

HS(HH/SH-60H/F) (SPECIFIC) ENLISTED AVIATION WARFARE SPECIALIST (EAWS) TUTORIAL



Welcome to the HS Specific PQS questions and answers. This study guide was designed to aid instructors and students alike. All of the questions were answered from instructions and directives found in NAVEDTRA 43902-9, Personnel Qualification Standard (PQS), Enlisted Aviation Warfare Specialist (EAWS), Unit Specific for HS (SH-60F).

Click on the section of the HS Specific PQS that you would like to review. Good luck and study hard!



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ACRONYMS USED IN THIS PQS

Not all acronyms or abbreviations used in this PQS are defined here. The Subject Matter Experts from the Fleet who wrote this Standard determined the following acronyms or abbreviations may not be commonly known throughout their community and should be defined to avoid confusion. If there is a question concerning an acronym or abbreviation not spelled out on this page nor anywhere else in the Standard, use the references listed on the line item containing the acronym or abbreviation in question.

AFCS	Automated Flight Control System
AI	Airspeed Indicator
	Attitude Indicator
AIRBOC	Airborne Rapid Blooming Offboard Chaff
APU	Auxiliary Power Unit
ASW	Anti-Submarine Warfare
BIM	Blade Inspection Method
CADS	Cartridge Activated Devices
CODR	Conventional Ordnance Discrepancy Report
CRRC	Combat Rubber Raiding Craft
ECS	Environmental Control System
ELT	Emergency Locator Transmitter
EMR	Explosive Mishap Report
EOD	Explosive Ordnance Disposal
GCU	Generator Control Unit
GPS	Global Positioning System
HERO	Hazards of Electromagnetic Radiation to Ordnance
HIFR	Helicopter In-Flight Refueling
HIRSS	Hover Infrared Suppression System
HVBSS	Heliborne Visit, Board, Search, Seizure
ICS	Intercommunication System
IPS	Inlet Particle Separator
LPP	Life Preserver Passenger
LPU	Life Preserver Unit
MDL	Mission Data Loader
MEDEVAC	Medical Evacuation
NATOPS	Naval Air Training Operating Procedures Standardization
NAVOSH	Navy Occupational Safety and Health Program
NAWMP	Naval Airborne Weapons Maintenance Program
NSW	Naval Special Warfare
RAST	Recovery, Assist, Secure, and Traverse
SORM	Standard Organization and Regulations Manual
SPIE	Special Patrol Insertion/Extraction
TACAN	Tactical Air Navigation
TDR	Time Domain Reflectometer
VERTREP	Vertical Replenishment
VSI	Vertical Speed Indicator

101 Safety Fundamentals

References:

- [a] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH-60H Aircraft
- [b] NAVAIR A1-H60CA-GAI-000, Organizational Maintenance Procedures, General Aircraft Information, Navy Model SH-60B/SH-60F/HH-60H
- [c] NAVAIR 01-1A-509, Aircraft Weapons Systems Cleaning and Corrosion Control
- [d] OPNAVINST 5100.23D, Navy Occupational Safety and Health (NAVOSH) Program Manual
- [e] NAVAIR A1-H60CA-GAI-010, Organizational Maintenance, Procedures Plane Captain's Manual

101.1 State the general safety precautions that must be observed while pressure refueling aboard ship while the rotors engaged. [ref. a, pp. III-8-2, III-8-3]

- a. Secure the helicopter with two chocks and initial four-point tiedown.
- b. All fueling personnel must be thoroughly indoctrinated in the contents of NAVWEPS 06-5-502, Aircraft Refueling, pertinent type commander's instructions, and the ship's refueling instructions.
- c. All movement from one side of the helicopter to the other shall be via the nose. Keep clear of tail rotor.
- d. Refueling shall be secured when any fuel spillage is noted and not commenced until the spillage is wiped up.
- e. The fueling hose shall be connected and disconnected from the helicopter with the hose in an evacuated condition.

101.2 State and identify the S/HH-60F/H danger areas: [ref. b, WP 009 00, p. 2]

- a. Suction from #1 and #2 engine inlets.
- b. Heat from #1 and 2 engine exhausts
- c. Heat from ECS exhaust on right side of A/C
- d. Exhaust form APU left side of A/C
- e. Main rotor ARC and tail rotor blades.

101.3 Discuss the hazard and safety precautions for the following:

a. Beryllium: [ref. c, p. 8-10]

A cancer causing agent avoid touching (i.e. LOCK PIN PULLER/DROOP STOPS), never grind or sand. Never inhale as a dust or splinter in the skin.

b. Lithium Batteries: [ref. a, p. V-12-51]

(Sonobuoy) can release sulfur dioxide gas (SO₂) which depletes oxygen in the cabin.

101.4 Discuss the basic requirements for each of the following NAVOSH programs: [ref. d]

a. Respiratory protection: [p. 15-1]

Many of the repair and maintenance activities performed at naval facilities generate air contaminants which can be dangerous, if inhaled. The best means of protecting personnel from exposure to such potentially hazardous materials is through the use of accepted engineering control measures, such as local exhaust ventilation. However, the use of engineering control measures may not always be technologically or economically feasible, due to the nature and location of the activities. In these situations, appropriate respiratory protection shall be used to ensure personnel protection.

Whenever respiratory protection is required, a respiratory protection program shall be established and maintained. A trained Respiratory Protection Program Manager (RPPM) shall be appointed in writing, by the commanding officer or officer in charge. The RPPM shall be responsible for implementing program requirements.

b. Hearing protection: [p. 18-1]

The goal of the Navy Hearing Conservation Program is to prevent occupational hearing loss and ensure auditory fitness for duty in the military and civilian workforce. The program includes the following:

- Work environments shall be surveyed to identify potentially hazardous noise levels and personnel at risk.
- Periodic hearing testing shall be conducted to monitor the effectiveness of the hearing conservation program.
- Education of individuals exposed to hazardous noise, their supervisors, and people providing hearing conservation services (i.e. training, monitoring, hearing protection, etc.) to these individuals is vital to the overall success of a hearing conservation program.

c. Sight conservation: [p. 19-2]

Navy Policy requires that Navy personnel exposed to eye hazardous areas or operations, be provided adequate eye protection at government expense. Employees shall be required to wear appropriate eye protective equipment when performing eye hazardous duties.

The activity sight conservation program shall include, but not be limited to, the following program elements:

1. Identification and evaluation of eye hazardous areas, processes, and occupations.
2. An employee vision screening program.
3. Effective equipment maintenance program.
4. An effective employee training, promotion and emphasis program.
5. Effective program enforcement.

In order to establish a sight conservation program, eye hazardous exposures including areas, occupations, equipment, and processes shall be identified and appropriate controls implemented.

d. Personal protection equipment (PPE): [p. 20-1]

It is Navy policy that PPE be provided, used, and maintained when competent authority has determined that its use is required and that such use will lessen the likelihood of occupational injuries and/or illnesses. Activities shall provide necessary protective equipment where there is a reasonable probability that the use of the equipment will prevent or reduce the severity of injuries or illnesses. PPE procurement and enforcement of proper use and maintenance is the responsibility of the activity. It must be recognized that personal protective devices do nothing to reduce or eliminate the hazard itself. They merely establish a last line of defense, and any equipment breakdown, failure, or misuse immediately exposes the worker to the hazard. Many protective devices, through misapplication or improper maintenance, can become ineffective without the knowledge of the wearer and can have potentially serious consequences. For this reason, proper equipment selection, maintenance, employee training and mandatory enforcement of equipment use are key elements of an effective PPE program

101.5 State the warnings to be observed prior to applying external power: [ref. e, WP 018 00, p. 3]

a. Ensure the area around and under the stab is clear of personnel and equipment due to the stab goes full down once power is applied. WOW circuit breaker closed. All switches off/safe and normal. Make sure power cords is not energized when inserting/extracting from aircraft.

b. Ensure proper circuit breakers are secured properly

101.6 Discuss the proper use of handholds, steps and walkway [ref. b, WP 009 00, p. 2]

a. Steps on both side of A/C just aft pilot and copilot door are recessed, on tail pylon the steps are telescoping.

b. Handholds are on both sides of A/C in reach for climbing on top of A/C ALL walkways are nonskid.

