated locally and remotely shall be tagged both at the breaker and from all remote operating.

(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 (h) provides methods for attachment and National Stock Numbers for available clips

(3) When using breakers with spring-charged operating mechanisms to establish isolation for work or casualty response, closing springs shall be discharged or disabled as required by reference (h), 300-2.3.3.2a prior to tagging the breaker in the OPEN position.

d. Switches. The term "switches" includes rotary switches, snap action switches, pushbutton switches, and other types of mechanical switches. Switches are not required to be tagged for awareness purposes or redundancy if they cannot exercise control once equipment is tagged out and electrically isolated by other means (e.g. remote and local ventilation switches, when the single isolation point in each conductor path is tagged out). 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.d~~e~~.(1).

(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.

(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.

e. 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.

f. 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.

g. Electrical 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 de-energized.

(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.

(7) PMS/MRC does not specifically require a tag-out.

NOTE: When these conditions are met, this simple electrical maintenance or troubleshooting is considered work on de-energized equipment per reference (h).

h. 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 tag-out 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 when using the manual tag-out process of Appendix K. 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 (called a “System Transfer WAF” as allowed by Ref (h)). 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, or has an insufficient unique component identifier (e.g. Sample Cooler Chill Water Supply), a temporary label-plate/tag shall be installed with a two party independent check/verification based on plans and/or ship check 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 ship check 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 require a new line item/TORS entry if the item is within the boundaries and scope of the WAF (see reference (i)).

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 (c) (when applicable) and the Volume IV, Chapter 10, Barrier Criteria for Submarine Hull Penetrations Appendix of reference (i) 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, valve orientation verification, 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, shall 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, or a shaft seal inflatable boot with the boot properly inflated. All of these methods 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 shall 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.

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

h. Butterfly valves can be used as pressure barriers. Caution shall 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 (k).

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

k. Shaft seal inflatable boots shall have the air supply vent valve danger tagged shut and the air supply valve caution tagged to maintain the appropriate boot pressure in addition to any other required secured equipment with the boot inflated (e.g. shaft turning gear, shaft locking device etc.)

l. 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.

m. Valve Orientation Verification: When valve orientation affects a pressure barrier (e.g. using the main seat of an in-line globe or butterfly valve as a pressure barrier for packing replacement on that same valve, or when connecting test equipment or fitting to a gage valve), perform the following:

(1) Compare the as-found condition of the valve to the applicable valve technical manual and system diagram to verify that bridgewall or port marking on the valve body match.

(2) If verification of the valve orientation is impractical or would adversely impact the ship (e.g. removal of insulation required), other means may be used to confirm proper valve orientation or sufficient isolation is achieved such as:

(a) Continuously leaking valve packing stops leaking after main seating the valve.

(b) Venting the test connection cap on a gage valve.

(c) Establishing an additional barrier.

(3) Valves identified to be installed backwards should not be used for maintenance isolation for work on that valve or for test equipment installation to a gage valve stem port. Incorrect valve orientation shall be reported to the ISIC, TYCOM, and NAVSEA for evaluation and action.

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.d.(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.

   (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 (i)). 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 (i) 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 ^{O}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).
Temporary seawater systems that have an unlimited water supply that cannot be secured by a pump with a siphon break or have two valves capable of securing flow to prevent flooding of a space or drydock.

Table 1

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 shall 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 between the atmospheric pressure system and the work site 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. The following requirements apply:

a. When working above the highest level in the system, there must be danger tagged barrier(s) meeting the criterion of this manual between the atmospheric pressure system and any connected system capable of raising the highest liquid level to, or above, the level of the work site.

b. There must be procedural and/or tag-out controls in place to preclude raising the liquid temperature of the atmospheric pressure system greater than or equal to 200°F if the design of the atmospheric pressure system allows for a temperature greater than or equal to 200°F.

c. There must be procedural and/or tag-out controls in place to maintain the atmospheric pressure system vented if the vent path is capable of being isolated by the design of the system.

