U.S. Department of Transportation
United States Coast Guard

Commandant
United States Coast Guard

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COMMANDANT INSTRUCTION M3502.15

Subj: PERSONNEL QUALIFICATION STANDARD (PQS) - SHIPBOARD HELICOPTER OPERATIONS

1. PURPOSE. This Manual provides guidance for the establishment, implementation and administration of PQS for personnel assigned duties in support of shipboard helicopter operations aboard flight deck equipped Coast Guard cutters.

2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, Commanding Officer, Aviation Training Center Mobile, and commanding officers of flight deck equipped cutters shall ensure that the provisions of this Manual are followed.

3. DIRECTIVES AFFECTED.

   a. Shipboard-Helicopter Operational Procedures Manual, COMDTINST M3710.2 (series).

   b. Cutter Training and Qualifications Manual, COMDTINST M3502.4 (series).

4. BACKGROUND. The PQS Program provides a system for qualifying personnel to perform certain duties. It reflects the minimum level of knowledge and skills an individual is required to demonstrate in order to qualify for a specific watchstation, maintain specific equipment, or perform as a team member. The PQS Program is not designed as a training program, but it provides many training objectives. The standards developed for this manual represent a cooperative

effort between the Ship-Helicopter Branch at Aviation Training Center Mobile, Headquarters staff, and representatives from flight deck equipped cutters.

5. DISCUSSION.

a. This PQS is applicable to all flight deck equipped Coast Guard cutters.

b. It reflects the minimum standards for qualifying shipboard personnel assigned to duties in support of flight operations. Unit tailoring is authorized to the extent that portions of the PQS not applying to a cutter class may be omitted.

c. PQS Qualifiers shall be designated in writing by their Commanding Officer to "sign off" individual PQS line items. They will normally be an E-5 or above, and must have completed the PQS or unit developed Job Qualification Requirements (JQR) for the designated watchstation.

d. This Manual is divided into five chapters. The Fundamentals chapter lists the fundamental knowledge or "book learning" necessary for understanding a watchstation's functions or duties. The Systems chapter is designed to acquaint individuals with the systems they will be required to operate. The Watchstations chapter lists the tasks required of the trainee to achieve final PQS qualification. The Qualifications chapter documents completion of individual PQS sections. The final chapter provides an Answer Book.

6. CHANGES. Changes to this Manual will be coordinated by the Ship-Helicopter Branch, ATC Mobile in conjunction with Commandant (G-OAV-2) and Commandant (G-OCU-3). Unit commanding officers are urged to provide recommendations for improvement to this Manual via the chain of command.

/s/ CAPT E. R. RIUTTA
ACTING CHIEF, OFFICE OF LAW ENFORCEMENT
AND DEFENSE OPERATION

PERSONNEL QUALIFICATION STANDARD
SHIPBOARD HELICOPTER OPERATIONS

TABLE OF CONTENTS

CHAPTER 5 ANSWER BOOK (Cont'd)

PQS USER'S GUIDE

This guide will explain what the Shipboard Helicopter Operations PQS program is, and how to use it.

I. WHAT IS SHIPBOARD HELICOPTER OPERATIONS PQS?

The shipboard helicopter operations PQS is a qualification system developed to provide both officer and enlisted personnel with the knowledge and skills required to qualify for specific watchstations, maintain specific equipment, or perform as team members supporting shipboard helicopter operations aboard Coast Guard cutters. The PQS Program is not designed as a training program, but provides many training objectives. The command's overall training program should support PQS.

II. HOW DOES PQS WORK?

A. Once you have been selected to qualify for a specific watchstation, you will be issued a PQS manual. This manual contains questions you must be able to answer and performance items you must be able to do prior to receiving your qualification. Next, you will be assigned a supervisor to serve as "PQS Qualifier." Your PQS Qualifier will normally be an officer or senior petty officer who has demonstrated proficiency and expertise in all of the functions and duties of that particular watchstation.

B. This PQS manual is comprised of five chapters: FUNDAMENTALS, SYSTEMS, WATCHSTATIONS, QUALIFICATIONS, and an ANSWER BOOK.

CHAPTER 1. FUNDAMENTALS: This chapter specifies the basic knowledge required of all personnel assigned to watchstations supporting shipboard helicopter operations.

CHAPTER 2. SYSTEMS: This chapter specifies the detailed knowledge required to understand individual systems aboard the cutter. The systems chapter familiarizes the trainee with a system's various components, operating principles, limitations, and safety precautions.

CHAPTER 3. WATCHSTATIONS: This chapter specifies the knowledge of systems and procedures required in order to become qualified for each specific watchstation.

CHAPTER 4. QUALIFICATIONS: This chapter provides "sign off" and designation forms to document qualification.

CHAPTER 5. ANSWER BOOK: This chapter provides standardized answers for Chapters One and Two.

C. First, complete the Safety Precautions Fundamentals,

followed by the other Chapter One requirements. Next, complete the required systems items from Chapter Two for your particular watchstation. Your PQS Qualifier may require you to complete the Chapter One and Chapter Two requirements in a certain order; if not, the order is up to you. If you do not know the answer to a question, look it up in one of the listed references. If you still can not find the answer, ask your supervisor for help, or consult the Answer Book in Chapter Five.

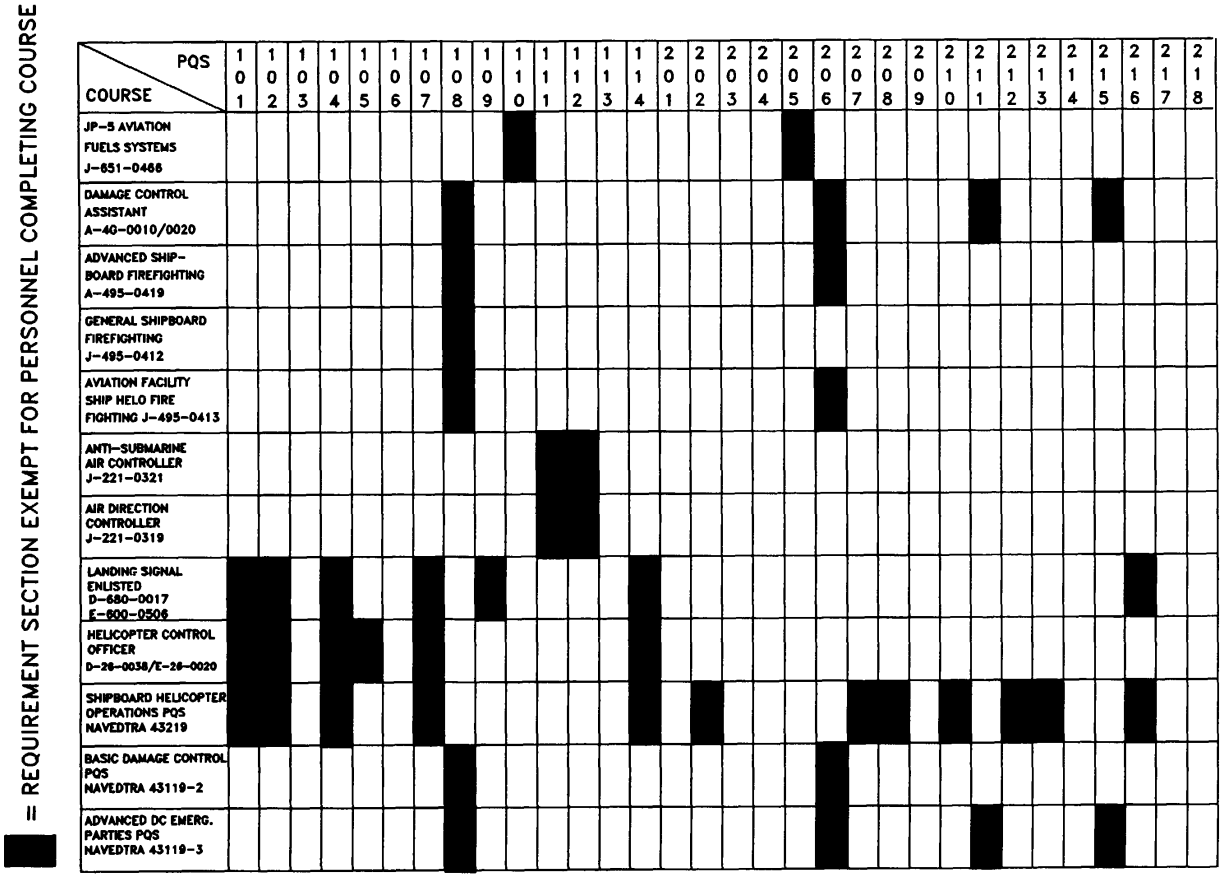
D. As you complete a Fundamental or System, have your PQS Qualifier "sign off" the appropriate Summary page in Chapter Four. When you have completed all of the Fundamentals and the required Systems, you can start on the performance items listed in Chapter Three. Each performance item should be "signed off" as it is successfully completed. When you have satisfactorily completed all of the required items, you will be recommended for designation using the appropriate form in Chapter Four.

III. PQS QUALIFIER

Only those individuals considered to be "experts" in their duty will be assigned as PQS Qualifiers. They must be totally knowledgeable of the Fundamentals, Systems and procedures required for their watchstation. They must be available to assist the trainee and to "sign off" each item as it is completed. It is important that the PQS Qualifier motivate the trainee by assigning goals and showing interest as the trainee progresses through the program. The PQS Qualifier should provide help, where necessary, but should not do the trainee's work. Most importantly, the PQS Qualifier must be totally satisfied that the trainee has acquired the knowledge necessary to complete each requirement prior to "sign off." If the trainee is not progressing satisfactorily, the PQS Qualifier should counsel the individual.

IV. EXEMPTIONS

Numerous training programs exist in the USN and Coast Guard which may cover, in part, some of the information contained in this manual. This PQS was developed to qualify an individual with no previous training or experience in any of the flight quarters billets aboard Coast Guard cutters. When possible, other training programs covering the same information are identified and exemptions in knowledge and performance qualifications are noted to eliminate redundant training. The following page contains a matrix to identify Chapter One and Chapter Two sections which are exempt for personnel completing other training. Each Chapter Three section is annotated with cross-qualification exemptions as applicable.


