U.S. Department
of Transportation

**United States
Coast Guard**

Personnel Qualification Standard

Buoy Deck Operations

COMDTINST M3502.12

U.S. Department of Transportation
United States Coast Guard

Commandant
U.S. Coast Guard

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COMDTINST M3502.12

8 SEP 1992

COMMANDANT INSTRUCTION M3502.12

Subj: PERSONNEL QUALIFICATION STANDARD (PQS) - Buoy Deck Operations

Ref: (a) Cutter Training and Qualifications Manual, COMDTINST M3502.4 (series)

1. PURPOSE. This manual provides guidance for the establishment, implementation and administration of Aids to Navigation (AtoN) specific unit Personnel Qualification Standards (PQS) on board Coast Guard cutters conducting buoy deck operations.

2. DIRECTIVES AFFECTED. None.

3. BACKGROUND. PQS is a system for qualifying personnel to perform certain duties. It is a compilation of the minimum level of knowledge and skills a trainee is required to correctly demonstrate in order to qualify for a specific workstation, maintain specific equipment or perform as a team member within your unit. The PQS Program is not designed as a training program, but provides many training objectives. This PQS was written as a cooperative effort of the NATON School, Headquarters staff, and representatives from the current buoy tender fleet with many years of experience on a variety of AtoN units.

4. DISCUSSION.

a. This PQS is applicable to all side loading buoy tenders with the exception of WLR's.

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	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A							10*						12	12	10	8	8									
B		8	20*		1									5												
C																										
D																										
E																										
F																										
G																										
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NON-STANDARD DISTRIBUTION: * A:g CGC MOBILE BAY, CGC BRISTOL BAY (only)
B:c MLCLANT, MLCPAC (6 extra)

4. b. This instruction serves as a minimum standard of training for personnel involved in buoy deck evolutions. Command tailoring of this package is authorized, but should be limited to those sections of this PQS that do not apply to a particular cutter.

c. The PQS Qualifier is designated in writing by the commanding officer/officer-in-charge to sign off individual PQS line items. Qualifiers will normally be E-5 or above and, as a minimum, must have completed the PQS they are authorized to sign off.

d. This PQS is divided into three sections. The 100 section (Fundamentals) contains the fundamental knowledge or "book learning" necessary for satisfactory understanding of the workstation duties. The 200 section (Systems) is designed to acquaint individuals with the systems they will be required to operate. The 300 section (Workstations) lists those performance tasks required of the trainee in order to achieve final PQS qualification for a particular workstation. In addition, the 300 section identifies prerequisite sections of this PQS.

e. Completion of this PQS does not replace formal training requirements identified in reference (a) or other Enlisted Qualification Code training requirements, but rather ensures a standard set of training objectives for the ATON fleet.

f. Upon completion of any 300 section of this PQS, comply with the certification requirements contained in reference (a).

5. ACTION. District commanders and unit commanding officers shall insure that the provisions of this manual are followed in conducting afloat unit training. PQS amplifying information is contained in reference (a).

6. CHANGES. Changes to this manual will be coordinated by Commandant (G-NSR-2). Unit commanding officers are urged to provide recommendations for improvement to this manual via the chain of command.

W. J. ECKER
Chief, Office of Navigation Safety
and Waterway Services

RECORD OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	DATE ENTERED	BY WHOM ENTERED

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FUNDAMENTALS AND SYSTEMS SUMMARY

FUNDAMENTALS

		SIGNATURE	DATE
101	Safety Precaution Fundamentals		
102	Terminology Fundamentals		
103	Basic Line Handling Fundamentals		
104	Rigging Safety Precaution Fundamentals		
105	Rigging Terminology Fundamentals		
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SYSTEMS

201	Anchor Windlass System		
202	Boom System		

101 SAFETY PRECAUTION FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Coast Guardsman Manual
e. Naval Ships Technical Manual (as applicable)

.1 Discuss the following safety equipment and describe when and how it is to be used:

a. Hard hats with proper chin straps to include proper color designations.
b. Proper eye protection for specific situations.
c. Proper types of personal flotation devices and their associated equipment.
d. Proper use of safety belts and harnesses.
e. Explain why knives are to be worn by all buoy deck personnel.
f. Proper clothing and footwear during buoy deck evolutions to include clothing required for foul weather operations.
g. Devices to be used when handling hazardous material.
h. Situations when hearing protection is to be worn to include types of hearing protection.
i. Situation when gloves shall be worn and dangers involved.
j. Appropriate safety markings for the buoy deck and associated equipment (e.g. trip hazards, buoy port, lifting hooks, etc.)

.2 State the minimum distance that personnel should remain clear of fairlead blocks, bitts, cleats, gypsy heads, capstans and chocks.

.3 Explain why personnel should remain clear of a bight of line, wire and chain.

.4 Explain why line and wire must be handled hand-over-hand.

.5 Explain the proper method for fairleading and tending lines on a gypsy head or capstan.

.6 Explain why an unattended line must never be left on a gypsy head or capstan.

.7 Discuss why and how suspended hooks must be tended.

.8 Discuss the danger involved if a line is wrapped around a hand or arm.

.9 Discuss the importance of minimizing noise during buoy deck operations.

.10 For each of the following, identify the associated hazards and what safety precautions apply:

a. Working near suspended or moving loads.
b. Cleaning buoys.
c. Painting buoys.
d. Handling/working near AtoN batteries.
e. Working on/near buoys with sound signals.
f. Working with hand tools.
g. Working with electric tools and electricity.
h. Working with pneumatic tools and compressed air.
i. Entering/leaving the buoy deck.
j. Working in foul weather.
k. Working atop a buoy.
l. Working around open hatches and unguarded openings.
m. Hoisting loads from the water or over the side.
n. Working with hazardous material in general.
o. Working on an icy or unusually slippery deck.
p. Working with pressure washing equipment.
q. Wearing jewelry during buoy deck evolutions.
r. Handling wire.

.11 Identify and explain the danger zones associated with the following:

a. Line handling
b. Wire rope
c. Running rigging
d. Snatch blocks
e. Hoisting and moving loads
f. Pulling and faking chain
g. Gunwales, bulwarks and handrails

.12 Identify and explain escape routes associated with the following:

a. Line handling
b. Wire rope
c. Running rigging
d. Snatch blocks
e. Hoisting and moving loads
f. Pulling and faking chain

.13 Discuss the use of tag-out procedures (including color coding of tags).

102 TERMINOLOGY FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Coast Guardsman Manual
e. Naval Ships Technical Manual (as applicable)

.1 Define the following terms:

a. Avast
b. Belay
c. Bight
d. Bitter end
e. Block
f. Boat hook
g. Boom
h. Bulwark
i. Cage line
j. Capstan
k. Chain stopper
l. Check
m. Chock (Open, Closed, Rolling)
o. Cleat
p. Drum
q. Dunnage
r. Ease
s. Fender
t. Grapnel hook (Small)
u. Gypsy head
v. Whelps
w. Hand over hand
x. Hold
y. Heave around
z. Hoist
aa. Marker buoy
ab. Hook
ac. Crossdeck line
ad. Leadline
ae. Lifeline
af. Line
ag. Link
ah. Hoist (Auxilliary, Whip, Main)
ai. Weather hitch
aj. Overriding turns
ak. Live chain
al. Padeye
am. Safety chain
an. Secure
ao. Slack off
ap. Small stuff
aq. Snatch block
ar. Stand by
as. Stow
at. Strain
au. Surge
av. Tag line
aw. Tension
ax. Two-block
ay. Outboard
az. Up behind
ba. Whippings
bb. Winch
bc. Wire rope
bd. Bail/bale
be. Bitts
bf. Bull chain
bg. Boom cradle
bh. Inboard
bi. Cargo hold
bj. Hatch
bk. Hatch cover
bl. Hogging line

103 BASIC LINE HANDLING FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. Knights Modern Seamanship
c. Coast Guardsman Manual
d. Naval Ships Technical Manual (as applicable)
e. Boat Crew Seamanship Manual, COMDTINST M16114.5(series)
f. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1

.1 Identify and explain the uses of the following:

a. Square knot
b. Bowline
c. Clove hitch
d. Stopper hitch
e. Half hitch
f. Reeving line bend
g. Barrel hitch
h. Heaving lines
i. Round turn
j. Becket bend
k. Double becket bend

.2 Explain what temporary and permanent whippings are used for.

.3 Describe the following types of lines, their construction, care and use:

a. Synthetic (Nylon, Polypropylene, Kevlar)
b. Manila
c. Marlin
d. Cotton cord

104 RIGGING SAFETY PRECAUTION FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Coast Guardsman Manual
e. Naval Ships Technical Manual (as applicable)

.1 Discuss safety precautions and rigging requirements in preparing to load/off-load buoy deck.