102 Rescue/Survival Equipment

References:

- [a] NWP 3-50.1, Naval Search and Rescue (SAR) Manual
- [b] NAVAIR 13-1-6.5, Aviation-Crew Systems, Rescue and Survival Equipment
- [c] NAVAIR 13-1-6.1-1, Aviation-Crew Systems, Inflatable Survival Equipment (Liferafts)
- [d] NAVAIR 13-1-6.1-2, Aviation-Crew Systems, Inflatable Survival Equipment (Life Preservers)
- [e] NAVAIR 16-30PRC90-2, Maintenance Instructions, Radio Sets, AN/PRC-90 and AN/PRC-90-2
- [f] NAVAIR 16-35PRC112-1, Operators, Unit, and Intermediate Maintenance Manual, Including Repair Parts and Special Tool, AN/PRC-112
- [g] NAVAIR 16-35PRC125-1, Operations and Organizational Maintenance Manual with Illustrated Parts Breakdown, Radio Set, AN/PRC-125
- [h] NAVAIR 16-35AVS-5, Aviation Unit and Intermediate Maintenance Manual Including Repair Parts and Special Tools List, Aviator's Night Vision Imaging System (ANVIS) AN/AVS-6 (V) 1
- [i] NAVAIR 13-1-6.7, Aviation-Crew Systems, Aircrew Personal Protective Equipment (PPE)
- [j] OPNAVINST 3710.7Q, NATOPS General Flight and Operating Instructions

102.1 Discuss the following search and rescue equipment:

a. Double rescue hook [ref. a, p. 5-1]

Primary rescue device, all other rescue devices can only be utilized with the double rescue hook. It contains 2 hooks (a large hook and small hook), one equipment ring. Large hook holds 3000 lbs. shall be the only hook used to hoist personnel, small hook holds 1000 lbs. used for lightweight items such as mail, equipment ring holds 1500 lbs. can be used to hoist light equipment and mail.

b. Rescue strop [ref. a, p. 5-3]

An inherently buoyant device used to lift one person at a time up to the aircraft. Provides floatation for the rescue hook during rescue.

c. MEDEVAC litter [ref. a, p. 5-3]

A buoyant foldable litter, used to transport injured personnel. Attached to the rescue hook, it can be lifted horizontal/vertical – red (head)- white (feet) suspension lines used to lift litter. Four retention straps to hold person in.

d. Forest penetrator [ref. a, pp. 5-3, 5-11]

3 Flukes (seats) old type, 2 Flukes new type; Used to assist rescue personal for both land and sea operations. Accommodates up to 2 people at one time.

e. Helicopter rescue equipment bag contents [ref. b, p. 13-27]

Hoisting Gloves, Chemical Lights, Chemical Light Straps, (3) Crewman Safety Belts, Cable (Chicago) Grip, Hoist Quick Splice, Pneumatic Rescue Hand Tool or Manual Rescue Hand Tool, Aldis lamp, Rescue Litter Sling Assembly, Rescue Strop, Blankets, Cranials, and Trail line assembly.

102.2 State the purpose and components of the LPP/-1/1A and LPU-30/P life preservers. [ref. a, p. 5-20]

a. LPP/1/1A “Rubber Ducky”

Single compartment yoke-type floatation assembly that provides 29 lbs. of buoyancy.

b. LPU-30/P “FLOAT COAT”

Vest-type preserver, provides 29lbs. buoyancy. Contains; whistle, sea dye marker floatation. No longer used, the new one is the LPU-32.

102.3 State the two types of life rafts utilized in the helicopter backpack assembly. [ref. c, pp. 4-1, 4-6, 6-1]

a. LRU-1:

One-person raft, Contains a sea anchor, interior flaps are pink exterior flaps are black.

b. LRU-18:

One-person raft. Clamshell style. Contains a sea anchor.

c. LRU-13A:

Five-people raft, not used with Navy Backpack assembly. Used instead of all the LRU-1 or 18's.

102.4 State the purpose of the following rescue swimmer equipment:

a. Rescue harness: [ref. a, p. 5-1]

The rescue swimmer harness shall be worn by the rescue swimmer on all rescues. Contains: knife, (4) chemical lights, strobe light, shroud line cutter, and (2) MK 124. It provides a lifting V-ring and a snap hook, for double rescues.

b. LPU-28- (SAR 1) Rescue swimmer floatation devise [ref. d, p. 24-1]

Provides a pocket for holding PRC-125 radio.

c. Wet suit [ref. b, p. 13-31]

Thermal protection-protect swimmer from outside water environment

102.5 Discuss the purpose and characteristics of the following radios:

a. AN/PRC-90-2 [ref. e, pp. 8-1, 8-2]

2 fixed frequencies, beacon or voice modes, water-resistant radio carried in aircrew's SV-2.

b. AN/PRC-112 [ref. f, p. 1-11]

CSAR radio. 2 programmable frequencies and 2 fixed frequencies. Used in overland rescue and used with DALIS authenticator. Carried in aircrew's SV-2.

c. AN/PRC-125 [ref. g, WP 001 00, p. 2]

Rescue swimmers radio, 2 fixed frequencies carried in the SAR 1.

102.6 Define the acronym HEED and state its purpose: [ref. b, p. 14-1]

Helicopter Emergency Escape Device; provides approx. 1-3 minutes of breathable air to aid in aircrew egress submerged aircraft.

102.7 Describe the characteristics, capabilities and features of the aviator's night vision imagining system. (AN/AVIS-6 NVG) [ref. h, p. 1-5]

Goggles that provide 40 degrees field of view at 20/40 vision. It enhances the aviator's vision at night, by amplifying ambient light. Can be used in low light (no moon) and high light (moon) environments.

102.8 Describe the purpose of the SV-2B survival vest and LPU. [ref. d, p. 14-1; ref. i, p. 7-20]

a. SV-2B contains all survival gear and up to 5 pounds of optional gear. Used to help aircrew in rescue environment- contains smoke, flares, and various survival equipment.

b. LPU-21 is for flotation and is attached to the SV-2B.

102.9 State the conditions that require the use of anti-exposure suits: [ref. j, p. 8-2]

- a. Anything under 50-degree water temp/ 32 degree outside wind chill/ dry suits are required.
- b. Used to protect aircrew in extreme cold weather.

103 Aircraft Handling Fundamentals

References:

- [a] NAVAIR A1-H60CA-GAI-010, Organizational Maintenance Procedures, Plane Captain's Manual
- [b] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH-60H Aircraft
- [c] NAVAIR A1-H60CA-GAI-000, Organizational Maintenance Procedures, General Aircraft Information, Navy Model SH-60B/SH-60F/HH-60H
- [d] NAVAIR 00-80T-96, U.S. Navy Support Equipment Common, Basic Handling and Safety Manual

103.1 State the reason why electrical power is required when folding the tail rotor pylon. [ref. a, WP 004 00, p. 8A]

Power is required to index the tail rotor to keep the tail rotor blades from catching wind and spinning.

103.2 State the wind restriction for folding the main and tail rotor pylon. [ref. a, WP 004 00, p. 4, WP 003 00, p. 5]

Do not fold blades or tail rotor pylon if the winds are over 45 knots.

103.3 State the position of the stabilator during tow/park of a helicopter. [ref. a, WP 006 00, p. 4]

Level position.

103.4 State the location of tiedown fittings on the SH-60F/H. [ref. b, p. 1-3-11]

Tiedown fittings are installed at six points on the helicopter:

- a. One on each main landing gear wheel hub.
- b. One high point above the strut on each side of the aircraft.
- c. Two more fittings are attached on the aft transition section above the tail wheel, one on each side.

103.5 State the ground receptacle locations and proper procedures for aircraft grounding: [ref. a, WP 006 00, p. 26]

- a. Main locations are on the port side of transition section.
- b. Grounding procedures- Attach grounding wire to ground first then to aircraft.
- c. Un-grounding procedure- Disconnect grounding wire from aircraft then disconnect from ground.

103.6 State the procedures and cautions that must be observed during aircraft jacking. [ref. c, WP 010 00, pp. 3 thru 6]

- a. Do not jack while engines are running or rotor turning.
- b. Do engage tail wheel lock pin.
- c. Do ensure wheels not being raised are choked.
- d. Do ensure overhead is clear.
- e. Do ensure jack is positioned under jack pad.
- f. Caution a minimum of one person per jack

103.7 Explain why tiedown deflection of blade tips should be six to twelve inches from static position. [ref. a, WP 005 00, p. 5]

To prevent damage from excessive tightening of tiedown cables or from wind flapping.

103.8 Identify the personnel required for an aircraft move: [ref. d, WP 005 00, p. 23]

- (2) wing walkers
- (1) tow tractor driver
- (1) safety observer
- (1) director
- (1) brake rider

103.9 State the importance of a whistle during an aircraft move. [ref. d, WP 005 00, p. 26]

When the whistle is blown the tow tractor driver stops immediately.

104 Airframe Fundamentals

References:

- [a] NAVAIR 01-1A-17, Aviation Hydraulics Manual
- [b] NAVAIR A1-H60CA-150-100, Organizational Maintenance, Principles of Operation, Rotor Systems, Navy Model SH-60B/SH-60F/HH-60H
- [c] NAVAIR A1-H60HA-110-100, Organizational Maintenance, Principles of Operation, Airframes Landing Gear Systems, Navy Model HH-60H
- [d] NAVAIR A1-H60FB-110-100, Organizational Maintenance, Principles of Operation, Airframes and Landing Gear Systems, Navy Model SH-60F
- [e] NAVAIR 00-80T-88, Helicopter History and Aerodynamics Manual
- [f] NAVAIR A1-H60CA-140-300, Organizational Maintenance, Principles of Operation, Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
- [g] NAVAIR 01-1A-509, Aircraft Weapons Systems Cleaning and Corrosion Control
- [h] NAVAIR A1-H60CA-140-100, Organizational Maintenance, Principles of Operation, Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
- [i] NAVAIR A1-H60CA-SRM-300, Corrosion Control, Navy Models SH-60B, SH-60F, HH-60H
- [j] NAVAIR A1-H60CA-GAI-010, Organizational Maintenance Procedures, Plane Captain's Manual

104.1 State the purpose of a hydraulic patch test. [ref. a, p. 4-8]

To ensure the cleanliness and purity in the hydraulic system.