= REQUIREMENT SECTION EXEMPT FOR PERSONNEL COMPLETING COURSE
PQS
COURSE
101 102 103 104 105 106 107 108 109 110 111 112 113 114 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218
JP-5 AVIATION FUELS SYSTEMS J-851-0466
DAMAGE CONTROL ASSISTANT A-4G-0010/0020
ADVANCED SHIP-BOARD FIREFIGHTING A-495-0419
GENERAL SHIPBOARD FIREFIGHTING J-495-0412
AVIATION FACILITY SHIP HELO FIRE FIGHTING J-495-0413
ANTI-SUBMARINE AIR CONTROLLER J-221-0321
AIR DIRECTION CONTROLLER J-221-0319
LANDING SIGNAL ENLISTED D-680-0017 E-600-0506
HELICOPTER CONTROL OFFICER D-26-0038/E-26-0020
SHIPBOARD HELICOPTER OPERATIONS PQS NAVEDTRA 43219
BASIC DAMAGE CONTROL PQS NAVEDTRA 43119-2
ADVANCED DC EMERG. PARTIES PQS NAVEDTRA 43119-3

CHANGE RECOMMENDATION

****

RECOMMENDED CHANGE TO: _____ **DATE:** _____
(PUBLICATION NUMBER/REVISION/CHANGE)

LOCATION: _____ _____ _____ _____
(PAGE) (PARA) (LINE) (FIG.#)

TYPE OF CHANGE: ADD ☐ DELETE ☐ MODIFY ☐ TEXT ☐ FIGURE ☐

****

EXACT CHANGES RECOMMENDED: (USE ADDITIONAL SHEETS IF NEEDED. GIVE VERBATIM CHANGES. IF FIGURE IS TO BE ADDED, SUPPLY ROUGH SKETCH OR IDENTIFY SOURCE. IF FIGURE IS TO BE CHANGED, INCLUDE A MARKED UP COPY OF EXISTING FIGURE.)

RATIONALE:

****

SUBMITTED BY: _____
(ORIGINATING COMMAND)

_____ _____
(POINT OF CONTACT) (PHONE NUMBER)

****

ATC ACTION: ACCCEPTED ☐ MODIFIED ☐ REJECTED ☐

HQ ACTION: ____ ACCCEPTED ☐ MODIFIED ☐ REJECTED ☐
(HQ DIV.)

REMARKS:

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(SEND ALL CHANGES TO ATC MOBILE SHIP/HELO FOR COORDINATION)

CHAPTER 1. FUNDAMENTALS

101 TERMS AND DEFINITIONS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 Explain the following terms used in shipboard helicopter operations:

a. Foreign object damage (FOD)
b. FLICON 1-2-3-4
c. Landing signal officer (LSO)
d. Helicopter control officer (HCO)
e. Crash and salvage detail
f. Flight deck on-scene leader (OSL)
g. Deck status light
h. Clear deck
i. Foul deck
j. Start and engage
k. Manned
l. Ready
m. Primary tiedowns
n. Secondary tiedowns
o. Heavy weather tiedowns
p. Chocks and chains
q. TALON grid
r. Helicopter in-flight refueling (HIFR)
s. Vertical replenishment (VERTREP)
t. Hot refueling
u. Emission control (EMCON)
v. Primary hose
w. Backup hose
x. Fireguard
y. Ready boat
z. Waveoff/go around
aa. Landing circle
ab. Peripheral lines
ac. Touch and go
ad. Catwalks
ae. Nets
af. Blade folding
ag. Ditching
ah. Emergency breakaway
ai. Visual landing aids (VLA)
aj. Tail stinger
ak. Mushroom
al. Lineup line
am. VERTREP "T"'s
an. Emergency low visibility approach (ELVA)
ao. TACAN
ap. DME
aq. Feet dry

ar. Bingo
as. Clear and bright
at. Go-no-go fuse
au. Pressure refueling nozzle (Carter nozzle)
av. Gravity (overwing) nozzle
aw. Wilden defueling pump
ax. Static discharge

102 FLIGHT QUARTERS ORGANIZATION FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Cutter Swimmer, COMDTINST 16134.2 (series)

.1 State the duties and responsibilities of the following personnel:

a. Helicopter control officer (HCO)
b. Landing signal officer (LSO)
c. Flight deck on-scene leader (OSL)
d. Flight deck director (FDD)
e. Tiedownman
f. Hoseman
g. Rescueman
h. Cutter swimmer
i. Aviation fuel king
j. Aviation fuel handler
h. Ready boat crew
l. Medical detail
m. Air direction controller
n. CIC flight follower
o. HCO phone talker
p. LSO phone talker
q. Aviation equipmentman
r. AFFF station operator

.2 State the equipment used by the personnel listed in 1. above.

.3 Identify the colors of the flight deck clothing worn by the following personnel:

a. Landing signal officer (LSO)
b. Flight deck on-scene leader (OSL)
c. Tiedownman
d. Hoseman
e. LSO phone talker
f. Aviation fuel handler
g. Aviation fuel king
h. Medical detail
i. Ship/helicopter instructor

.4 Describe the following jobs, terms, and equipment as they apply to vertical replenishment (VERTREP):

a. Landing signal officer (LSO)
b. Grounding wand man
c. Hookup man
d. Spotter
e. Grounding wand
f. External load hook
g. Cargo net
h. Pendant
i. Pallet/pallet sling
j. Rescue sling (Horse collar)
k. Rescue basket
l. Rescue hoist
m. Stokes litter
n. Trail/tending line
o. Hoist hook
p. Deck status light

.5 Describe the following jobs, terms and equipment as they apply to Helicopter In-Flight Refueling (HIFR):

a. Grounding hook man
b. Grounding hook
c. HIFR rig
d. Assist (Hook-up) man
e. Hose tender
f. Emergency breakaway
g. Landing signal officer (LSO)
h. Clear and bright sample
i. Quick disconnect couplings
j. HIFR "H"
k. HIFR heading lights
l. Deck status light

.6 Describe the circumstances under which flight deck, fire party, and helicopter control staffing may be modified.

103 HELICOPTER CHARACTERISTICS FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)
c. HOSTAC, APP 2 (series)

.1 Discuss the following helicopter characteristics and their significance for the HH-65A and HH-60J:

a. Rotor diameter
b. Minimum rotor blade clearance during launch and recovery
c. Exterior dimensions with rotor blades folded
d. Landing gear configuration
e. Maximum gross weight and ship's stability
f. Fuel capacity
g. Minimum crew requirements
h. Maximum range
i. Maximum endurance
j. TALON operations
k. Maximum hoist weight capacity
l. Cargo hook weigh capacity
m. Wheel base
n. Height
o. Rotorwash (Downwash)
p. Tiedown points
q. Nosewheel/tailwheel lock
r. Parking brake
s. Construction materials
t. Maximum payload
u. Rotor brake
v. Relative wind limitations for rotor engagement/disengagement, launch/recovery, VERTREP and HIFR
w. Pitch and roll limits for launch/recovery

.2 Indicate where you would look to find this information for non-USCG aircraft.

104 HELICOPTER HAND SIGNALS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 Identify the following hand/wand signals and describe when they would be used:

a. Connect ground electrical power (pilot)
b. Cable connected, power on (LSO)
c. Disconnect ground electrical cable (pilot)
d. Cable power off (LSO)
e. Start engines
f. Engage rotors
g. Attach (Install) tiedowns
h. Remove tiedowns
i. (Cleared for) Takeoff to port/starboard
j. Touch and go (LSO to tiedown crew)
k. Landing with primary tiedowns (LSO to tiedown crew)
l. Hover
m. Move forward

n. Slide left
o. Slide right
p. Rotate left
q. Rotate right
r. Move up
s. Move down
t. Move back
u. Land
v. Waveoff
w. Wheels not down (lower wheels)
x. Hover/landing lights are on (turn lights on/off)
y. Ready for takeoff (pilot)
z. Come forward from the helicopter
aa. Cut engines
ab. Fire on the aircraft (engine fire)
ac. Hook up load
ad. Release load
ae. Load not released
af. Hoist (winch) up
ag. Hoist (winch) down
ah. Cut cable
ai. Spread pylon
aj. Fold pylon
ak. I desire HIFR
al. Commence fueling
am. Am pumping fuel
an. Cease pumping fuel
ao. Have ceased pumping fuel
ap. Execute emergency breakaway
aq. Make up (overhaul) tiedowns
ar. Tiedown failure (tiedown crew)
as. Talker signals to LSO
at. Wait

105 HELICOPTER EMERGENCIES FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 For the following flight deck emergencies, discuss:

(1) What are the symptoms or indications?
(2) What action is required by shipboard personnel?

a. Hot start
b. External engine fire
c. Internal engine fire
d. Rotor brake failure
e. Damaged/unsafe landing gear
f. Brake failure
g. Automatic flight control stabilization (AFCS) failure

h. Ground resonance
i. Engine failure
j. Electrical failure
k. TALON failure
l. Fuel spill
m. Crash on deck
n. Ditching/crash at sea
o. HIFR emergency breakaway
p. Jammed/fouled hoist cable
q. Loss of tail rotor effectiveness
r. Dynamic rollover
s. Battery thermal runaway

106 FLIGHT DECK CERTIFICATION FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Aviation Facilities Resume, NAEC-ENG-7576 (series)

.1 State the different levels and classes used for flight deck certification.

.2 Discuss the meaning of each level and class of flight deck certification.

.3 State the level and class for which your ship is certified or waivered.

.4 Describe the appearance of and clearance provided by each of the following markings:

a. Peripheral lines
b. Landing spot
c. Touchdown circle
d. Lineup line
e. Vertical replenishment (VERTREP) line
f. HIFR "H"

.5 Discuss aircraft limitations imposed on your ship.

.6 Discuss when and why waivers on ship certification are required.

107 SOUND-POWERED TELEPHONE FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3712.2 (series)
b. Ship's Organization and Regulations Manual
c. Telephone Talkers Manual, COMDTINST M9430.1
d. Basic DC PQS, NAVEDTRA 43119.2 (series)

e. Surface Ship Survivability, NWP 62.1 (series)

.1 State the purpose of designating sound-powered telephone circuits.

.2 Describe the significance of circuit nomenclature.

.3 Describe the following sound-powered circuits:

A. 1JV
b. 1JG
c. JL
d. JA

.4 Describe the following types of sound-powered telephone equipment:

a. Handset
b. Headset
c. Drum type selector switch
d. Call signal station box

.5 Describe the following basic message parts:

a. Station called
b. Station calling
c. Text

.6 State the characteristics of a good telephone talker.

.7 State the rules to be observed to maintain good circuit discipline.

108 FIREFIGHTING AND RESCUE FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Surface Ship Survivability, NWP 62.1 (series)
c. NSTM 079 Vol. II
d. NSTM Chapter 555

.1 Discuss the proper procedures for reporting a fire or casualty on the flight deck.

.2 Define the fire triangle in terms of preventing and fighting fires.

.3 Describe the conditions that must exist for spontaneous combustion.

.4 Explain why areas and materials must be kept neat and clean.

.5 Describe the four classes of fires and their characteristics.

.6 State the recommended extinguishing agents for each class of fire.

.7 Describe the effects of extinguishing agents on aircraft and other equipment.