.2 Explain how and why routine visual inspections are conducted prior to use of the following equipment:

a. Bull chain
b. Slings
   (1) Wire rope
   (2) Chain
   (3) Natural fiber
   (4) Synthetic fiber
c. Gripe chains
d. Chain stopper
e. Snatch blocks
f. Aircraft tiedowns
g. Steamboat jacks (Ratchet binders)
h. Blocks, sheaves, pins and hangers
i. Hooks
j. Shackles
k. Lines
l. Padeyes
m. Wire rope
n. Turnbuckles
o. Load binders
p. Rigging chain
q. Pelican hooks
r. Roller chocks

.3 Discuss what to do with load handling equipment that is found to be defective.

.4 Define Safe Working Load (SWL) and Working Load Limit (WLL). Explain the importance of knowing the WLL or SWL and how to determine it on the following rigging equipment:

a. Wire rope
b. Slings
   (1) Wire rope
   (2) Chain
   (3) Natural fiber
   (4) Synthetic fiber
c. Steamboat jacks (Ratchet binders)
d. Hooks
e. Shackles
f. Lines
g. Padeyes
h. Gripe chains
i. Snatch blocks
j. Load binders

.5 Discuss why it is necessary to know the weight of the load to be lifted.

.6 Discuss why the landing area must be clear before lifting the load.

.7 Explain horizontal sling angles.

.8 Explain how to properly attach slings to a load.

.9 Discuss the possible consequences of attempting to hoist a load with improperly rigged slings.

.10 Explain the proper care and stowage of rigging equipment.

.11 Discuss the authorized method for lifting compressed gas cylinders.

.12 Describe two-blocking and the dangers involved.

.13 Explain the importance of loads being plumb prior to lifting.

.14 Explain the importance of establishing and maintaining a proper lead to control loads.

.15 Explain the importance of properly reeving hooks into bales, padeyes and chains.

.16 Explain the danger involved with point loading of hooks.

.17 Explain the importance of setting the chain in the stopper after every pull.

.18 Explain the requirements for rated capacity tags on slings.

.19 Discuss the safety considerations for towing buoys on to station.

.20 Discuss the safety considerations for retrieving stray buoys.

105 RIGGING TERMINOLOGY FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Coast Guardsman Manual
e. Naval Ships Technical Manual (as applicable)
f. Rigging Manual (Construction Safety Assoc. of Ontario)

.1 Define the following terms:

a. Wire rope clip
b. Chain (Open link, Stud link)
c. Deck load
d. End fitting
e. Fairlead
f. Bridle
g. Happy hooker
h. Cutting torch
i. Pigtail
j. Plumb
k. Preventer
l. Purchase
m. Mechanical advantage
n. Sinker
o. Buoy port doors
p. Spot (Load or Boom)
q. Steamboat jacks (Ratchet binder)
r. Gripe down
s. Reeving devices
t. Seize
u. Rig, running
v. Rig, standing
w. Rotten stops
x. Marry
y. Mousing
z. Set
aa. Rosebud
ab. Chaffing gear
ac. Fishhook
ad. Horse collar
ae. Vang
af. Head block
ag. Slushing
ah. Reeve
ai. Chafe
aj. Riser
ak. Unlay
al. Wind pennant

.2 Identify the various sizes and classes of buoys serviced by your unit.

.3 Identify and explain the function of the following parts of a buoy:

a. Lantern ring guard
b. Crossover tube
c. Radar reflectors
d. Fast water fin
e. Battery pockets
f. Counter weight
g. Buoy battery box
h. Power assembly clamp (PAC)
i. Sound signaling devices
j. Tapper shock absorber
k. Bails (Lifting, Mooring, Offset/Odd, Crossdeck)
l. Bell stand
m. Cage
n. Swing bolts
o. Buoy body
o. Buoy tube
q. Pocket covers
r. Chafe blocks
s. Tappers
t. Vent tubes
u. Vent valves

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Coast Guardsman Manual
e. Naval Ships Technical Manual (as applicable)
f. Rigging Manual (Construction Safety Assoc. of Ontario)

.1 Identify and explain the uses of the following:

a. Single bowline on a bight
b. Double bowline on a bight
c. French bowline
d. Cat's paw
e. Timber hitch
f. Blackwall hitch
g. Back splice
h. Eye splice
i. Short splice
j. Long splice
k. Rattail stopper
l. Chinese stopper

.2 For each of the items listed below:

a. Explain size of use determination
b. Explain type of use determination
c. Discuss line/wire determination
d. Discuss proper care
e. Explain how to determine serviceability
f. Discuss restrictions on use
g. Discuss specific applications:

	A	B	C	D	E	F	G
.21 Natural fiber line	X	X	X	X	X	X	X
.22 Synthetic fiber line	X	X	X	X	X	X	X
.23 Wire rope	X	X	X	X	X	X	X

.3 Explain how seizing is applied to wire.

.4 Explain how to mouse a shackle and hook.

.5 Describe what safety latch hooks and self-mousing hooks are used for.

.6 Explain the procedures for spooling/unspooling wire rope/line.

.7 What is the proper way of coiling down a wire rope?

.8 How are wire rope kinks worked out?

.9 Explain the use and application of the following types of buoy and cargo handling equipment:

a. Cage line
b. Reeving line
c. Pelican hook
d. Horse collar
e. Boat hook
f. Gripe chains
g. Chain hook
h. Modeer shackle
i. Rotten-stops
j. Roller chock
k. Choker
l. Spreader bars
m. Double choker hitch
n. Chain sling
o. Barrel slings
p. Braided slings
q. Grapnel hook (large)
s. Boat sling
r. Lead line
t. Gang bridle (2, 3, 4 leg)
u. Headblock
v. Crossdeck
w. Bull chain
x. Chain stopper
y. Saddle
z. Pear link
aa. Tag line
ab. Nipper chain
ac. Hogging line
ad. Snatch blocks
ae. Picking pendant
af. Pallet slings
ag. Single choker hitch
ah. Tag lines
ai. Double wrap choker
aj. Endless slings
ak. Hammer locks
al. Cargo nets
am. Come-along
an. Nylon straps
ao. Aircraft tie-downs

.10 Explain the use and application of the following types of end fittings:

a. Poured
b. Fiege
c. Swedge
d. Wire rope clips
e. Thimble
f. Epoxy

.11 Explain the use and application of the following types of hooks:

a. Grab
b. Foundary
c. Sling
d. Snap

.12 Identify the following blocks and tackles:

a. Single whip
b. Runner
c. Gun tackle
d. Luff tackle (Jigger)
e. Wire rope snatch blocks
f. Twofold purchase
g. Double luff
h. Threefold purchase
i. Fiber rope blocks
k. Triple luff

.13 Identify the use and application of the following types of shackles:

a. Screw pin
b. Heat and beat (rivet pin)
c. Split key

.14 Define and discuss the operation of the following items associated with anchor windlasses/crossdeck winches:

a. Riding pawl assembly
b. Windlass/winch motor
e. Windlass clutch
f. Brake assembly
g. Windlass/winch controls
h. Windlass emergency run control
c. Chain stopper
d. Winch drum
i. Wildcat
j. Gypsy head
k. Capstan

.15 Identify and discuss the following signals used in conjunction with crossdeck/hogging line windlasses/winches:

a. Heave around on crossdeck winch
b. Pay out on crossdeck winch

107 BUOY DECK TOOLS FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Naval Ships Technical Manual (as applicable)

.1 Identify and discuss how to use the following tools:

a. Anvil (heat and beat)
b. Bars (crow, wrecking, and stock 60-inch length)
c. Hacksaws
d. Hammer
   (1) Sledge
   (2) Chipping
   (3) Pin
   (4) Split key (30 and 45 degree)
   (5) Claw
   (6) Ballpeen
e. Hatchet (Axe)
f. Hand saws (Crosscut, Rip)
g. Pressure washer
h. Pliers
   (1) Slip joint
   (2) Long nose
   (3) Round nose
   (4) Side cutter
   (5) Vise grips
   (6) Channel locks
   (7) Crimping tool
i. Scraper
   (1) Paint
   (2) Buoy
j. Screw drivers (assorted sizes and types)
k. Tape measure
l. Calipers
m. Wrench
   (1) Box end, open end
   (2) Ratchet
   (3) Sockets
   (4) Adjustable
   (5) Pipe
   (6) Impact
   (7) Strap
   (8) Swede
n. Boat hook
o. Step ladder
p. Knives
   (1) Riggers
   (2) Long
   (3) Machete
q. Reeving line device (Happy hooker)
r. Marlinespike

