

17 JUN 1997

3. Periscope Depth Operations

Ref: 4, 5, 65, 74, 90, 122

a. Knowledge Requirements

(1) Discuss the following aspects of periscope depth operations with particular emphasis on OOD considerations, techniques, and actions.

(a) Preparations for going to periscope depth, including:

- [Signature]* 9/3/99 (R)
1. Equipment lineups
 2. Alerting watchstanders
 3. Clearing baffles/safety searches
 4. Contact evaluation
 5. Course, speed, and depth selection
 6. Diving Officer considerations
 7. Periscope selection
 8. Fairing and head window heater use
 9. WQC settings for periscope depth
 10. Sensor indications
 11. Commanding Officer's permission
 12. Night adaption considerations

(b) Ascent to periscope depth

- [Signature]* 9/3/99 (R)
1. Periscope under water search procedures
 2. Control of masts (AN/BQR-19), periscopes, and antennas (AN/BRA-8) and floating wire)
 3. Rate of ascent

09 JUN 1998

4. OOD (Under Instruction Watches)

a. Practical Factors

(1) Act as OOD (under instruction) during the maneuvering watch for:

(a) An underway (including supervision and review of pre-underway checks).

[Signature] 8/16/99

(b) A landing.

[Signature] 4/22/99

(2) Stand two watches as OOD during normal surfaced steaming conditions.

(a) [Signature] 6/7/99

(b) [Signature] 8/23/99

(3) Stand five watches as OOD submerged including pre-watch tours, watch relief procedures, post-watch tours and making all reports.

(a) [Signature] 5/26/00

(b) [Signature] 5/27/00

(c) [Signature] 5/28/00

(d) [Signature] 5/29/00

(e) [Signature] 6/2/00

D. DEPARTMENT HEAD RECOMMENDATIONS

1. Review selected lessons learned relating to the Officer of the Deck from COMSUBLANT or COMSUBPAC Lessons Learned.

[Signature] 4/9/00
Senior Watch Officer

2. Complete a walkthrough of the ship with each department head listed. The following items are representative of topics which should be discussed:

[Signature] 6/13/00
Engineer

[Signature] 6/7/00
Navigator

[Signature] 6/10/00
Weapons/CSO

- a. Operation of systems and components
- b. Function of each piece of equipment
- c. Proper nomenclature

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- d. Power supply/fluid system isolations
- e. Location of all communications equipment and alarms
- f. Remote/local indications and hydraulic operators
- g. Safety precautions
- h. Damage control equipment locations

E. EXAMINATION AND RECOMMENDATION

1. Completed written and oral examinations and recommended for qualification as Officer of the Deck.

Surfaced * $\frac{3.19}{\text{Grade}}$

LDJ KAC 3/25/00
Senior Watch Officer

Submerged* $\frac{2.80}{\text{Grade}}$

KAC 6/11/00
Senior Watch Officer

* One test may be used for both surfaced and submerged exams.

2. Completed oral examination and recommended for qualification as Officer of the Deck.

Surfaced

LDJ 3/24/00
Executive Officer

Submerged

LDJ 6/19/00
Executive Officer

F. QUALIFICATION

1. Officer of the Deck (surfaced)

- a. Completed oral examination and is certified as a qualified Officer of the Deck (surfaced).

LDJ 3/30/00
Commanding Officer

- b. Appropriate entries made in ship's qualification records and service record.

Admin Officer

ORAL EXAMINATION RECORD

NAME E(b)(3)/(b)(6) RANK/RATE J DATE _____

PURPOSE: QUALIFICATION X
 REQUALIFICATION _____
 PROFICIENCY _____
 QPO DESIGNATION _____
 SAFEGUARDS _____
 OTHER _____

WATCHSTATION/SYSTEM:
OOD

EXAMINED BY:
 CO XO
 DEPT. HD. _____
 DIV. OFF. _____
 OOD/EOOW _____
 LPO _____

AREA COVERED:

- Buffer Zone, Fir Exp, Exceptions →
- BLADE RATE →
- IDMS (SA/TA) - SPEED, DEPTH, COURSE →
- SECTION TRACKING PARTY
- MOVING HAVENS (FORM + TEMP OPARETS) →
- MASTS + ANTENNAS →
- MINIMUM TRACKING RANGE →
- SUBMARINE GENERATED SEARCH AREAS (buoys) →
- TEA (JOINT OPI) →
- SWIMMER OPI →
- WGR UNDERWATER COMMS →
- TORPEDO EVASION →
- COUNTER MEASURES →
- NAVIGATION →
- TOXIC GAS →
- OTTO FUEL SPILL →
- HOT RUN →

WEAK AREAS:

fir expansion, IDMS, tracking number, 004995 SA/TA/DETS

ADDITIONAL ACTIONS REQUIRED:

discuss weak areas w XO

RESULTS: (INTERVIEWERS INITIAL)

____ SAT
J SAT WITH WEAK AREAS DISCUSSION REQUIRED
 ____ UNSAT

ADDITIONAL ACTION OR WEAK AREA DISCUSSION COMPLETE

J SAT ____ UNSAT ____ N/A

[Signature] 6/16/00
 INTERVIEWER SIGNATURE DATE

E(b)(3)/(b)(6) 6/16/00
 RE-INTERVIEWER SIGNATURE DATE

____ APPROVED/CERTIFIED/NOTED DATE

ORAL EXAMINATION RECORD

NAME L (b) (3) / (b) (6) RANK/RATE _____

DATE 6/10/00

PURPOSE: QUALIFICATION X
REQUALIFICATION _____
PROFICIENCY _____
QPO DESIGNATION _____
SAFEGUARDS _____
OTHER X

WATCHSTATION/SYSTEM:
WATER FOR
OOD/QUALINSABS

EXAMINED BY:
CO _____ XO _____
DEPT. HD. XIEN
DIV. OFF. _____
OOD/EOOW _____
LPO _____

AREA COVERED:

IB-16 / IB-23
LPF
A1/A2 SCOPES
WLR-8, EWR, HPI
P-17 locations/loads
EP-2
BT LOCATIONS
SCOPE BENCHMARKS
UYR-43
BRA-34c
LOS COMMS
O2 GENERATOR - O2 BLEED, H2O BLEED
BURNER / SCRUBBERS (COMMS)
DIBSEL
LOCATION TUBES (VLS)
PVC SYSTEM
O2 CANDLES

A1/A2
O2 BLEED
RON PLANTS LOCAL CONTROL
A1/A2 - F1/F2

WEAK AREAS:

P-17, BTs, EP-2, BRA-34c, O2 BLEED, O2 CANDLES, BURNERS

ADDITIONAL ACTIONS REQUIRED:

DISCUSSED N/EN/C

RESULTS: (INTERVIEWERS INITIAL)

____ SAT
ll SAT WITH WEAK AREAS
DISCUSSION REQUIRED
____ UNSAT

ADDITIONAL ACTION OR WEAK AREA DISCUSSION COMPLETE

SAT _____ UNSAT _____ N/A _____

[Signature] 6/13/00
RE-INTERVIEWER SIGNATURE DATE

[Signature] 6/13/00
INTERVIEWER SIGNATURE DATE

[Signature] 6/13/00
APPROVED/CERTIFIED/NOTED DATE

ORAL EXAMINATION RECORD

NAME [(b) (3) / (b) (6)] RANK/RAT. J DATE 6/6/00

PURPOSE:	QUALIFICATION <input checked="" type="checkbox"/>	WATCHSTATION/SYSTEM:	EXAMINED BY:
	REQUALIFICATION <input type="checkbox"/>	<u>OOD / QUALN SUB</u>	CO <input type="checkbox"/> XO <input type="checkbox"/>
	PROFICIENCY <input type="checkbox"/>	<u>WALKTHRU</u>	DEPT. HD. <u>2 FC WEP5</u>
	QPO DESIGNATION <input type="checkbox"/>	_____	DIV. OFF. <input type="checkbox"/>
	SAFEGUARDS <input type="checkbox"/>	_____	OOD/EOOW <input type="checkbox"/>
	OTHER <input type="checkbox"/>	_____	LPO <input type="checkbox"/>

AREA COVERED:

<u>LAUNCHING COUNTER MEASURES P</u>	<u>IFF /</u>
<u>3" vs 6" /</u>	<u>WEAPON STORAGE AND XFER INTO ROOM. /</u>
<u>STRIKE - PLAN MSN, WAYPT /</u>	<u>P21 /</u>
<u>STRATEGY -></u>	<u>10MS -></u>
<u>OFF AXIS RANGE PRIORITY -></u>	<u>Torpedo Evasion /</u>
<u>BCR-22 -></u>	_____
<u>SDC -></u>	_____
<u>FATHOMER /</u>	_____
<u>TAC-3 DISPLAYS /</u>	_____
<u>TORPEDO TUBE INTERLOCKS -></u>	_____
<u>SWAPSHOT /</u>	_____
<u>HYDRAULICS FOR TORP TUBES /</u>	_____
<u>AIR SYSTEMS FOR WEAPON LAUNCH /</u>	_____
<u>VLS - PVL /</u>	_____
<u>AACAPS -></u>	_____
<u>WYK-44, 43, SUBPASS -></u>	_____
<u>GRD-III -></u>	_____

WEAK AREAS:

GRD-III /

ADDITIONAL ACTIONS REQUIRED:

RESULTS: (INTERVIEWERS INITIAL)

SAT

_____ SAT WITH WEAK AREAS DISCUSSION REQUIRED

_____ UNSAT

ADDITIONAL ACTION OR WEAK AREA DISCUSSION COMPLETE

___ SAT ___ UNSAT ___ N/A

[(b) (3) / (b) (6)] / 10 JUN 00

INTERVIEWER SIGNATURE _____ DATE _____

RE-INTERVIEWER SIGNATURE _____ DATE _____

APPROVED/CERTIFIED/NOTED _____ DATE _____

ORAL EXAMINATION RECORD

NAME [(b)(3)/(b)(6)] RANK/RATE []

DATE 6/7/00

PURPOSE:	QUALIFICATION	<input checked="" type="checkbox"/>	WATCHSTATION/SYSTEM:
	REQUALIFICATION	<input type="checkbox"/>	<u>WALKTHRU FOR</u>
	PROFICIENCY	<input type="checkbox"/>	<u>DOD/DUAL IN SUBS</u>
	QPO DESIGNATION	<input type="checkbox"/>	
	SAFEGUARDS	<input type="checkbox"/>	
	OTHER	<input type="checkbox"/>	

EXAMINED BY:

CO XO

DEPT. HD. NAV

DIV. OFF.

OOD/EOOW

LPO

AREA COVERED:

RADIO-MINI DANA →

BASE BAND SWITCH →

RADIO GEAR + LOCATION →

Becks →

ESM SYSTEMS + OPERATION ↑

BRE-15 RADAR ↑

LAW ↑

ESM OVERVIEW ↑

EM LOG →

CAMS-↑

WSN-2 ↑

WLR-8 →

WEAK AREAS:

RADIO GEAR LOCATION, EM LOG, WSN-2

ADDITIONAL ACTION REQUIRED:

RESULT: (Interviewer's Initial)

KS SAT

_____ SAT WITH WEAK AREAS DISCUSSION REQUIRED

_____ UNSAT

ADDITIONAL ACTION OR WEAK AREA DISCUSSION COMPLETE

_____ SAT _____ UNSAT _____ N/A

[Signature] 6/7/00

INTERVIEWER SIGNATURE DATE

E-INTERVIEWER SIGNATURE DATE

APPROVED/CERTIFIED/NOTED DATE

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DIVING OFFICER OF THE WATCH
QUALIFICATION CARDName: [(b) (3) / (b) (8)]