104.2 State the purpose of a Blade Inspection Method (BIM) indicator. [ref. b, WP 004 00, pp. 2, 3]

- a. In the leading edge of the blade is a spar that runs the length of the blade. The spar contains nitrogen and if there is a leak in the spar the BIM will change to 3 black lines.
- b. The BIM under proper conditions is all white.

104.3 State the purpose of conducting Flight Control system rigging. [ref. f, WP 003 00, p. 3]

To bring flight control perimeters into straight level flight, as set by the factory.

104.4 State the purpose of a tactical paint scheme. [ref. g, p. 7-5]

The paint design is for each A/C type to reduce visual detection by matching reflection of operational surroundings.

104.5 State the two methods of locking and unlocking tail wheel lock pin. [ref. c, WP 014 00, p. 2; ref. d, WP 014 00, p. 2]

- a. Manually
- b. Electrically

104.6 State the factors that affect helicopter flight. [ref. e, p. 31]

- a. **Lift:** Counter acts the force of weight causing the helo to rise.
- b. **Weight:** Force of gravity pulling helo downward.
- c. **Drag:** Friction of air pushing on the helo.
- d. **Thrust:** Counter acts the force of drag causing helo to go forward.

104.7 State the factors that affect rotor blade lift. [ref. e, pp. 31, 32]

Increasing the pitch of the main blades creating a high-pressure area on the lower side of the blade and a low-pressure area on the upper side of the blade, this creates lift. Lift must be greater or equal to weight if lift is to be sustained.

104.8 State the location and purpose of the main rotor head dampers. [ref. b, WP 003 00, p. 2]

- a. Between each spindle and hub.
- b. Purpose to reduce the lead and lag of the main rotor blades and absorb main rotor head start load.

104.9 Explain how the following flight controls affect helo flight. [ref. h, WP 001 00, p. 7]

- a. **Collective stick** change pitch of main rotor blade. Increase or decrease lift
- b. **Cyclic stick** changes the angle of the rotor disk. Controls forward aft and lateral movement
- c. **Rudder pedals** changes pitch of tail rotor blades. Controls helo heading

104.10. State what must be done for effective helo corrosion prevention. [ref. i, WP 005 00, p. 5]

A/C must be washed every 7 days at sea and every 14 days on shore.

104.11 State the two areas on the helo, which must have particular attention during a corrosion inspection [ref. h, WP 005 00, p. 6]

- a. Gear boxes.
- b. Avionics.

104.12 State the approved cleaning materials and methods. [ref. j, WP 006 00, p. 6]

- a. A/C cleaning compound Mil-C-85570 type 1 or II.
- b. Mixing procedures for heavy dirt is 1 part-cleaning compound to 1 part water.
- c. Mixing procedures for light dirt 1 part-cleaning compound to 9 parts water.
- d. Clean A/C from bottom to top.

104.13 State the purpose for emergency reclamation procedures. [ref. g, p. 9-1]

To salvage salvageable components, and to remove them by their priority.

105 Propulsion Fundamentals

References:

- [a] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH-60H Aircraft
- [b] NAVAIR A1-H60CA-220-100, Organizational Maintenance, Principles of Operation, Power Plant Systems, Navy Model SH-60B/SH-60F/HH-60H
- [c] NAVAIR A1-H60HA-110-100, Organizational Maintenance, Principles of Operation, Airframe and Landing Gear Systems, Navy Model HH-60H
- [d] NAVAIR A1-H60CA-260-100, Organizational Maintenance, Principles of Operation, Transmission Systems, Navy Model SH-60B/SH-60F/HH-60H
- [e] NAVAIR A1-H60CA-240-100, Organizational Maintenance, Principles of Operation, Auxiliary Power Unit (APU) Systems, Navy Model SH-60B/SH-60F/HH-60H
- [f] NAVAIR A1-H60CA-220-300, Organizational Maintenance, Procedures Power Plant Systems, Navy Model SH-60B/SH-60F/HH-60H
- [g] NAVAIR 01-1A-24, U.S. Navy Aviation Vibrational Analysis Manual

105.1 State the type model and characteristics of the engine used in the SH-60F/H. [ref. a, p. I-1-1]

- a. T700-GE-401C- front driven turbo shaft engine.

105.2 Define the following acronyms/abbreviations. [ref. b, WP 002 00, p. 3]

- a. DEC digital electronic control
- b. ESU electronic sequencing unit
- c. HMU hydromechanical unit
- d. LCF load cycle fatigue
- e. LDS load demand spindle
- f. Ng gas generator speed
- g. Np power turbine speed
- h. Nr rotor speed
- i. P3 compressor discharge pressure
- j. PAS power available spindle
- k. T2 compressor inlet temp
- l. TGT turbine gas temp

105.3 State the three different pneumatic sources for engine start. [ref. a, p. 1-2-8]

- a. Out side air source
- b. APU
- c. Engine cross bleed

105.4 State the purpose of the Inlet Particle Separator (IPS). [ref. b, WP 003 00, p. 18]

To prevent foreign particles from entering the compressor. It consists of a swirl frame, collection scroll case, and an engine-driven blower. The swirl vanes impart rotation to the airflow, causing the particles to be thrown outward into the collection scroll. From the collection scroll, the foreign particles are dumped over board through a blower assembly.

105.5 State the purpose of the Hover Infrared Suppression System (HIRSS). [ref. c, WP 010 00, p. 2]

Installed on HH-60H model, reduces exhaust gas radiation and line of sight hot surfaces.

105.6 State the five main components of the H-60 power train. [ref. a, p. 1-2-21]

- a. Main transmission modules
- b. Drive shafts
- c. Oil cooler
- d. Intermediate gear box
- e. Tail gear box

105.7 State the primary and secondary function of the main transmission system [ref. a, p. 1-2-21]

- a. Drives and supports main rotor; drives tail rotor.
- b. Drives electrical and hydraulic units.

105.8 State the purpose of the chip detectors used on the H-60. [ref. d, WP 008 00, p. 2]

- a. Detect metal chips in the gearbox and send a signal to the cockpit indicating a chip has been detected.
- b. The chip detector is fuzze burn off, for the fine shavings that magnetically get attached.

105.9 State the purpose of the Auxiliary Power Unit (APU). [ref. e, WP 003 00, p. 2]

- a. Provides power (air) to the engines for engine start.
- b. Provides power (air) to the environmental control system.
- c. Provides power (electrical) for emergencies and for the backup pump.

105.10 State the purpose of the APU accumulator and the two methods of charging. [ref. e, WP 003 00, p. 2]

- a. The accumulator is serviced with hydraulic fluid and nitrogen, when APU start is selected hydraulically fluid is sent to the APU starter for APU start.
- b. Charging:
 - 1. Back-up pump.
 - 2. Manual hand pump.

105.11 State the purpose of the history recorder/counter. [ref. b, WP 003 00, p. 12]

To read engine conditions:

- 1. Hours.
- 2. Index.
- 3. LCF1 (LOAD CYCLE FATIGUE).
- 4. LCF2 (THERMO CYCLE FATIGUE).

105.12 State the types of fuel the T700 engines uses and their restrictions. [ref. a, p. 1-3-1]

- a. JP-5, Primary fuel (NATO Code F-44).
- b. JP-8, flashpoint too low for shipboard use, Primary fuel (NATO Code F-34).
- c. JP-4, not on the ship, Restricted fuel (NATO Code F-40).

105.13 State two conditions that would require an engine compressor cleaning. [ref. f, WP 006 00, p. 6]

- a. Low engine power.
- b. On a 60 hour.

105.14 State the goals of the vibration analysis program. [ref. g, p. 1-3]

To increase useful life of components and structure on the H-60 helo by maintaining vibration levels within established practical limits.

106 Avionics/Electrical Fundamentals

References:

- [a] NAVEDTRA 10348-G, Aviation Electrician's Mate 3 & 2
- [b] NAVAIR A1-H60FB-420-100, Organizational Maintenance Principles of Operation, Electrical Power and Lighting Systems, Navy Model SH-60F
- [c] NAVEDTRA 12329, Aviation Electronics Technician 3
- [d] NAVEDTRA 172-02-00-91, Navy Electricity and Electronics Training Series Mod 2, Introduction to Alternating Current and Transformers
- [e] NAVAIR A1-H60HA-420-100, Organizational Maintenance Principles of Operation, Electrical Power and Lighting Systems, Navy Model HH-60H
- [f] NAVEDTRA 12000, Airman
- [g] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H Aircraft
- [h] NAVEDTRA 12330, Aviation Electronics Technician 2 (Organizational)

106.1 Define the following: [ref. a]

a. Ohm's Law: The equation $I=E/R$ [p. app. A1-7]

The current (I) in a circuit is directly proportional to the voltage (E) and inversely proportional to the resistance (R)

b. Thermocouple [p. app. A1-10]

A junction of two dissimilar metals that produce voltage when heated

c. Frequency [p. app. A1-4]

Number of cycles of alternating current per second measured in Hz

106.2 Describe Alternating Current (AC) and Direct Current (DC). [ref. d, p. 1-2]

a. Alternating current

Current which constantly changes in amplitude, and which reverses direction at regular intervals.

b. Direct current

Flows only in one direction and that the number of electrons flowing past a point in a circuit in one second determines the amplitude of current.