.8 Explain the protection provided by the proximity suit.

.9 Describe the proper use and care of the proximity suit.

.10 Discuss the types of flammables associated with helicopters.

.11 Discuss forcible entry.

.12 Discuss ordinance fires.

.13 Discuss the potential for a fire spreading from the flight deck into the ship.

.14 Discuss the special hazards associated with the burning of composite materials found on the HH-65A.

109 FLIGHT DECK PROTECTIVE CLOTHING FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 Explain the protection provided by the following:

a. LPU 30(P) (MK1) life preserver assembly
b. Flight deck jersey
c. Safety boots
d. Cranial helmets
e. Goggles
f. Flash hoods and gloves

.2 Describe the proper use and care of each of the items listed in .1 above.

110 JP-5 FUEL HANDLING FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 Explain the meaning of the following terms as they apply to aircraft refueling:

a. JP-5
b. JP-4
c. JET A/JP-8
d. Flash point
e. Particulates
f. Free water
g. Entrained water
h. Dissolved water
i. Microorganisms
j. Surfactants
k. Fuel system icing inhibitor (FSII)
l. MK 1 test kit
m. MK 3 test kit
n. Clear and bright test
o. Grounding wire
p. Continuity
q. Flushing
r. Recirculation
s. Stripping
t. Transfer pump
u. Service pump
v. Nozzle strainers
w. Go-no-go filter
x. Filter/separator
y. Storage tank
z. Service tank
aa. Pressure refueling nozzle
ab. Gravity refueling nozzle
ac. HIFR rig
ad. Defueling pump

.2 State the possible effects resulting from delivery of contaminated fuel to the helicopter.

.3 Explain why it might be necessary to defuel a helicopter aboard ship.

.4 Explain why helicopters which have been refueled ashore will not ordinarily be allowed to defuel aboard ship.

III HELICOPTER INSTRUMENT APPROACH FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)

.1 State the circumstances which would ordinarily require a helicopter to execute an instrument approach to return to the ship.

.2 Explain the following terms as they apply to helicopter instrument approaches:

a. Ceiling
b. Visibility
c. Visual meteorological conditions
d. Instrument meteorological conditions
e. MATCH procedure
f. CATCH procedure
g. Procedure turn approach
h. Teardrop procedure
i. TACAN approach
j. NDB approach
k. Ground controlled approach
l. Emergency low visibility approach (ELVA)
m. Final approach course
n. Glide path
o. Missed approach point
p. Minimum descent altitude
q. Missed approach procedure
r. Lost communications procedures
s. RADAR
t. Traffic advisories
u. Anti-submarine air controller
v. Bingo fuel

.3 What information must be passed to a helicopter prior to the initiation of an instrument approach?

.4 What conditions must exist for the pilot to discontinue an instrument approach and proceed visually to the ship?

112 AIR DIRECTION CONTROL FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 State the following for the three forms of aircraft control:

a. Under what meteorological conditions may it be used?
b. Who is responsible for helicopter navigation?
c. Who is responsible for helicopter collision avoidance?

.2 After launch, when should the CIC controller take control of the helicopter?

.3 During the approach phase, when should helicopter control be passed from CIC to the HCO?

.4 State the information the controller must obtain or provide during the following situations:

a. New helicopter checking in.
b. Reporting air traffic to a controlled helicopter.
c. Helicopter checking out.
d. Helicopter emergency.

.5 Define the following controller commands and describe the correct dialog in their use:

a. Turn
b. Vector
c. Climb
d. Descend
e. Speed
f. Report

.6 When should a controlled aircraft be advised of other air traffic in the controllers area?

.7 State the minimum required horizontal separation between all aircraft during positive control.

.8 State the required vertical separation between the following types of aircraft during positive control:

a. Fixed-wing and rotary-wing
b. Rotary-wing
c. Fixed-wing

113 TALON CHARACTERISTICS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 State the function of the TALON system.

.2 State the sequence of operations of a helicopter landing using the TALON system.

.3 Describe the procedures to be followed in the event of a TALON equipment failure.

.4 Describe safety precautions to be followed during periods when the TALON system is not in use.

114 SAFETY PRECAUTIONS FUNDAMENTALS

Reference:
a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 Discuss safety precautions applicable to the following:

a. Engine/rotor noise
b. Foreign object damage (FOD)
c. Compressor and turbine blades
d. Hot exhaust areas
e. Fluids under pressure
f. Compressed and liquefied gasses
g. Intake ducts
h. Exhaust nozzles
i. Handling oils and fuels
j. Fueling and defueling
k. Working area
l. Grounding of electrical equipment
m. Fuel, oil and hydraulic leaks
n. Approaching helicopter with rotors turning
o. Ground resonance
p. Tail rotor
q. Composite materials
r. Aircraft antennae
s. Steel-toed safety boots
t. Flight deck clothing
u. Hangar door
v. Lighting at night
w. Safety nets/catwalks
x. Hatches on deck
y. Ordnance
z. TALON equipment
aa. VERTREP equipment
ab. Tiedowns
ac. Wheel chocks
ad. Pivotable antennae
ae. Night operations
af. Heavy weather operations
ag. Cold weather operations
ah. Flash equipped cameras

CHAPTER 2. SYSTEMS

201 PRIMARY TIEDOWN SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B Where is it located?
C. What are the modes of operation or control?
D. What are the probable indications if this component fails?

	A	B	C	D
.21 High tiedown assembly	X	X		
a. Pelican hook	X	X	X	X
b. Bale assembly	X	X	X	X
c. Strap and ratchet	X	X	X	X
d. Raised cloverleaf/bulbhook	X	X	X	
e. Flushdeck cloverleaf/bulb hook	X	X	X	
f. Bar fitting/open hook	X	X	X	
.22 Low tiedown assembly	X	X		
a. Hook	X	X	X	X
b. Strap and ratchet	X	X	X	X
c. Raised cloverleaf/bulbhook	X	X	X	
d. Flushdeck cloverleaf/bulbhook	X	X	X	
e. Bar fitting/open hook	X	X	X	

.3 PRINCIPLES OF OPERATION

.31 Describe the sequence of attachment of primary tiedowns.

.32 Describe the sequence of removal of primary tiedowns.

.33 Describe the process of overhauling high and low tiedowns.

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE - None to be discussed.

.6 SAFETY PRECAUTIONS

.61 What safety precautions apply to releasing primary

tiedowns under high tension?

.62 Describe action taken as a result of one or more tiedown failures.

202 SECONDARY/HEAVY WEATHER TIEDOWN (TD-1A) SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are the modes of operation or control?
D. What are the probable indications if this component fails?

		A	B	C	D
.21	Chain and hook assembly	X	X		
.22	Housing assembly	X	X		
	a. Tension nut	X	X	X	X
	b. Release lever	X	X	X	X
	c. Locking arm	X	X	X	X
	d. Link retainer	X	X		
.23	Tail tiedown strap	X	X	X	X

.3 PRINCIPLES OF OPERATION

.31 Describe the arrangement of secondary tiedowns on the HH-65A helicopter.

.32 Describe the arrangement of heavy weather tiedowns on the HH-65A helicopter.

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE - None to be discussed.

.6 SAFETY PRECAUTIONS

.61 What safety precautions apply to releasing TD-1A tiedown assemblies under high tension?

.62 Describe procedures to be taken prior to the removal

of secondary tiedowns.

.63 Explain the reason secondary tiedowns must be removed prior to engine start/rotor engagement.

203 REFUELING/HIFR EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are its different modes of operation?
D. What are the probable indications if this component fails?

		A	B	C	D
.21	Refueling Hose	X	X	X	X
.22	Quick disconnect coupling	X	X		
.23	Pressure refueling nozzle	X	X	X	X
.24	Gravity (over wing) refueling nozzle	X	X	X	X
.25	HIFR rig	X	X	X	X
.26	Sample (gammon) fitting	X	X		
.27	Recirculation deck fitting	X	X		
.28	Grounding wire	X	X		
.29	Nozzle strainer	X	X	X	X
.210	Filter separator	X	X	X	X
.211	Go-no-go fuses	X	X	X	X
.212	Transfer pump	X	X	X	X
.213	Service pump	X	X	X	X
.214	Stripping line	X	X	X	
.215	Flight deck/Fueling Station JP-5 emergency shut-off	X	X		

.3 PRINCIPLES OF OPERATION

.31 Discuss the principle of continuity in refueling equipment and why it is required for fueling operations.

.32 State the manning requirements for refueling aircraft aboard your ship.

.33 State how often the following procedures must be carried out and why:

a. Recirculation of storage and service tanks.
b. Stripping of tanks.
c. Flushing refueling hose and nozzle.
d. Clear and bright test.
e. Contamination and free-water tests.
f. Inspection of nozzle strainers.
g. Replacement of filter-separator elements.
h. Lab analysis of JP-5 stores.
i. Fuel hose/nozzle continuity check.

.34 State the different types of turbine fuel and which are allowed to be carried aboard ship.

.4 PARAMETERS/OPERATING LIMITS

.41 State the maximum and minimum allowable fuel pressure at the nozzle for pressure refueling.

.42 Discuss the maximum allowable concentration of solids and free water in JP-5 and how these levels are determined.

.43 Discuss the minimum required concentration of Fuel System Icing Inhibitor (FSII) and why it is required in JP-5.

.5 SYSTEM INTERFACE

.51 Explain what EMCON procedures apply during aircraft refueling and why they are necessary.

.6 SAFETY PRECAUTIONS

.61 Discuss the personal safety equipment required by personnel involved in handling JP-5, testing and refueling aircraft.

.62 Discuss the health hazards posed by the following materials:

a. Kerosene fuel fumes
b. Benzene
c. DIEGMME FSII (Diethylene glycol monomethyl ether)

.63 Discuss the procedures for electrical grounding of the aircraft and why it is necessary prior to refueling.

204 DEFUELING EQUIPMENT SYSTEM

Reference:

A. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of the system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

.21 Explain the function of the following equipment used in conjunction with the aircraft defueling pump:

a. Pressure refueling nozzle
b. Fuel hose
c. Pneumatic lines
d. Fuel storage tanks

.22 State the equipment required for gravity defueling.

.3 PRINCIPLES OF OPERATION

.31 What is the normal rate of fuel transfer when using the defueling pump?

.32 How much fuel can be removed from the aircraft using the defueling pump?

.33 To which tanks aboard ship would the following types of fuel normally be transferred:

a. Clean JP-5
b. Contaminated JP-5
c. JP-4/JET A

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE

.51 Explain what EMCON procedures apply during aircraft defueling and why they are necessary.

.6 SAFETY PRECAUTIONS

.61 Discuss the procedures for grounding the aircraft and the defueling equipment.