9 Isolation from Sea while in Drydock. Danger tagging valves for protection from sea is not required while in a dewatered drydock that meets the requirements of reference (l) for drydock flooding protection systems.

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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 (d) is invoked. An MOA shall be issued, if needed, (i.e. not codified by local instruction), 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 (m).

(An example special case MOA is for work on non-nuclear components that results in the need to tag nuclear components, the RA Representative may be a non-nuclear tag-out qualified individual, providing the Shift Test Engineer (STE) is informed of the need to tag a nuclear component and concurs prior to authorizing the tags).

2 RA Representative.

a. For nuclear cognizant systems, the 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. The RA representative may be a non-nuclear tag-out qualified individual when the work is on non-nuclear cognizant systems that tag nuclear components when allowed by MOA.

(1) This individual authorized to act as RA Representative shall be STE qualified on the plant type involved or knowledgeable on the plant type if a non-nuclear individual is acting as the RA Representative.

(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 line item 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 line item, 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 (f). 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 Tags to be Hung Sheet (THS).

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 line items 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 shall be avoided. Where this is not practical, the tag(s) shall be audited just before access is restricted and again when access is regained. Any such instances shall 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 supported by more than one line item, a method shall be in place to reference the work item to all affected line items such that all required tags for the work item may be clearly identified.

6 Removal. The STE or the applicable cognizant RA Rep (if a non-nuclear component is tagged), shall concur with component repositioning after tag removal by signing the **Clearance Authorized Repair Activity (Signature)** block on the Tags to be Removed Sheet (TRS) or, if using the manual tag-out system, 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 (f) to check repositioning.

APPENDIX I

ELECTRONIC TAG-OUT PROGRAM ADMINISTRATION

1 Purpose. Provide administrative directives for use of the electronic tag-out program.

2 LAN and Server Administration. When more than one organization is utilizing the electronic tag-out program, the Ship's Force server shall be used and Ship's Force shall maintain the program exclusively. If the Ship's Force server is disabled during a maintenance availability, another server may be used.

a. A Ship's Force 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 program.

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

c. **(ESOMS Only)** Access to the NOMS.INI file shall only be granted to the LAN administrator. This file shall be protected as "READ ONLY" for all personnel except LAN administrators. 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 the electronic tag-out program, the administrator of the provided server may also need access to the NOMS.INI file.

d. The Repair Activity (RA) will connect their workstations to the ship's Local Area Network if required, as directed by Memorandum of Agreement (MOA). Each organization shall use compatible and functionally identical versions of the program. The ship's database, which existed prior to the availability, will be the only database used. In preparation for a shipyard availability, a copy of the ship's database may be used to prepare tag-outs for the shipyard availability. No other database may be used. In addition, each organization shall use compatible and functionally identical version of the electronic tag-out system program.

NOTE: It is imperative that only one copy of the database is online and available for issuing and clearing tags.

e. The RA shall provide to the Ship's Force administrator a list of all RA personnel requiring 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 the electronic tag-out program and need not be printed.

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

g. Ship's Force shall establish a standard method of naming components such that duplicate names are avoided. Paragraph 3 of this appendix provides additional guidance for naming components.

3 Component Naming Convention. The following provides requirements for naming components when creating, updating and maintaining an electronic tag-out program database. Existing databases that use a consistent component naming convention are not required to be changed to meet these requirements.

a. The component name (**Component ID** in ESOMS, **Nameplate ID** in eTAG-OUT) must be unique. This is the field which prints out as the **System/Component/Identification** block 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 the naming requirements of Section 1.6.a of the main body. The description of the component (**Component Description** in ESOMS, **Component Name** in eTAG-OUT) is for user assistance, and does not appear on tags, Line Item Record Sheets, THS or TRS. The **Component Description/ Component Name** 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 for a component with a generic identifier) on the **Component ID/Nameplate ID** to prevent confusion when the operator hangs tags.

b. For valves, **Component ID/Nameplate ID** should be entered using the system designation and valve number (e.g., MS-11). If the **Component Description/ Component Name** is entered, it is recommended that the label plate wording be used. For valves with multiple operators, separate **Component ID's/Nameplate 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/ Component Name** is entered, it is recommended that the label plate wording and method of operation be used.

