



DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND
WASHINGTON, D.C. 20362-5101

IN REPLY REFER TO

NAVSEAINST 9997.2
OPR 07112D
26 MAR 92

NAVSEA INSTRUCTION 9997.2

From: Commander, Naval Sea Systems Command

Subj: SUPERVISOR OF SHIPBUILDING, CONVERSION AND
REPAIR, USN (SUPSHIP) DOCKING OBSERVER PROGRAM

Ref: (a) General Specifications for Ships of the United States
Navy, NAVSEA S9AA0-AA-SPN-010\GEN-SPEC
(b) Navy Regulations, Chapter 8, Section 3, Subsection A

Encl: (1) Academic Requirements for the Qualification of
Docking Observers
(2) Practical Requirements for the Qualification of
Docking Observers
(3) Duties and Responsibilities of SUPSHIP Docking
Observers

1. Purpose. To establish the requirements for the qualification and certification of Docking Observers. This instruction applies to docking and undocking operations in graving docks, floating dry docks, marine railways, vertical lifts, launching ways, and other facilities certified for docking, undocking, or launching Navy ships.

2. Background. The docking and undocking of Navy ships by commercial shipyards is the responsibility of the contractor as conveyed by contract requirements. In the case of new construction and launching, reference (a), section 045, in conjunction with the contract requirements and ship's specifications, provide guidelines and contractor responsibilities. However, reference (b) in part states that the Supervisor of Shipbuilding is responsible for ensuring the contractor's facilities, methods, operations, and qualifications meet the standards of efficiency and safety prescribed by Navy directives. So, in order to ensure safety and efficiency, the Supervisor must have military and/or civilian personnel specifically trained and qualified to check and verify the contractor's facility and mode of operation during docking and undocking evolutions of naval ships and for the launching of newly constructed ships and craft. These trained and qualified personnel will be responsible to the Supervisor for ensuring the contractor carries out his contractual responsibilities relative to the safe docking, undocking, and launching of naval ships.

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Currently, SUPSHIP personnel responsible for docking, undocking, and launching of naval ships are called docking observers, docking officers, docking assistants, assurance officers, or docking inspectors. These personnel are either military or civilian.

3. Policy. This instruction intends to establish a cadre of docking personnel, referred to in this instruction as "Docking Observers," for the purpose of protecting Navy interests where the docking, undocking or launching could be jeopardized by the action or the inaction of contractor personnel. Docking Observers are required because the Supervisor is responsible for ensuring that contractors under their cognizance use facilities certified under MIL-STD-1625 in a safe manner and consistent with the approved Facility Certification Reports. Docking Observers have the authority, delegated to them in writing by the Supervisor, to stop the docking, undocking, or launching when the ship's safety or other Navy interests are jeopardized. To ensure that these responsibilities are carried out, a Docking Observer shall be assigned who is knowledgeable and is responsible to the Supervisor for the safe use of the certified facilities.

a. The Supervisor shall ensure that qualified personnel responsible for observing the docking, undocking, and launching of naval ships and craft are trained and qualified to the requirements of enclosures (1) and (2) and through the use of oral or written examinations, if necessary. These personnel shall be called "Docking Observers" to ensure consistency within the SUPSHIPS. These enclosures provide the minimum initial training for qualification as Docking Observers and refresher training for Docking Observers with previous experience in the docking, undocking, or launching evolutions but who have not maintained currency of their qualifications or who require certification for a type of facility different from that type for which they were qualified.

b. Docking Observers may be military or civilian, but they must be certified in writing by the Supervisor as the individual to ensure the contractor's facilities, methods, and operations permit the safe docking and undocking evolutions or launchings. They act as the Supervisor's on-site representative during these evolutions.

c. The assigned SUPSHIP Docking Observer is the Navy's point of contact for all matters relative to docking and undocking of naval ships and craft, and therefore must possess the knowledge and potential to perform the duties of a Naval Shipyard Docking Officer.

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d. The Docking Observer may use other SUPSHIP codes to verify adequacy and/or correctness of docking facilities but shall retain the responsibility for the Command in the proper execution of the docking and undocking evolutions.

e. SUPSHIP Docking Observers must meet the following requirements:

(1) Be designated in writing by the Supervisor as the individual(s) responsible to ensure the safe docking, undocking, and launching of naval ships.

(2) Be thoroughly familiar with and understand the academic requirements for the qualification of Docking Observers listed in enclosure (1).