106.3 State the output of the SH-60F/HH-60H a/c generator in reference to the following parameters. [ref. b, WP 003 00, p. 2; ref. e, WP 003 00, p. 2]

- a. Voltage 115 volts a/c
- b. 3 phase
- c. Frequency 400 Hz

106.4 State the purpose and location of the aircraft battery. [ref. g, p. 1-2-30]

- a. The battery is under the co-pilots seat.
- b. The purpose – 24volts-dc ni-cad battery provides primary source of power to start APU.

106.5 Describe the difference between the following type of tests. [ref. a]

a. Continuity [p. 2-12]

Makes sure there is no shorts/breaks in the wire, from one end of the wire to the other end of the wire.

b. Voltage [p. 2-13]

Checking for required voltage as specified.

106.6 Discuss the purpose of the following test equipment: [ref. a, pp. 2-17, 2-19]

a. Digital Multimeter:

Measures voltage, amperage, and resistance ohms also diode check.

b. Time Domain Reflectometer (TDR):

Identifies how far (in feet) if there is a short/break in the wire. The machine operates by sending a signal down the wire and reading where the break is and sending the signal back.

106.7 Briefly describe the Pitot Static system. [ref. f, p. 7-6]

It consists of a Pitot-static tube and three indicators, all connected with tubing that carries air. The three indicators are the altimeter, the airspeed, and the rate-of-climb indicator. The airspeed indicator displays the speed of the aircraft. The altimeter displays the altitude of the aircraft. The rate-of-climb indicator shows how fast the aircraft is climbing or descending. Each instrument operates on air taken from outside the aircraft during flight.

106.8 State the difference between the barometric and radar altimeter. [ref. g, pp. 1-2-61, 1-2-63]

- a. Barometric altimeter reads aircraft from sea level.
- b. Radar altimeter reads altitude from terrain.

106.9 Explain the basic principle of the Doppler Effect. [ref. c, pp. 1-29, 1-30]

The apparent change in frequency of a received signal caused by the relative motion between the sender and receiver.

106.10 Explain the operating characteristics of the Emergency Locator Transmitter (ELT). [ref. g, p. 1-2-84]

- a. Self activated by five-G force or turned on by switch.
- b. Sends out distress signal up to 100 miles with the search aircraft at an altitude of 10,000 ft.

106.11 Define the following acronyms:

- | | |
|-------------------------------|---|
| a. TDP [ref. g, p. VII-15-1] | Tactical Data Processor |
| b. CDU [ref. g, p. VII-15-4] | Control Display Unit |
| c. DCP [ref. g, p. VII-15-4] | Display Control Panel |
| d. MFD [ref. g, p. VII-15-4] | Multi Function Display |
| e. HUD [ref. g, p. VII-15-35] | Heads Up Display |
| f. CSC [ref. g, p. VII-16-1] | Communications System Control |
| g. DALs [ref. g, p. VII-17-9] | Downed Aviator Locator System |
| h. IFF [ref. g, p. VII-16-5] | Identification Friend or Foe |
| i. DAFCS [ref. g, p. 1-2-42] | Digital Automatic Flight Control System |
| j. HSVd [ref. g, p. VII-17-9] | Horizontal Situation Video Display |
| k. HF [ref. h, pp. 4-2, 4-3] | High Frequency |
| l. UHF [ref. h, p. 4-3] | Ultra High Frequency |
| m. VHF [ref. h, p. 4-3] | Very High Frequency |
| n. ARI [ref. h, p. 6-55] | Azimuth Range Indicator |

106.12 Define the following terms as applied to sonar [ref. c]

a. Active [p. app. A1-1]

Transmitter is sending out signal.

b. Passive [p. app. A1-7]

Transducer listens for noise.

c. Azimuth [p. app. A1-2]

A target clockwise angular displacement in the horizontal plane with the respect to true north.

d. Bearing [p. app. A1-2]

The direction that the sound is coming from the source.

e. Range [p. app. A1-8]

Distance of target from transducer

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References:

[a] NAVEDTRA 12309, Aviation Ordnanceman 3, 2, & 1

[b] OPNAVINST 8600.2B, The Naval Airborne Weapons Maintenance Program (NAWMP), Volume 1

[c] NAVAIR 00-80T-103, NATOPS Conventional Weapons Handling Procedures Manual (Ashore)

[d] NAVAIR 28-SSQ-500-1, Sonobuoys

[e] NAVAIR 13-1-6.5, Aviation-Crew Systems, Rescue and Survival Equipment

[f] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H Aircraft

107.1 Define the term pyrotechnics. [ref. a, p. 4-1]

Pyrotechnics are fireworks adapted to military use. The word pyrotechny means the art of fire. Therefore, pyrotechnics are items that produce their effect by burning, and are consumed in the process. Pyrotechnics, as used in the military, are items that produce a bright light for illumination or colored lights or smoke for signaling.

107.2 State the purpose and burn time of the following pyrotechnics:

a. MK 80 MOD O signal flare [ref. a, p. 4-3]

The Mk 79 Mod 0 signal kit consists of a Mk 31 Mod 0 signal projector, a plastic bandoleer that holds seven Mk 80 Mod 0 signals, and an instruction sheet. The kit is used by downed aircrew personnel as a distress-signaling device. Because it is small and lightweight, personnel can carry it in pockets of flight suits or in life rafts. The projector aims and fires the signals. Each signal contains a single red star. On activation, this star is propelled upward to a height of between 250 and 650 feet. The star burns for a minimum of 4 1/2 seconds.

b. MK 124 MOD O signal [ref. e, p. 9-37]

The Mk 124 Mod 0 is used as a day or night signal by personnel on land or sea. Because of its small size and weight, it can be carried in life vests or flight suit pockets and on life rafts. This device is especially adapted for use by aircrew personnel downed at sea. It has two sides, one for day (produces orange smoke) and one for night (red flame), both side last approx. 20 seconds.

c. MK 25 MOD 4 Marine location Marker [ref. a, p. 4-10]

They are launched from aircraft to provide day or night reference points for marking the course of enemy submarines in antisubmarine warfare operations. They are suitable for any type of sea-surface reference-point marking that calls for both smoke and flame for a period of 10 to 20 minutes.

d. MK 58 MOD O marine location marker [ref. a, p. 4-12]

They are launched from aircraft to provide day or night, long burning reference point marking on the ocean surface. It is also used for SAR operation, man overboard, and as a target for practice bombing at sea (40 to 60 minutes).

107.3 State the purpose of explosive handling personnel qualification and certification program. [ref. a, p. 11-3]

To set guidelines for weapons certification for all personnel whose duties require evolutions or tasks involving explosive device.

107.4 State the purpose of the airborne weapons stores loading manual. [ref. a, p. 14-1]

To standardize loading procedures used throughout the Navy and Marine Corps, improving safety and reliability in the loading of conventional weapons and airborne stores.

107.5 Define the following sonobuoy classifications [ref. d, pp. 2-2 thru 2-4]

a. Active

Self-timed or commandable sonobuoy in which the sonar signal that pulses is used for a target range movement. These signals are transmitted by the ASW aircraft for processing and display.

b. Passive

Detects underwater sounds and converts them to electrical energy transmits a signal to a receiving station, normally on the deployment aircraft.

c. Special Purpose

To measure water temp verses depth, or for communication from aircraft to submarine.

107.6 Explain the purpose of the following [ref. b, p. 4-6-2]

a. Conventional Ordnance Discrepancy Report (CODR)

Provide a standard system for reporting malfunctions or induced defects involving live ordnance, ammunition, explosives, explosive systems and devices such as bomb racks, missile launchers, gun systems, rocket launcher, sonobuoy launchers, leaking or spilled OTTO fuel, and armament weapons support equipment.

b. Explosive mishap Report (EMR)

A report that applies to explosive incidents involving conventional ordnance, ammunition, explosives, explosive system and devices resulting in actual unintentional detonation, firing, burning, launching of ordnance material leaking of spilled propellant fuels and oxidizers, or chemical agents released.

107.7 State the purpose of the naval airborne weapons maintenance program (NAWMP). [ref. b, p. 1]

It issues the policies, procedures and responsibilities for activities supporting or performing airborne weapons maintenance.

107.8 Explain the conditions for aircraft grounding during weapons load/unload. [ref. c, p. 5-4]

During aircraft explosive loading/downloading procedures, the aircraft shall be grounded such that the resistance between aircraft and ground shall be 10,000 ohms or less.

107.9 State the purpose of a stray voltage check. [ref. a, p. 16-17]

Stray voltage checks are normally performed with the weapon loaded on the aircraft, but they are made before making an electrical connection between the weapon and the aircraft. Additionally, this check is normally performed after the aircraft's engines have been started and all aircraft preflight checks have been completed. The stray voltage check is performed at the last possible moment before the aircraft takes off. This is to ensure that no voltage has been induced in the aircraft firing circuitry from external sources, such as the ship's radar. The launcher electrical safety pin must not be removed until the aircraft is positioned on the catapult for takeoff.

