



DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND
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WASHINGTON NAVY YARD DC 20376-0001

IN REPLY TO

NAVSEAINST 4720.23A
Ser 399A41/0384
16 Dec 08

NAVSEAINST 4720.23A

From: Commander, Naval Sea Systems Command

Subj: DEEP SUBMERGENCE SYSTEMS TEMPORARY MODIFICATIONS

Ref: (a) NAVSEA SS800-AG-MAN-010/P-9290 System Certification Procedures and Criteria Manual for Deep Submergence Systems
(b) NAVSEAINST 4720.14D Temporary Alterations to Active Fleet Submarines
(c) MIL-STD-461 Requirements For The Control Of Electromagnetic Interference Characteristics Of Subsystems And Equipment
(d) NAVSEA S9407-AB-HDBK-010 Handbook of Shipboard Electromagnetic Shielding Practices
(e) MIL-STD-464 Electromagnetic Environmental Effects Requirements for Systems

Encl: (1) Sample DSS TEMPMOD Log
(2) Sample TEMPMOD Evaluation Sheet
(3) Guide for NAVSEA Approval Letter

1. Purpose. To define the NAVSEA policy for Temporary Modifications (TEMPMODs) to Deep Submergence Systems (DSSs).

2. Cancellation. This revision supersedes NAVSEAINST 4720.23 Ser 395/0654 of 16 June 2003.

3. Background. Deep Submergence Systems (DSSs), as defined in reference (a), are those systems and components that, when working together, provide the capability for manned underwater operations. TEMPMODs are components, systems, or subsystems temporarily installed for the purposes of test and evaluation, research and development programs, or in support of short-term mission or exercise requirements. TEMPMODs are not intended to cover equipment required for normal or long-term operation of the DSS.

4. Scope. This instruction is applicable to all NAVSEA assets in the DSS Program governed by reference (a).

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5. Exclusion

a. Executive Order 12344, statutorily prescribed by Public Law 98-525 (42 U.S.C. 715 Note), establishes the responsibilities and authorities of the Deputy Commander, Nuclear Propulsion Directorate (SEA 08) over all facilities and activities that comprise the Naval Nuclear Propulsion Program, a joint Department of Energy (DOE) and U. S. Navy organization. These responsibilities and authorities include all technical and logistical matters related to naval nuclear responsibilities and propulsion. Accordingly, nothing in this instruction supersedes or changes those authorities, and SEA 08 shall be consulted concerning all matters related to Naval Nuclear Propulsion.

b. A TEMPALT must be submitted for approval in accordance with reference (b) for equipment that modifies the host submarine, when such equipment is temporarily used with or added to a DSS that interfaces with a host submarine.

c. TEMPMODs are authorized for use only on systems, equipment, components, platforms or portions of platforms meeting the definition of DSSs specified in reference (a).

6. Requirements

a. Administration. The cognizant NAVSEA Program Office and the Sustaining Activity for the DSS shall maintain a file of DSS TEMPMODs. The file shall contain the DSS TEMPMOD log as shown in enclosure (1), and all official correspondence regarding each TEMPMOD. The DSS TEMPMOD log has columns for a unique tracking number (TEMPMOD #), description of the TEMPMOD, the DSS asset on which the TEMPMOD is installed, the date of installation, and the date of removal. The maximum limit is 14 months without explicit NAVSEA concurrence and validation of the requirement for a longer duration. IN NO CASE shall equipment that is required for regular and routine operations of the DSS asset remain installed by TEMPMOD process beyond the time period(s) authorized by NAVSEA. All equipment required for regular operations shall be permanently installed via the formal Field Change (FC) process established by the Program Office for the DSS asset. If equipment has been temporarily installed for evaluation purposes via a TEMPMOD, an evaluation shall be conducted by the DSS asset's operational command, using a form

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similar to enclosure (2). If the item is determined to be suitable to become a permanent part of the configuration of the DSS asset, a complete FC Technical Data Package (FCTDP) shall be submitted to convert the TEMPMOD into a permanent FC prior to the expiration of the TEMPMOD authorization period. The following time requirement guidelines should be followed for the typical length of time TEMPMODs are to remain on a DSS asset:

- (1) At-sea test and evaluation: 6 months
- (2) Research and development: 6 months
- (3) Special Mission: 14 months
- (4) Scientific Mission: 6 months
- (5) Exercise: 6 months

b. Procedures. Any organization within the DSS community may recommend the development of a TEMPMOD. In developing a TEMPMOD, the recommending organization should work closely with the cognizant NAVSEA Program Office, the SEA 05 DSS Ship Design Manager, the specific DSS Planning Yard (PY), and the DSS Engineering Agent (EA), throughout the development process to ensure all technical requirements are adequately identified and addressed prior to submittal to the cognizant NAVSEA Program Office for approval. The proposed TEMPMOD or TEMPMOD recommendation shall be submitted in writing to the NAVSEA Program Office. The request shall be submitted no less than 20 working days prior to the requested approval date. Due to the varying degrees of complexity among different potential TEMPMOD installations, the NAVSEA review and approval process may take significantly longer than 20 working days to perform a thorough engineering and logistical analysis. To help streamline this review process, whenever possible, a preliminary design study investigating the impacts of the proposed TEMPMOD in each the areas listed below should be performed by the submitting activity, prior to submitting a formal TEMPMOD recommendation to NAVSEA for approval. The results of this preliminary design study, along with any applicable design analyses, calculations and testing results, should be provided to NAVSEA along with the formal TEMPMOD proposal. At a minimum, the submitting activity should address the following areas in their recommendation:

- (1) Purpose and description of the proposed TEMPMOD, including desired installation date.

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(2) A System Safety Program Plan tailored to address all aspects necessary to protect DSS personnel per paragraph 2.2.2 of reference (a).

(3) Mounting details (e.g. equipment location, type of fasteners, welding requirements, etc.).

(4) Shock analysis and qualification (for special mission installation), as applicable. Shock qualification shall meet the requirements for the DSS asset on which the TEMPMOD is being installed.

(5) Electrical power requirements (e.g. voltage, amperages, connector types, type and length of cable, etc.).

(6) A statement certifying that the TEMPMOD equipment and installation plans comply with the emissions requirements of MIL-STD-461 (reference (c)) and will not introduce EMI problems to other shipboard systems. The installing activity shall be responsible for correcting any EMI problems resulting from the TEMPMOD installation.

(a) NAVSEA S9407-AB-HDBK-010 (reference (d)) contains information providing guidance for determining cable locations based upon electromagnetic interference requirements. Shielding requirements are also addressed. Classification guidelines are provided so that cables can be categorized as radiators or susceptors and their spacing requirements can be determined. All TEMPMOD cables shall be installed with existing ship's cables as specified in NAVSEA S9407-AB-HDBK-010 (reference (d)).

(b) As required by paragraph 5.12 of MIL-STD-464, Electromagnetic Environmental Effects Requirements for Systems (reference (e)), national security information shall not be compromised by emanations from classified information processing equipment. The TEMPMOD package shall include OQE of testing, analysis, inspections or a combination thereof verifying compliance with this requirement. Baseline requirements are contained in NSTISSAM TEMPEST 1-92, NSTISSAM TEMPEST 1-93, NSTISSAM TEMPEST 2-95 and IA Pub-5239-31, Information Assurance Shipboard Red/Black Installation Publication. Those publications and CNNS Advisory Memorandum TEMPEST 01-02 provide testing guidelines. The Committee on National Security Systems (CNSS) (formerly the National Security

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Telecommunications and Information Systems Security Committee (NSTISSC)) maintains a web site at <http://www.nstissc.gov>.

(7) Analysis of impact on weight and stability of the DSS asset, including change to dry weight, change in buoyancy and righting moment, height above baseline, location fore or aft of the center of gravity, height above baseline (keel), and location port or starboard of centerline.

(8) Weight and moment compensation required, including weight in pounds, location fore or aft of the center of gravity, height above baseline (keel), and location port or starboard of centerline.

(9) Impact on other systems or design specifications [e.g. hydrodynamics, hazardous electromagnetic radiation to ordnance (HERO), access to vital equipment, life support, etc.].

(10) Impact on the DSS Scope of Certification (SOC).