(3) Be thoroughly familiar with and comply with the practical requirements for the qualification of Docking Observers listed in enclosure (2).

(4) To maintain proficiency, personally observe docking evolutions at least once every six (6) months. When this is not feasible, this requirement may be waived in writing by the Supervisor. In the case when there are insufficient dockings of Navy ships locally to fulfill this requirement, observation of dockings at naval shipyards or contractor facilities under the cognizance of other SUPSHIPS is encouraged. If necessary, observations of dockings and/or undockings of commercial ships at contractor's facilities may be used to fulfill this requirement.

(5) Be thoroughly familiar with local contractors' docking facilities, practices, and procedures.

(6) Perform the duties and responsibilities of a Docking Observer as assigned by the Supervisor using enclosure (3) as a guide.

4. Action. All Supervisors of Shipbuilding, Conversion and Repair shall implement the requirements of this instruction and forward a copy of local implementing instructions to NAVSEA (SEA 071) within 90 days from the date of this instruction.



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ACADEMIC REQUIREMENTS FOR THE QUALIFICATION
OF DOCKING OBSERVERS

1. To be qualified as a Docking Observer, personnel must be familiar with the following:

a. Duties and responsibilities of the docking observer:

(1) Navy Regulations, Chapter 8 (The Commanding Officer), Section 3 (Special Circumstances), Subsection A (Ships in Naval Stations and Shipyards).

b. Specific information on docking and undocking:

(1) Naval Ships' Technical Manual, NAVSEA S9086-7G-STM-000/CH-997R2, Docking Instructions and Routine Work in Drydock.

(2) Naval Ships' Technical Manual, NAVSEA S9086-C6-STM-000/CH-096, Weight and Stability.

(3) Naval Ships' Technical Manual, NAVSEA 0901-LP-079-0010, Chapter 079, Vol 1, Damage Control - Stability and Buoyancy.

(4) NAVSEA 9997/1 through 9997/5, "Docking Reports."

(5) General Specifications for Ships of the United States Navy, NAVSEA S9AA0-AA-SPN-010\GEN-SPEC.

(6) NAVSEAINST 9997 Minimum Requirements for the Qualification of Docking Officers.

(7) NAVSEAINST 11420.1(series), Drydocking and Launching Facilities Safety Certification Criteria for U.S. Navy Ships.

(8) MIL-STD-1625(latest revision)(SH), Safety Certification Program for Docking Facilities and Shipbuilding Ways for U.S. Navy Ships.

(9) NAVSEA 0900-LP-079-5010, Ship Repair Contracting Manual, paragraphs 4-3.3.3 and 7-4.11.2.

(10) NAVSEA 0900-LP-000-6010, Ship Acquisition Contract Administration Manual, paragraphs 7-4.2 and 11-7.3.j.

c. Docking and undocking of ships and craft in graving docks. (When assigned to a facility having graving docks)

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(1) Standard procedures and principles covering the operation of docking and undocking in graving docks, emphasizing:

- (a) Nomenclature
- (b) Safety Precautions
- (c) Sequence of operations in Dockings and Undockings

(2) Facility Certification Report; docking/undocking procedures relative to graving docks.

d. Docking and undocking of ships and craft in floating dry docks. (When assigned to a facility that has a floating dry dock)

(1) Standard procedures and principles covering the operation of docking and undocking in floating dry docks, emphasizing:

- (a) Nomenclature
- (b) Safety Precautions
- (c) Sequence of operations in Dockings and Undockings

(2) Facility Certification Report; docking/undocking procedures relative to floating dry docks.

e. Docking and undocking of ships and crafts in marine railways. (When assigned to a facility that has a marine railway)

(1) Standard procedures and principles covering the operation of docking and undocking on a marine railway, emphasizing:

- (a) Nomenclature
- (b) Safety Precautions
- (c) Sequence of operations in Dockings and Undockings

(2) Facility Certification Report; docking/undocking procedures relative to Marine Railways.

f. Docking and undocking of ships and craft in vertical lifts. (When assigned to a facility that has a vertical lift)

(1) Standard procedures and principles covering the operation of docking and undocking on a vertical lift, emphasizing:

Enclosure (1)

- (a) Nomenclature
- (b) Safety Precautions
- (c) Sequence of operation in Dockings and Undockings

(2) Facility Certification Report; docking/undocking procedures relative to vertical lifts.

g. Launching of ships and craft on launchways. (When assigned to a facility that has a launchway)

(1) Standard procedures and principles covering launching of ships and craft on a launchway, emphasizing:

- (a) Nomenclature
- (b) Safety Precautions
- (c) Sequence of operations in launchings

(2) Facility Certification Report, Launching Procedures.

h. Docking drawings for naval ships, to include the following:

- (1) Stern Reference Point (SRP).
- (2) Utilization of Table of Offsets for side blocks.