108 OXYGEN-ACETYLENE CUTTING FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. Naval Ships Technical Manual (as applicable)

.1 Identify and explain the following:

a. Oxygen
b. Acetylene
c. Oxygen cylinder
d. Acetylene cylinder
e. Check valves
f. Backfire flame arrestors
g. Oxy/acetylene hoses
h. Regulators
i. Cutting orifice
j. Torch
k. Cutting tip
l. Brazing tip
m. Rosebud tip
n. Cutting goggles
o. Tip cleaning tool
p. Striker
q. Preheating orifice

.2 Discuss the following safety related items:

a. Personal protective equipment (e.g. eye protection, hotwork gloves, leather clothing, etc.)
b. Condition of hoses and torch.
c. Operation of backfire flame arrestors and check valves.
d. Condition of regulators.
e. Proper sequence for lighting torch.
f. Dangers of excessive acetylene pressure.
g. Presence of flammables in cutting/slag area.
h. Protecting deck and adjacent compartments.
i. Dangers of cutting on concrete sinkers.
j. Incompatibility of petroleum products and oxygen.
k. Security of cylinders in rack.
l. Dangers of cutting on metal painted with lead, chromate or vinyl based paints.
m. Importance of keeping acetylene cylinders upright prior to and during use.
n. Firewatch requirements during and after hotwork.
o. Importance of "gas-freeing" prior to conducting hotwork on buoy bodies.
p. Hazards of conducting hotwork on galvanized metals.

109 BOOM/CRANE OPERATOR SAFETY FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. Knights Modern Seamanship
c. Naval Ships Technical Manual (as applicable)
d. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1

.1 Define and identify critical lifts and non-critical lifts.

.2 State the Safe Working Load (SWL) and Working Load Limit (WLL) for each purchase used on your unit.

.3 Discuss the following safety topics:

a. When tag lines are required on lifts.
b. The maximum height a load should be lifted and why the landing area shall be clear prior to lifting the load.
c. The dangers of sideloading the boom or crane.
d. The dangers of shock loading the boom or crane.
e. Why the boom or crane operator must follow the buoy deck supervisor's hand signals.
f. The special or emergency situations when the boom operator should take independent action.
g. The warnings that may be seen or heard from faulty equipment or equipment under heavy strain.
h. The precautions necessary when lifting loads near the rated capacity of the boom or crane.
i. Why excessive speed and sudden starts or stops should be avoided on lifting equipment.
j. Describe the minimum number of turns required on wire rope drums.
k. The dangers of exceeding limits when topping boom up and down and slewing.
l. How external factors such as roll, pitch, trim and wind affect boom or crane operations.
m. When and how to use a preventer.

110 BOOM/CRANE OPERATOR FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. Knights Modern Seamanship
c. Naval Ships Technical Manual (as applicable)
d. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1

.1 State the topping and slewing limits of the boom for each purchase.

.2 Identify the following blocks and tackles (as applicable):

a. Single whip
b. Runner
c. Gun tackle
d. Luff tackle (Jigger)
e. Wire rope snatch blocks
f. Twofold purchase
g. Double luff
h. Threefold purchase
i. Triple luff

.3 Identify and discuss the following boom/crane signals:

a. Hoist/lower the boom
b. Hoist/lower the boom while slewing port/starboard
c. Hoist/lower the load
d. Hoist/lower boom while lowering/raising the load
e. Hoist/lower boom while maintaining the load level
f. Slewing port/starboard
g. Stop

.4 Identify and discuss the following signals used in conjunction with crossdeck/hogging line windlasses/winches:

a. Heave around on crossdeck winch
b. Pay out on crossdeck winch

.5 Identify and discuss hand signals for applicable auxiliary machinery.

.6 Define and discuss the operation of the following items associated with anchor windlasses/crossdeck winches:

a. Riding pawl assembly
b. Windlass/winch motor
c. Windlass clutch
d. Brake assembly
e. Windlass/winch controls
f. Windlass emergency run control
g. Chain stopper
h. Winch drum
i. Wildcat
j. Gypsy head

.7 Explain the following characteristics of wire rope:

a. Wire rope diameter
b. Wire rope construction
c. Types of wire rope cores
d. Wire rope grade
e. Explain how to determine serviceability
f. Discuss restrictions on use

.8 Discuss the importance of and procedures for wire rope lubrication and maintenance.

.9 Explain the inspection standards for each of the following conditions which would cause the removal of wire rope from service:

a. Caging
b. Broken wires/strands
c. Loss of diameter
d. Excessive wear of outer wires
e. Crushing
f. Kinks
g. Corrosion

.10 Identify and discuss the following relating to daily inspections prior to boom or crane operation:

a. Wire rope spooling
b. Wire rope lubrication
c. Wire rope condition
d. Condition of hooks and swivels
e. Condition of end fittings (fiege, poured socket, wedge fittings)
f. Cotter pins and keepers
g. Lubrication of fittings
h. Operation of controls prior to energizing boom/crane
i. Condition of hangers, blocks, straps, and sheaves

.11 Discuss the indications of improper operation for each of the following when the boom or crane is being exercised:

a. Boom controls
b. Emergency shut offs
c. Boom angle indicators
d. Rough or unsmooth operation
e. Blocks
f. Sheaves
g. Swivels

.12 Identify the various sizes and classes of buoys serviced by your unit.

.13 Identify and explain the function of the following parts of a buoy:

a. Lantern ring guard
b. Crossover tube
c. Radar reflectors
d. Bell stand
e. Cage
f. Swing bolts

g. Fast water fin
h. Battery pockets
i. Counter weight
j. Buoy battery box
k. Power assembly clamp (PAC)
l. Sound signaling devices
m. Tapper shock absorber
n. Bails (Lifting, Mooring, Offset/Odd, Crossdeck)
o. Buoy body
o. Buoy tube
q. Pocket covers
r. Chafe blocks
s. Tappers
t. Vent tubes
u. Vent valves

111 ATON TECHNICIAN FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Minor Aids Servicing Guide, COMDTINST M16500.19

.1 Define the following terms:

a. Isolated danger mark
b. Safe water top mark
c. Top mark assembly
d. Top mark mounting bracket
e. Solar panel bracket
f. Solar panel installation kit
g. Solar battery bracket
h. Bird springs/pyramids
i. Battery (Primary/Solar)
j. 155mm lantern assembly (Tidelands and Esna)
k. Daylight controls (4 types)
l. CG-6P lampchanger
m. Solar panel
n. Blocking diode
o. Stuffing tubes
p. Wiring harness
q. Terminal lugs
r. Lamps
s. 12/2 SO wire
t. CG-181 flasher

.2 Discuss the following safety equipment and describe how and when it is to be used:

a. Safety belt/harness
b. Full face shield
c. Chemical protective goggles
d. Emergency eyewash
e. Rubber apron
f. Rubber gloves

.3 Identify and state the uses of the following tools:

a. Battery charger
b. Load tester
c. Megohmeter
d. Voltmeter

.4 Discuss the type and arrangement of retro-reflective material on buoys.

112 <u>BUOY DECK SUPERVISOR (BDS) SAFETY PRECAUTION FUNDAMENTALS</u>

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3
c. Knights Modern Seamanship
d. Naval Ships Technical Manual (as applicable)
e. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1

.1 Explain the role of the BDS in the enforcement of all safety regulations.

.2 Explain the relationship of the BDS with the:

a. Boom Operator
b. Buoy Deck Personnel
c. Buoy Deck Safety Observer
d. Officer of the Deck
e. The Commanding Officer

.3 Explain the coordination required between the buoy deck operation and conn.

.4 Explain the importance of the evolution pre-brief and the assignment of personnel.

.5 Discuss how the following external forces affect buoy deck operations:

a. Adverse Weather
b. Ship Control Difficulties
c. Fouled Mooring
d. Roll
e. Pitch
f. List
g. Current

.6 Explain the importance of conducting operational pre-checks. (Appendix I)

.7 Explain the importance of exercising the boom.