A. PREREQUISITES

1. Complete Basic Submarine Orientation Card.
2. Second Class Petty Officer or above.

B. KNOWLEDGE REQUIREMENTS/PRACTICAL FACTORS

1. Systems

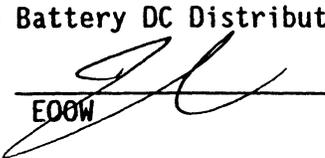
NOTE: CHECKOUTS MUST COVER THE KNOWLEDGE REQUIRED IN THE GUIDE AS A MINIMUM. SYSTEM KNOWLEDGE CHECKOUTS AND SIGNATURES MAY BE PROVIDED BY SYSTEM QUALIFICATION PETTY OFFICERS, QUALIFIED DIVING OFFICERS OF THE WATCH, OR CHIEFS OF THE WATCH EXCEPT WHERE OTHERWISE NOTED. SOME OF THESE REQUIREMENTS DESIGNATED WITH AN "E" OR "S" WILL BE MET BY NUCLEAR TRAINED OFFICERS WHEN QUALIFIED EOW AND EDO OR BY SOBC GRADUATES, AND CAN BE SIGNED OFF. SYSTEM PRACTICAL FACTOR CHECKOUTS AND SIGNATURES MAY BE PROVIDED BY A QUALIFIED SYSTEM PETTY OFFICER OR A QUALIFIED DIVING OFFICER OF THE WATCH, EXCEPT WHERE OTHERWISE NOTED.

a. Electrical

Ref: 3, 29, 30, 46

(1) Knowledge Requirements

(a) 60 HZ and Main Storage Battery DC Distribution


EOW

12/15/97(E)

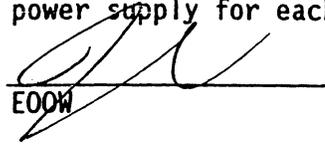
1. Be able to draw a one line diagram of the major electrical distribution system, including:
 - a. All 60 HZ generators
 - b. All major distribution breakers
 - c. All major and secondary distribution panels and the associated significant feeder breakers
 - d. Main storage battery, DC diesel (if applicable) and DC distribution breakers.

Enclosure (5)

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2. Be able to draw a one line diagram of the 60 HZ, 120 volt distribution system; including power supplies, breakers, transformers and automatic bus transfer (ABT) devices (if applicable) for:
 - a. Forward lighting
 - b. Forward electronics
 - c. Navigation lighting
3. Explain the significance of the loss of a major distribution bus to you as diving officer.
4. Explain the operation of ABT devices which affect equipment or systems pertinent to you as diving officer, including the normal power supply for each.

(b) 400 Hz Distribution


EODW

10/15/97E

1. Be able to draw a one line diagram of the 400 Hz distribution including:
 - a. All 400 Hz generators, their power supplies and input/output breakers
 - b. Major distribution switchboards which supply power to equipment or systems essential to ship control, navigation and weapons
2. Explain the purpose of each 400 Hz generator and the reliability features built into this distribution network as it affects you as diving officer.

b. Interior Communications and Alarms

Ref: 3, 28, 29, 30, 41

(1) Knowledge Requirements:

- (a) Explain the power supplies and reliability features of the integrated announcing system, including the locations of the control cabinet.
- (b) Discuss procedures used on loss of all MC System communications.
- (c) Discuss all alarms on the Common Alarm Panel and other alarm panels in the control room monitored by the COW/DOOW

Enclosure (5)

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including sensor location, power supplies and normal indications. Discuss ship's procedures when an alarm/indicator circuit is out of commission.

(2) Practical Factors:

Roll 7/24/97
BOOW

(a) Demonstrate proficiency in face-to-face communications, (as Diving Officer of the Watch with the Officer of the Deck, Chief of the Watch, Helmsmen/Planesmen), and sound powered telephone procedures.

(b) Demonstrate proficiency in performing the following:

1. Operate all ship's alarms in the control room
2. Operate all internal communications systems available to the Diving Officer

c. High Pressure Air

Ref: 28, 29, 30, 46

(1) Knowledge Requirements:

Roll 7/21/97

(a) Be able to draw a one line diagram of the high pressure air system including the air compressors, air dryers, moisture separators, filters, solenoid-operated air bank stop valves, major isolation valves, air banks, reducers and other major equipment services.

(b) Discuss the purpose and operation of the system.

(c) Be able to answer questions on the following topics:

1. Minimum and maximum air bank pressures when in port and at sea
2. Air bank capacity
3. Power supplies to high pressure air compressors, Marotta valves and remote indicating circuits
4. Capacity of air compressors
5. Air bank lineup

(d) Explain the safety precautions associated with the high pressure air system, including the hazards associated with

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the introduction of water or oil into the system and boundary criteria during maintenance.