205 FUEL TESTING EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this equipment?

.12 Explain why it is necessary to test fuel prior to refueling a helicopter.

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. How does it operate?
C. How often is it used?

		A	B	C
.21	MK 1 Free Water Detector	X	X	X
.22	MK 1 Detector pad		X	X
.23	MK 3 Contaminated Fuel Detector	X	X	X
.24	Wratten filters	X	X	X
.25	Millipore Filters		X	X
.26	FSII Test Kit	X	X	X
.27	Flash point test kit	X	X	X

.3 PRINCIPLES OF OPERATION - None to be discussed.

.4 PARAMETERS/OPERATING LIMITS

.41 State the maximum allowable concentrations of particulates and free water in JP-5 used to refuel aircraft.

.42 State the minimum required concentration of FSII in JP-5 used to refuel aircraft.

.5 SYSTEM INTERFACE - None to be discussed

.6 SAFETY PRECAUTIONS

.61 State the safety precautions to be followed when taking fuel samples.

.62 State the personal safety equipment required when fuel tests are run in an enclosed space.

.63 State the procedures normally followed when contaminated fuel is detected at the refueling

station.

206 FIREFIGHTING EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are the modes of operation or control?
D. What protection is provided by it?
E. What are the functions of each position?

		A	B	C	D	E
.21	Carbon dioxide (CO2) fire extinguisher	X	X	X	X	
.22	Dry chemical extinguisher (PKP)	X	X	X	X	
.23	Firehose	X	X	X		
.24	In-line eductor	X	X	X	X	
.25	Proportioner	X	X	X	X	
.26	Variable stream fog nozzle (varinozzle)	X	X	X	X	X
.27	All-purpose nozzle	X	X	X	X	X
.28	Spanner wrench	X	X			
.29	Seawater stations	X	X	X	X	
.210	AFFF stations	X	X	X	X	
.211	Flight deck AFFF activation switch	X	X	X		
.212	Proximity suits	X	X		X	
.213	Flash hoods and gloves	X	X		X	
.214	Crash kit	X	X			
.215	Respirators	X	X		X	
.216	Self-contained breathing apparatus	X	X	X	X	

.3 PRINCIPLES OF OPERATION

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

.32 What is the sequence of component involvement to accomplish:

a. Seawater activation
b. AFFF activation

.4 PARAMETERS/OPERATING LIMITS

.41 What minimum concentration of AFFF is required at the flight deck station for certification?

.42 For certification, what is the maximum time allowed between activation of the AFFF system and delivery of foam to the flight deck nozzles?

.43 State how long the supply of AFFF in the storage tank will last in the event of a fire on the flight deck.

.44 State how long the supply of AFFF in a 5 gallon storage can will last when being used with an eductor on a flight deck fire.

.5 SYSTEM INTERFACE

.51 How does loss of firemain pressure affect this system?

.6 SAFETY PRECAUTIONS

.61 What general safety precautions apply to this system?

.62 What are the precautions when operating AFFF hoses in the vicinity of proximity suited rescuemen?

207 SOUND-POWERED TELEPHONE SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Telephone Talkers Manual, COMDTINST M9430.1
c. Basic DC PQS. NAVEDTRA 43119.2 (series)
d. Surface Ship Survivability, NWP 62.1 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What is the source of power?
D. What is the source of control signals?
E. What are the functions of each position?

		A	B	C	D	E
.21	Jackboxes	X	X			
.22	Selector switches	X	X			X
.23	Headset	X	X	X		
	a. Transmitter	X	X			
	b. Receiver	X	X			
	c. Switch	X	X			
.24	Handset	X	X	X		
	a. Transmitter	X	X			
	b. Receiver	X	X			
	c. Switch	X	X			
.25	Loudspeaker	X	X		X	
.26	Call bell station box	X	X	X	X	X

.3 PRINCIPLES OF OPERATION

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

.32 What are the effects on the system when a press-to-talk switch remains closed?

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE - None to be discussed.

.6 SAFETY PRECAUTIONS - None to be discussed.

208 INTERNAL COMMUNICATIONS SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Ship's CIC Doctrine
c. Ship's Technical Manuals

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are the modes of operation or control?
D. What are the functions of each position?

		A	B	C	D
.21	Multichannel units (21MC)	X	X	X	X
.22	Ship's service telephone	X	X	X	X
.23	General announcing system (1MC)	X	X	X	
.24	Sound-powered telephone	X	X	X	
.25	VHF-FM radio sets	X	X	X	

.3 PRINCIPLES OF OPERATION

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

.32 What is the sequence of component involvement to accomplish communications between stations?

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE

.51 How does heavy tempo of operations affect this system?

.52 How does a loss of electrical power affect the different components of this system?

.6 SAFETY PRECAUTIONS - None to be discussed.

209 FLIGHT DECK SURVIVAL EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this equipment?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. How is it operated?
D. What should be checked prior to its use?

		A	B	C	D
.21	LPU-30 (P) Life preserver assembly	X	X	X	
	a. MK1 Vest	X	X	X	X
	b. Bladder assembly	X	X	X	X
	c. CO2 inflation assembly	X	X	X	X
	d. Strobe light and pouch	X	X	X	X
	e. Sea dye marker and pouch	X	X	X	X
	f. Whistle	X	X	X	X
.22	Cranial helmet	X	X	X	
.23	Goggles	X	X	X	

.24 Describe the required markings for cranial helmets.

.3 PRINCIPLES OF OPERATION

.31 Describe the different methods of inflating the LPU-30.

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE - None to be discussed.

.6 SAFETY PRECAUTIONS

.61 What problems may result when the bladder assembly is twisted or kinked inside the vest?

.62 What problems may result when the retaining nut on the CO2 inflation assembly is loose or too tight?

210 FLIGHT DECK MARKINGS AND SURFACE SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What protection is provided by it?

		A	B	C
.21	Peripheral lines	X	X	X
.22	Lineup line	X	X	X
.23	T-line	X	X	X
.24	Touchdown circle	X	X	X
.25	Landing spot	X	X	
.26	HIFR pickup spot	X	X	
.27	Flight deck non-skid	X		X
.28	Frame markings	X	X	

.3 PRINCIPLES OF OPERATION

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

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE

.51 How does the loss of lighting affect this system?

.6 SAFETY PRECAUTIONS - None to be discussed.

211 GROUNDING HOOK/GLOVES SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. where is it located?
C. What are the safety/protective devices?
D. What protection is provided for it?
E. What are the probable indications if this component fails?

		A	B	C	D	E
.21	Metal contact	X	X			X
.22	Insulation	X	X			X
.23	Grounding wire	X	X	X	X	X
.24	Ground disconnect	X	X	X	X	X
.25	Electrical grounding clip (alligator)	X	X			X
.26	Grounding wand	X	X	X	X	X
.27	Insulated gloves	X		X		X

.3 PRINCIPLES OF OPERATION

.31 What is the sequence of component involvement to accomplish a hookup?

.32 What indications will you receive if the system is malfunctioning?

.4 PARAMETERS/OPERATING LIMITS

.41 For certification, what is the minimum voltage insulation rating for the gloves?

.5 SYSTEM INTERFACE - None to be discussed.

.6 SAFETY PRECAUTIONS

.61 What general safety precautions apply to this system?

.62 How much time is normally required for a hovering helicopter to build up a static electrical charge?

212 LIGHTING SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)
c. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT SYSTEMS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are the modes of operation or control?
D. What are the functions of each position?

		A	B	C	D
.21	Homing beacon	X	X		
.22	Deck-edge lights (peripheral)	X	X	X	X
.23	Lineup lights	X	X	X	X
.24	Overhead floodlights	X	X	X	X
.25	HIFR heading lights	X	X		X
.26	Deck surface and hangar wash floodlights	X	X	X	X
.27	Extended lineup lights	X	X	X	X
.28	Vertical drop line lights	X	X	X	X
.29	Stabilized glide slope indicating system	X	X		
.210	Waveoff lights	X	X	X	
.211	Lighting control panels	X	X	X	X
.212	Helicopter anti-collision lights	X	X		X
.213	Helicopter navigation lights	X	X		X
.214	Helicopter searchlight	X	X		
.215	Helicopter landing/hover lights	X	X		
.216	Helicopter wheels downlock light	X	X		
.217	Ship's stern light	X	X		
.218	Ship's running lights	X	X		
.219	Ship's restricted maneuverability lights	X	X		
.220	Ship's aircraft warning lights	X	X		
.221	Deck status light	X	X	X	X
.222	Flash sequencer	X	X	X	X

.3 PRINCIPLES OF OPERATION

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

.4 PARAMETERS/OPERATING LIMITS

.41 Where is the lighting control panel light voltage monitored?

.5 SYSTEM INTERFACE

.51 How does the loss of electrical power affect this system?

.6 SAFETY PRECAUTIONS - None to be discussed.

213 LIGHTING CONTROL SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are the modes of operation or control?
D. What are the functions of each position?

		A	B	C	D
.21	Homing beacon on/off switch	X	X	X	
.22	Homing beacon variable dimmer knob	X	X	X	X
.23	Deck-edge lights on/off switch	X	X	X	
.24	Deck-edge lights variable dimmer knob	X	X	X	X
.25	Lineup lights on/off, left/right switch	X	X	X	
.26	Lineup lights variable dimmer knob	X	X	X	
.27	Overhead floodlights on/off switch	X	X	X	
.28	Overhead floodlights variable dimmer knob	X	X	X	X
.29	HIFR heading light assembly on/off switch	X	X	X	
.210	HIFR heading light assembly variable dimmer knob	X	X	X	X
.211	Deck status signal system red/green/amber on/off switch	X	X	X	
.212	Deck status signal system variable dimmer knob	X	X	X	X
.213	Deck surface and hangar floodlights on/off switch	X	X	X	
.214	Deck surface and hangar floodlights variable dimmer knob	X	X	X	X
.215	Flash sequencer on/off switch	X	X	X	
.216	SGSI on/off switch	X	X	X	
.217	SGSI variable dimmer knob	X	X	X	X
.218	Waveoff light system on/off switch	X	X	X	

.3 PRINCIPLES OF OPERATION

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

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE

.51 How do the following outside influences affect this system?

a. Low visibility
b. Loss of electrical power
c. Flight deck operations
d. HIFR operations

.6 SAFETY PRECAUTIONS - None to be discussed.

214 SHIPBOARD/HELICOPTER ELECTRICAL POWER SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. Where is it located?
C. What are the modes of operation or control?
D. What are the safety/protective devices?
E. What are the functions of each position?