.8 Explain what actions a BDS should take to ensure safety in the following situations:

a. Operating with a full deck load
b. Swinging load
c. Fouled tagline
d. Two-blocked
e. Loss of boom power during:
   (1) Hoisting a buoy
   (2) Pulling chain
   (3) Setting the buoy
   (4) Hanging the sinker
   (5) Pulling the sinker

f. Parting the whip, main or preventer during:
   (1) Hoisting a buoy
   (2) Pulling chain
   (3) Setting the buoy
   (4) Hanging the sinker
   (5) Pulling the sinker
g. Loss of ship's power during:
   (1) Hoisting a buoy
   (2) Pulling chain
   (3) Setting the buoy
   (4) Hanging the sinker
   (5) Pulling the sinker
h. Loss of cross deck control during:
   (1) Hoisting a buoy
   (2) Setting the buoy
   (3) Hanging the sinker
   (4) Pulling the sinker
i. Loss of cage line control during:
   (1) Hoisting a buoy
   (2) Setting the buoy
j. Loose buoy on deck

.9 Define shock load and identify what safety precautions to take to prevent it.

.10 Explain the importance of the use of a preventer during the buoy servicing evolution.

.11 Discuss the following abnormal situations, difficulties, dangers, and procedures:

a. Retrieving a sunken buoy
b. Working in ice
c. Knotted chain
d. Fouled mooring
e. Inverted buoy
f. Mudded/sanded-in sinker
g. Working a buoy with divers
h. Working a diving buoy
i. Towing buoys on to station
j. Retrieving stray buoys

113 BUOY DECK SUPERVISOR RIGGING FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3
c. Knights Modern Seamanship
d. Naval Ships Technical Manual (as applicable)
e. Boatswain Mate 1 & C, NAVEDTRA 10122-E
e. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1
f. Riggers Manual (Construction Safety Assoc. of Ontario)

.1 Explain the inspection criteria for the following equipment:

a. Wire rope
b. Slings
   (1) Wire rope
   (2) Chain
   (3) Natural fiber
   (4) Synthetic fiber
c. Gripe chains
d. Aircraft tie downs
e. Rigging chain
f. Turnbuckles
g. Steamboat jacks (Ratchet binders)
h. Blocks, sheaves, pins, and hangers
i. Hooks
j. Shackles
k. Lines
l. Padeyes
m. Load binders
n. Snatch blocks
o. Roller chocks
p. Chain stopper
q. Bull chain
r. Pelican hooks

.2 State the Working Load Limit (WLL) and Safe Working Load (SWL) of the following rigging equipment as applicable:

a. Main Purchase
b. Whip
c. Boom
d. Aux hoist
e. Slings
   (1) Wire rope
   (2) Chain
   (3) Natural fiber
   (4) Synthetic fiber
f. Picking pendants
g. Aircraft tie downs
h. Steamboat jacks (Ratchet binders)
i. Hooks
j. Shackles
k. Lines
l. Padeyes
m. Snatch blocks
n. Bull chain
o. Pelican hooks
p. Rigging chain
q. Wire rope
r. Turnbuckles
s. Load binders
t. Gripe chains

.3 Explain why large horizontal sling angles are important when hoisting a load.

.4 State the topping and slewing limits of the boom for each purchase.

.5 State the weight of the various types of buoys, sizes of chains and bridles serviced by your unit.

.6 State the weight of the various types of buoys serviced by your unit when they are flooded.

.7 Describe the boom position for the following evolutions:

a. Hooking a buoy
b. Pulling chain
c. Bringing the sinker on board
d. Hanging the sinker
e. Setting the buoy
f. Loading and off loading
g. Moving loads on deck in a seaway

.8 Discuss the required frequencies and extent of rigging inspections.

114 BUOY DECK SAFETY OBSERVER FUNDAMENTALS

References:

a. AtoN Seamanship Manual (series)
b. AtoN Technical Manual, COMDTINST M16500.3 (series)
c. Knights Modern Seamanship
d. Coast Guardsman Manual
e. Naval Ships Technical Manual (as applicable)
f. Rigging Manual (Construction Safety Assoc. of Ontario)

.1 Explain how to mouse a shackle and hook.

.2 Describe what safety latch hooks and self-mousing hooks are used for.

.3 Explain the use and application of the following types of buoy and cargo handling equipment:

a. Cage line
b. Reeving line
c. Pelican hook
d. Horse collar
e. Boat hook
f. Gripe chains
g. Chain hook
h. Modeer shackle
i. Rotten-stops
j. Roller chock
k. Choker
l. Spreader bars
m. Double choker hitch
n. Chain sling
o. Barrel slings
p. Braided slings
q. Grapnel hook (large)
s. Boat sling
r. Lead line
t. Gang bridle (2, 3, 4 leg)
u. Headblock
v. Crossdeck
w. Bull chain
x. Chain stopper
y. Saddle
z. Pear link
aa. Tag line
ab. Nipper chain
ac. Hogging line
ad. Snatch blocks
ae. Picking pendant
af. Pallet slings
ag. Single choker hitch
ah. Tag lines
ai. Double wrap choker
aj. Endless slings
ak. Hammer locks
al. Cargo nets
am. Come-along
an. Nylon straps
ao. Aircraft tie-downs

.4 Explain the use and application of the following types of hooks:

a. Grab
b. Foundary
c. Sling
d. Snap

.5 Identify the use and application of the following types of shackles:

a. Screw pin
b. Heat and beat (rivet pin)
c. Split key

.6 Define and discuss the operation of the following items associated with anchor windlasses/crossdeck winches:

a. Riding pawl assembly
b. Windlass/winch motor
c. Windlass clutch
d. Brake assembly
e. Windlass/winch controls
f. Windlass emergency run control
g. Chain stopper
h. Winch drum
i. Wildcat
j. Gypsy head
k. Capstan

.7 Identify and discuss the following signals used in conjunction with crossdeck/hogging line windlasses/winches:

a. Heave around on crossdeck winch
b. Pay out on crossdeck winch

201 ANCHOR WINDLASS SYSTEM

References:

a. Knights Modern Seamanship
b. Naval Ships Technical Manual (as applicable)
c. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1
d. Riggers Manual (Construction Safety Assoc. of Ontario)
e. Manufacturers' Technical Manuals

201.1 FUNCTION

.11 What is the function of this system?

201.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Referring to a standard print of this system or the actual equipment, identify the following system components and component parts and discuss the designated items for each:

A. What is its function?
B. Where is it located?
C. What are the sources of power?
D. What are the modes of operation or control?
E. What are the probable indications if this component fails?
F. What is the effect on system operation if this component fails?
G. What is the function of each position?

		A	B	C	D	E	F	G
.21	Brake handwheel	X	X			X	X	
.22	Capstan/gypsy head	X	X	X	X			
.23	Wildcat	X	X	X	X			
.24	Winch control	X	X		X	X	X	
.25	Friction brake	X	X			X	X	
.26	Locking head	X	X					X
.27	Drive motor	X	X				X	
.28	Motor operated brake	X	X	X		X	X	
.29	ON/OFF switch	X	X	X	X	X		
.210	Emergency run switch	X	X	X	X		X	
.211	Windlass control box	X	X	X	X	X	X	X

201.3 PRINCIPLES OF OPERATION

.31 How do the components work together to achieve the system's function?

201.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

201.5 SYSTEM INTERFACE - None to be discussed.

201.6 SAFETY PRECAUTIONS

.61 What safety precautions must be observed when operating this system?

202 BOOM SYSTEM

References:

a. AtoN Seamanship Manual (series)
b. Knights Modern Seamanship
c. Naval Ships Technical Manual (as applicable)
d. Boatswain Mate 1 & C, NAVEDTRA 10122-E
e. Boatswain Mate 3 & 2, NAVEDTRA 10121-G1
f. Riggers Manual (Construction Safety Assoc. of Ontario)
g. Applicable Ships Blueprints

202.1 FUNCTION

.11 What is the function of this system?

202.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the de5signated items for the following components and component parts as applicable to the rig of your ship:

A. What is its function?
B. Where is it located?
C. What is the source of power?
D. What are the modes of operation or control?
E. What are the safety/protective devices?
F. What protection is provided by this component?
G. What are the probable indications if this component fails?