107.10 State the purpose of the explosive ordnance disposal EOD unit. [ref. a, app. AI-3]

Personnel with special training and equipment who render explosive ordnance safe, make intelligence reports, and supervise the safe removal of ordnance.

107.11 State the purpose of the hazards of electromagnetic radiation to ordnance. [ref. a, p. 11-31]

The functional characteristics of electrically initiated ordnance cause hazards of electromagnetic radiation to ordnance (HERO). Ordnance that presents a HERO problem includes cartridges, cartridge-actuated devices, and 20-mm ammunition. The ordnance electroexplosive devices (EEDs) may be accidentally initiated or their performance degraded by exposure to radio frequency (RF) environments. Ordnance is more susceptible to RF environments during assembly, disassembly, handling, loading, and unloading operations.

107.12 State the three categories of HERO susceptibility. [ref. a, p. 11-32]

a. HERO SAFE

An ordnance item is classified as HERO safe if it meets the following criteria:

1. Percussion initiated.
2. Sufficiently shield protected so all electroexplosive devices (EEDs) contained by the item are immune to adverse effects (safe and/or reliable) when the item is used in its expected RF environments.
3. General HERO requirements are observed.

b. HERO SUSCEPTIBLE

An ordnance item is classified as HERO susceptible if proved (by tests) to contain EEDs. HERO-susceptible ordnance can be adversely affected by RF energy. The safety and/or reliability of the system are in jeopardy when the system is used in its expected RF environments.

c. HERO UNSAFE

An ordnance item is classified as HERO unsafe if it meets the following criteria:

1. Its internal wiring is physically exposed.
2. Tests are being conducted on the item that result in additional electrical connections to the item.
3. EEDs that have exposed wire leads are handled or loaded.
4. The item is being assembled or disassembled.
5. It is disassembled.

107.13 State the two types of torpedoes deployed by the SH-60F. [ref. f, p. I-1-1]

- a. MK46
- b. MK50

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References:

- [a] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H Aircraft
- [b] NWP 3-22.5-HH60H, HH-60H Tactical Manual, Vol. 1
- [c] NWP 3-50.1, Naval Search and Rescue (SAR) Manual
- [d] NAVAIR 00-80T-112, NATOPS Instrument Flight Manual
- [e] COMHSWINGPACINST 3710.5/COMHSWINGLANTINST 3710.2/COMHELWINGRESINST 3710.1, Combat Search and Rescue (CSAR) Maneuver Description Guide
- [f] Joint Pub 3-50.2, Doctrine for Joint Combat Search and Rescue
- [g] NAVAIR 00-80T-105, CV NATOPS Manual

108.1 Define the following acronyms:

- | | |
|------------------------------|----------------------------|
| a. NOE [ref. a, p. III-9-33] | Nap Of the Earth. |
| b. IFR [ref. d, p. 51] | Instrument Flight Rules. |
| c. VFR [ref. d, p. 56] | Visual Flight Rules. |
| d. SAR [ref. f, p. GL-7] | Search And Rescue. |
| e. CSAR [ref. f, p. GL-4] | Combat Search And Rescue. |
| f. NVG [ref. f, p. GL-2] | Night Vision Goggles. |
| g. CAL [ref. e, p. 35] | Confined Area Landing. |
| h. ISOPREP [ref. f, p. J-1] | ISOLated Personnel REPort. |
| i. TERF [ref. e, p. 13] | TERrain Flying. |
| j. RESCAP [ref. f, p. GL-7] | RESCue Air Patrol. |
| k. RESCORT [ref. f, p. GL-3] | RESCue esCORT. |

108.2 State the objective of CSAR. [ref. f, p. GL-4]

A specific task performed by rescue forces to effect the recovery of distressed personnel during wartime or contingency operations.

108.3 State the purpose of the ISOPREP. [ref. f, p. J-1]

Information only the person being rescued would know to help the rescue team identify the survivor.

108.4 Discuss the sections of a passenger brief. [ref. a, p. III-6-67]

- a. Survival equipment (proper wearing and use).
- b. Entry/exit exit procedures.
- c. Emergency procedures (crashing/ditching over land /water, emergency exits doors and jettisonable windows).

108.5 State the rated capacity of the cargo hook. [ref. a, p. I-2-81]

6000 lbs.

108.6 Discuss the following methods used for insertion and extraction of troops.

a. Fast rope [ref. a, p. III-9-34]

This procedure is a method of rapidly inserting troops into areas in which helicopters are unable to land. Maximum limit of two (when rope is attached to rescue hook) or six (when rope is attached to FRIES bar) troops on the rope at any time.

b. McGuire rig [ref. a, p. III-9-35]

This procedure is a method of inserting troops into or extracting troops from areas in which helicopter are unable to land. Limit of two lines deployed in aircraft and limit of one troop per line at any time.

c. Special Patrol Insertion/Extraction (SPIE) rig [ref. a, p. III-9-38]

This procedure is a method of inserting troops into or extracting troops from areas in which helicopters are unable to land. Maximum limit of eight troops on SPIE rig at a time.

d. Heliborne, Visit, Board, Search, Seizure (HVBSS) [ref. b, p. 12-1]

These missions are designed to take control of a ship considered to be a Contact Of Interest (COI).

e. Combat Rubber Raiding Craft (CRRC) [ref. a, p. III-9-40]

This procedure is a method of rapidly inserting troops and a Combat Rubber Raiding Craft (CRRC/Tethered Duck) into overwater areas.

108.7 Briefly discuss the factors to be considered for rescue swimmer deployment. [ref. c, pp. 1-2, 1-4]

- a. Number of survivors.
- b. Location of survivors.
- c. Visible injuries.
- d. Flotation devices inflated/not inflated.
- e. Parachute entanglement problem.
- f. Sea State.
- g. Fuel/Debris in water
- h. Sea predators.
- i. Feasibility of attempting rescue.
- j. Rescue order.

108.8 Briefly describe the following aircraft launch conditions [ref. g, pp. 4-17, 4-18]

a. Condition I (Alert 5)

Aircrew is fully dressed and the APU is turning.

b. Condition II (Alert 15)

When the crew is waiting in the ready room fully dressed.

c. Condition III (Alert 30)

When the crew is at their recall or they can be recalled.

d. Condition IV (Alert 60)

When the crew is on alert to be ready.

201 Airframe Systems

- [a] NAVAIR A1-H60HA-110-100, Organizational Maintenance, Principles of Operation, Airframe and Landing Gear Systems, Navy Model HH-60H
- [b] NAVAIR A1-H60CA-GAI-000, Organizational Maintenance Procedures, General Aircraft Information, Navy Model SH-60B/SH-60F/HH-60H
- [c] NAVAIR A1-H60CA-150-100, Organizational Maintenance, Principles of Operation, Rotor Systems, Navy Model SH-60B/SH-60F/HH-60H
- [d] NAVAIR A1-H60CA-140-100, Organizational Maintenance, Principles of Operation, Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
- [e] NAVAIR A1-H60CA-450-100, Organizational Maintenance, Principles of Operation, Hydraulic Power Systems, Navy Model SH-60B/SH-60F/HH-60H
- [f] NAVAIR A1-H60VA-490-200, Organizational Maintenance, Testing and Troubleshooting Procedures Utility Systems
- [g] NAVAIR A1-H60CA-490-100, Organizational Maintenance, Principles of Operational, Utility Systems, Navy Model SH-60B/SH-60F/HH-60H
- [h] NAVAIR A1-H60CA-140-200, Testing and Troubleshooting Procedures Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
- [i] NAVAIR A1-H60HA-410-100, Organizational Maintenance Principles of Operation, Environmental Control Systems, Navy Model HH-60H
- [j] NAVAIR A1-H60HA-110-200, Organizational Maintenance Testing and Troubleshooting Procedures, Navy Model HH-60H
- [k] NAVAIR A1-H60FB-110-100, Organizational Maintenance, Principle of Operation, Airframe and Landing Gear Systems, Navy Model SH-60F
- [l] NAVAIR A1-H60FB-110-200, Organizational Maintenance Testing and Troubleshooting Procedures, Navy Model SH-60F
- [m] NAVAIR A1-H60FB-410-100, Organizational Maintenance Principles of Operation, Environmental Control Systems, Navy Model SH-60F

201.1.1 State the function and location of the following fuselage components.

- a. Cockpit section [ref. a, WP 003 00, p. 2; ref. b, WP 012 00, p. 3; ref. k, WP 003 00, p. 2]

Front section, seats pilot and copilot. Contains all flight control.

- b. Cabin section [ref. a, WP 005 00, p. 2; ref. b, WP 012 00, p. 3; ref. k, WP 005 00, p. 2]

Aft of the Cockpit, seats aircrew and hold cargo and ASW equipment.

- c. Transition section [ref. a, WP 007 00, p. 2; ref. b, WP 012 00, p. 3; ref. k, WP 007 00, p. 2]

Aft of the cabin, holds avionics, tail strut, main fuel tank.

- d. Tail cone [ref. a, WP 008 00, p. 2; ref. b, WP 012 00, p. 3; ref. k, WP 008 00, p. 2]

Aft of the transition section, houses drive shafts.

- e. Tail rotor pylon [ref. a, WP 009 00, p. 2; ref. b, WP 012 00, p. 3; ref. k, WP 009 00, p. 2]

Aft of the tail cone, a foldable section at the aft end of helo that supports the horizontal stabilator, IGB, TGB and tail drive shaft flight controls.

