

STANDING ORDER 5

SONAR OPERATIONS

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0530	TOWED ARRAY HANDLING EVOLUTIONS
APPENDIX A	SONAR WATCH ROUTINE CHECKLIST
APPENDIX B	ACOUSTIC CONDITIONS ON INITIAL DIVE

- Ref: (a) NWP 3-21.22.3, AN/BSY-1 Acoustic Subsystem Employment Manual
- (b) NWP 3-21.61.2, AN/BSY-1 Acoustic Subsystem Operating Guidelines
- (c) NWP 3-21.61.14, AN/BQQ-10 Phase II TB-16/23 Configuration
- (d) COMSUBLANT/COMSUBPACINST 5400.40A, Combat Systems Operations and Regulations Manual
- (e) NWP 3-21.22, Submarine Search Manual
- (f) NWP 3-21.23, Submarine Track Manual
- (g) COMSUBLANT/COMSUBPACINST C9460.4C, Towed Array Operations
- (h) SSM OI 637-10, Reelable Towed Array Handling System Operation
- (i) SSN OI 637-11, Deployable Array Working Group Operations

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0500 (U) SONAR WATCHSTANDING

1. Sonar watches will be manned in accordance with references (a) through (i). These watchstanders will not leave the Sonar Control Room unless a qualified relief is obtained, except for the Auxiliary Operator for short periods. The Sonar Supervisor may leave the Sonar Control Room for brief conferences with the OOD on the Conn. Additional watchstanders will be used for operations outside the Sonar Control Room, such as launching an SSXBT, operating the towed array handling systems, or operating the fathometer. The Auxiliary Operator may operate the CSDC on

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periscope depth approaches (if qualified). My permission is required to relax sonar watchstander requirements.

2. Oncoming watchstanders will receive a thorough turnover and request permission from the Sonar Supervisor to relieve the watch. Reliefs will occur one at a time in a quiet and orderly fashion, especially during a threat or high contact situation. The oncoming Sonar Supervisor will review the following prior to relieving the watch:

- a. Navigation Plot
- b. Critical Factors Plot/Environmental Monitoring Log
- c. Fire Control and Sonar Logs
- d. Tactical Plots
- e. Current Tasking Messages
- f. CO's Night Orders
- g. Operational Status of Sonar Equipment
- h. Status of the Ship's Acoustic Health
- i. OOD's intentions for the next watch

Once subordinate watches have relieved and after meeting with the Officer of the Deck, the oncoming Sonar Supervisor will request permission from the OOD to relieve the watch.

3. I expect the Sonar Supervisor to fully support the OOD in all operations and to make recommendations to further enhance these operations. I further expect the OOD to be open to sonar's recommendations. Without close coordination between the Sonar Supervisor and the OOD, any sonar search will be ineffective.

4. The Sonar Watch Routine Checklist (APPENDIX A) is to be maintained in a binder in the Sonar Control Room by the Sonar Supervisor. All evolutions conducted on watch should be recorded on this sheet or attached on additional sheets. These sheets shall be the basis for Sonar Supervisor turnover.

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0505 (U) SONAR EMPLOYMENT

1. The OOD and Sonar Supervisor will operate in accordance with references (a) through (i). The Sonar Supervisor shall evaluate the best listening depth and best depth to avoid detection in accordance with CO Standing Order #9. He will stay abreast of the changing environment and make recommendations to the Officer of the Deck.

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0515 (U) SOUND SILENCING

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2. (U) Each watch, the Sonar Supervisor will monitor all bands of each noise monitoring hydrophone for any potential noise

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sources, report the results to the OOD, and record the results in the Supervisor's Log. Following an inport period, complete APPENDIX B as soon as possible after the initial dive.

3. (U) If it is impractical to accomplish all these items, the outstanding items will be reported to the oncoming OOD at watch relief until all items are accomplished. The completed checklist will be routed to the Commanding Officer. Platform noise monitoring will be performed in accordance with PMS schedules. These measurements should be made in water with low ambient noise and few interfering contacts. The OOD will ensure that the applicable machinery lineup requested by sonar is in effect and the lineup is not changed during the data run. Any transient noise detected will invalidate the data taken.