.21 Boom System Components

	A	B	C	D	E	F	G
a. Controls	X	X	X	X	X	X	X
b. Gooseneck	X	X					X
c. Boom	X	X	X	X	X		X
d. Vang block assembly	X	X					X
e. Vang swivels	X	X					X
f. Vang and topping lift hangers	X	X					X
g. Slewing gear	X	X		X			X
h. Bull gear	X	X	X				X
i. Head block	X	X					X
j. Whip hoist	X	X	X	X			X
k. Hook, block and swivel assembly	X	X					X
l. Topping lift	X	X					X
m. Topping block assembly	X	X					X
n. Winches	X	X	X	X	X	X	X
o. Brakes	X	X	X	X	X	X	X
p. Drum	X	X	X	X	X	X	X
q. Drive motor	X	X	X				X
r. Fairlead blocks	X	X					X
s. Self-tensioning mechanism	X	X	X				X
t. Wire rope	X	X					X

	u.	Attachment points	X	X				X
	v.	Limit alarm	X	X				X
	w.	Boom cradle	X	X				X
	x.	Auxiliary hoist	X	X	X	X	X	X	X
	y.	Wire rope crossdeck	X	X	X	X	X	X	X
	z.	Main hoist	X	X	X	X	X	X	X
	aa.	Boom angle indicator	X	X				X	X
	ab.	Level wind	X	X	X			X	X
.22	Electrical System Components		A	B	C	D	E	F	G
	a.	AC motors	X	X	X	X	X	X	X
	b.	DC motors	X	X	X	X	X	X	X
	c.	Overload relays	X	X	X	X	X	X	X
	d.	Electric brake actuator	X	X	X		X	X	X
	e.	Circuit breakers	X	X	X	X	X	X	X
	f.	Motor generators	X	X	X	X	X	X	X
.23	Hydraulic System Components		A	B	C	D	E	F	G
	a.	Electric motor/Auxiliary pump	X	X	X	X			X
	b.	Hydraulic pump	X	X	X	X			X
	c.	Hydraulic motor	X	X	X	X			X
	d.	Relief valve	X	X		X	X	X	X
	e.	Air bleeder	X	X		X		X	X
	f.	Directional control valve	X	X	X	X			X
	g.	Reservoir	X	X					X
	h.	Filters	X	X			X	X	X
	i.	Pressure gauge	X	X				X	X

202.3 PRINCIPLES OF OPERATION - None to be discussed.

202.4 PARAMETERS

.41 State the pressure and temperature operating parameters of your system.

202.5 SYSTEM INTERFACE

.51 Discuss the effects of contaminants/air in hydraulic systems.

.52 Discuss the identification of fluid leaks and the procedure for correcting leaks on your ship.

301 WORKSTATION - FORECASTLE SEAMAN

301.1 PREREQUISITES

Before starting your assigned task, complete the following:

.11 Fundamentals and Systems from this PQS:

101 Safety Precaution Fundamentals

Completed_____
(Qualifier/Date)

102 Terminology Fundamentals

Completed_____
(Qualifier/Date)

103 Basic Line Handling Fundamentals

Completed_____
(Qualifier/Date)

201 Anchor Windlass System

Completed_____
(Qualifier/Date)

301.2 TASKS

For the tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. Discuss the safety precautions observed.
D. Discuss the control/coordination required.
E. Perform this task.

	A	B	C	D	E
.21 Tie each of the following knots, bends and hitches:					
a. Square knot	X				X
b. Bowline	X				X
c. Clove hitch	X				X
d. Half hitch	X				X
e. Reeving line bend	X				X
f. Barrel hitch	X				X
g. Round turn	X				X
h. Becket bend	X				X
i. Double becket bend	X				X
j. Temporary and permanent whipping	X				X

_____
(Signature) (Date)

.22	Line handling					
	a. Fake, coil, flemish a line.	X	X			X
	b. Take turns around a gypsy head or capstan, cleat and bitt.	X	X	X		X
	c. Properly bend, make up and throw a heaving line.	X	X	X		X
	d. Handle synthetic lines under strain.	X	X	X	X	X
	(Signature) (Date)					
.23	Check personal equipment.	X	X			X
	(Signature) (Date)					
.24	Lay out station equipment.	X	X		X	X
	(Signature) (Date)					
.25	Properly tend the cross deck line.	X	X	X	X	X
	(Signature) (Date)					
.26	Properly tend the hogging line.	X	X	X	X	X
	(Signature) (Date)					
.27	Take soundings as necessary.	X	X	X	X	X
	(Signature) (Date)					
.28	Properly rig, deploy and retrieve a marker buoy.	X		X	X	X
	(Signature) (Date)					
.29	Properly secure all gear.	X				X
	(Signature) (Date)					

301.3 INFREQUENT TASKS - None to be discussed.

301.4 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. What indications and alarms are received?
B. What immediate action is required?
C. What emergencies or malfunctions may occur if immediate action is not taken?
D. Perform or simulate the corrective/immediate action for this abnormal condition?

		A	B	C	D
.41	Overriding turns.	X	X	X	X

(Signature) (Date)

301.5 EMERGENCIES

For the emergency conditions listed below:

A. What indications and alarms are received?
B. What immediate action is required?
C. How does this emergency affect other operations/equipment/workstations?
D. Perform or simulate the corrective/immediate action for this emergency condition?

		A	B	C	D
.51	Personnel casualties.	X	X	X	X

(Signature) (Date)

.52	Man overboard.	X	X	X	X

(Signature) (Date)

.53	Letting go the anchor(s).	X	X	X	X

(Signature) (Date)

302 WORKSTATION - RIGGER/LINE HANDLER

302.1 PREREQUISITES

Before starting your assigned task, complete the following:

.11 Workstations from this PQS:

301 Forecastle Seaman

Completed_____
(Qualifier/Date)

.12 Fundamentals from this PQS:

104 Rigging Safety Precaution Fundamentals

Completed_____
(Qualifier/Date)

105 Rigging Terminology Fundamentals

Completed_____
(Qualifier/Date)

106 Advanced Chain, Linehandling and Rigging Fundamentals

Completed_____
(Qualifier/Date)

107 Buoy Deck Tools Fundamentals

Completed_____
(Qualifier/Date)

302.2 TASKS

For the tasks listed below:

A. Describe the steps of this procedure.
B. Explain the reason for each step.
C. Discuss the control/coordination required.
D. Discuss the safety precautions observed.
E. Perform this procedure.

	A	B	C	D	E
.21 Tie the following knots, hitches and bends:					
a. Single bowline on a bight			X		X
b. Double bowline on a bight			X		X
c. French bowline			X		X
d. Cat's paw			X		X
e. Timber hitch			X		X

f.	Blackwall hitch	X	X
g.	Rattail stopper	X	X
h.	Chinese stopper	X	X

(Signature) (Date)

.22 Make the following splices:

a.	Back splice	X	X
b.	Eye splice	X	X
c.	Short splice	X	X
d.	Long splice	X	X
e.	Molly Hogan	X	X

(Signature) (Date)

.23 Apply a seizing to wire rope. X X X

(Signature) (Date)

.24 Mouse a shackle and hook. X X X

(Signature) (Date)

.25 Spool and unspool wire rope and line. X X X

(Signature) (Date)

.26 Coil down a wire rope. X X X

(Signature) (Date)

.27 Work kinks out of a wire rope. X X X

(Signature) (Date)

.28 Rig and demonstrate the proper use of:

a.	Choker	X X	X X
b.	Spreader bars	X	X X
c.	Chain sling	X X	X X
d.	Barrel slings	X X	X X
e.	Braided slings	X X	X X
f.	Cargo nets	X	X X
g.	Boat slings	X X	X X
h.	Nylon straps	X X	X X
i.	Gang bridles	X X	X X

j.	Pallet slings	X	X		X	X
k.	Endless slings	X			X	X
l.	Hammer locks	X			X	X
m.	Grapnel hook (large)	X	X	X	X	X
n.	Come-along	X			X	X
o.	Aircraft tie-downs	X			X	X

(Signature) (Date)

.29 Demonstrate the proper application of the following types of end fittings:

a.	Fiege	X	X	X	X	X
b.	Wire rope clips	X	X	X	X	X
c.	Wedge	X	X	X	X	X

(Signature) (Date)

.210 Rig the following tackles (as applicable):

a.	Single whip	X	X			X
b.	Runner	X	X			X
c.	Gun tackle	X	X			X
d.	Luff tackle (jigger)	X	X			X
e.	Twofold	X	X			X
f.	Double luff	X	X			X
g.	Threefold	X	X			X

(Signature) (Date)

.211 Reeving Line / Tag Line Tender

a.	Check personal equipment	X	X		X	X
b.	Identify "Danger Zones"	X	X	X	X	X
c.	Tend hook	X	X	X	X	X
d.	Rig reeving line	X	X	X	X	X
e.	Reeve hook into lifting bale	X	X	X	X	X
f.	Reeve crossdeck into buoy	X	X	X	X	X
g.	Hook into chain/modeer shackle	X	X	X	X	X
h.	Hook into lifting bale to hang	X	X	X	X	X
i.	Mouse hook	X	X	X	X	X
j.	Trip hook on command and retrieve	X	X	X	X	X
k.	Secure equipment after use	X		X	X	X

(Signature) (Date)