- f. Main rotor pylon [ref. a, WP 010 00, p. 2; ref. b, WP 012 00, p. 3; ref. k, WP 010 00, p. 2]

Attached to the upper cabin transition section covering and protecting the subsystems below it. Houses the hydraulics system, transmission system and main rotor.

201.1.2 State the function and location of the Wire Strike Protection system. [ref. a, WP 016 00, pp. 2 thru 5]

To protect helicopter incase the airframe come in contact with wires in its path of flight. The system consists of seven cutter blades, (2 on hydraulics bay door [dog house], 2 nose avionics bay door, 1 in front of each landing gear) to cut the wire, and deflectors to deflect the wires.

201.1.3 State the function and location of the following flight controls / surfaces.

a. Main rotor blades [ref. c, WP 004 00, p. 2]

4 main rotor blades, receives power from the main rotor head. Provides thrust and lift. The blades are attached to the main rotor head.

b. Main rotor head [ref. c, WP 003 00, pp. 2, 5]

Transmits the movement of the flight controls to the 4 main rotor blades. Located on top main transmission.

c. Tail rotor [ref. c, WP 005 00, p. 2]

4 paddles are 2 interchangeable graphite blades provide 2.5% of lift in a hover. Located on the Tail rotor pylon.

d. Horizontal stabilator [ref. b, WP 012 00, p. 3; ref. d, WP 001 00, p. 6]

Keeps forward flight stable. Located on the tail rotor pylon.

e. Collective stick [ref. d, WP 001 00, p. 7]

Change pitch of the main rotor blades increases and decreases lift. Located in the cockpit.

f. Cyclic stick [ref. d, WP 001 00, p. 7]

Provides forward, aft, and lateral movement. Located in the cockpit.

g. Rudder pedal [ref. d, WP 001 00, p. 7]

Control helicopters heading. Change pitch of tail rotor blades to turn aircraft. Located in the cockpit.

201.1.4 State the function and location of the following hydraulic components. [ref. e]

a. Reservoirs [WP 003 00, pp. 8, 11, 15, 17]

Stores hydraulic fluid, 5 on SH-60F (4 on HH-60H).

- 1) Attached to the #1 hydraulic pump
- 2) Attached to the #2 hydraulic pump
- 3) Attached to the back-up hydraulic pump
- 4) Servicing reservoir in hydraulic bay
- 5) (SH-60F only) Attached to the utility hydraulic pump

b. Pumps [WP 003 00, pp. 7, 11, 15, 17, 19]

Pump hydraulic fluid, 4 hydraulic pumps (3 on the HH-60H).

- 1) #1 hydraulic pump located in the hydraulic bay
- 2) #2 hydraulic pump located in the hydraulic bay
- 3) Back-up hydraulic pump located in the hydraulic bay
- 4) (SH-60F only) Utility hydraulic pump located at the four o'clock position of the main transmission module

c. Servos [WP 003 00, pp. 8, 11, 15, 18]

Uses hydraulics to boost pilot's input in the flight controls. Located in the hydraulics bay.

201.1.5 State the function of the following:

a. Main landing gear [ref. a, WP 011 00, pp. 3, 4, 5; ref. k, WP 011 00, pp. 3 thru 5]

To support the weight of the aircraft and absorb the landing forces as well as provides ground braking ability.

b. Tail landing gear [ref. a, WP 014 00, pp. 2, 3; ref. k, WP 011 00, pp. 2, 3]

To support the weight of the aircraft and absorb the landing forces as well as provide ground steering control.

c. Recovery, Assist, Secure, Traverse (RAST) system [ref. a, WP 015 00, pp. 2, 3; ref. k, WP 015 00, pp. 2, 3]

To assist in handling the helicopter during high sea states. It's capable of :

- 1) Assisting the pilot in landing the helicopter in the flight deck. (RAST capable ship only.)
- 2) Securing the helicopter to the deck.
- 3) Straightening the helicopter to a laterally centered position.
- 4) Traversing the helicopter into and out of the hangar.

201.1.6 State the function and location of the following:

a. Rescue hoist [ref. g, WP 005 00, pp. 2, 7, 9]

Lowers and raises swimmer, survivor, and cargo. Located above the main cabin door.

b. Cargo hook [ref. g, WP 008 00, pp. 1 thru 4, 7]

Used for external transfer of cargo. Holds up to 6000 lbs. Located in main cabin floor.

c. Fire detector [ref. g, WP 003 00, pp. 1 thru 4, 6]

2 in each engine comp/and 1in APU comp, detects infrared energy (flame).

d. Fire extinguishers [ref. g, WP 004 00, pp. 1 thru 5, 8]

2 bottles with 2 shot capability to engine compartments and or APU.

201.1.7 State the functions of the Environmental Control System (ECS). [ref. i, p. 2; ref. m, p. 2]

Air conditioning for cooling electrical equipment and crew.

201.5.1 What caution or warning must be observed when working with the following?

a. Rescue hoist [ref. f, WP 005 00, pp. 5, 7, 10]

Has a CAD installed, do not maintain equipment with CAD installed.

b. RAST [ref. j, WP 003 00, p. 5; ref. l, WP 003 00, p. 5]

Has a CAD installed and a spring-loaded main probe, stand clear.

c. Flight controls [ref. h, WP 001 00, p. 12]

Activation of the back-up pump while personnel are on top of the helicopter will the flight controls to move control surfaces. This could cause injury or death.

201.5.2 State the safety precautions that must be observed when the following are operating: [ref. b, WP 009 00, p. 2]

a. Main rotor head

Due to orientation main rotor, enter and exit the aircraft at the 3 or 9 o'clock position only.

b. Tail rotor

Could dip low enough to cause injury or death.

202 Propulsion Systems

References:

- [a] NAVAIR A1-H60CA-220-100, Organizational Maintenance, Principles of Operation, Power Plant Systems, Navy Model SH-60B/SH-60F/HH-60H
- [b] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H Aircraft
- [c] NAVAIR A1-H60FB-460-100, Organizational Maintenance Principles of Operation, Fuel Systems, Navy Model SH-60F
- [d] NAVAIR A1-H60HA-460-100, Organizational Maintenance Principles of Operation, Fuel Systems, Navy Model HH-60H
- [e] NAVAIR A1-H60CA-GAI-000, Organizational Maintenance Procedures, General Aircraft Information, Navy Model SH-60B/SH-60F/HH-60H

202.1.1 State the purpose of the following T700 engine components: [ref. a, WP 003 00]

a. Cold section [p. 14A]

Compressor, compress air and sends it to the combustion section.

b. Hot section: Combustion section [p. 15]

Combines air and fuel mixture.

c. Power turbine [p. 16]

Two-stages; First section is the gas generator, Second stage is the power turbine.

d. Accessory section [p. 16]

On top of the swirl frame and houses components starter, fuel pump chip detector etc.

e. Engine control quadrant [p. 8]

Inside of cockpit where the pilot selects engine control.

202.1.2 State the purpose of the APU. [ref. b, p. 1-2-12]

a. Start engines.

b. Supplies power to ECS and elect power for emergencies and the back up pump.

202.1.3 State the purpose for the tail drive shaft. [ref. c, WP 005 00, pp. 2, 3]

a. Transmit power to drive the tail rotor.

b. Consists of six sections.

202.1.4 State the purpose of the following transmission section components. [ref. b]

a. Main transmission [p. 1-2-21]

Drives the main rotor head

b. Input module [p. 1-2-21]

Changes the angle of drive and reduces rpm and houses accessory module

c. Accessory module [p. 1-2-23]

Reduces rpm from input module and houses the hydraulic pump and generator.

d. Intermediate gearbox [p. 1-2-23]

Reduces rpm and changes angle of drive.

e. Tail gearbox [p. 1-2-23]

Reduces rpm and changes angle of drive shaft and drives the tail rotor.

202.1.5 State the purpose of the following fuel system components.

a. Main fuel cell [ref. c, WP 003 00, p. 4; ref. d, WP 003 00, p. 4]

Aft of cabin in transition section. There are two cells and they house the fuel for the engines and APU. Holds 590 gals (4012 lbs. of JP-5).

b. Auxiliary fuel tanks [ref. c, WP 003 00, p. 5; ref. d, WP 003 00, p. 4]

Externally located and houses additional fuel. Holds 120 gals (816 lbs. of JP-5).

c. Internal fuel cell [ref. c, WP 003 00, p. 4; ref. d, WP 003 00, p. 3]

(SH-60F Only) Located in the cabin and houses additional fuel. Holds 105 gals (714 lbs. of Jp-5).

d. Internal auxiliary fuel cell [ref. c, WP 003 00, p. 4]

202.5.1. What safety precautions must be observed when the following are operating. [ref. e, WP 009 00, pp. 2 thru 5]

a. Engine

Keep clear of engine exhaust, hot exhaust gases; Keep clear of engine inlet, suction.

b. APU

Keep clear of APU exhaust, hot exhaust gases; Keep clear of APU inlet, suction.