(3) Side block build-up (especially, relationship among values for points A, B, and C, and bevel across bilge blocks).

i. Docking Notices, use of tide tables, agenda for Docking Conferences, Undocking Notices and agenda for Undocking Conferences. Preparation of sample documents may be required by the certifying officer to enhance understanding and proficiency.

j. Preparation of dry dock build-up papers for each major class of ship normally docked at the activity. Specific topics of interest include:

(1) Verification of contractor build-up of blocks and arrangement in accordance with ship's docking drawing.

(2) Docking and undocking calculations in accordance with NSTM, Chapter 997.

(3) Selection and construction of keel and bilge blocks and the requirements for cribbing and shoring.

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(4) Knuckle loading.

k. Unusual conditions and/or circumstances for such major occurrences as:

- (1) Hurricanes.
- (2) Earthquakes.
- (3) High winds.
- (4) Use of divers during docking.

l. Previous drydocking accidents and discussion of causes and ways they might have been avoided.

m. For dry docks which routinely dock nuclear powered ships, demonstrate a knowledge of:

(1) Operating requirements of the reactor plant during a docking evolution, dry dock support services required by the reactor plant and safety precautions thereto.

(2) Radiological procedures and precautions employed when a nuclear powered ship is in dry dock.

n. Casualty procedures on types of facilities used by the contractor under the cognizance of the respective SUPSHIP. Procedures should cover the following:

- (1) Equipment malfunctions.
- (2) Failure of remote control or indicating systems.
- (3) Fire in the dry dock or dry dock spaces.
- (4) Fire in drydocked ship.
- (5) Flooding of dry dock tanks or basin.
- (6) Loss of electrical power to all or part of the dock.

o. Factors of drydocking ships, such as:

(1) Trim, list and maximum draft prior to and during drydocking.

(2) Draft at landing determination.

- (3) Draft at instability determination.
- (4) Maximum keel block loading.
- (5) Maximum knuckle block loading.
- (6) Stability during landing.
- (7) Differences among various types of docking facilities and their varied effects on ship stability.
- (8) Effect of tide on docking facility.
- (9) Change of ship's characteristics during the lay period in the dry dock.
- (10) Utilization of ship's damage control books, inclining experiments, tank sounding tables, Displacement and Other (D&O) Curves, and last docking report.
- (11) The use of BONJEAN's curves in docking.

2. General information which should be reviewed or required knowledge demonstrated as applicable includes:

a. Uniform Method and Standard (UM&S) 9971-450, Drydocking Naval Surface Ships in Graving Docks.

b. Uniform Method and Standard (UM&S) 0043-450, Drydocking Nuclear Powered Submarines in Graving Docks.

Note: Release of Uniform Methods and Standards (UM&S) to contractor personnel must be approved by NAVSEA 071 prior to release.

c. Floating Dry Dock Training Manual BUSHIPS/BUDOCKS, June 1953-Chapter 2; Fundamental Principles, Chapter 5, Mooring; Chapter 7, Operation of Floating Dry Docks.

d. Operating manuals, data books and damage control books of floating docks.

e. Naval Ships' Technical Manual, NAVSEA 0901-LP-079-0020, Chapter 079, Vol 11, Damage Control - Practical Damage Control.

f. BUSHIPS Technical Bulletin #3, "Notes on Drydocking of Ships," May 1941, by W. E. Howard and J. M. Farrin.

g. "Safety of Floating Dry Docks in accordance with MIL-STD-1625A", by Robert G. Wasalaski, NAVSEA (SEA 55W43).

PRACTICAL REQUIREMENTS FOR
SUPSHIP DOCKING OBSERVERS

Prior to qualification as SUPSHIP Docking Observer, the candidate shall accomplish the following:

1. Attend and participate in, at a minimum, the following evolutions, as applicable to facilities under SUPSHIP cognizance:

a. Docking Conferences (2).

b. Dockings (build-up papers, check blocks, check calculations, land ship, etc.) (3).

c. Undocking Conferences (2).

d. Undockings (3).

e. Launchings (2).