.212 Cageline Tender

a.	Check personal equipment	X	X		X	X
b.	Lay out cageline	X	X			X

c.	Pass cageline	X	X	X	X	X
d.	Make cageline ready to tend as buoy is brought aboard	X	X	X	X	X
e.	Shift cage line across deck on command	X	X	X	X	X
f.	Work cage line opposite the side the buoy comes aboard	X	X	X	X	X
g.	Rig cage line for paying out	X	X	X	X	X
h.	Tend cage line as buoy is hung over the side	X	X	X	X	X
i.	Release cageline and retrieve	X	X	X	X	X
j.	Secure equipment after use	X	X	X	X	X

_____
(Signature) (Date)

.213 Construct buoy moorings with properly sized and correctly installed appendages: X X X X X

_____
(Signature) (Date)

.214 Mooring maintenance

a.	Check personal equipment	X	X		X	X
b.	"Break" the buoy	X	X	X	X	X
c.	"Hook up" the buoy	X	X	X	X	X
d.	Install heat and beat shackle	X	X	X	X	X
e.	Determine chain wear	X	X	X	X	X
f.	"Hook up" a sinker	X	X	X	X	X
g.	Inspect bridle and swivel	X	X	X	X	X
h.	Secure equipment after use	X	X		X	X

_____
(Signature) (Date)

.215 Griping buoys and sinkers

a.	Check personal equipment	X	X		X	X
b.	Set up deck	X	X	X	X	X
c.	Position saddle under buoy	X	X	X	X	X
d.	Set headblock	X	X	X	X	X
e.	Gripe buoy	X	X	X	X	X
f.	Gripe sinker	X	X	X	X	X
g.	Position dunnage	X	X	X	X	X
h.	Secure equipment after use	X	X		X	X

_____
(Signature) (Date)

.216 Working mooring chain

a.	Check personal equipment	X	X		X	X
b.	Rig bull chain	X	X	X	X	X
c.	Rig pelican hooks	X	X	X	X	X

d.	Rig hogging line	X	X	X	X	X
e.	Rig/horse collar	X	X	X	X	X
f.	Rig tagline	X	X	X	X	X
g.	Rig modeer shackle/nipper chain/shackle	X	X	X	X	X
h.	Hook up for hoist	X	X	X	X	X
i.	Seat chain in stopper	X	X	X	X	X
j.	Range chain on deck	X	X	X	X	X
k.	Tie rotten stops	X	X	X	X	X
l.	Unrig horse collar	X	X	X	X	X
m.	Trip chain stopper	X	X	X	X	X
n.	Trip pelican hooks	X	X	X	X	X
o.	Secure equipment after use	X	X		X	X

(Signature) (Date)

.217 Buoy maintenance

a.	Check personal equipment	X	X		X	X
b.	Lay out station equipment	X	X		X	X
c.	Scrape and paint a buoy	X	X	X	X	X
d.	Inspect and replace retro as needed	X	X	X	X	X
e.	Replace vent valves as needed	X	X	X	X	X
f.	Replace bell/gong tappers as needed	X	X	X	X	X
g.	Inspect buoy whistle	X	X	X	X	X
h.	Prepare buoy for recharge	X	X	X	X	X
i.	Inspect chafe blocks	X	X	X	X	X
j.	Inspect mooring bales/pins	X	X	X	X	X
k.	Rig buoy for air testing	X	X	X	X	X
l.	Secure equipment after use	X	X		X	X

(Signature) (Date)

302.3 INFREQUENT TASKS

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. Discuss the Safety precautions observed.
D. Perform this task.

	A	B	C	D
.31 Rig a buoy for towing.	X	X	X	X

(Signature) (Date)

303 WORKSTATION - OXYGEN-ACETYLENE TORCH OPERATOR

303.1 PREREQUISITES

Before starting your assigned task, complete the following:

.11 Fundamentals from this PQS:

101 Safety Precaution Fundamentals

Completed_____
(Qualifier/Date)

108 Oxygen-acetylene Cutting Fundamentals

Completed_____
(Qualifier/Date)

303.2 TASKS

For the tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. Discuss the Safety precautions observed.
D. Perform this task.

	A	B	C	D
.21 Lighting off oxygen-acetylene torch				
a. Check personnel equipment	X	X		X
b. Lay out equipment	X	X		X
c. Set up regulators	X	X	X	X
d. Set up torch	X	X	X	X
e. Set up hoses	X	X	X	X
f. Adjust gas mixtures	X	X	X	X
g. Light off torch	X	X	X	X
h. Inspect area for fire hazards	X	X	X	X
i. Establish adequate fire watches	X	X	X	X
j. Secure fire watches	X	X	X	X

_____
(Signature) (Date)

.22 Cutting and heating				
a. Select proper size cutting tip and/or rosebud tip	X	X	X	X
b. Cut various chain and shackles	X	X	X	X
c. Preform heat and beat installtion	X	X	X	X

_____
(Signature) (Date)

.23 Securing torch

a.	Shut off torch	X X X X
b.	Secure gas bottles	X X X X
c.	Secure hoses and regulators	X X X X
d.	Stow all gear	X X X X

(Signature) (Date)

303.3 INFREQUENT TASKS

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. Discuss the Safety precautions observed.
D. Perform this task.

		A B C D
.31	Cut various size plate, angle iron and round stock	X X X X
.32	Cut hole in sunken buoy as applicaple	X X X X
.33	Demonstrate precision cutting of bolts, brackets and other material as necessary	X X X X

(Signature) (Date)

303.4 ABNORMAL CONDITIONS - None to be discussed.

303.5 EMERGENCIES

For the emergency conditions listed below:

A. What indications and alarms are recieved?
B. What immediate action is required?
C. What are probable causes?
D. What other emergencies or malfunctions may occur if immediate action is not taken?
E. Perform or simulate the immediate action for this emergency condition.

		A B C D E
a.	Backfire	X X X X X
b.	Flashback	X X X X X
c.	Slag fire	X X X X X
d.	Personnel casualty (burns)	X X X X X
e.	Damaged or leaking hoses and fittings	X X X X X
f.	Explosion	X X X X X

(Signature) (Date)

304 WORKSTATION - BOOM / CRANE OPERATOR

304.1 PREREQUISITES

Before starting your assigned task, complete the following:

.11 Fundamentals from this PQS:

101 Safety Precaution Fundamentals

Completed_____
(Qualifier/Date)

104 Rigging Safety Precaution Fundamentals

Completed_____
(Qualifier/Date)

109 Boom/Crane Operator Safety Fundamentals

Completed_____
(Qualifier/Date)

110 Boom/Crane Operator Fundamentals

Completed_____
(Qualifier/Date)

.12 Systems from this PQS:

202 Boom System

Completed_____
(Qualifier/Date)

304.2 TASKS

For the tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. Demonstrate the signal used.
E. Discuss the safety precautions observed.
F. Perform this task.

		A	B	C	D	E	F
.21	Pre-exercise inspection of rig	X	X			X	X
.22	Exercise and lubricate rig	X	X	X	X	X	X
.23	Operate the boom with no load to limits of arc following hand signals from BDS	X	X	X	X	X	X
.24	Load/Offload sinkers, chain, unlighted buoys	X	X	X	X	X	X
.25	Load/Unload from cargo holds	X	X	X	X	X	X

.26	Load/Offload lighted buoys	X X X X X X
.27	Load/Offload general cargo	X X X X X X
.28	U/W work ULB's and moorings	X X X X X X
.29	U/W work tubed lighted buoys	X X X X X X
.210	U/W work flat bottom buoys	X X X X X X
.211	U/W work conical bottom buoys	X X X X X X

_____
(Signature) (Date)

304.3 INFREQUENT TASKS

For the infrequent tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. Demonstrate signal used.
E. Discuss the safety precautions observed.
F. Perform this task.

		A B C D E F
.31	Load/Offload NOAA buoys	X X X X X X
.32	Work NOAA buoys U/W	X X X X X X
.33	Remove/install buoy port doors	X X X X X X
.34	Set/Retrieve simulated mines	X X X X X X
.35	Set/Retrieve oil pollution booms	X X X X X X

_____
(Signature) (Date)

304.4 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. What indications and alarms are received?
B. What immediate action is required?
C. What emergencies or malfunctions may occur if immediate action is not taken?
D. Perform or simulate the corrective/immediate action for this abnormal condition?

		A B C D
.41	Retrieve mudded/sanded in sinker	X X X X
.42	Retrieve fouled mooring	X X X X
.43	Retrieve a mooring with braceleted chain	X X X X
.44	Retrieve a flooded buoy	X X X X
.45	Overriding turns on wire drum (bird's nest)	X X X X

_____
(Signature) (Date)

304.5 EMERGENCIES

For the emergency conditions listed below:

A. What indications and alarms are received?
B. What immediate action is required?
C. How does this emergency affect other operations/equipment/workstations?
D. Perform or simulate the corrective/immediate action for this emergency condition?