203 Avionics/Electrical Systems

References:

- [a] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H Aircraft
- [b] NAVAIR A1-H60CA-710-100, Organizational Maintenance, Principles of Operation, Navigation Systems, Navy Model SH-60B/SH-60F/HH-60H
- [c] NAVAIR A1-H60HA-760-100, Organizational Maintenance Principles of Operation, Countermeasures Systems, Navy Model HH-60H
- [d] NAVAIR A1-H60HA-420-100, Organizational Maintenance Principles of Operation, Electrical Power and Lighting Systems, Navy Model HH-60H
- [e] NAVAIR A1-H60FB-420-100, Organizational Maintenance Principles of Operation, Electrical Power and Lighting Systems, Navy Model SH-60F

203.1.1 State the purpose of the following communication system: [ref. a, p. VII-16-1]

a. Very High Frequency/Ultra High Frequency radio set

Line of sight communication. Two radios provide AM, FM, VHF, and UHF coverage between 30.00 MHz and 399.975 MHz.

b. High Frequency radio set

Over the horizon. The HF radio operates in the frequency range of 2 to 29.9999 MHz, with 280,000 channels at intervals of 100 Hz.

c. Intercommunication system ICS

Internal communications (talking to one another in the aircraft) 7 stations on the SH-60F, 6 on the HH-60H.

203.1.2 State the purpose of the following primary navigation systems: [ref. a]

a. Tactical air navigation [p. VII-17-1]

The TACAN navigation set consists of a receiver/transmitter and control. The TACAN set receives an UHF signal from a TACAN surface station (ground or shipboard) or aircraft and calculates the magnetic bearing and slant range to that station.

b. Global Position System [p. VII-17-5]

GPS processes signal received from 4 GPS satellites to compute a position and provides latitudinal and longitudinal coordinates of the aircraft's present position to the TDP.

c. Compass [p. VII-17-6]

There are two displacement gyroscopes. Each gyroscope consists of a vertical and a directional gyro, mounted in multiple gimbals. Synchro outputs representing heading, roll, and pitch, and roll synchro signals to the TDP and to AFCS for distribution to the various equipment.

d. Doppler [p. VII-17-3]

The DOPPLER radar navigation set is the ground speed sensor for the main backup (to the GPS) tactical navigation system. It provides three axis velocities that are used to compute the ground speed that may be displayed on the HSVD.

203.1.3.State the purpose of the automatic flight control system. [ref. a, p. 1-2-42]

Smooths out the flight control to enable the pilot to handle the aircraft. Improves aircraft handling and stability, controls pitch roll and yaw. b. Made up of three systems:

- a. Stability Augmentation System (SAS).
- b. Stabilator.
- c. DAFCS.

203.1.4 State the purpose of the following tactical systems:

a. Tactical navigation [ref. b, WP 003 00, p. 2]

Collects navigation information for visual display on cockpit indicators.

b. Identification Friend or Foe (IFF) [ref. a, p. VII-16-5]

Replies to interrogations from other aircraft or ships. H-60 has respond only capability. Five modes 1-4 and C, Mode 4 is military use only.

c. Mission Data Loader (MDL) [ref. a, p. VII-17-6]

Programmable data cartridge for flight plans etc.

d. Downed Aviator Locator System (DALs) [ref. a, p. VII-17-9]

Locks on signal from PRC-112 provides pilots with direction of flight and distance to find downed aviator or aircrew.

e. Heads Up Display (HUD) [ref. a, p. VII-15-34]

Used in HH-60H in conjunction with NVG goggles. Provides flight parameter information through the NVG's.

f. Sonar detecting ranging set [ref. a, p. VII-15-6]

Used as either a variable depth passive/active or an acoustic processor for display of passive/active sonobuoy information. Also provides under water communications (UQC) and water temperature (BT) reading.

203.1.5 State the purpose of the following survivability system:

a. Radar warning [ref. c, WP 005 00, p. 2]

The radar signal detecting set detects radar tracking (high-band) and missile guidance (low-band) signals which may represent a threat to the helicopter. The system provides visual directional indication of the source if a tracking signal, indicates when a tracking radar has locked onto the helicopter, and identifies the presence of low-band signals used for missile guidance.

b. Missile warning [ref. c, WP 008 00, p. 2]

The Missile Warning Set (MWS) is an electronic countermeasure unit designed to protect helicopters and low, slow flying aircraft against surface to air and air to air missiles. The MWS will detect a missile fired at the aircraft and provide a sector warning message to the pilot through the indicator and control unit of the AN/APR-39A(V) Radar Signal Detecting Set

c. Laser warning [ref. c, WP 009 00, p. 2]

The AN/AVR-2 Laser Detecting Set (LDS) is a frequency extension of the AN/APR-39 Radar Signal Detecting Set (RSDS). The LDS shares three of the ten RSDS's Weapon Replaceable Assemblies (WRA's). The LDS detects and displays to the aircraft pilot information concerning the laser environment around the aircraft.

d. Countermeasures [ref. a, pp. VIII-18-8, VIII-18-27]

Dispenses metallic chaff, flares, and two other categories of expendables to defeat air intercept, anti-aircraft artillery, and surface to air missiles.

203.1.6 State the purpose of the following flight instruments: [ref. a]

a. Horizontal Situation Video Display (HSVD) [p. VII-17-9]

Primary flight instruments display.

b. Attitude Indicator (AI) [p. 1-2-63]

Provides displays aircraft attitude also known as artificial horizon.

c. Radar altimeter [p. 1-2-63]

Reads distance from aircraft to ground 0-5000 ft.

d. Barometric altimeter [p. 1-2-63]

Reads aircraft position above sea level.

e. Vertical Speed Indicator (VSI) [p. 1-2-63]

Indicates vertical speed.

f. Airspeed Indicator (AI) [p. 1-2-61]

Measures difference between impact pressure and static pressure.

**203.1.7 State the purpose/location of the position and anti-collision lights.
[ref. d, WP 005 00, p. 2; ref. e, WP 005 00, p. 2]**

a. Position lights

White light located tail rotor pylon/ red light on the left and green on right main landing gear sponsons or stub wings.

b. Anti-collision lights

On top of the tail underside of tail cone clear lens for day and red lens for night.

c. Both used as navigational aids.

**203.1.8 Discuss the function of the following electrical power system components.
[ref. d, WP 003 00, p. 5; ref. e, WP005 00, p. 5]**

a. AC generator

Produces A/C power 115 volts ac 3 phase 400 Hz.

b. Generator control unit

Controls generator. Regulates output and protects against over, under volts and feed faults.

203.1.9 Briefly describe and state the purpose of the following ASW system components: [ref. a]

a. Transducer [p. V-15-16]

A waterproof sensor holding active projectors and passive receiver's as well as electronic equipment and batteries. Actively and passively detects underwater contacts.

b. Reeling machine [p. V-15-26]

Hydraulically operated reeling machine, with an AC back up motor, incorporating a hand crank reeling capability. Used to raised and lower sonar transducer.

c. Azimuth range indicator [p. V-15-14]

Circular display. Displays all active and passive information.

d. Sonobouy receiver [p. V-15-14]

4 receivers. Receivers radio information from sonobouies and routes to SDC.

e. Sonar data computer [p. V-15-14]

Computer that receives, process all acoustic information and formats them for display.

204 Armament Systems

References:

- [a] NAVAIR 11-100-1.1, General Use Cartridges and Cartridge Actuated Devices (CADS) for Aircraft and Unique Aircraft Systems
- [b] NAVAIR 11-100-1.3, Cartridges and Cartridge Actuated Devices for Bomb Racks/Launchers, Bomb Dummy Units, and Airborne Missile Systems (CADS)
- [c] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H
- [d] NAVEDTRA 12309, Aviation Ordnanceman 3, 2, & 1
- [e] NAVAIR 11-95M60-1, Organizational and Intermediate Maintenance with Illustrated Parts Breakdown, 7.62mm Aircraft Machine Gun, M60
- [f] NAVEDTRA 12330, Aviation Electronics Technician 2 (Organizational)
- [g] NAVAIR A1-H60FB-TAC-000, SH-60F Tactical Manual

204.1.1 State the purpose of the following cartridge actuated devices/pyrotechnic/squibs:

a. Hoist (M514) [ref. a, p. 2-116]

Contains a CAD to shear the cable in an emergency.

b. Cargo hook (MJ21) squib [ref. c, p. 1-2-81]

Contains a squib to disable the linkage and open the cargo hook in an emergency.

c. Fire bottles (MH92) [ref. a, p. 2-337]

Contains a CAD to discharge the fire extinguishing agent through the lines

d. BRU-14/A

M264 [ref. b, p. 2-47]

Contains a CAD to jettison torp. or aux. tank in the event of mechanical failure or emergency

M934 [ref. b, p. 2-78]

Contains a CAD to jettison torp. or aux. tank in the event of mechanical failure or emergency

e. Chaff [ref. b, p. 2-29]

Contains CADs to release shower of metal pieces to confuse radar missiles.

f. Flare [ref. b, p. 2-27]

Contains CADs to release hot flares to confuse infrared (IR) missiles.

204.1.2 State the purpose and identify the location of the BRU-14/A bomb rack unit. [ref. c, pp. VIII-18-1 thru VIII-18-4; ref. d, p. 10-6]

- a. Attached to each pylon, one on the right side of helicopter, two on the left side.
- b. Used to suspend carry torpedoes, fuel tanks, and missile launch rack.