c. For other mechanical components (e.g., pumps, periscopes, turbines, etc.) **Component ID/Nameplate ID** shall 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/ Component Name** is entered, it will normally be identical to the **Component ID/Nameplate ID**.

d. For breakers, **Component ID/Nameplate 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/Component Name** is entered, normally it will be identical to the **Component ID/Nameplate ID.**

e. For breakers with spring charged operating mechanisms with closing springs discharged or disabled to establish work or casualty isolation, the breaker **TAGGED POSITION/CONDIDTION** shall be equivalent to “Open, closing springs discharged(disabled)”, as required.

f. For fuses, **Component ID/Nameplate ID** shall 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/Component Name** is entered, normally it will be identical to the **Component ID/Nameplate ID**.

g. For switches, **Component ID/Nameplate 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).

h. For cables/leads, **Component ID/Nameplate 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/ Component Name** is entered, normally it will be identical to the **Component ID/Nameplate ID**.

4 Standard Tag-out Procedures for an electronic tag-out program to be used in conjunction with this manual.

a. 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 3 of this appendix) and be entered by a system administrator for the Electronic Tag-out Program in use.

b. 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.

c. Only labels printed from the 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.

d. When an individual signs a line item as a "Petty Officer in Charge", "Second Person", "Authorizing Officer", or "Repair Activity" on a line item, his/her name is electronically placed in the "signature " block. 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 unless required to document other non-electronic signatures such as CO permissions or RA Witness initials for shared tags.

e. 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 administrator to ensure data is present.

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APPENDIX J

MASTER TAG-OUTS (Electronic Tag-Out Only)

1 Definitions.

a. 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.

b. 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.

c. 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.

d. Reference Component (eSOMS ONLY). A component that is generated in the 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.

e. Reference Tag (eSOMS ONLY). A tag generated 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 line item. The physical reference tag is not required to be created, posted, or maintained

f. Master Line Item. A line item, or line items (see paragraph 1.5.2.b (4) in the main body) established in the database representing the components tagged to isolate the boundaries of the Master WAF.

2 Establishing Master Line Items.

a. (eSOMS ONLY) 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. This Master WAF description defines the work area boundary and shall be broad enough to ensure the Master Line Item isolation boundary will cover the major portion of all known work during the availability or maintenance period. For eSOMS, this line item shall institute the use of a "Reference Tag".

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

(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.

(2) No actual work is to be directly worked to a Master Line Item.

(3) Master Line Items can be changed due to changing conditions and will use a revision

number (i.e., (1), (2), etc.), at the end of the line item name, when such changes occur.

(4) Any work WAF line item using a Master Line item 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 work WAF line item for adequate and accurate isolation. The Repair Activity and Ship's Force representatives shall review the Master WAF's description and work WAF scope for adequate and accurate isolation provided by the Master Line item.

(5) During the weekly audits, the Master Line Item shall be verified to ensure that all components listed on the Master Line Item have their respective danger tags listed in a "hanging" status.

For eSOMS, 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 the TUM".

d. When Master Line Items are in a "hanging" status, a work WAF may now be hung utilizing the Master Line item and any additional components that may be required for adequate isolation of that work. This occurs by picking the appropriate Master Line item, and then adding any additional components necessary for adequate isolation to the work WAF's line item.

For ESOMS, when Master Line item and it's associated "reference tag" is hanging, a work WAF may now be hung utilizing the Master Line item and any additional components that may be required for adequate isolation of the work.

e. A Master Tag-out may use one or more other Master Tag-outs as part of its isolation boundary. For example, the Catapult Steam Master Tag-out may reference the Main Steam Master Tag-out, or a Ship-Service Switchboard Master Electrical Tag-out may reference an Emergency Switchboard Master Electrical Tag-out. This becomes necessary when there is work required to be performed on one or more components (valves, breakers, etc.) that would normally be used as the interface isolation boundary between the two master tag-outs.