(11) How the certification requirements of reference (a) will be addressed, including:

(a) Implodable or Explodable volume drawings and structural analyses (if applicable), including the NAVSEA calculated minimum standoff distances from all critical items, with all associated test procedures and test results.

(b) Items subjected to explosive decompression shall have the approved test procedure and the test results included in the package.

(c) Toxicity analyses:

(1) Obtain either a Closed Boat Atmospheric Sample from a NAVSEA Approved gas analysis laboratory, or an Environmental Chamber Atmospheric Gas Sample as soon as possible after the TEMPMOD hardware is initially installed inside of a DSS asset, and prior to any manned operations.

(2) Develop a List of Toxic or Flammable Materials, and eliminate all materials determined to represent unacceptable risk (e.g. heavy metals, mercury, lead, etc.).

(d) Bench Testing Requirements: conduct a "burn-in bench test" to determine the maximum temperature experienced by energized units and perform a flammability evaluation.

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(1) Equipment Heat Source: If new hardware is a potential heat source, address how the surrounding area must be protected.

(2) De-energizing Equipment: Energized hardware must be able to be de-energized quickly, and a redundant method to de-energize the equipment must be provided.

(e) Access To and Operation of Vital Equipment: Ensure that new components do not interfere with the time needed to access existing vital equipment. If the TEMPMOD equipment is also vital, verify that the installation location and equipment layout allow operators to meet the time requirements of reference (a), and that the equipment is added to the vital equipment operating and emergency procedures.

(12) Technical Documentation:

(a) Calculations: Submit the design calculations for the TEMPMOD.

(b) Drawings or Sketches: Submitted drawings shall be sufficiently detailed to support assembly, installation, testing and evaluation of the TEMPMOD equipment.

(c) Technical Manuals and Procedures: All normal or emergency procedures affected by the TEMPMOD must be modified and provided for approval as part of the TEMPMOD package.

(d) Installation Instructions: Detailed installation instructions shall be developed and submitted as part of the TEMPMOD.

(e) Test Procedures: Procedures for testing the TEMPMOD equipment shall be developed and submitted as part of the TEMPMOD package to ensure that all systems and components meet specification requirements, and do not represent a hazard to the DSS operators.

(13) Material certification requirements shall be identified and OQE provided in the package showing that the material certification requirements have been met.

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(14) A corrosion assessment of the material compatibility between the TEMPMOD components and other existing installed systems.

(15) An analysis of the impact on existing host submarine systems, including any interfaces between DSS-SOC and SUBSAFE components.

(16) Maintenance and spares requirements shall be identified.

(17) Preventive Maintenance System (PMS): Any additional preventive maintenance requirements, or changes to existing Maintenance Record Cards (MRCs) shall be identified and included in the TEMPMOD package.

(18) Include the required removal date for the TEMPMOD.

(19) Identify any related TEMPALTs to the host submarine that are either required by or impact the TEMPMOD installation.

NOTE

NAVSEA recognizes that some of the above areas may not be applicable for every type of TEMPMOD. Tailor the above list to suit the specific requirements of the TEMPMOD being processed.

c. Responsibilities

(1) Submitting Activities:

(a) When the need for a TEMPMOD is established, the responsible NAVSEA Program Office shall be contacted well in advance of the TEMPMOD hardware development and package submittal, to obtain the necessary guidance with respect to all applicable technical and certification requirements that must be met in order to obtain TEMPMOD approval.

(b) Submit the TEMPMOD recommendation and package including all of the items in paragraph 6.b above to the NAVSEA Program Office for technical review and approval.

(c) Submit revisions to each TEMPMOD as necessary. Any change to an approved TEMPMOD requires NAVSEA Program Office approval. TEMPMOD revisions are required when there is a change to a certification attribute, equipment, configuration, scope, a

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boundary or a retest requirement. Revisions shall be given a letter designator (e.g. Rev A, Rev B, etc.).

(2) Type Commanders:

(a) Authorize installation of only those TEMPMods that have been approved by NAVSEA per this instruction.

(b) Maintain administrative control and manage the current configuration of the DSS asset including all TEMPMods installed, and the required removal date for each.

(c) Notify the appropriate interfacing Type Commanders when authorizing the installation of TEMPMods that impact the mission or operational capabilities of the DSS asset.