- (e) Using the drawing above identify ship service air supplies to reactor plant systems. Discuss the importance of these systems to reactor plant operation. Discuss shipboard procedures to monitor and control operation and maintenance on these air supplies.

d. Service Air

Ref: 28, 29, 30

(1) Knowledge Requirements:

[Handwritten signature] 7/21/97

- (a) Be able to draw a one line diagram of the 700 psi air system showing reducers, isolation stops and equipment serviced.
- (b) List the loads supplied by all service air systems.

e. Main Ballast Tank Blow and Vent

Ref: 28, 29, 30, 46, 64

(1) Knowledge Requirements:

[Handwritten signature] 7/21/97

- (a) Be able to draw a one line diagram of the main ballast tank blow system (show the interrelation of the high pressure air system).
 - 1. Explain the operation of the main ballast tank blow system.
 - 2. Describe the operation of the blow valves and pilot valves.
 - 3. Explain the loss of power (fail) positions for MBT blow valves.
 - 4. Explain the operation of a main ballast tank emergency blow valve control valve from control.
- (b) Draw a one line diagram of the low pressure blow system (show the interrelation with the ventilation system).
 - 1. Describe the low pressure blower, including the general construction of the blower, automatic shutdowns and protective features, capacity and power supply.

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2. Explain the operation of the system, including trim and list control.

3. Describe the operation of major system valves.

(c) Explain the operation of main ballast tank vent valves, including:

1. Function and location of the solenoid control valves.

2. Hydraulic and electrical supplies for valve control.

3. Rig for dive/surface condition.

4. Failed (loss of electrical power) position of the vent valves.

5. Explain how to operate a MBT vent valve manually.

6. Explain the function of the ratchet mechanism (locking device).

(2) Practical Factor:

(a) Cycle a main ballast tank vent valve in hand and using the solenoid control valve override.

f. Ventilation

Ref: 3, 28, 29, 30, 39, 47

(1) Knowledge Requirements:

(a) Be able to draw a one line diagram of the ventilation system including all major dampers, fans, vacuum breakers, the induction sump, valves, and the low pressure blower and diesel. Know the location of major components.

(b) Using that diagram, explain the differences in the ventilation line-up and air flow paths for the following ventilation modes:

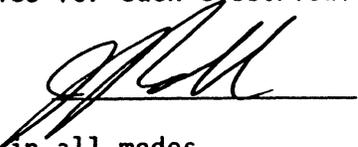
1. Recirculate

2. Surface ventilate

3. Ventilate

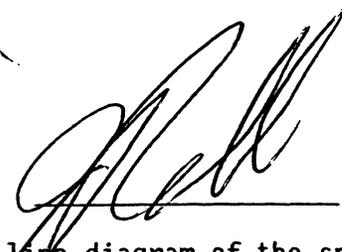
4. Snorkel

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5. Emergency ventilate with the diesel
 6. Emergency ventilate with the blower
 7. Rapid ventilate (if applicable).
- (c) Describe the operation of the head valve in all modes. Explain the air supply to the head valve.
- (d) List the power supplies for each electrical load in the ventilation system.
- (2) Practical Factors:  7/27/97
- (a) Cycle the head valve in all modes.
 - (b) Operate the outboard induction and ventilation exhaust valves in hand and using the solenoid control valve override.
 - (c) Operate the inboard induction and ventilation exhaust valves.

g. Snorkel

Ref: 3, 10, 29, 30, 46

- (1) Knowledge Requirements:  4/6/97
- (a) Be able to draw a one line diagram of the snorkel system including the diesel snorkel piping, valves and masts.
 - (b) Discuss the rating of the diesel, maximum snorkel depths, endurance radius (nm), head valve operation and snorkel bill from the SOP/Ship System Manual.
 - (c) Be able to completely describe the operation of the snorkel safety circuit using a one line diagram. Know all set points, contacts, and automatic shutdown features. Discuss the purpose of each.
 - (d) Know the power supplies for the head valve and the snorkel safety circuit. Describe how the diesel is started with a failure of 2SN power.
 - (e) Describe the procedures to be used to shut down the diesel in an emergency if the snorkel safety circuit (SN) fails to stop the diesel.