(1) When a Master WAF in one electronic tag-out database uses another Master WAF's Line Item from a different electronic database as part of its isolation boundary, not all components are recognized, or visible, by both electronic databases.

(2) Visibility and proper communication ensure a Master WAF is not closed or revised when being used by another WAF in a different electronic database. The method of ensuring visibility and proper communications, shall be determined and agreed upon by the activities involved.

NOTE: Careful consideration and coordination is required when multiple Master Line items are being utilized from different electronic tag-out databases (see paragraph 1.5.2.b.(4) of the main body).

f. A WAF may require isolation from more than one Master Tag-out when the WAF authorizes work within or at the boundaries described by more than one Master WAF. In these cases, the work WAF shall reference each Master Line item, required for adequate isolation, by including the Master line items (For eSOMS, reference components) on the work WAF tag-out line item. The Master Tag-outs shall be referenced by the work WAF even when the Master Tag-outs list each other on their respective line items. This ensures the work WAF will be reviewed for adequate and accurate isolation when changes are made to any of the Master Tag-outs that the work WAF requires for isolation.

3 Tag Rolls.

a. Any time a Master WAF must be revised, the tag roll process is executed to verify establishment of all system conditions (draining, de-pressurization, electrical frisk, etc.) and to obtain authorizing officer/repair activity representative concurrence that remaining work is satisfactorily isolated within the rolled tag-out boundary.

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

b. To ensure adequate isolation of all line items using the old Master Line Item the Repair Activity and Ship's Force representatives shall notify all activities utilizing the old master line item and ensure a review of the new Master WAF's description and supported work, and that adequate and accurate isolation are 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 TRS sheet should be cleared.

e. When planning a tag roll to a Master Tag-out that is referenced by other Master Tag-outs for isolation, the personnel making the change must ensure all activities utilizing the new Master Line item, verify the change being made provides adequate and accurate isolation for all WAF's affected prior to performing the tag roll.

4 Clearing the Master Line Items. Upon clearing the last work line item that used a Master Line Item and verifying there is no additional upcoming work requiring its use, sign the Master WAF complete and clear associated Master Line Item(s). The electronic tag-out program will allow clearing of the Master Line item(s). The Master Line Item(s) may be cleared from the front of the Tag-out Log.

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APPENDIX K
MANUAL TAG-OUT SYSTEM

1 PURPOSE. Provide guidance for preparing manual tag-outs. The electronic tag-out management system is the preferred tag-out management system and shall be used when available.

2 SCOPE.

a. Manual tag-outs are used when the electronic tag-out program has not yet been installed. All requirements of the TUM not specifically addressed in this appendix remain applicable. Where terms for the Line Item Record Sheet (LIRS), Tags to be Hung Sheet (THS) and Tags to be Removed Sheet (TRS) are used, the LIRS is similar to the front of the TORS and the THS/TRS are similar to the back of the TORS.

b. Manual tag-outs may be used during outages of the electronic tag-out system such as when performing maintenance on servers or other LAN infrastructure or transitioning to a temporary LAN during shipyard periods when an additional server is unavailable.

c. Casualties to the electronic tag-out system shall be repaired and electronic tag-outs restored as soon as practical using the copy of the latest backup.

d. Manual tag-outs may be used for iterative tag-outs requiring on scene management associated with specific iterative tests and maintenance evolutions.

e. Manual tag-outs may be used to support Appendix C operations.

3 ESTABLISHING TAG-OUTS.

a. Tag-Out Logs shall be maintained per paragraph 1.5.1 of the main body except that each tag-out log shall also include:

(1) Index sheet(s) (see Figure K-1).

(2) Active TORS (see Figures K-2 and K-3).

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

b. Preparation

(1) The preparer shall:

(a) On the TORS, fill in block 1, 3-5 and 14-16 (see figures K-2 and K-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.

(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.

c. Independent Review

(1) 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.

(2) 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.

d. Authorization

(1) When authorizing tags to be posted, the Authorizing Officer shall ensure:

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

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

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

(d) If manned, notify Damage Control (DC) Central for tag-outs affecting DC capabilities.