		A	B	C	D	E
.21	28 Volt DC cable	X	X		X	
.22	115 VOLT AC 400 Hz cable	X	X		X	
.23	Master switch	X	X	X	X	X
.24	Cable selector switch	X	X	X	X	X
.25	Power indicator light	X	X			
.26	Control panel	X	X	X	X	X
.27	Power output gauges	X	X			

.3 PRINCIPLES OF OPERATIONS

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

.4 PARAMETERS/OPERATING LIMITS

For the items listed, answer the following questions:

A. What are the normal operating values?
B. Where are the parameters sensed or monitored?
C. What is the physical location of the indicators?

		A	B	C
.41	AC voltage (line to neutral	X	X	X
.42	AC amperage	X	X	X
.43	AC frequency	X	X	X
.44	DC voltage	X	X	X
.45	DC amperage	X	X	X

.5 SYSTEM INTERFACE

.51 How does loss of electrical power affect this system?

.52 What will result if the incorrect voltage, amperage or frequency (AC) is applied to the HH-65A?

.6 SAFETY PRECAUTIONS

.61 Discuss electrical safety hazards during power cable attachment.

.62 Discuss care of the power cable.

.63 Discuss load test requirements.

.64 Discuss hazard to equipment and personnel during wet weather start.

215 CRASH/RESCUE TOOLS (CRASH KIT) SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For the items listed, answer the following questions:

A. What is its function?
B. Where is it located?

		A	B
.21	Fire ax	X	X
.22	Halligan tool	X	X
.23	Canvas tool roll	X	X
.24	Metal cutting saw	X	X
.25	Wrench (vice grip)	X	X
.26	Common 4-inch screwdriver	X	X
.27	Common 8-inch screwdriver	X	X
.28	Phillips 4-inch screwdriver	X	X
.29	Phillips 8-inch screwdriver	X	X
.210	Lineman's pliers	X	X
.211	Cable cutter	X	X
.212	Hacksaw blade	X	X
.213	Hacksaw frame	X	X
.214	V-blade rescue knife	X	X
.215	Rescue knife blade	X	X
.216	Rib joint pliers	X	X
.217	Open-end adjustable 12-inch wrench	X	X
.218	Flashlight	X	X
.219	Zeus key	X	X

.3 PRINCIPLES OF OPERATION - None to be discussed.

.4 PARAMETERS - None to be discussed.

.5 SYSTEM INTERFACE - None to be discussed.

.6 SAFETY PRECAUTIONS - None to be discussed.

216 RADIOTELEPHONE COMMUNICATIONS SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Ship's CIC Doctrine

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For the items listed, answer the following questions:

A. What is its function?
B. Where is it located?

	A	B
.21 Remote radiotelephone unit	X	X
a. Handphone/headset	X	X
b. Start/stop buttons and light	X	X
c. Earphone level control	X	X
d. Transmit light	X	X
.22 Speaker amplifier unit	X	X
a. Power switch	X	X
b. Volume control knob	X	X
.23 Secure voice unit	X	X
a. Transmit lamp	X	X
b. Power on lamp and switch	X	X
c. Muting switch	X	X
d. Volume knob	X	X
.24 Remote channel selector unit	X	X
a. Control (start/stop/volume)	X	X
b. Selector dial	X	X
.25 Remote handset control unit	X	X
a. Selector knob	X	X
b. Volume control	X	X

.3 PRINCIPLES OF OPERATION - None to be discussed.

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE

.51 How does loss of electrical power affect this system?

.52 Describe the communications capabilities of the HH-65A.

.6 SAFETY PRECAUTIONS - None to be discussed.

217 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For the items listed, answer the following questions:

A. What is its function?
B. Where is it located?

		A	B
.21	Video camera	X	X
.22	NCO station CCTV control console	X	X
	a. Camera directional control	X	X
	b. Focus control	X	X
	c. Zoom control	X	X

.3 PRINCIPLES OF OPERATION

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

.4 PARAMETERS/OPERATING LIMITS - None to be discussed.

.5 SYSTEM INTERFACE

How do the following outside influences affect this system?

a. Low visibility
b. Night operations
c. Loss of electrical power

.6 SAFETY PRECAUTIONS - None to be discussed.

218 RADAR/FLIGHT FOLLOWING SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)
c. Ship's CIC Doctrine

.1 FUNCTION

.11 What is the function of this system?

.2 SYSTEM COMPONENTS AND COMPONENT PARTS

Discuss the designated items for the following components and component parts:

A. What is its function?
B. What are its normal modes of operation?
C. What are its minimum and maximum effective ranges?

		A	B	C
.21	Surface search radar	X	X	X
.22	Air search radar	X	X	X
.23	Fire-control radar	X	X	X
.24	X-band transponder	X	X	X
.25	Mode 3C IFF	X	X	X
.26	TACAN	X	X	X
.27	Aircraft radar	X	X	X
.28	Ship's homing beacon	X	X	X
.29	UHF radio	X	X	X
.210	VHF-AM radio	X	X	X
.211	VHF-FM radio	X	X	X
.212	HF radio	X	X	X
.213	Dead reckoning tracer (DRT)	X		

.3 PRINCIPLES OF OPERATION

.31 At what point in the flight does CIC normally take control of aircraft operations?

.32 How often are position marks taken on the aircraft?

.33 How often are flight operations checks required?

.4 PARAMETERS/OPERATING LIMITS

.41 What is the maximum range of the HH-65A?

.42 For flight planning purposes, what is the usual range of the HH-65A?

.43 What is the normal cruising speed of the HH-65A?

.44 State the reason flight plans have to be filed and a daily IFF squawk code obtained prior to operating the helicopter in or near foreign airspace.

.5 SYSTEM INTERFACE

.51 State how a loss of electrical power would affect these systems.

.6 SAFETY PRECAUTIONS

.61 Describe the procedures followed in event of lost communications with the aircraft.

CHAPTER 3. WATCHSTATIONS

301 TIEDOWN CREWMAN WATCHSTATION

Prior to final sign off for this watchstation, you must complete:

Fundamentals: 101-105, 108, 109, 114

Systems: 201, 202, 206, 209-211

Cross Qualification: Personnel completing USN Shipboard Helicopter Operations Chock and Chain Handler PQS (NAVEDTRA 43219B-Q1) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. Perform this task.

		A	B	C	D	E	F
.11	Install and remove (I/R) primary high tiedowns on the HH-65A.	X	X	X	X	X	X
	_____ (Signature/Date)						
.12	I/R primary low tiedowns on the HH-65A.	X	X	X	X	X	X
	_____ (Signature/Date)						
.13	Overhaul primary high tiedowns.	X		X	X	X	X
	_____ (Signature/Date)						
.14	Overhaul primary low tiedowns.	X		X	X	X	X
	_____ (Signature/Date)						
.15	I/R secondary tiedowns.	X	X	X	X	X	X
	_____ (Signature/Date)						

.16 I/R heavy weather tiedowns X X X X X X

_____
(Signature/Date)

.17 Attach and remove steering bar from/to HH-65. Except 210 WMEC) X X X X X X

_____
(Signature/Date)

.18 Use grounding hook. * X X X X X X

_____
(Signature/Date)

.19 Assist in hangaring helicopter. (Except 210 WMEC) X X X X X X

_____
(Signature/Date)

.110 Demonstrate the use of all flight deck firefighting equipment. * X X X X X X

_____
(Signature/Date)

.111 Conduct FOD walkdown. * X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. State conditions requiring this infrequent task.
G. Perform or simulate this task

	A	B	C	D	E	F	G
.21 Attach cargo/personnel/equipment during hoisting ops. *	X	X	X	X	X		X

_____
(Signature/Date)

.22 Assist in HIFR operations. * X X X X X X X

_____
(Signature/Date)

.23 Assist in VERTREP operations. * X X X X X X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. Explain what other emergencies or malfunctions may occur if immediate is not taken.
E. Perform or simulate the corrective/immediate action for this condition.

	A	B	C	D	E
.31 Pelican hook on high tiedown will not reset.	X	X	X	X	X

_____
(Signature/Date)

.32 Primary tiedown strap jammed in ratchet lever.	X	X	X	X	X

_____
(Signature/Date)

.33 Primary tiedown ratchet lever left open.	X	X		X	X

_____
(Signature/Date)

.34 Chain not properly seated in turnbuckle on secondary tiedown. *	X	X		X	X

_____
(Signature/Date)

.35 Secondary tiedowns chain overtightened or too loose. *	X	X		X	X

_____
(Signature/Date)

.36 Secondary tiedown chain hook not installed properly. * X X X X

_____
(Signature/Date)

.4 EMERGENCIES

For the emergency condition listed below:

A. State indications and alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what other emergencies or malfunctions may occur if immediate action is not taken.
F. Explain how emergency affects other operations/equipment/watchstations.
G. Perform or simulate the immediate action for this emergency condition.

		A	B	C	D	E	F	G
.41	Primary tiedown failure.	X	X		X	X	X	X

_____
(Signature/Date)

.42 Primary tiedown strap jammed. X X X X X X

_____
(Signature/Date)

.43 Secondary tiedown failure. X X X X X X

_____
(Signature/Date)

.44 Hookup man receives static electrical shock. X X X X X

_____
(Signature/Date)

.45 Helicopter crash/fire on the flight deck. X X X X X X X

_____
(Signature/Date)

.5 WATCHES

.51 Complete 10 primary tiedown day evolutions.

_____
(Signature/Date)

.52 Complete 5 primary tiedown night evolutions.

_____
(Signature/Date)

.53 Complete 1 secondary tiedown evolution.

_____
(Signature/Date)

302 LSO SOUND-POWERED TELEPHONE TALKER WATCHSTATION

Prior to final sign off for this watchstation, you must complete:

Fundamentals: 101-105, 107-109, 113, 114

Systems: 206-210

Cross Qualifications: Personnel completing USN Shipboard Helicopter Operations Sound-Powered Telephone Talker PQS (NAVEDTRA 43219B-Q2) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Demonstrate required control/coordination.
D. Demonstrate/simulate required communications.
E. Perform this task.

		A	B	C	D	E
.11	Set up a sound-powered telephone. *	X	X			X

_____
(Signature/Date)

.12	Establish and test communications. *	X	X	X	X	X

_____
(Signature/Date)

.13	Transmit message using standard phraseology/procedures. *	X	X	X	X	X

_____
(Signature/Date)

.14	Receive and pass messages using standard phraseology/procedures. *	X	X	X	X	X

_____
(Signature/Date)

.15	Secure and store a sound-powered telephone. *	X	X			X

_____
(Signature/Date)

.16 Signal to LSO for helicopter cleared to land with primary tiedowns. X X X X X

_____
(Signature/Date)

.17 Signal to LSO for helicopter cleared to takeoff to port/starboard. X X X X X

_____
(Signature/Date)

.18 Signal to LSO for helicopter cleared for touch-and-go to port/starboard. X X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. State conditions requiring this infrequent task.
D. Perform or simulate this task.