40

01 DEC 1992 (2) Practical Factors:

- (a) Operate the trim system flow and noise control valves and bypassing those systems, if applicable.

John 7/21/97

- (b) Operate a trim system tank flood and drain valve using the solenoid control valve override and hand pump.

John 7/21/97

- (c) Under supervision at the BCP, demonstrate proficiency in carrying out the following orders (including proper face to-face communications with the BOOW):

John 7/21/97

1. Pump from tank to tank
2. Pump from a variable ballast tank overboard
3. Transfer water to and from the torpedo tube flood and drain system
4. Cross connect the drain pump and trim system and pump overboard.
5. Flush the TDU
6. Line up trim system as a fire fighting water supply

i. Hovering

Ref: 29, 30, 46

(1) Knowledge Requirements:

John 7/21/97

- (a) Be able to sketch and explain a one line diagram of the hovering system including tanks, major valves, vent and flood valves, control system, power supplies and backup operation. Know the locations of these components.
- (b) Describe the procedures for prepare to, commence, and secure hovering.
- (c) Discuss the indications available to assist the operator to monitor and/or control the system.
- (d) Describe the following evolutions associated with the

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hovering system:

1. Recycling Water
2. Tank Reversal
3. Manual Hovering

(e) Describe the various safety features and interlocks built into the hovering system.

(f) Describe the procedure for hovering on the trim pump.

(2) Practical Factors:

(a) Operate the hovering sea valve using the solenoid control valve in override. n/a

(b) Under supervision at the BCP, prepare, commence and secure hovering in manual for SSNs or automatic mode for SSBNs. Explain the differences in the mode not used. 5/10/98

j. Depth Detecting and Indicating Systems

Ref: 29, 30, 39

(1) Knowledge Requirements: JLL 7/24/97

(a) Be able to draw a one line diagram of the depth gage piping systems (including digital, hydraulic and hovering systems). Know the locations of major components, including all hull and backup valves.

(b) Discuss the depth gage system operation.

(c) Identify the power supply for the digital depth detector and indications of a loss of power.

(d) Identify other locations where ship's depth or sea pressure is sensed and indicated.

(2) Practical Factors: JLL 5/10/98 B

(a) Isolate and place a depth gage on service.

(b) Vent a depth gage.

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k. Hydraulic Power Plant

Ref: 28, 29, 30, 37, 39, 46

(1) Knowledge Requirements:

 7/21/97 (E)

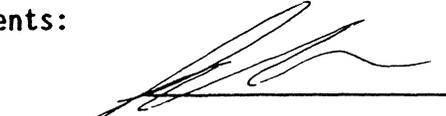
- (a) Be able to draw a one line diagram of the hydraulic power plant.
- (b) Using a one line diagram explain the location and operation of the hydraulic power plant with respect to the following:
 - 1. Hydraulic oil pumps
 - 2. Hydraulic oil pump controllers and their power supplies
 - 3. Vent and supply tank
 - 4. Bypass valves
 - 5. Oil coolers
 - 6. Accumulators and their differences
 - 7. Headers
 - 8. Plant line up (surfaced, submerged and in port)
 - 9. Controls and indications at the BCP
- (c) Discuss in detail the hydraulic distribution system(s) as applicable to your ship, including the identification of major components serviced by each system.

1. Steering and Diving

Ref: 3, 29, 30, 46

(1) Knowledge Requirements:

(a) Hydraulics

 28 Nov 97 (S) 

- 1. Be able to draw a one line diagram of all steering and diving hydraulic systems and discuss the purpose of each system.
- 2. Discuss the modes of operation of the system and purpose for each component in the system.

