DEPARTMENT OF THE NAVY
BOARD OF INSPECTION AND SURVEY
2600 TARAWA COURT SUITE 250
NORFOLK, VA 23521-3295

INSURVINST 4730.22D
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7 Sep 06

BOARD OF INSPECTION AND SURVEY INSTRUCTION 4730.22D

From: President, Board of Inspection and Survey

Subj: STANDARDS FOR SURFACE SHIP UNDERSEA WARFARE (USW) DEMONSTRATION

Ref: (a) OPNAVINST 4730.5N
(b) INSURVINST 4730.1E

Encl: (1) Sample Demonstration Plan

1. Purpose. To establish policy and standards for demonstrating the condition of USW sensors, underwater fire control, weapon systems, and USW countermeasures for applicable surface ships during Board of Inspection and Survey (INSURV) Acceptance Trials (ATs), Final Contract Trials (FCTs), and Material Inspections (MIs).

2. Cancellation. INSURVINST 4730.22C.

3. Discussion. References (a) and (b) provide responsibilities and procedures for INSURV in the conduct of trials and inspections for surface ships. The USW demonstration is a non-tactical exercise of USW capabilities utilizing a MK 39 Expendable Mobile ASW Training Target (EMATT). Evaluated events include:

a. Acquisition by all USW sensors.

b. Acoustic data processing to a fire control solution.

c. Simulated engagement.

d. Operation of USW countermeasures.

4. Policy

a. The USW demonstration will be conducted during ATs, FCTs, and MIs on all surface ships with an USW primary mission area. The USW demonstration conducted during ATs is governed by local shipyard test procedures.

b. The USW demonstration will include detection, localization, tracking, and simulated engagement of a target. The following equipment, if applicable, will be demonstrated:

(1) Active (hull-mounted) sonar.

(2) Passive (hull-mounted) sonar.

(3) Passive towed array.

(4) Sonobuoy processing via ship's antenna and receiver.

(5) Sonobuoy processing via helicopter data link.

(6) SVTT (UWFCS initiated air slug) and/or VLA (launch simulated).

(7) Prairie/Masker Air Systems.

c. If helicopter services are not available, the LAMPS MK III radio telemetric data set AN/SRQ-4 will be demonstrated using the TS-4120/SRQ-4 test set.

5. Preparations.

a. The ship should be positioned in an area of at least four by four nautical miles, with minimal shipping present. All passive and active systems will be utilized.

b. The ship should have available, and be ready to launch, an expendable bathythermograph (XBT), EMATT, sonobuoys, and a long-life smoke float (MK6 or MK58). The sonobuoys will be used for testing on board processing equipment and will be received via helicopter, if available, and by direct link through shipboard antennas to onboard receiving equipment. The smoke float is used to establish the DATUM visual bearing while maneuvering the ship. It is assumed the distance traveled by the target during this demonstration will be small and the location of the smoke float will be near the target's location.

c. All USW weapon systems, sonar systems, towed array systems, Prairie/Masker Air Systems, and helicopter USW support systems installed should be fully operational and in NORMAL, not CASUALTY modes. Equipment should meet PMS specifications outlined in the ship's installed PMS deck and/or Combat System Demonstration Test Package. Ensure the towed array is ready for deployment. Critical installed monitoring and support systems (DRT/CADRT/DDRT

plotting tables, 400Hz power, dry air, HP air, and cooling water) must be operational to the extent that all mission areas are supported.

d. NIXIE Stream Demonstration (Deployment of Towed Bodies, Limit Switch Settings verification, and Output Indication function of Towed Bodies verification) is no longer required to be performed during the MI. Ship's Force should perform the NIXIE Stream Demonstration in accordance with applicable PMS/MRC procedures within 60 days of the MI and discrepancies should be entered into the CSMP. A detailed report of CSMP entries on NIXIE systems shall be provided to the Board of Inspection and Survey prior to the scheduled MI. Inspection of the RL-272 Winch, Tow Chocks, Transom Door, Fleet Angle Compensator, Transmitter Remote Control Unit test, System Performance test, and Off-Line Maintenance test will be performed during the scheduled MI period.

6. Procedures.

a. The following sequence, depicted in enclosure (1), is the recommended method for conducting the USW demonstration.

(1) Select an EMATT run pattern from the data sheet enclosed in the EMATT package and note the initial magnetic course (recommend selecting the shallow depth pattern).

(2) Conduct XBT drop to determine the best depth setting for sonobuoys and towed array.

(3) Deploy the towed array, if applicable.

(4) Maneuver the ship down the reciprocal of the intended EMATT magnetic course and drop sonobuoys based on the computed Maximum Detection Range (MDR).

(5) Deploy the EMATT and smoke float approximately one MDR beyond the last sonobuoy.

(6) Confirm, by sonobuoy or towed array, that EMATT is operational.

(7) Establish secure data link with helicopter, if applicable. However, do not delay the demonstration if data link cannot be established at aircraft check-in.

(8) Maneuver the ship 180 degrees to port or starboard of the EMATT magnetic course and begin prosecution.

(9) All sensors should detect, localize, track, and classify the EMATT.

(10) Pass contact information from each sensor to the plotting team. Information should also be passed electronically, including acoustic lines of bearing, to the appropriate watchstations in CIC.

(11) Conduct simulated attack(s) utilizing all USW weapon systems.

NOTE: Helicopter deployment of sonobuoys, smoke float, and EMATT is optional.

7. Briefing. The demonstration should be pre-briefed during the Combat Systems brief early on the first day of the inspection. The ship's demonstration plan should be reviewed by the INSURV USW inspector to ensure all equipment is demonstrated. If there are any procedural questions, the USW inspector should be contacted for assistance.

8. Evaluation Criteria. The USW demonstration will be evaluated using the following criteria:

a. Satisfactory. Contact was gained and displayed on all sensors and processors, contact data was automatically transmitted to the fire control systems, and all weapons systems demonstrated the ability to remotely engage (simulated) the target. USW countermeasure Prairie/Masker Air Systems were fully functional. The combination of events and equipment status resulted in an EOC score of 0.80 to 1.0.

b. Degraded. The contact was gained by at least one sensor and successfully engaged with at least one weapons system. However, not all USW sensors, processors, or weapons systems demonstrated the ability to track/remotely engage the target. If significant equipment in the ship USW suite directly associated with acquisition, developing a fire control solution or engaging (firing remotely and locally) a contact is not operational or malfunctions, the demonstration is degraded. USW countermeasure Prairie/Masker Air Systems were fully functional. The combination of events and equipment status resulted in an EOC score of 0.60 to 0.79.

c. Unsatisfactory. The target was not successfully engaged by any USW weapons system. The combination of events and equipment status resulted in an EOC score of 0.0 to 0.59.

9. Responsibility. As with all ship's operations, the Commanding Officer retains responsibility for the safe conduct of this demonstration and for ensuring all applicable safety precautions are enforced. Nothing is more important than the safety of all personnel and equipment.

M. P. Nowakowski

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Distribution:
CNO (N75, N76, N77)
COMLANTFLT (N6, N43, N3)
COMPACFLT (N6, N43, N3)
COMNAVSURFPAC (N6, N3)
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COMNAVAIRLANT (N435)
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SAMPLE DEMONSTRATION PLAN

ASW/USW OPDEMO

SCENARIO BASED ON ASSUMED EMATT MAG COURSE OF 070.

LAY BUOY FIELD ON SHIP'S COURSE OF 250.

AT END OF FIELD, TURN PORT OR STBD 180 DEGREES.