	A	B	C	D
.21 Transmit messages through earpiece. *	X	X	X	X

_____
(Signature/Date)

.22 Receive messages through mouthpiece. *	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal condition below:

A. State indications and alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain follow-up action required.
F. Perform or simulate the corrective/immediate action for this condition.

	A	B	C	D	E	F
.31 Loss of communications. *	X	X	X	X	X	X

_____
(Signature/Date)

.4 EMERGENCIES - None to be discussed.

.5 WATCHES

.51 Stand at least one qualified watch under qualified supervision for 10 day landings and 5 night landings to include 3 with primary tiedowns.

_____
(Signature/Date)

.52 Act as Flight Deck phone talker during an aircraft refueling.

_____
(Signature/Date)

.53 Act as Flight Deck phone talker during a crash at sea drill.

_____
(Signature/Date)

.54 Act as Flight Deck phone talker during a crash on the flight deck drill.

_____
(Signature/Date)

303 LANDING SIGNAL OFFICER (LSO) WATCHSTATION

Prior to final sign off for this watchstation, you must complete:

PQS Qualifications for LSO Sound-Powered Telephone Talker.

Fundamentals: 106

Systems: 201, 202, 211, 212, 214

Cross Qualification:

(1) - Personnel completing Landing Signal Enlisted Course (D-680-0017 or E-0506) are exempt from the requirements noted.

(2) - Personnel qualified under USN Shipboard Helicopter Operations Landing Signal Enlisted PQS (NAVEDTRA 43219B-Q3) are exempt from the requirements noted.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.

		A	B	C	D	E	F
.11	Conduct preoperational inspection of all flight deck attire and equipment. (1, 2)	X	X	X	X	X	X
	_____ (Signature/Date)						
.12	Conduct FOD walkdown. (2)	X	X	X		X	X
	_____ (Signature/Date)						
.13	Inspect flight deck markings and lighting. (2)	X	X			X	X
	_____ (Signature/Date)						

.14	Conduct preoperational brief.	X X X X X X
	_____ (Signature/Date)	
.15	Direct start and shut down of engines (day and night). (1, 2)	X X X X X X
	_____ (Signature/Date)	
.16	Direct landing/launch (day and night). (1, 2)	X X X X X X
	_____ (Signature/Date)	
.17	Direct personnel hoisting operations. (2)	X X X X X X
	_____ (Signature/Date)	
.18	Direct injured personnel hoisting operations. (2)	X X X X X X
	_____ (Signature/Date)	
.19	Direct HIFR operations. (2)	X X X X X X
	_____ (Signature/Date)	
.110	Direct VERTREP operations. (1, 2)	X X X X X X
	_____ (Signature/Date)	
.111	State entry/exit points of HH-65A.	X X X X X X
	_____ (Signature/Date)	
.112	State location of battery compartment on HH-65A	X X X X X X
	_____ (Signature/Date)	
.113	Direct flight deck personnel while hot refueling.	X X X X X
	_____ (Signature/Date)	

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. State conditions requiring this infrequent task.
G. Perform or simulate this task.

		A	B	C	D	E	F	G
.21	EMCON launch/recovery procedures. (2)	X	X	X	X	X	X	X

_____
(Signature/Date)

.22	Disengagement of rotors with rotor brake failure. (2)	X	X	X			X	X

_____
(Signature/Date)

.23	Recover aircraft with unsafe landing gear indication. (2)	X	X	X	X	X	X	X

_____
(Signature/Date)

.24	Direct aircraft during adverse weather conditions. (2)	X	X	X	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications of alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Explain how this condition affects other operations/equipment/watchstations.
G. State required follow-up action.
H. Perform or simulate the corrective/immediate action for this condition.

		A	B	C	D	E	F	G	H
.31	Negligent preoperational inspection. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								
.32	FOD. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								
.33	Incorrect hand signals. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								
.34	Incorrect flight deck attire. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								
.35	Unauthorized personnel on the flight deck. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								
.36	Fuel/oil/hydraulic spills. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								
.37	Unauthorized lights. (2)	X	X	X	X	X	X	X	X
	_____ (Signature/Date)								

.38 Incorrect lighting. (2) X X X X X X X

_____
(Signature/Date)

.39 Secondary tiedowns not removed be fore rotor engagement. X X X X X X X

_____
(Signature/Date)

.310 Primary tiedowns not removed before takeoff. X X X X X X X

_____
(Signature/Date)

.311 Rotor brake failure. (2) X X X X X X

_____
(Signature/Date)

.312 Improper tiedowns. X X X X X X

_____
(Signature/Date)

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Explain how this condition affects other operations/equipment/watchstations?
G. Perform or simulate the immediate action for this emergency condition.

	A	B	C	D	E	F	G
.41 Helicopter in nets or catwalk. (2)	X	X	X	X	X	X	X

_____
(Signature/Date)

.42 Engine fire. (2) X X X X X X

_____
(Signature/Date)

.43 Aircraft crash on deck. (2) X X X X X X

_____
(Signature/Date)

.44 Landing gear malfunction. (2) X X X X X X

_____
(Signature/Date)

.45 Single-engine landings. (2) X X X X X X

_____
(Signature-Date)

.46 Aircraft crash at sea. X X X X X X

_____
(Signature/Date)

.47 Aircraft battery malfunction. (2) X X X X X X

_____
(Signature/Date)

.48 HIFR emergency breakaway. (2) X X X X X X

_____
(Signature/Date)

.5 **WATCHES**
Direct the following operations/exercises under qualified supervision:

.51 20 day landings (including 3 primary tiedowns).

_____
(Signature/Date)

.52 10 night landings (including 3 primary tiedowns).

_____
(Signature/Date)

.53 Direct I/R of secondary/heavy weather tiedowns.

_____
(Signature/Date)

.54 Direct engine start/rotor engagement.

_____
(Signature/Date)

.55 Direct engine and rotor shutdown.

_____
(Signature/Date)

.56 Participate in one crash on deck drill.

_____
(Signature/Date)

.59 Participate in one crash at sea drill.

_____
(Signature/Date)

304 FLIGHT DECK HOSEMAN WATCHSTATION

Prior to final sign off for this watchstation, you must complete:

Fundamentals: 101-103, 108, 109, 114

Systems: 206, 209, 215

Cross Qualification:

(1) - Personnel completing Shipboard Aircraft Firefighting Course (J-495-0413/4) or Advanced Shipboard Firefighting Course (A-495-0419) are exempt from the requirements noted.

(2) - Personnel completing USN Advanced Damage Control Emergency Parties PQS (NAVEDTRA 43119-3) are exempt from the requirements noted.

.1 **TASKS**

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Demonstrate required control/coordination.
D. Demonstrate/simulate required communications.
E. Perform this task.

		A	B	C	D	E
.11	Break out firehose. (1, 2)	X	X	X	X	X

_____
(Signature/Date)

.12	Inspect firehose for deterioration. (2)	X	X			X

_____
(Signature/Date)

.13	Change out defective section of firehose. (2)	X	X	X		X

_____
(Signature/Date)

.14	Change out firehose nozzle.	X	X	X		X

_____
(Signature/Date)

.15	Replace a 1 1/2 in. hose with a 2 1/2 in. hose using a reducer. (2)	X	X	X		X

_____
(Signature/Date)

.16	Operate a 125 GPM varinozzle,. demonstrating the different spray patterns. (1, 2)	X	X		X	X X

_____
(Signature/Date)

.17	Operate a 95 GPM varinozzle, demonstrating the different spray patterns. (2)	X	X	X	X	X X

_____
(Signature/Date)

.18	Demonstrate operation of the fireplug on each flight deck fireplace station. (1, 2)	X	X	X	X	X

_____
(Signature/Date)

.19	Rig an in-line educator for AFFF operation. (2)	X	X	X	X	X

_____
(Signature/Date)

.110	Demonstrate the use of a CO2 fire extinguisher. (2)	X	X	X	X	X

_____
(Signature/Date)

.111	Demonstrate the use of a PKP fire extinguisher. (2)	X	X	X	X	X

_____
(Signature/Date)

.112	Demonstrate operation of the flight deck AFFF activation switch.	X	X	X	X	X

_____
(Signature/Date)

.113 Demonstrate operation of the flight deck JP-5 emergency cutoff switch. X X X X X

_____
(Signature/Date)

.114 Demonstrate change out of the nozzleman on an operating firehose. (1, 2) X X X X X

_____
(Signature/Date)

.115 Demonstrate how to disconnect the battery of the HH-65A. X X X X X

_____
(Signature/Date)

.116 Identify and operate the emergency exit stations of the HH-65A. X X X X X

_____
(Signature/Date)

.117 Demonstrate the proper method of securing a charged firehouse. (2) X X X X X

_____
(Signature/Date)

.118 Demonstrate the proper method of storing a firehouse. (1, 2) X X X X X

_____
(Signature/Date)

.119 Demonstrate the proper method of standing fireguard during a HH-65A start. X X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS - None to be discussed.

.3 ABNORMAL CONDITIONS - None to be discussed.

.4 EMERGENCIES

For the emergency conditions listed below:
A. State indications or alarms received.
B. State required immediate action.
C. Explain follow-up action required.
D. Perform or simulate the corrective action for this emergency condition.

		A	B	C	D
.41	Firehose ruptures or break loose from the hose team. (2)	X	X	X	X

_____
(Signature/Date)

.42	Fuel fire on the aircraft.	X	X	X	X

_____
(Signature/Date)

.43	Electrical fire on the aircraft.	X	X	X	X

_____
(Signature/Date)

.44	Battery thermal runaway.	X	X	X	X

_____
(Signature/Date)

.45	Engine fire on start.	X	X	X	X

_____
(Signature/Date)

.46	Engine post-shutdown fire.	X	X	X	X

_____
(Signature/Date)

.47	Personnel with burning clothing. (2)	X	X	X	X

_____
(Signature/Date)

.5 WATCHES

.51 Participate in a crash on deck drill as a nozzleman.

_____
(Signature/Date)

.52 Participate in a crash on deck drill as a hose tender.

_____
(Signature/Date)

.53 Participate in a crash on deck drill as plugman.

_____
(Signature/Date)

305 FLIGHT DECK RESCUEMAN WATCHSTATION

Before starting qualification for this watchstation, you must complete:

PQS Qualification: Flight Deck Hoseman

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Perform/simulate this task.