		A	B	C	D
.51	Rig casualty	X	X	X	X
.52	Loss of positive control of the load	X	X	X	X
.53	Personnel casualty	X	X	X	X
.54	Loss of ship control	X	X	X	X
.55	Loose buoy on deck	X	X	X	X

_____
(Signature) (Date)

305 WORKSTATION - ATON TECHNICIAN

305.1 PREREQUISITES

Before starting your assigned task, complete the following:

.11 Workstations from this PQS:

301 Forecastle Seaman

Completed_____
(Qualifier/Date)

302 Rigger/Line Handler

Completed_____
(Qualifier/Date)

.12 Fundamentals from this PQS:

111 ATON Technician Fundamentals

Completed_____
(Qualifier/Date)

305.2 TASKS

For the tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. Discuss the safety precautions to be observed.
E. Perform this task.

	A	B	C	D	E
.21 Assemble and install a 155mm lantern.	X	X		X	X
_____ (Signature) (Date)					
.22 Charge and install solar batteries.	X	X	X	X	X
_____ (Signature) (Date)					
.23 Assemble and install solar panels.	X	X		X	X
_____ (Signature) (Date)					

.24 Take voltage readings before and after load testing a battery and determine the condition. X X X X

(Signature) (Date)

.25 Take megohmeter readings on power cable and determine condition. X X X X X

(Signature) (Date)

.26 Conduct a blocking diode test and determine the condition. X X X X

(Signature) (Date)

.27 Conduct a routine inspection and determine the condition of the lighting equipment. X X X X

(Signature) (Date)

.28 Conduct an air test and determine the condition. X X X X X

(Signature) (Date)

.29 Troubleshoot and correct problems in lighting and power equipment. X X X X X

(Signature) (Date)

305.3 INFREQUENT TASKS - None to be discussed.

305.4 ABNORMAL CONDITIONS - None to be discussed.

305.5 EMERGENCIES - None to be discussed.

306 WORKSTATION - BUOY DECK SUPERVISOR

306.1 PREREQUISITES

Before starting your assigned task, complete the following:

.11 Workstations from this PQS:

303 Oxygen-Acetylene Torch

Completed_____
(Qualifier/Date)

304 Boom / Crane Operator

Completed_____
(Qualifier/Date)

305 Aton Technician

Completed_____
(Qualifier/Date)

.12 Fundamentals from this PQS:

112 BDS Safety

Completed_____
(Qualifier/Date)

113 BDS Rigging Fundamentals

Completed_____
(Qualifier/Date)

306.2 TASKS

For the tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. What means of communications are used?
E. Discuss the safety precautions to be observed.
F. Perform this task.

	A	B	C	D	E	F
.21 Muster and inspect assigned personnel.	X	X	X	X	X	

_____
(Signature) (Date)

.22	Conduct evolution pre-brief and assign personnel.		X	X	X	X X
	(Signature) (Date)					
.23	Conduct operational pre-checks on all applicable equipment.		X		X	X
	(Signature) (Date)					
.24	Exercise the boom/crane.	X	X	X	X	X X
	(Signature) (Date)					
.25	Supervise, under direction, dockside loading and unloading operations.	X	X	X	X	X X
	(Signature) (Date)					
.26	Observe a minimum of three ATON evolutions from the bridge.	X	X	X	X	X X
	(Signature) (Date)					
.27	Supervise, under direction, hoisting aboard various unlighted buoys used in unit OPAREA.	X	X	X	X	X X
	(Signature) (Date)					
.28	Supervise, under direction, hauling chain and hoisting and hanging various sized sinkers used in unit OPAREA.	X	X	X	X	X X
	(Signature) (Date)					
.29	Supervise, under direction, hanging and setting various unlighted buoys used in unit OPAREA.	X	X	X	X	X X
	(Signature) (Date)					

.210 Supervise, under direction, hoisting aboard various lighted buoys used in unit OPAREA. X X X X X X

(Signature) (Date)

.211 Supervise, under direction, hanging and setting various lighted buoys used in unit OPAREA. X X X X X X

(Signature) (Date)

.212 Supervise, under direction, servicing lighted and unlighted buoys on deck. X X X X X X

(Signature) (Date)

.213 Conduct post buoy operation debrief. X X X X X X

(Signature) (Date)

.214 Supervise required periodic PMS on the boom. X X X X X X

(Signature) (Date)

.215 Supervise required periodic PMS on all buoy deck related equipment. X X X X X X

(Signature) (Date)

306.3 INFREQUENT TASKS

For the infrequent tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. What means of communications are used?
E. Discuss the safety precautions to be observed.
F. Perform this task.

		A	B	C	D	E	F
.31	Load and unload deck during adverse weather conditions.	X	X	X	X	X	X
	(Signature) (Date)						
.32	Supervise retrieving, servicing and deploying lighted and unlighted buoys in adverse weather conditions.	X	X	X	X	X	X
	(Signature) (Date)						
.33	Supervise deploying and retrieving a NOAA buoy.	X	X	X	X	X	X
	(Signature) (Date)						
.34	Supervise deploying and retrieving MARDEZ simulated mines.	X	X	X	X	X	X
	(Signature) (Date)						
.35	Supervise the weight test for the whip and main purchases.	X	X	X	X	X	X
	(Signature) (Date)						
.36	Supervise rigging/unrigging of buoy port doors.	X	X	X	X	X	X
	(Signature) (Date)						
.37	Supervise the lubrication of running rigging.	X	X	X	X	X	X
	(Signature) (Date)						
.38	Supervise towing buoys on to station.	X	X	X	X	X	X
	(Signature) (Date)						
.39	Supervise the retrieving of a stray buoy.	X	X	X	X	X	X
	(Signature) (Date)						

306.4 ABNORMAL CONDITIONS - None to be discussed.

306.5 EMERGENCIES

For the emergency conditions listed below:

A. What indications and alarms are received?
B. What immediate action is required?
C. How does this emergency affect other operations/equipment/workstations?
D. Perform or simulate the corrective/immediate action for this emergency condition?

	A	B	C	D
.51 Supervise a man overboard drill while at ATON stations.	X	X	X	X

_____
(Signature) (Date)

307 WORKSTATION - BUOY DECK SAFETY OBSERVER

307.1 PREREQUISITES

Before starting your assigned task, complete the following:

307.1.1 **Fundamentals and Systems from this PQS:**

101 Safety Precautions Fundamentals

Completed_____
(Qualifier/Date)

102 Terminology Fundamentals

Completed_____
(Qualifier/Date)

104 Rigging Safety Precaution Fundamentals

Completed_____
(Qualifier/Date)

105 Rigging Terminology Fundamentals

Completed_____
(Qualifier/Date)

109 Boom/Crane Operator Safety Fundamentals

Completed_____
(Qualifier/Date)

110 Boom/Crane Operator Fundamentals

Completed_____
(Qualifier/Date)

112 BDS Safety

Completed_____
(Qualifier/Date)

114 Bouy Deck Safety Observer Fundamentals

Completed_____
(Qualifier/Date)

201 Anchor Windlass System

Completed_____
(Qualifier/Date)

307.2 TASKS

For the tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. What means of communications are used?
E. What parameters/operating limits must be monitored?
F. Perform this task.

		A	B	C	D	E	F
.21	Conduct safety brief.		X				X
	(Signature) (Date)						
.22	Establish and maintain communications with Commanding Officer		X				X
	(Signature) (Date)						
.23	Enforce personnel/buoy deck safety precautions.		X				X
	(Signature) (Date)						
.24	Identify minor safety infractions not requiring stoppage of work and correct at appropriate time.		X	X	X		X
	(Signature) (Date)						
.25	Identify major safety violations requiring stoppage of work.		X	X	X		X
	(Signature) (Date)						
.26	Stop work and correct major safety violations.	X	X	X	X		X
	(Signature) (Date)						

.27 Conduct debrief of Buoy Deck Supervisor on procedures and safety violations. X X X X

(Signature) (Date)

.28 Initiate modification of procedures as necessary to eliminate safety violations. X X X X

(Signature) (Date)

.29 Observe a minimum of three ATON evolutions from the bridge. X X X X X

(Signature) (Date)

307.3 INFREQUENT TASKS

For the infrequent tasks listed below:

A. What are the steps of this procedure?
B. What are the reasons for each step?
C. What control/coordination is required?
D. What means of communications are used?
E. Discuss the safety precautions to be observed.
F. Perform this task.