(d) Accomplish the removal of TEMPMods prior to the required removal date. If it becomes necessary to extend the authorized installation period, provide justification to the NAVSEA Program Office for approval of an extension.

(e) If a TEMPMod has been approved and installed on one DSS asset and it becomes necessary to install the (unmodified) TEMPMod on another DSS asset, obtain NAVSEA Program Office's approval for the additional installation.

(f) If a TEMPMod must be modified to support installation on the new asset, a TEMPMod revision package must be developed and submitted for technical review and approval.

(g) If a TEMPMod has been properly removed from a DSS asset and it becomes necessary to re-install the unmodified TEMPMod on the original asset, obtain NAVSEA Program Office approval prior to re-installing the TEMPMod.

(h) If installation of a TEMPMod requires a revision, contact the initiating TEMPMod activity and coordinate the submission of a TEMPMod revision package to the NAVSEA Program Office.

(i) Designate installation and removal activities as necessary.

(j) If a DSS asset enters an overhaul period with a TEMPMod installed, contact NAVSEA for a determination of whether

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the TEMP MOD may remain installed. Unless otherwise directed, the overhauling activity must remove all TEMP MODs.

(3) Installing Activity: The TEMP MOD installing activity shall be approved in accordance with the TEMP MOD approval letter, or a Type Commander designation letter. The installing activity shall immediately report any problems encountered during installation, including any deficiencies in the approved TEMP MOD installation instructions and drawings, to the NAVSEA Program Office for immediate resolution. The installing activity shall report successful installation and any installation lessons learned, authorized "red-line" changes made, etc. to the NAVSEA Program Office, the DSS Type Commander, the DSS custodian or Immediate Superior In Command (ISIC), and the appropriate DSS PY.

(4) Removing Activity: The TEMP MOD removing activity shall be approved in accordance with the TEMP MOD approval letter, or a Type Commander designation letter. In addition, during DSS overhauls, all TEMP MODs shall be removed by the activity performing the overhaul work, unless the overhauling activity is specifically directed by the applicable Type Commander (with NAVSEA approval) to leave a TEMP MOD installed. Removal of a TEMP MOD during overhaul will preempt the TEMP MOD letter removal date. The removing activity shall report the removal to the DSS Type Commander, the DSS custodian or ISIC, the NAVSEA Program Office, and the appropriate DSS PY.

(5) DSS Planning Yard: The DSS PY shall provide a technical review and evaluation of TEMP MOD packages to the NAVSEA Program Office. This review shall cover consistency with the specific DSS design requirements, overall technical adequacy, and conformance with system safety and certification requirements.

(6) NAVSEA

(a) The NAVSEA Program Office shall provide technical requirements to the developer of the TEMP MOD package, as approved by SEA 05.

(b) The NAVSEA Program Office shall review all requests for TEMP MODs, and fund development of a formal TEMP MOD package if the Program Manager deems a request is appropriate.

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(c) The NAVSEA Program Office shall forward the proposed TEMPMOD to the applicable DSS PY for technical review and evaluation, prior to obtaining final approval from SEA 05.

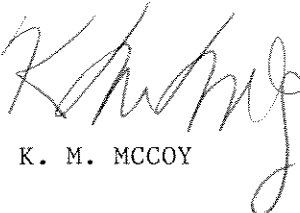
(d) The NAVSEA Program Office shall obtain a review and concurrence from the SEA 05 DSS Ship Design Manager. Review and concurrence shall also be obtained from the DSS Engineering Agent, SEA05U7TC, SEA07Q, SEA00C, and SEA00 as required.

(e) The NAVSEA Program Office shall issue a technical approval letter stating that the requirements of paragraph 6.b above have been satisfied, and that the TEMPMOD is approved and recommended for installation. The approval letter shall identify the following: Installation funding, authorized duration for TEMPMOD installation, source of materials, and the activity responsible for Re-Entry Control (REC) in accordance with reference (a). The NAVSEA Program Office approval letter can also suggest appropriate installation and removal activities, but the final designation of those activities will come from the Type Commander. The approval letter will require the end user or installing activity to report the installation completion or removal by letter or message to the NAVSEA Program Office. The approval letter shall also require the end user to perform an assessment of the performance and suitability of the temporary equipment, and shall include a TEMPMOD Evaluation Sheet listing instructions for conducting the evaluation, and the attributes necessary to determining the item's suitability for permanent use. A sample TEMPMOD Evaluation Sheet is shown in enclosure (2). Enclosure (3) is a guide for developing a NAVSEA Program Office TEMPMOD approval letter.