0520 (U) SYSTEM MAINTENANCE

1. My permission is required prior to conducting any maintenance resulting in a loss of sonar capability. On failure of a unit that requires immediate actions by the Sonar Supervisor to initiate an IPL or reload the applicable unit, the Sonar Supervisor is to inform the OOD of the problem and take required actions. The Auxiliary Operator may perform watch routines and daily preventive maintenance. All other maintenance will be performed by off-watch personnel.

0525 (U) SONAR SEARCH PLAN

1. Applicable Type Commander directives and CO Standing Order #9 expand on the requirements of this section.

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a. The Sonar LPO will ensure that optimum settings for the AN/BSY-1 Acoustic System, AN/BQQ-10 ARCI System and its associated auxiliaries are made in accordance with references (a) through (i). Own ship, target, and environmental data sheets are filled out in accordance with reference (d) or using ship generated forms and will be submitted to the Commanding Officer before preparing an initial search plan. There will be a search plan approved by the Commanding Officer for each underway period. OODs/Sonar Supervisors will be thoroughly familiar with the search plan. The search plan will remain in the Sonar Control Room at all times and a copy of the executive summary will be kept in the OOD's Notebook on the Conn.

b. PC IMAT is used in conjunction with the TAC-3 to develop the sonar search plan. Watchstanders in sonar and the OOD will

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also evaluate ray traces to aid in selecting search and evasion depths.

c. The SVP will be measured with an SSXBT upon arrival in a search area. After every periscope depth evolution (and following other significant depth excursions), the sound velocity trace will be compared with the SSXBT trace and MODAS data. If the SVP has changed, a new SSXBT trace should be obtained if operations permit. If a SSXBT is unavailable, consider conducting a depth excursion.

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d. A complete set of LEs will be measured upon arrival in an assigned search area to validate the sonar search plan. A full set of LEs will be taken every mid-watch or as required. Ensure a spherical array and towed array LE is measured every hour. Revised ambient limited, breakpoint speed, and figure of merit will be reported to the OOD and CDO (if stationed). New data will be routed to the Commanding Officer for review in the 1200 report.

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e. The Sonar Officer and the Sonar LPO will review and initial the search plan daily. The search plan will be updated if:

- (1) Environmental conditions have changed as discussed in CO Standing Order #9;
- (2) Contact of interest changes;
- (3) Ship's mission or goal changes.

0530 (U) TOWED ARRAY HANDLING EVOLUTIONS

1. The following general requirements supplement the requirements found in references (g) through (i).

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a. A qualified Towed Array Handling Supervisor and Operator(s) will be stationed for all streaming and retrieving evolutions.

b. Streaming/retrieving either array requires a pre-evolution brief consisting of the OOD, Sonar Supervisor, Diving Officer of the Watch, Chief of the Watch, and Towed Array Handling Supervisor. This discussion will include ship's parameters, intended scope, manning of stations, and applicable milestones.

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c. Different tow cable lengths require different Control Indicator Unit (CIU) Limit Preset Thumbwheel Switch settings in order to prevent damage to the array. The Towed Array Handling Supervisor will brief the proper switch setting per reference (i) at the pre-evolution brief.

d. Communications will be passed via the JA phones between the Sonar Control Room, the Chief of the Watch, and the Towed Array Handling Station.

e. Overriding of any interlock or operating in any casualty/abnormal mode requires my permission. The only exception is to jog the array a few feet in accordance with the applicable procedures to obtain proper system locked indications.

f. The following milestones will be reported to the OOD via the Chief of the Watch:

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- (1) Array movement,
- (2) Array inboard/overboard,
- (3) Any unexpected cycle stop, and
- (4) Every 500 feet of array scope change.

Note:

Do not retrieve or deploy the TB-23 array unless the external hydraulic power plant is in a normal lineup (configured with both simplex pumps online and operating) and no additional loads are placed upon the external hydraulic power plant. Stopping/cogging during the deployment and retrieval cycles may occur due to fluctuations in the external hydraulic supply to the TB-23 handling gear, damaging the array.

g. In the event of an external hydraulic power plant casualty with the array deployed, retrieval operations of the TB-23 may be performed when only one pump is operational. This is accomplished by securing all other loads on the external hydraulic power plant. Commence slow speed retrieval (less than 60 fpm). Monitor the accumulator. When the accumulator indicated 35-40% charged, secure the retrieval evolution until accumulator indicates 95% charged. Continue this cycle until array is stowed and secure the system until the other pump can be repaired.