		A	B	C	D
.11	Conduct a preoperational inspection of the aluminized proximity suit.	X	X	X	X

_____
(Signature/Date)

.12	Conduct a preoperational inspection of the crash kit.	X	X	X	X

_____
(Signature/Date)

.13	Demonstrate correct method of donning the proximity suit.	X	X	X	X

_____
(Signature/Date)

.14	Demonstrate operation of the HH-65A emergency egress handles.	X	X	X	X

_____
(Signature/Date)

.15	Demonstrate operation of the HH-65A restraint harness five-point release.	X	X	X	X

_____
(Signature/Date)

.16	Demonstrate use of the halligan tool to enter a crashed aircraft.	X	X	X	X

_____
(Signature/Date)

.17 Demonstrate use of the v-blade knife. X X X X

_____
(Signature/Date)

.18 Demonstrate a "Charlie Check" of the HH-65A. X X X X

_____
(Signature/Date)

.19 Demonstrate removal of an injured/ unconscious crewman from the HH-65A. X X X X

_____
(Signature/Date)

.110 Demonstrate the proper method of carrying an injured crewman from a burning aircraft. X X X X

_____
(Signature/Date)

.111 Demonstrate disconnection and removal of the battery from an HH-65A. X X X X

_____
(Signature/Date)

.112 Identify areas of the HH-65A containing fuel or other combustible materials. X

_____
(Signature/Date)

.2 INFREQUENT TASKS - None to be discussed.

.3 ABNORMAL CONDITIONS - None to be discussed.

.4 EMERGENCIES - None to be discussed.

.5 WATCHES

.51 Participate in a crash on deck drill as the leading rescueman.

_____
(Signature/Date)

.52 Participate in a crash on deck drill as the back-up rescueman.

_____
(Signature/Date)

.53 Stand fireguard during a HH-65A engine start.

_____
(Signature/Date)

306 FLIGHT DECK ON-SCENE LEADER (OSL) WATCHSTATION

Prior to final sign off for this watchstation, you must complete:

Fundamentals: 101-103, 105, 108, 109, 114

Systems: 206, 209-213, 215

Cross Qualification:

(1) - Personnel completing USN Damage Control Assistant Course (A-4G-0010 or A-4G-0020) are exempt from the requirements note.

(2) - Personnel completing Shipboard Aircraft Firefighting Course (J-495-0413/4) or Advanced Shipboard firefighting Course (A-495-0419) are exempt from the requirements noted.

(3) - Personnel completing USN Advanced Damage Control Emergency Parties PQS (NAVEDTRA 43119-3) are exempt from the requirements noted.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Perform this task.

	A	B	C	D	E
.11 Muster fireparties and conduct a pre-operational brief. (1)	X	X	X	X	X

_____
(Signature/Date)

.12 Inspect protective clothing and equipment of fireparties. (1)	X	X	X	X	X

_____
(Signature/Date)

.13 Inspect flight deck firefighting stations for condition and proper equipment. (1, 2, 3)	X	X	X	X	X

_____
(Signature/Data)

.14 Inspect flight deck CO2 and PKP fire bottles for condition and proper charge. (1,3) X X X X X

_____
(Signature/Date)

.15 Inspect rescuement for proper equipment and donning of proximity suits. (1) X X X X X

_____
(Signature/Date)

.16 Demonstrate operation of the flight deck AFFF activation switch. (3) X X X X X

_____
(Signature/Date)

.17 Demonstrate operation of the flight deck JP-5 emergency cutoff switch. (3) X X X X X

_____
(Signature/Date)

.18 Identify emergency exit points of the HH-65A and how they may be opened by ground personnel. X X X X X

_____
(Signature/Date)

.19 Identify areas of the HH-65A containing fuel or other combustible materials. X X X X

_____
(Signature/Date)

.110 Conduct a "Charlie Check" of the HH-65A. X X X X X

_____
(Signature/Date)

.111 Identify location to fight on engine start fire. X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge of required safety precautions.
D. Perform or simulate this task.

	A	B	C	D
.21 Cleanup a fuel or oil spill on the flight deck. (1,3)	X	X	X	X

_____
(Signature/Date)

.22 Supervise pressure defueling the HH-65A.	X	X	X	X

_____
(Signature/Date)

.23 Supervise gravity defueling the HH-65A.	X	X	X	X

_____
(Signature/Date)

.24 Demonstrate rigging of an in-line educator on a flight deck firehose. (1, 3)	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS - None to be discussed.

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain what other emergencies or malfunctions may occur if immediate action is not taken.
D. Perform or simulate the immediate action for this emergency condition.

	A	B	C	D
.41 Aircraft crash on flight deck.	X	X	X	X

_____
(Signature/Date)

.42 Aircraft crash in nets/catwalks.	X	X	X	X

_____
(Signature/Date)

.43 Aircraft crash on fantail. X X X X

_____
(Signature/Date)

.44 Aircraft fire on flight deck. X X X X

_____
(Signature/Date)

.45 Firehose rupture during firefighting. (1,3) X X X X

_____
(Signature/Date)

.46 Hose team killed or incapacitated during fire. (1, 3) X X X X

_____
(Signature/Date)

.47 Ship's AFFF storage tank emptied during fire (1) X X X X

_____
(Signature/Date)

.48 Aircraft battery in thermal runaway condition. X X X X

_____
(Signature/Date)

.5 WATCHES

.51 Act as flight deck on-scene leader during one complete flight evolution (including start and shutdown).

_____
(Signature/Date)

.52 Supervise aircraft refueling on the flight deck.

_____
(Signature/Date)

.53 Perform a crash on deck drill as on-scene leader.

_____
(Signature/Date)

307 HCO SOUND-POWERED TELEPHONE TALKER WATCHSTATION

Prior to final sign off for this watchstation, you must complete:

Fundamentals: 101-103, 107, 114

Systems: 207, 208

Cross Qualification: Personnel completing USN Ship Control/Navigation Bridge Phone Talker PQS (NAVEDTRA 43492-2) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Demonstrate required control/coordination.
D. Demonstrate/simulate required communications.
E. Perform this task.

		A	B	C	D	E
.11	Set up a sound-powered telephone. *	X	X			X

_____
(Signature/Date)

.12	Establish and test communications. *	X	X	X	X	X

_____
(Signature/Date)

.13	Transmit a message using standard phraseology/procedures. *	X	X	X	X	X

_____
(Signature/Date)

.14	Receive and record messages using standard phraseology/procedures. *	X	X	X	X	X

_____
(Signature/Date)

.15	Secure and stow a sound-powered telephone. *	X	X			X

_____
(Signature/Date)

.16 Complete station manning checkoff list. X X X X

_____
(Signature/Date)

.17 Complete HCO equipment check off list. X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. State conditions requiring this infrequent task.
D. Perform or simulate this task.

		A	B	C	D
.21	Transmit messages through earpiece. *	X	X	X	X

_____
(Signature/Date)

.22	Receive messages through mouthpiece. *	X	X	X	X

_____
(Signature/Date)

.23	Use lighting control panel to set up proper flight deck lighting.	X	X	X	X

_____
(Signature/Date)

.24	Operate CCTV system.	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain follow-up action required.
F. Perform or simulate the corrective/immediate action for this condition.

		A	B	C	D	E	F
.31	Loss of communication. *	X	X	X	X	X	X

_____
(Signature/Date)

.4 EMERGENCIES - None to be discussed.

.5 WATCHES

.51 Stand at least one satisfactory watch as HCO sound-powered telephone talker including startup, shutdown, and refueling of the helicopter.

_____
(Signature/Date)

.52 Act of HCO sound-powered telephone talker during a crash at sea drill.

_____
(Signature/Date)

.53 Act as HCO sound-powered telephone talker during a crash on deck drill.

_____
(Signature/Date)

308 HELICOPTER CONTROL OFFICER (HCO) WATCHSTATION

Before starting qualification for this watchstations, you must complete:

PQS Qualification: HCO Sound-Powered Phone Talker

Prior to final sign off for this watchstation, complete the following:

Fundamentals: 101-107, 111-114

Systems: 207, 208, 210, 212, 213, 216-218

Cross Qualification:

(1) - Personnel completing USN Helicopter Control Officer School (D-26-0038 or E-26-0020) are exempt from the requirements noted.

(2) - Personnel completing USN Shipboard Helicopter Air Officer/Helicopter Control Officer PQS (NAVEDTRA 43219B-Q5) are exempt from the requirements noted.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications
F. State parameters to be monitored.
G. Perform this task.

	A	B	C	D	E	F	G
.11 Conduct pre-operational brief. (2)	X		X	X	X	X	X

_____
(Signature/Date)

.12 Establish and use internal and external communications. (2)	X	X	X	X			X

_____
(Signature/Date)

.13 Direct and coordinate safe landing and launching of aircraft per COMDTINST M3710.2 (Series)	X	X	X	X	X	X	X

_____
(Signature/Date)

.14	Direct and coordinate day and night helicopter pattern operations. (1,2)	X	X	X	X	X	X
	_____ (Signature/Date)						
.15	Direct and coordinate a crash on deck drill from the bridge.	X	X	X	X	X	X
	_____ (Signature/Date)						
.16	Direct and coordinate a crash at sea drill from the bridge.	X	X	X	X	X	X
	_____ (Signature/Date)						
.17	Verify that the flight operations checkoff list is complete. (1,2)	X	X	X	X		X
	_____ (Signature/Date)						
.18	Coordinate briefing and manifesting of personnel prior to embarkation on helicopter. (1,2)	X	X	X	X		X
	_____ (Signature/Date)						
.19	Coordinate all movement; permission to start engines; rotor engagements/disengagements; and launch/recovery of the helo with the CO. (1,2)	X	X	X	X	X	
	_____ (Signature/Date)						
.110	Monitor wind limitations for helicopter launch/recovery operations and rotor engagements/disengagements. (1,2)	X	X	X	X	X	X
	_____ (Signature/Date)						
.111	Monitor wind limitations for HIFR operations. (2)	X	X	X	X	X	X
	_____ (Signature/Date)						

.112 Energize and use the flight deck lighting system and visual landing aids. (2) X X X X X X

_____
(Signature/Date)

.113 Energize and use the rotor engagement/disengagement and flight deck status lights. (1,2) X X X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. State the steps for this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. Perform or simulate this task.

	A	B	C	D	E	F
.21 Coordinate flight deck EMCON procedures. (1,2)	X	X	X	X	X	X

_____
(Signature/Date)

.22 Coordinate defueling aircraft. (2)	X	X	X	X	X	X

_____
(Signature/Date)

.23 Monitor wind limitations for VERTREP operations. (1,2)	X	X	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Explain how this condition affects other operations/equipment/watchstations.
G. Perform or simulate the corrective/immediate action for this condition.