	A	B	C	D	E	F
.31 Load and unload deck during adverse weather conditions.	X	X	X	X	X	
.32 Retrieve, service and deploy lighted and unlighted buoys in adverse weather conditions.	X	X	X	X	X	

(Signature) (Date)

.33 Oversee the weight test for the whip and main purchases.	X	X	X	X	X	X

(Signature) (Date)

.34 Oversee the rigging/unrigging of buoy port doors.	X	X	X	X	X	X

(Signature) (Date)

.35 Supervise towing buoys on to station. X X X X X X

(Signature) (Date)

.36 Supervise the retrieving of stray buoys. X X X X X X

(Signature) (Date)

307.4 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. What indications and alarms are received?
B. What immediate action is required?
C. What emergencies or malfunctions may occur if immediate action is not taken?
D. Perform or simulate the corrective/immediate action for this abnormal condition?

	A	B	C	D
.41 Overriding turns	X	X	X	X
(Signature) (Date)				
.42 Letting go the anchor(s)	X	X	X	X
(Signature) (Date)				
.43 Retrieve mudded/sanded in sinker	X	X	X	X
(Signature) (Date)				
.44 Retrieve fouled mooring	X	X	X	X
(Signature) (Date)				
.45 Retrieve a mooring with braceleted chain	X	X	X	X
(Signature) (Date)				

.46 Retrieve a flooded buoy X X X X

(Signature) (Date)

307.5 EMERGENCIES

For the emergency conditions listed below:

A. What indications and alarms are received?
B. List or recite the steps of procedure for immediate action.
C. Indicate an understanding of this condition by describing:
   (1) Probable causes.
   (2) Operating limitations imposed.
   (3) How this condition affects other workstations.
D. Outline follow up action.
E. Perform when practicable or simulate the corrective action.

		A	B	C	D	E
.51	Loss/damage of cargo.	X	X	X	X	X
	(Signature) (Date)					
.52	Rig casualty.	X	X	X	X	X
	(Signature) (Date)					
.53	Personnel casualty	X	X	X	X	X
	(Signature) (Date)					
.54	Loss of ship control	X	X	X	X	X
	(Signature) (Date)					
.55	Loss of positive control of the load	X	X	X	X	
	(Signature) (Date)					
.56	Loose buoy on deck	X	X	X	X	
	(Signature) (Date)					
..57	Oxygen-acetylene Casualties					

a.	Backfire	X X X X X
b.	Flashback	X X X X X
c.	Slag fire	X X X X X
d.	Personnel casualty (burns)	X X X X X
e.	Damaged or leaking hoses and fittings	X X X X X
f.	Explosion	X X X X X

_____
(Signature) (Date)

307.6 WATCHES

Act as Safety Observer under instruction during the following evolutions:

.61 Loading/offloading operations

_____
(Signature) (Date)

.62 Unlighted buoy evolutions

_____
(Signature) (Date)

.63 Lighted buoys (flat bottomed)

_____
(Signature) (Date)

.64 Lighted buoys (tubed)

_____
(Signature) (Date)

.65 Conical hull buoys

_____
(Signature) (Date)

.66 NOAA buoy operations (LNB's)

_____
(Signature) (Date)

.67 MARDEZ/Mine operations

_____
(Signature) (Date)

APPENDIX I

PRE-EVOLUTION BUOY DECK CHECKOFF

		SAT	UNSAT
1.	Cross deck line/wire inspect for:		
	a. Staged	( )	( )
	b. Wear/chafe	( )	( )
	c. Whippings	( )	( )
	d. Splices	( )	( )
	e. Hooks/shackles	( )	( )
	f. Tripping line	( )	( )
	g. Broken wires	( )	( )
	h. End fitting	( )	( )
	i. Attachment points	( )	( )
2.	Hogging line/wire inspect for:		
	a. Staged	( )	( )
	b. Wear/chafe	( )	( )
	c. Whippings	( )	( )
	d. Splices	( )	( )
	e. Hooks/shackles	( )	( )
	f. Tripping line	( )	( )
	g. Broken wires	( )	( )
	h. End fitting	( )	( )
3.	Marker buoy inspect for:		
	a. Staged	( )	( )
	b. Adequate length	( )	( )
	c. Adequate sinker	( )	( )
	d. Adequate retro	( )	( )
4.	Small grapnel hook inspect for:		
	a. Staged	( )	( )
	b. Wear/chafe	( )	( )
	c. Whippings	( )	( )
	d. Splices	( )	( )
5.	Lead line inspect for:		
	a. Staged	( )	( )
	b. Wear/chafe	( )	( )
	c. Whippings	( )	( )
	d. markings	( )	( )
6.	Gypsy head/capstan inspect for:		
	a. Energized	( )	( )
	b. Disengaged	( )	( )
7.	Auxiliary Fo'c'sle winches if applicable:		
	a. Uncovered	( )	( )
	b. Energized	( )	( )
8.	Tag Line inspect for:		
	a. Staged	( )	( )
	b. Chafe	( )	( )
	c. Snap hook	( )	( )

9. Cage Line inspect for:

a.	Staged	( )	( )
b.	Chafe	( )	( )
c.	Chafing gear	( )	( )
d.	Whipping	( )	( )

10. Reeving line inspect for:

a.	Staged	( )	( )
b.	Chafe	( )	( )
c.	Smooth operation	( )	( )
d.	Splice	( )	( )
e.	Snap hooks	( )	( )

11. Picking pendant inspect for:

a.	Staged	( )	( )
b.	Chafe	( )	( )
c.	Deformed links	( )	( )
d.	Broken wires	( )	( )
e.	Shackles/hammerlocks	( )	( )
f.	Attachment points	( )	( )
g.	Hook	( )	( )

12. Bull chain inspect for:

a.	Staged	( )	( )
b.	Chafe	( )	( )
c.	Deformed links	( )	( )
d.	Shackles/hammerlocks	( )	( )

13. Snatch blocks inspect for:

a.	Staged	( )	( )
b.	Proper size	( )	( )
c.	Smooth operation	( )	( )
d.	Attachment point	( )	( )

14. Chain stopper inspect for:

a.	Smooth operation	( )	( )
b.	Lock arm pin	( )	( )
c.	Cotter pins	( )	( )
d.	Horse collar staged	( )	( )

15. Pelican hook inspect for:

a.	Staged	( )	( )
b.	Keeper pin	( )	( )
c.	Attachment point	( )	( )

16. Gripe down gear inspect for:

a.	Staged		
	(1) Chain	( )	( )
	(2) Steamboat jacks	( )	( )
	(3) Grab links	( )	( )
	(4) Shackles	( )	( )
	(5) Load binders	( )	( )
	(6) Aircraft tiedowns	( )	( )
b.	Deformation/cracks		

(1) Chain ( ) ( )
(2) Steamboat jacks ( ) ( )
(3) Grab links ( ) ( )
(4) Shackles ( ) ( )
(5) Load binders ( ) ( )
(6) Aircraft tiedowns ( ) ( )

c. Smooth operation
(1) Steamboat jacks ( ) ( )
(2) Shackles ( ) ( )
(3) Load binders ( ) ( )
(4) Aircraft tiedowns ( ) ( )

17. Dunnage inspect for:
a. Staged
(1) Saddles ( ) ( )
(2) Head blocks ( ) ( )
(3) Wedges ( ) ( )
(4) Lumber ( ) ( )
b. Tending lines ( ) ( )
c. Serviceable ( ) ( )

18. Oxygen/Acetylene cutting outfit inspect for:
a. Staged ( ) ( )
b. Regulator settings ( ) ( )
c. Hose ( ) ( )
d. Torch ( ) ( )
e. Cutting & heating tip ( ) ( )
f. Striker ( ) ( )
g. Goggles & gloves ( ) ( )

19. Miscellaneous ATON tools and equipment staged and inspected:
a. Buoy hammers ( ) ( )
b. Marlinespike ( ) ( )
c. Heat & Beat anvil ( ) ( )
d. Impact wrench ( ) ( )
e. Various sockets ( ) ( )
f. Tool kit ( ) ( )
g. Chain hooks ( ) ( )
h. Nipper chains ( ) ( )
i. Rotten stops ( ) ( )
j. Modeer shackles ( ) ( )
k. Various shackles ( ) ( )
l. Slings & straps ( ) ( )
m. Paint ( ) ( )
n. Paint equipment ( ) ( )
o. Buoy scrappers ( ) ( )
p. Step ladder ( ) ( )
q. Small block & tackle ( ) ( )
r. Retro tape ( ) ( )
s. Numbers ( ) ( )
t. Letters ( ) ( )