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- (b) Identify the power supplies for all components and indications on the Ship Control Panel.
- (c) Explain the loss of power condition, position and/or indication for all components on the SCP.

n. Ballast Control Panel (BCP)

Ref: 2, 3, 29, 30

(1) Knowledge Requirements

[Handwritten signature] 7/21/97

- (a) For all alarms on the BCP common alarm panel:
 - 1. Describe the procedure for alarm test, cutout, and when should alarms be cutout and cleared.
 - 2. List all alarms, specifying set points when applicable.
 - 3. Describe the required reports and action (including orders to subordinate watches) for each type alarm.
- (b) Identify the power supplies for all components and indications on the ballast control panel.
- (c) Explain the failed (loss of power) position, condition and/or indication for all valves, controls and indications on the BCP.

o. Gyrocompass/Repeater System

Ref: 3, 29, 30, 41, 56

(1) Knowledge Requirements

[Handwritten signature] 1/3/98

- (a) Using a one line diagram be able to discuss the gyrocompass repeater system including:
 - 1. Compass power supplies
 - 2. Synchro signal amplifiers
 - 3. Course and trim angle repeaters at the SCP and other locations in Control
- (b) Explain the procedures for gyro checks and steering compass checks, including maximum allowable errors.

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(b) Electronics (control and indication)

[Signature] 26 Dec 89 (S)

1. Using the electronics TAB/SSM explain the operation of the course and depth control system, including:
 - a. Design rate of movement for rudder and planes in normal and planes limit
 - b. Causes of an automatic shift to emergency power
 - c. Power supplies for normal mode of operation
 - d. Local operation of plane surfaces
 - e. Causes of a plane "JAM" casualty
2. Discuss the operation, power supplies, sensing element, and alignment tolerance of the following circuits:
 - a. Normal rudder and plane synchro position indication circuits
 - b. Emergency rudder and plane position indication circuits
 - c. Mechanical plane and rudder position indications
3. Explain the indications and actions required for loss of control and indicating power for the planes and rudder.

(c) Practical Factors:

[Signature] 7/21/97

1. Operate the planes and rudder in normal and emergency power, including shifting control to and from normal and emergency.
2. Line up and operate the stern planes or rudder in local emergency.

m. Ship Control Panel (SCP)

Ref: 3, 29, 30, 47

(1) Knowledge Requirements:

[Signature] 28 Mar 89

- (a) Explain the operation of the engine order transmitter, including interpretation of indications and alarms.

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1. State the horsepower, limitations, and power supply for the SPM.
2. Discuss the procedures for operation of the SPM and the meaning of all indicators on the SPM Control Panel at the Ship's Control Panel.

(2) Practical Factor:

 28 Nov 92

- (a) As helmsman, test, train and operate the SPM, demonstrating proficiency in the proper response and operating procedures to orders by the OOD.

q. External Hydraulic Plant

Ref: 28, 29, 30, 46

(1) Knowledge Requirements:

 7/21/97

- (a) Discuss the relation to the system of the following components:

1. Hydraulic pumps
2. Hydraulic pump controllers and their power supplies
3. Accumulator
4. Vent and supply tank
5. Stowage tanks

- (b) Describe the proper operation and procedure to be used to raise masts without electric power to the external hydraulic pumps. List power supplies to the external hydraulic pumps.

(c) Discuss external hydraulic oil distribution.

(d) Discuss the reasons for having an external hydraulic system in lieu of using the existing internal hydraulic systems.

r. Masts, Antennas, and Periscopes

Ref: 4, 29, 30, 37, 47, 54, 66

(1) Knowledge Requirements:

 7/21/97

- (a) List the height, operating depth and speed limitations on

4

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(c) Explain actions required to maintain an accurate steering reference in the following situations:

1. Loss of SINS (ESGN)
2. Loss of MK 19 or MK 27 gyro
3. Loss of synch amps
4. Loss of all 400 Hz
5. Loss of Master Compass

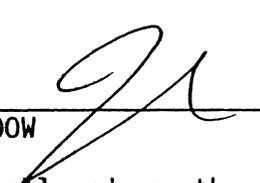
p. Propulsion Systems

Ref: 28, 29, 30, 46

(1) Knowledge Requirements:

(a) Main Propulsion

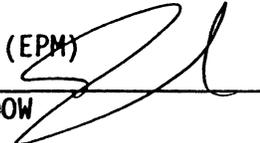
EOOW

 10/15/97(E)

1. List all main engine bell orders, the corresponding shaft RPM and expected speed through the water.
2. Describe the sequence of events from the time a new bell is ordered by the OOD until the shaft is turning at the desired speed.
3. Discuss the purpose for and indications on the cavitation indicator.