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STANDING ORDER 6

PERISCOPE DEPTH OPERATIONS

<u>ARTICLE</u>	<u>CONTENTS</u>
0600	GENERAL
0605	PREPARATION
0610	CLEARING BAFFLES
0615	ASCENT TO PERISCOPE DEPTH
0620	MAST/PERISCOPE OPERATIONS AT PERISCOPE DEPTH
0625	ESM SEARCH
0630	CONTACT REPORTING
0635	RADIO BROADCAST
0640	LEAVING PERISCOPE DEPTH
0645	SNORKELING SAFETY CONSIDERATIONS

- Ref:
- (a) NWP 3-21.61.2, AN/BSY-1(V) Acoustic Subsystem Operating Guidelines
 - (b) NWP 1-13.10, Submarine Electronic/Optic Sensor Employment Manual
 - (c) 688 CLASS SSM

0600 (U) GENERAL

1. Bringing the ship to periscope depth places the ship in its most vulnerable and least maneuverable position from the time the ship leaves 150 feet until a visual search is completed. It is therefore extremely important that once a baffle clear is completed, that the ship be taken expeditiously to periscope depth. Unknown surface SVP conditions and quiet surface contacts present a hazard that our sensor systems may not be able to detect. **THIS EVOLUTION IS NEVER ROUTINE.** All watchstanders must be thoroughly alerted and ready to respond promptly.

0605 (U) PREPARATION

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0610 ^u(c) CLEARING BAFFLES

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0615 ^g(c) ASCENT TO PERISCOPE DEPTH

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0620 (U) MAST/PERISCOPE OPERATIONS AT PERISCOPE DEPTH

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2. (U) The OOD has the authority to briefly station a periscope watch while he "takes a break". The OOD is personally responsible for ensuring that his temporary relief is sufficiently trained and briefed to conduct a safe periscope search.

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6. (U) In good visibility, conduct periscope search in accordance with reference (b). In poor visibility, sweep in low power, adjusting sweeps such that a high speed target cannot endanger the ship if it breaks through the limit of visibility just after sweeping by.

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9. (U) Always have a periscope raised and searching whenever any masts are exposed above the surface.

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0625 (U) ESM SEARCH

1. (U) ESM searches shall be conducted in accordance with reference (b) as amplified by the following guidance.

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0630 (C) CONTACT REPORTING

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0635 (U) RADIO BROADCAST

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3. (U) The Officer of the Deck is responsible for knowing the broadcast schedule being copied and the navigation plan for getting external fix data. He will coordinate mast/antenna usage to optimize communications and navigational signal reception and minimize risk of counterdetection due to mast/antenna exposure.

4. (U) During copying of the broadcast, the RMOW shall report the following items in sequence:

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c. (U) Receipt of the last message addressed to the ship. (Conn, Radio, All traffic on board", clear on the ____ ZBO) or for SSIIXS, all traffic printed out.

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6. (U) Obtain permission from the Commanding Officer prior to transmitting on any radio equipment, except when attack center control of a voice circuit has been set up for tactical communications with other units. The OOD is authorized to release tactical messages and to make challenges, replies, and communications checks on this or RACS circuits when no EMCON

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conditions are in effect. Ensure the UWT log is used and maintained and that all RACS messages are logged.

7. (U) Stay informed of the broadcast schedule being copied and any special reporting requirements. Alert cognizant personnel sufficiently in advance of these evolutions to ensure orderly and timely completion with minimum interruption of operations in progress.

0640 (U) LEAVING PERISCOPE DEPTH

1. The ship may be taken to 200 feet as soon as a "straight board" is achieved on the BCP. Reports on TDU, Sanitary, and Diesel Sea Water systems secured and "Rigged for Dive" should be received prior to exceeding 200 feet. Normally the ship will be taken to 150 feet following periscope depth operations to obtain a good 1/3 trim. Secure the shallow water depth gage prior to exceeding 200 feet. In an emergency, when operationally required, and for training, the ship may be taken deep directly from periscope depth.

2. When leaving PD, the OOD should announce (to Control on the open mike) "All stations, Conn, going deep." The OOD should order "COW, lower all masts and antennas, QMOW take a sounding," and the DOOW to ordered depth. With Number 2 scope trained at 000 relative, he should mark the scope under as the head window goes awash. Do not turn the eyepiece. Leave it in the horizontal position. The DOOW should mark the depth to verify the accuracy of the depth gages. The DOOW should not order an angle greater than 5 degrees until deeper than 80 feet to prevent the screw from broaching the surface. Once the scope is under, the OOD will verify the following conditions: TV off, magnification set to low power, elevation set to 0 degrees. Ensure the head window heater is secured or the periscope head window may fail.