204.1.3 State the purpose of the following deployable countermeasures:

a. Chaff [ref. d, p. 10-32]

Showers metal pieces to confuse missile radar.

b. Flare [ref. d, p. 10-32]

Attracts IR missiles because IR missiles are heat seekers.

c. Jammer [ref. f, p. 5-13]

Type of chaff.

d. AIRBOC [ref. g, p. 8-15]

Large chaff, provides coverage for ships deployed by helo—Sonobouy size.

204.1.4 Describe the following characteristics of the M60D machine gun. [ref. e, p. 2-1]

a. Weight: 23 $\frac{3}{4}$ lbs.

b. Length: 44 $\frac{7}{8}$ inches.

c. Rate of fire: 550 rounds per minute.

204.2.1 Describe the three configurations of the MK 46 torpedo. [ref. d, pp. 5-1, 5-2]

a. War shot: Live explosive.

b. Exercise: Runs but do not explode, recoverable.

c. Rextorp: Does not run, recoverable.

204.2.2 Describe the basic operation of the M60D machine gun. [ref. c, p. VIII-18-20]

Automatic weapon; needs to be mounted to A/C or tripod. Air cooled and pneumatic driven.

205 Warfare Mission Area

References:

[a] Squadron Standard Organization and Regulations Manual (SORM)

[b] NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH60H Aircraft

[c] NWP 3-22.5-SH-60F, SH-60F, Tactical Manual

[d] Joint Pub 3-50.2, Doctrine for Joint Combat Search and Rescue

[e] NWP 3-22.5-HH60H, HH-60H Tactical Manual, Vol. 1

205.1.1 State and discuss your commands mission statement. Use your command mission statement.
[ref. a; ref. b, p. I-1-1]

HS-8:

Example of one (To deploy the helo in support of battle group commander's objective in the area of search and rescue, Anti-submarine warfare, surface warfare and special operations.)

205.2.1 Define ASW and discuss the role of the SH-60F in an ASW mission. [ref. c, p. 1-1]

- a. ASW; Anti-submarine warfare.
- b. To defend the aircraft carrier by using dipping sonar and sonobuoies.

205.3.1 Define CSAR and discuss the role of the HH-60H in a CSAR mission. [ref. d, p. app. b]

- a. CSAR; Combat search and rescue.
- b. A specific task performed by H-60 to effect the recovery of distressed personnel during wartime or contingency operations.

205.4.1 Define and discuss the role of the SH-60F and HH-60H in the following NSW mission.

a. Special Warfare reconnaissance support [ref. e, p. 12-1]

Insert and extract special operation forces.

b. Heliborne visit board, search, and seizure (HVBSS) [ref. e, p. 12-1]

Insert SEAL's to search and seize a ship.

c. Explosive ordnance disposal mine neutralization [ref. e, p. 12-2]

Insert EOD into and from water or ships to dispose of explosive ordnance.

205.5.1 Discuss the role of the SH-60F and HH60H in a SAR mission. [ref. b, p. III-9-5]

- a. Primary rescue vehicle.
- b. Insert rescue swimmer to assist downed aviators.

205.6 Describe the following logistic support mission performed by the SH-60F and HH-60H.

a. Vertical replenishment (VERTREP) [pp. I-1-1, III-9-15]

Uses cargo hook to collect and transport cargo (SH-60F can not do Vertrep with the transducer installed).

b. Personnel transfer [pp. I-1-9, I-2-79]

Transfer personal to and from smaller ships. Carry people to areas not able to land.

c. Medical evacuation (MEDEVAC) [p. I-1-1]

Take someone injured to medical facility that is more advance than on ship or pick up an injured individual off another ship and bring them to the aircraft carrier.

LIST OF REFERENCES USED IN THIS PQS

COMHSWINGPACINST 3710.5/COMHSWINGLANTINST 3710.2/COMHELWINGRESINST 3710.1, Combat Search and Rescue (CSAR) Maneuver Description Guide
Joint Pub 3-50.2, Doctrine for Joint Combat Search and Rescue
NAVAIR 00-80T-103, NATOPS Conventional Weapons Handling Procedures Manual (Ashore)
NAVAIR 00-80T-112, NATOPS Instrument Flight Manual
NAVAIR 00-80T-88, Helicopter History and Aerodynamics Manual
NAVAIR 00-80T-96, U.S. Navy Support Equipment Common, Basic Handling and Safety Manual
NAVAIR 01-1A-17, Aviation Hydraulics Manual
NAVAIR 01-1A-24, U.S. Navy Aviation Vibrational Analysis Manual
NAVAIR 01-1A-509, Aircraft Weapons Systems Cleaning and Corrosion Control
NAVAIR 11-100-1.1, General Use Cartridges and Cartridge Actuated Devices (CADS) for Aircraft and Unique Aircraft Systems
NAVAIR 11-100-1.3, Cartridges and Cartridge Actuated Devices for Bomb Racks/Launchers, Bomb Dummy Units, and Airborne Missile Systems (CADS)
NAVAIR 11-95M60-1, Organizational and Intermediate Maintenance with Illustrated Parts Breakdown, 7.62mm Aircraft Machine Gun, M60
NAVAIR 13-1-6.1-1, Aviation-Crew Systems, Inflatable Survival Equipment (Liferafts)
NAVAIR 13-1-6.1-2, Aviation-Crew Systems, Inflatable Survival Equipment (Life Preservers)
NAVAIR 13-1-6.5, Aviation-Crew Systems, Rescue and Survival Equipment
NAVAIR 13-1-6.7, Aviation-Crew Systems, Aircrew Personal Protective Equipment (PPE)
NAVAIR 16-30PRC90-2, Maintenance Instructions, Radio Sets, AN/PRC-90 and AN/PRC-90-2
NAVAIR 16-35AVS-5, Aviation Unit and Intermediate Maintenance Manual Including Repair Parts and Special Tools List, Aviator's Night Vision Imaging System (ANVIS) AN/AVS-6 (V) 1
NAVAIR 16-35PRC112-1, Operators, Unit, and Intermediate Maintenance Manual Including Repair Parts and Special Tool, AN/PRC-112
NAVAIR 16-35PRC125-1, Operations and Organizational Maintenance Manual with Illustrated Parts Breakdown, Radio Set, AN/PRC-125
NAVAIR 28-SSQ-500-1, Sonobuoys
NAVAIR A1-H60CA-140-100, Organizational Maintenance, Principles of Operation, Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-140-200, Testing and Troubleshooting Procedures, Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-140-300, Organizational Maintenance, Principles of Operation, Flight Control Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-150-100, Organizational Maintenance, Principles of Operation, Rotor Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-220-100, Organizational Maintenance, Principles of Operation, Power Plant Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-220-300, Organizational Maintenance, Procedures Power Plant Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-240-100, Organizational Maintenance, Principles of Operation, Auxiliary Power Unit (APU) Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-260-100, Organizational Maintenance, Principles of Operation, Transmission Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-450-100, Organizational Maintenance, Principles of Operation, Hydraulic Power Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-490-100, Organizational Maintenance, Principles of Operational, Utility Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-710-100, Organizational Maintenance, Principles of Operation, Navigation Systems, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-GAI-000, Organizational Maintenance Procedures, General Aircraft Information, Navy Model SH-60B/SH-60F/HH-60H
NAVAIR A1-H60CA-GAI-010, Organizational Maintenance Procedures, Plane Captain's Manual
NAVAIR A1-H60CA-NFM-000, NATOPS Flight Manual, Navy Model SH-60F/HH-60H Aircraft
NAVAIR A1-H60CA-SRM-300, Corrosion Control, Navy Models SH-60B, SH-60F, HH-60H
NAVAIR A1-H60FB-110-100, Organizational Maintenance, Principles of Operation, Airframes and Landing Gear Systems, Navy Model SH-60F

NAVAIR A1-H60FB-110-200, Organizational Maintenance Testing and Troubleshooting Procedures, Navy Model SH-60F
NAVAIR A1-H60FB-410-100, Organizational Maintenance Principles of Operation, Environmental Control Systems, Navy Model SH-60F
NAVAIR A1-H60FB-420-100, Organizational Maintenance Principles of Operation, Electrical Power and Lighting Systems, Navy Model SH-60F
NAVAIR A1-H60FB-460-100, Organizational Maintenance Principles of Operation, Fuel Systems, Navy Model SH-60F
NAVAIR A1-H60FB-TAC-000, SH-60F Tactical Manual
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NAVEDTRA 12000, Airman
NAVEDTRA 12309, Aviation Ordnanceman 3, 2, & 1
NAVEDTRA 12329, Aviation Electronics Technician 3
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NWP 3-22.5-HH60H, HH-60H Tactical Manual, Vol. 1
NWP 3-50.1, Naval Search and Rescue (SAR) Manual
OPNAVINST 3710.7Q, NATOPS General Flight and Operating Instructions
OPNAVINST 5100.23D, Navy Occupational Safety and Health (NAVOSH) Program Manual
OPNAVINST 8600.2B, The Naval Airborne Weapons Maintenance Program (NAWMP), Volume 1 Squadron Standard Organization and Regulations Manual (SORM)