2. Review and understand the following: (Where circumstances allow, candidate may be required to perform and/or prepare the item)

a. Calculations and build-up papers for docking (3).

b. Docking notices for the particular facility being used (2).

c. Undocking notices for the particular facility being used (2).

d. Docking reports (2).

e. Pumping plans (for floating dry docks) (3).

3. Perform the duties of Docking Observer for a minimum of four (4) dockings and undockings under the supervision of a qualified SUPSHIP Docking Observer.

NOTE: When local conditions do not permit the frequencies to be performed as listed, the Supervisor may reduce the frequencies to a level commensurate with the workload in the area and the ability of the candidate.

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DUTIES AND RESPONSIBILITIES OF
SUPSHIP DOCKING OBSERVERS

The duties and responsibilities of a SUPSHIP Docking Observer must be clearly understood by both the Docking Observer and the contractor's dockmaster. New construction and repair contracts specify that the contractor is responsible for the docking and undocking evolutions of the Navy ship during construction or repair. However, the Supervisor of Shipbuilding, Conversion and Repair is responsible for safety of Navy ships and for the coordination between the (Navy) ship's crew and the contractor. The correlation of all necessary information for docking and undocking ships is done by the Docking Observer, and in so doing, the contractor's dockmaster and the Docking Observer must keep one another properly informed at all times of the procedure and progress of events.

1. Prior to Docking:

a. Prior to the use of any commercial graving dock, floating dry dock, vertical lift, marine railway or launchway, the Docking Observer will ensure that the facility has been certified to MIL-STD-1625 for a capacity equal to or greater than the ship scheduled to be docked.

b. The following information, as required by contract, must be reviewed:

- (1) Contractor proposal for docking and undocking.
- (2) Navy letter certifying the facility.
- (3) Facility Certification Report.
- (4) Dockmaster's qualifications.
- (5) Operating procedures.
- (6) Safety precautions for ship while in dock.
- (7) Calculations for the ship being drydocked.
- (8) Contractor requests for deviation from ship's docking drawing.
- (9) Pumping plans for floating dry docks.
- (10) Current water depth/sounding survey (dry dock and vicinity).
- (11) Last docking report and last docking position.

Note: Items (2) through (5) normally are reviewed once by the certifying authority and again during pre-award survey prior to contract award.

Enclosure (3)

2. Preparatory Information for Docking:

a. For ships in commission, the contractor's dockmaster shall conduct a docking conference with the ship's force and Docking Observer prior to docking to inform the Commanding Officer of:

(1) Tentative time of docking and the facility in which the ship is scheduled to be docked.

(2) The necessity for ship's force ensuring that retractable projections below the ship's hull are properly housed and that the propeller blades and shaft(s) are in the docking position.

(3) Maximum permissible trim, list and draft.

(4) Utilization of tugs for docking.

(5) Communication line established between ship and dockmaster.

(6) The requirement that no weights be shifted, placed onboard, or removed by ship's force without the permission of the Navy Ship Superintendent, or other designated person, and that a ship's officer, for ships in commission, be designated as Weight Control Officer and keep record of weight changes and notify the Docking Observer of all weight changes. These records are to be delivered to the Ship Superintendent, or designated person, as directed. The Ship Superintendent, or designated person, is to permit no weight changes without the approval of the contractor's dockmaster.

(7) The requirement that propellers, rudders and gun mounts not be rotated or removed by ship's force without the permission of the Ship Superintendent or other designated person(s). The Docking Observer shall be made aware of planned rotations or removals.

(8) The requirement that no underwater hull or over the side work or internal work, that would delay the drydocking or unnecessarily endanger the ship or crew during drydocking, be accomplished by ship's force without the expressed authority of the Ship Superintendent or designated person(s).

(9) The requirement that a current liquid loading diagram or sounding sheet including all liquid storage tanks be submitted to the Docking Observer one (1) day prior to docking and undocking.

(10) The requirement that the Docking Observer be furnished a list, with a copy to the contractor, indicating the location of ammunition and highly flammable liquid aboard the ship.

(11) Contingency plans and procedures to be used in case of emergency, i.e., flood, personnel injury, etc.

(12) Whether a pilot will or will not be used.