(2) When required, the Ship's Force Authorizing Officer shall obtain review by the RA per 1.6.3b of the main body except as follows: The RA Representative shall independently review the tag coverage for adequacy, and review the tag(s) and TORS for completeness and accuracy. When satisfied with the tag-out plan, the RA Representative shall sign block 10 of the TORS.

(3) 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 of the main body).

(4) When the check of paragraph 3.4.c is complete (and RA review when required), the Authorizing Officer shall:

(a) Sign block 9 of the TORS.

(b) Sign block 6 of the tag(s) (see section 1.3.2 of the main body).

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

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

e. Posting (Attachment)

(1) The person assigned to post tags shall post the tag(s) per paragraph 1.6.4 of the main body except after each tag is posted:

(a) Sign block 4 of the tag, and

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

(2) 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.

f. Check of Posted Tags

(1) 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 as per paragraph 1.6.5 of the main body except as follows:

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

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

(c) When required, the RA Witness shall sign block 7 of the tag and initial the TORS in block 18b prior to commencement of the RA work.

NOTE: Two block 18b's are provided on the TORS to allow checks of tags be a second RA, as delineated in paragraph 1.6.7., and as such, the unused block 18b should remain blank for possible future use.

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

g. 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 3.2 through 3.6. Exceptions are as follows:

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

(2) 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.

(3) 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.

h. 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:

(1) A TORS (see Figures K-2 and K-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.

(2) 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 isolating any equipment.

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

4 MAINTAINING TAG-OUTS. The process for maintaining tag-outs shall be per section 1.7 of the main body except as follows:

a. Missing or Damaged Tags.

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

(a) 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.

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

(c) 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.

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

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

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

(a) 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.

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

(c) 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.

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

(e) 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 of the main body.

b. Audits by Ship's Force. Audits will be conducted per paragraph 1.7.4 of the main body except as follows:

(1) Record results of tag audits on the back of the TORS under the last tag listed. Record the date completed, the discrepancies noted, and the signature of person doing the audit.

(2) Ship's Force audit of TORS.

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

(b) Record the results of the TORS audit by a line entry on the index sheet. Record the date completed, the discrepancies noted, and the signature of the person doing the audit.

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

5 CLEARING TAG-OUTS.

a. 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.

b. Completion of Operation/Work Items

(1) 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.

(2) 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. The new work item shall be approved by the Authorizing Officer and RA (when applicable) prior to authorizing clearance of the affected tags.

c. 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.

d. Authorization

(1) 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”.

(2) 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.

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

(b) 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.

e. Removal

(1) 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:

(a) 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.

(b) 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.

(2) All tags shall 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.

f. 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.

g. Completion of Tag-out Record Sheet.

(1) 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.

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

(3) 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.

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 K-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).

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 K-2

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 tag-out may be used as the repair activity's validation of the adequacy and accuracy of a tag-out. This allowance only applies when the proposed tag-out and the authorized tag-out are identical. The RA Representative authorizing the tag-out in block 10 of the TORs remains responsible for ensuring the tag-out 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.

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)			

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9210/9)

Figure K-3

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.
	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.
	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.
	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.

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)

(FOR ILLUSTRATION ONLY - USE FORM NAVSEA 9890/8)

Figure K-4

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 shall have the general design and basic safety characteristics equivalent to a one-piece nylon cable tie that will withstand all environmental conditions, be non-reusable, attachable by hand, self-locking, and non-releasable.

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 K-5

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 shall have the general design and basic safety characteristics equivalent to a one-piece nylon cable tie that will withstand all environmental conditions, be non-reusable, attachable by hand, self-locking, and non-releasable.

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APPENDIX L
OUT OF CALIBRATION/OUT OF COMMISSION LABELS

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 shall 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 shall 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 shall be immediately replaced upon discovery. The Instrument Log shall 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.

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.

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.

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.

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

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.

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.

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.

Ref: NAVSEAINST 4160.3A NAVSEA S0005-AA-GYD-030/TMMP

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