0645 (U) SNORKELING SAFETY CONSIDERATIONS

1. (U) Flooding is potentially the most serious casualty that could occur during this evolution. Accordingly, when any of the following conditions exist while snorkeling, the "Emergency Secure Snorkeling" procedure shall be initiated in accordance with OP 61-5 section 2.3.3.c and O/I 634.1 of reference (c).

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b. (U) Reaching or exceeding 4 inches of vacuum in the boat.

c. (U) An induction mast flood alarm with associated indications of induction sump flooding.

d. (U) Upon initiating Emergency Deep procedures.

2. (U) Snorkeling is an inherently noisy evolution, so assume the ship is detectable when snorkeling. As such there is no need to conduct snorkeling evolutions at maximum depth possible. Normal snorkel depth should be 56 feet. If the head valve is cycling excessively, decrease depth as appropriate.

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STANDING ORDER 10

COMMAND DUTY OFFICER (CDO)

<u>ARTICLE</u>	<u>CONTENT</u>
1000	GENERAL
1005	RESPONSIBILITIES
1010	AUTHORITY

1000 (U) GENERAL

1. A Command Duty Officer (CDO) may be stationed during periods where active command level supervision is required but the pace of underway operations requires the Commanding Officer to rest. The times of stationing and securing the CDO will be announced to the OOD, or will be specified in my Night Orders, and will be logged in the Deck Log by the Quartermaster of the Watch.

1005 (U) RESPONSIBILITIES

1. The CDO, when stationed, speaks for me. He is authorized to direct actions of the Officer of the Deck and all subordinate watchstanders. For matters pertaining to the tactical operation of the ship, the CDO has all my authority except what is specifically reserved in my Standing Orders. He does not, however, relieve or absolve the OOD of any of his responsibilities to me. If at any time the OOD feels proper action is not being taken, or improper action is being directed by the CDO, he is authorized and obligated to report the matter to me immediately. Because of my unique responsibilities for the safety of this submarine, I require that the CDO notify me if he overrides a recommendation of the OOD or if the CDO and OOD disagree on an issue affecting ship safety. The CDO is not required to stand his watch in the Control Room. He shall be up and about during his watch. He is encouraged to tour the ship as necessary to obtain first hand information on any problems, keeping the OOD informed as to his whereabouts. The CDO shall be in Control for all ascents to periscope depth and will remain in the vicinity (e.g., Radio, Sonar or Navigation Center) until the ship returns to patrol/ transit depth. While the ship is surfaced, the CDO will closely monitor the contact situation in order to provide experienced guidance to the OOD and Contact Coordinator on contact avoidance. He should pay particular attention to the operation of the radar and to weather/ visibility conditions on the Bridge. The CDO shall carefully

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review all incoming radio traffic and will inform me of any messages requiring my immediate attention.

1010 (U) AUTHORITY

1. When stationed, the CDO may authorize normal evolutions and receive normal reports for me. These evolutions and reports include:

a. Giving permission for maintenance authorized in my Night Orders.

b. Receiving initial contact reports. Either you or the Officer of the Deck (OOD) brief me immediately on sighting any warship contact or gaining contact on any submarine. Either you or the OOD brief me before any contact closes inside 4000 yards.

c. Breaking rig for dive for routine evolutions or evolutions permitted by my Night Orders or these Standing Orders.

d. Conducting a battery charge.

e. Streaming and retrieving the floating wire and towed array.

f. Granting permission to go active to search in preparation for periscope depth. Also clearing baffles at a depth above 150 feet.

g. Granting permission to come to periscope depth.

h. Taking reports from officers being relieved of watch.

i. Receiving 0800 and 2000 reports.

j. Receiving all reports required to supervise safe navigation. You or the OOD should make any navigation report to me that would indicate the submarine is standing into danger. This includes red or yellow soundings.

k. Changing the status of rig for quiet including shifting reactor coolant pumps and other equipment.

l. Placing equipment out of commission and authorizing repairs that do not require single valve protection, overriding

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interlocks, or work on energized electrical or deranged equipment.

m. Authorizing routine periscope depth operations such as operating the trash disposal unit, ventilating, acknowledging receipt of messages, etc.

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