(13) Whether drivers will be used to check hull/block clearances.

b. The Docking Observer is to ensure responsible SUPSHIP personnel are aboard the ship during all movements and that proper services are provided.

3. Prior to the flooding of the dock, the Docking Observer is to:

a. Review the procedure which the contractor's dockmaster intends to follow and insure that the procedure is sound, before permitting the docking to proceed. (This is usually done at the docking conference)

b. Inspect the dry dock for debris and loose cap blocks.

c. Ascertain that the depth of water over the blocks is sufficient to move the ship into docking position without possibility of damaging projections from the ship or the docking block setup, taking into account the possible fall in tide during the docking evolution. In the event the ship sails directly into dock from the sea, ascertain from the Commanding Officer, the ship's anticipated condition of draft, trim and list.

d. Check, together with the contractor's dockmaster, the docking drawing and the setup of the dry dock, paying particular attention to the following: (This step may be augmented by Engineering or Quality Assurance personnel, where assigned and available; but the Docking Observer must personally review these items in sufficient detail to ensure that all items are correct)

(1) Location of the square marks on the dock for determining the position of the ship with respect to the dock and/or the keel blocks.

(2) Location of the after keel block from the square mark. (Reference point)

(3) Location of all bilge blocks from the stern reference point and their half breadths.

(4) The height of all bilge blocks making sure the height is in accordance with the docking drawing and any authorized deviations and will clear the bilge keel of the ship.

(5) Any possible interference between docking blocks and sea valves or other hull fitting and omission of blocks to facilitate accomplishment of contractor's work.

(6) Location of fixed underwater sound apparatus, propellers and any other underwater projections with respect to interference in the dock, making special check of vertical clearance of such locations.

(7) Height of keel block and bilge blocks shall be determined from established bench marks with a transit to ensure that no blocks are unduly high.

(8) If haul blocks are used, ensure that tackle runs are free and blocks will haul to proper offset.

(9) Any special requirements/dimensions pertaining to removals, e.g. sonar domes, rudder stock, etc.

4. During the docking operation, the Docking Observer is to:

a. Be present prior to docking time to ensure that the dock is ready to receive the ship.

b. Be present at the time of flooding or hauling out and remain at the dock until all blocks are well covered with water and be satisfied that no blocks are adrift or misplaced so as to endanger the ship when landing.

c. Check the position of the ship with respect to the dock and centering over the keel blocks.

d. Check the drafts, as the ship lands, to ensure that there are no obstructions between ship and blocks.

e. Immediately after hauling or pumping, the Docking Observer, with the Ship's Commanding Officer, Ship's Engineer and the contractor's dockmaster, make a complete inspection of the bottom of the ship, noting particularly the fit of blocks. The Docking Observer will file a preliminary report of conditions, if required, to document discrepancies.

5. In preparation for the undocking operations, the Docking Observer is to:

a. Determine with the contractor's dockmaster and the Ship Superintendent, if one is assigned, when all underwater work will be completed, and schedule an undocking conference.

b. Ensure the contractor's technical personnel have received all weight data records and sounding sheets, and the contractor has compensated for any changes in weight distribution, to correct for satisfactory list, trim and stability when the ship is undocked. The Docking Observer may be assisted by the SUPSHIP Engineering Department.

Note: Ship's Engineering Officer is to provide a sounding sheet to the Docking Observer with current tank conditions one (1) day prior to undocking.

c. Participate in an undocking conference, with the contractor's dockmaster and ship's force, to inform the Commanding Officer of the undocking procedure, as follows:

(1) Necessity of inspection by ship's force of the underwater body, sea valves and hull penetrations.

(2) Time undocking evolution to commence.

(3) Time flooding to commence.

(4) Sill time.

(5) Location and approximate time of arrival of the ship at new berth.

(6) Procedure for handling ship's lines during undocking operations.

d. Ensure responsible SUPSHIP personnel are aboard the ship, commissioned or noncommissioned, for all movements, and that proper services are arranged.

e. Verify all underwater work has been accomplished and all hull openings are in proper position.

f. Inspect dry dock for debris and loose cap blocks.

g. Be present to observe the undocking operations.

h. Perform post-undocking inspection, as required.

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6. Launching of Navy ships is normally limited to contractor facilities operating under a new construction ship contract. The information required by the specification for submittal to the Supervisor and the degree of participation by the Supervisor will be specified in the contract.

Enclosure (3)