(b) Electric Propulsion Motor (EPM)

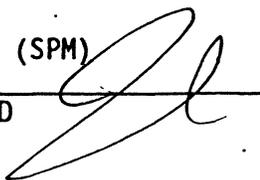
EOOW

 10/15/97(E)

1. Describe, in general terms, how propulsion is shifted to/from the main engines and EPM.
2. Describe the bells which can be answered on the EPM and the approximate shaft RPM and speed for each.
3. State the horsepower of and power supply for the EPM.
4. Discuss the conditions under which operation on the EPM is required.

(c) Secondary Propulsion Motor (SPM)

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each mast and antenna, the floating wire, towed array, periscopes, and floating buoy. If fairings are installed, include limitations as altered by these fairings. Know which masts have under ice positions.

- (b) Draw an outline of the top of the sail and show the positions of all masts, antennas, and periscopes.

(2) Practical Factors

- (a) Raise and lower masts using BCP controls, demonstrating proficiency in responding to orders from the OOD with respect to mast operation.

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- (b) Raise and lower a mast using the solenoid control valve override. Locate all mast solenoid control valves.

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- (c) On appropriate masts, shift to the under ice position and return to the faired position.

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s. Potable Water and Plumbing Systems

Ref: 2, 3, 4, 29, 30, 37, 46

(1) Knowledge Requirements:

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- (a) Explain the locations, capacities and limitations of these systems.
- (b) Explain normal system operations such as blowing/pumping sanitaries and filling/placing on service potable water tanks.
- (c) Discuss evaporator/still filling procedures. Explain the importance to the DOOW of knowing the status of the evaporator/still (i.e., filling, dumping to the bilge, delay from start up to tank filling).
- (d) State precautions for operating the evaporator/still while in restricted waters or discharging primary coolant.

u. Tanks

Ref: 28, 29, 30, 46

(1) Knowledge Requirement:

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- (a) Be able to sketch a longitudinal diagram of the ship showing the relative location and approximate capacity of all significant tanks (those included on the compensation form).

v. Missile Compensation

Ref: 29, 30, 46, 112

(1) Knowledge Requirements:

OOD



- (a) Be able to sketch and explain a one line diagram of the missile compensation system including tanks, proportioning valves, pressurization and vent valves, hull and back-up valves, position control unit (PCU) and power supplies. Know the location of these components.
- (b) Discuss how the Ship Control Application Program (SCAP) interfaces with and controls the missile compensation system.
- (c) Discuss the procedures for preparing to, commencing, and securing from missile compensation operation.
- (d) Discuss the indications available to assist the operator to monitor and/or control the system.
- (e) Describe the following evolutions associated with the missile compensation system:
 - 1. System initiation
 - 2. Automatic operation
 - 3. Semi-automatic operation
 - 4. Manual operation
- (f) Describe the various safety features and interlocks built into the missile compensation system.

2. Theoretical Requirements

a. Submerged Operating Envelope

Ref: 3, 12, 28, 64

(1) Knowledge Requirements:

OOD



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(a) Be able to sketch and discuss in detail the following items concerning the submerged operating envelope:

1. Derivation, initial conditions and purpose
2. Significance of each region
3. Recovery actions of each designated region and reasons for each action
4. How it changes with depth of water and depth zones

b. Flooding and Recoverability

Ref: 3, 4, 12, 28, 29, 30

(1) Knowledge Requirements:

(a) Discuss the following major variables as they affect recovery from a flooding casualty:

1. Rate of flooding
 - a. Hole size
 - b. Depth
 - c. Coefficient of discharge
2. Time to secure flooding
3. Ship speed
4. Time lapse between casualty and initiation of corrective action
5. Location of casualty
6. Initial air bank pressure
7. Trim status

(b) Discuss the recommended recovery actions and when the EMBT Blow System should be used.

(c) Be able to list the following from memory:

1. Surfaced and submerged displacement
2. Reserve buoyancy