(f) The NAVSEA Program Office shall review and process all Type Commander requests for extension to an approved TEMPMOD installation period. The Program Office shall review each request and the associated justification to ensure the extension is legitimate, and is not an attempt to circumvent conversion of the TEMPMOD to a formal Field Change. If the NAVSEA Program Office, with the concurrence of the applicable SEA05 Technical Warrant Holder, determines the extension request is justified, the Program Office may authorize a one-time extension. In no case shall the extension period be longer than the original TEMPMOD approval period. Once a TEMPMOD period has been extended, any future requests for additional extensions must be reviewed and approved by the SCA for the DSS involved.

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7. Action. All NAVSEA personnel assigned will fully discharge their respective responsibilities under this instruction.



K. M. MCCOY

Distribution:

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NAVSEA All Hands (Electronic)
PEO-SUB
SEA05
SUPSHIP GROTON
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GUIDE FOR NAVSEA APPROVAL LETTER

4720
Ser 399AXX/XXX
<Date>

From: Commander, Naval Sea Systems Command
To: Applicable Type Commander
Initiating Activity (if applicable)

Subj: APPROVAL OF DEEP SUBMERGENCE SYSTEM (DSS) <TITLE OF
TEMPMOD>; TEMPORARY MODIFICATION (TEMPMOD) NUMBER ##-
####

Ref: (a) <applicable activity> ltr <Serial number of ltr>
dtd DD MMM YY (NOTAL)
(b) <forwarding activity (if applicable) ltr <Serial
number of ltr> dtd DD MMM YY (NOTAL)
(c) NAVSEAINST 4720.23A
(d) <list any other applicable references>

Encl: (1) TEMPMOD Evaluation Sheet

1. Reference (a) forwarded reference (b) to NAVSEA for review and approval.

2. NAVSEA has reviewed reference (a), TEMPMOD Number ##-####, <TEMPMOD Title>, and approves it for installation. *{if minor corrective comments are required, they should be inserted here.}* All of the requirements of reference (c), paragraph 6.b have been satisfied. This TEMPMOD shall be funded by <identify appropriate source of funding>, and the total amount to be expended for this TEMPMOD shall not exceed <authorized funding limit>. Equipment included in this TEMPMOD shall be provided by <activity providing TEMPMOD equipment>. <Activity responsible for Re-Entry Controls (REC)> shall be responsible for maintaining Re-Entry Control (REC) for work on all Scope-of-Certification components.

Enclosure (3)

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3. This TEMPMOD shall be removed no later than <# of months - 6 is default> months after installation, or during the next regularly scheduled overhaul, whichever occurs first. Written verification of the TEMPMOD installation and removal shall be forwarded to NASVEA PMS <enter program office code> by the installation and removal activities. An evaluation of the performance and suitability of the temporary equipment shall be conducted and documented on the enclosed TEMPMOD Evaluation Sheet.

3. The NAVSEA point of contact for this item is <Program Office Point of Contact>, PMS<POC's office code>, (202) 781-<POC's phone number>.

Program Manager

Enclosure (3)

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Subj: APPROVAL OF DEEP SUBMERGENCE SYSTEM (DSS) <TITLE OF
TEMPMOD>; TEMPORARY MODIFICATION (TEMPMOD) NUMBER ##-
####

Copy to:

- TYCOMs (not already action addressees)
- SUPSHIP GROTON/NEWPORT NEWS (Code ###) (if applicable)
- DDS PY (Code ###)
- NAVSEA (Program Office Code)
- Initiating and Design Activity (if applicable)

Record Note: CONCUR with the technical approval of
TEMPMOD-##-####, <TEMPMOD Title>, for a period not-to-
exceed <#> months after installation.

Code	Name	Signature	Date
_____	_____	_____	/ /
_____	_____	_____	/ /
_____	_____	_____	/ /
_____	_____	_____	/ /
_____	_____	_____	/ /
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Enclosure (3)