		A	B	C	D	E	F	G
.31	Rotor brake failure. (2)	X	X		X	X	X	X

_____
(Signature/Date)

.32	Helicopter with unsafe landing gear indication. (1,2)	X	X		X	X	X	X

_____
(Signature/Date)

.33	Lost communications (day and night).	X	X	X	X		X	X

_____
(Signature/Date)

.34	Overdue aircraft procedures.	X	X			X	X	X

_____
(Signature/Date)

.35	Jammed hoist cable.	X	X	X	X	X	X	X

_____
(Signature/Date)

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Explain how this emergency affects other operations/equipment/watchstations.
G. Perform or simulate the corrective/immediate action for this emergency condition.

		A	B	C	D	E	F	G
.41	Helicopter crash on deck. (2)	X	X		X	X	X	X
	_____ (Signature/Date)							
.42	Helicopter crash at sea. (2)	X	X			X	X	X
	_____ (Signature/Date)							
.43	Helicopter fire. (2)	X	X	X	X	X	X	X
	_____ (Signature/Date)							
.44	Helicopter landing gear failure. (2)	X	X		X	X	X	X
	_____ (Signature/Date)							
.45	Ruptured fuel hose. (2)	X	X	X	X	X	X	X
	_____ (Signature/Date)							
.46	Helicopter single engine failure.	X	X	X	X	X	X	X
	_____ (Signature/Date)							

.5 WATCHES

Stand at least one satisfactory watch under qualified supervision including, at a minimum, 10 day and 5 night landings (6 with primary tiedowns) and one start and shutdown.

_____
(Signature/Date)

309 CIC FLIGHT FOLLOWER WATCHSTATION

Before starting qualification for this watchstation, you must complete:

Fundamentals: 101-103, 105, 111, 112, 114

Systems: 208, 216, 218

Cross Qualification: Personnel completing USN Anti-Submarine Air Controller Course (J-221-0321) or Air Direction Controller Course (J-221-0319) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Demonstrate required control/coordination.
D. Demonstrate/simulate required communications.
E. Perform this task.

		A	B	C	D	E
.11	Establish communications with the helicopter on primary, secondary, and tertiary frequencies.	X	X	X	X	X

_____
(Signature/Date)

.12	Energize and set up radar repeater.	X	X	X	X	X

_____
(Signature/Date)

.13	Participate in preoperational briefing.	X	X	X		X

_____
(Signature/Date)

.14	Draw a flight plan on the CIC DR tracer, color plotter or COMDAC.	X	X			X

_____
(Signature/Date)

.15	Identify points of land/foreign airspace on or near the planned route.	X	X			X

_____
(Signature/Date)

.16	Establish helicopter comms guard.	X	X	X	X	X
	_____ (Signature/Date)					
.17	Determine aircraft bearing/range from the ship using radar and plot position. *	X	X			X
	_____ (Signature/Date)					
.18	Provide aircraft vectors to assist in following a planned route. *	X	X	X	X	X
	_____ (Signature/Date)					
.19	Use established brevity codes to reduce communications. *	X	X	X	X	X
	_____ (Signature/Date)					
.110	Plot positions of contacts as passed by the helicopter. *	X	X			X
	_____ (Signature/Date)					
.111	Provide bearing/range of ship to the aircraft. *	X	X	X	X	X
	_____ (Signature/Date)					
.112	Advise bridge of helo's position and expected time of return.	X	X	X	X	X
	_____ (Signature/Date)					

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge of required safety precautions.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. Perform or simulate this task.

		A	B	C	D	E	F
.21	Aircraft TACAN approach.	X	X	X	X	X	X

_____
(Signature/Date)

.22	Aircraft NDB approach.	X	X	X	X	X	X

_____
(Signature/Date)

.23	Aircraft generated approach (CATCH/MATCH).	X	X	X	X	X	

_____
(Signature/Date)

.24	Controll of multiple aircraft. *	X	X	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this condition.

		A	B	C	D	E	F
.31	Failure of ship's radar.	X	X	X	X	X	X

_____
(Signature/Date)

.32 Communications equipment failure. * X X X X X X

_____
(Signature/Date)

.33 Lost radar contact. * X X X X X X

_____
(Signature/Date)

.34 Emergency low visibility approach (ELVA). * X X X

_____
(Signature/Date)

.35 Ship unable to make preplanned rendezvous point. X X X X

_____
(Signature/Date)

.36 Aircraft gyro compass failure. X X X X X

_____
(Signature/Date)

.37 Aircraft navigation system failure. X X X X X

_____
(Signature/Date)

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what other emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this emergency condition.

	A	B	C	D	E	F
.41 Helicopter overdue for communications check/lost target. *	X	X	X			X

_____
(Signature/Date)

.42	Helicopter calls mayday. *	X	X					X
	_____ (Signature/Date)							
.43	Helicopter single engine failure.	X	X			X	X	X
	_____ (Signature/Date)							
.44	Helicopter transmission chip light/ transmission malfunction.	X	X			X	X	X
	_____ (Signature/Date)							
.45	Helicopter fuel system failure.	X	X			X	X	X
	_____ (Signature/Date)							
.46	Helicopter tail rotor failure.	X	X			X	X	X
	_____ (Signature/Date)							
.47	Helicopter landing gear malfunction.	X	X					X
	_____ (Signature/Date)							
.48	Helicopter encounters hostile forces.	X	X			X	X	X
	_____ (Signature/Date)							
.49	Ship unable to recover helicopter.	X	X	X	X	X	X	X
	_____ (Signature/Date)							

.5 WATCHES

.51 Stand one watch as CIC Flight Follower under qualified supervision.

_____
(Signature/Date)

310 AIR DIRECTION CONTROLLER (ADC) WATCHSTATION

Before starting qualifications for this watchstation, you must complete:

PQS Qualification: CIC Flight Follower

Cross Qualification: Personnel completing USN Anti-Submarine Air Controller Course (J-221-0319) or Air Direction Controller Course (J-221-0319) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Demonstrate required control/coordination.
D. Demonstrate/simulate required communications.
E. Perform this task.

		A	B	C	D	E
.11	Set up radar and IFF equipment. *	X	X	X	X	X
	_____ (Signature/Date)					
.12	Conduct a preflight briefing.	X	X	X		X
	_____ (Signature/Date)					
.13	Demonstrate correct procedure for incoming aircraft check-in. *	X	X	X	X	X
	_____ (Signature/Date)					
.14	Demonstrate correct procedure for reporting other air contacts to the helicopter. *	X	X	X	X	X
	_____ (Signature/Date)					
.15	Demonstrate correct procedure for altering the aircraft's heading. *	X	X	X	X	X
	_____ (Signature/Date)					

.16 Demonstrate the correct procedure to direct the helicopter to a new altitude. * X X X X X

_____
(Signature/Date)

.17 Demonstrate the correct procedure to vector helo clear of conflicting air traffic.* X X X X X

_____
(Signature/Date)

.18 Demonstrate correct procedure for departing aircraft check-out. * X X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge of required safety precautions.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. Perform or simulate this task.

	A	B	C	D	E	F
.21 Air control of more than one aircraft.*	X	X	X	X	X	X

_____
(Signature/Date)

.22 Radar-Monitored approach. X X X X X X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what other emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this condition.

	A	B	C	D	E	F
.31 Radar contact lost during positive control.	X	X	X	X	X	X

_____
(Signature/Date)

.32 Failure of ship's TACAN.	X	X	X	X	X	X

_____
(Signature/Date)

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitation imposed.
E. Explain what other emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this emergency condition.

	A	B	C	D	E	F
.41 Helicopter overdue for comms check/lost target. *	X	X	X			X

_____
(Signature/Date)

.42 Helicopter calls mayday. *	X	X				X

_____
(Signature/Date)

.43 IFF code 7500, 7600, or 7700 received from helicopter. X X X X X X

_____
(Signature/Date)

.5 WATCHES

.51 Complete four hours of direct aircraft control, at least two of which must be actual or simulated positive control.

_____
(Signature/Date)

.52 In simulated weather conditions, control aircraft while conducting an ELVA and low visibility approach.

_____
(Signature/Date)

311 FLIGHT DECK DIRECTOR WATCHSTATION

Before starting qualification for this watchstation, you must complete:

PQS Qualifications: Landing Signal Officer

Systems: 205

Cross Qualification: Personnel completing USN Shipboard Helicopter Operations Flight Deck Director PQS (NAVEDTRA 43219B-Q6) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. Perform this task.

		A	B	C	D	E	F
.11	Conduct preoperational inspection of all flight deck attire and traversing equipment. *	X	X				X

_____
(Signature/Date)

.12	Establish and use internal comms. *	X	X	X	X		X

_____
(Signature/Date)

.13	Conduct pre-traversing brief. *	X	X	X			X

_____
(Signature/Date)

.14	Supervise attachment of primary tiedowns.	X	X	X	X	X	X

_____
(Signature/Date)

.15	Direct normal traversing with primary tiedowns.	X	X	X	X	X	

_____
(Signature/Date)

.16 Identify entry/exit points on HH-65A. X X X X X X

_____
(Signature/Date)

.17 Observe HH-65A blade folding/removal. X X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent task listed below:

A. Demonstrate/perform the steps of this procedure.
B. Show knowledge of required safety precautions.
C. Explain the reasons for each step.
D. Demonstrate required control/coordination.
E. Demonstrate/simulate required communications.
F. Perform or simulate this task.

	A	B	C	D	E	F
.21 Demonstrate heavy weather traversing.	X	X	X	X	X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what other emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this condition.

	A	B	C	D	E	F
.31 Rotor brake failure. *	X	X		X	X	X

_____
(Signature/Date)

.32 Blade crutch failure. X X X X X X

_____
(Signature/Date)

.33 Fouled tiedown. X X X X X

_____
(Signature/Date)

.34 Wheel brake failure. * X X X X X

_____
(Signature/Date)

.4 EMERGENCIES - None

.5 WATCHES

.51 Conduct one cycle traversing the aircraft into and out of the hangar using the normal (walking tiedowns) method.

_____
(Signature/Date)

.52 Conduct one cycle traversing the aircraft into and out of the hangar using the heavy weather (progressive chains) method.

_____
(Signature/Date)

312 AVIATION FUEL HANDLER WATCHSTATION

Before stating qualification for this watchstation, you must complete:

Fundamentals: 101-105, 108-110, 114

Systems: 203-206, 209

Cross Qualification: Personnel completing USN JP-5 Aviation Fuels Systems Course (J-651-0466) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge of required safety precautions.
D. Demonstrate required control/coordination.
E. Perform this task.

	A	B	C	D	E
.11 Align the system and strip the JP-5 storage tank(s).	X	X	X	X	X

_____
(Signature/Date)

.12 Align the system and strip the JP-5 service tank.	X	X	X	X	X

_____
(Signature/Date)

.13 Align the system and recirculate the JP-5 storage tank.	X	X	X	X	X

_____
(Signature/Date)

.14 Align the system and recirculate the JP-5 service tank.	X	X	X	X	X

_____
(Signature/Date)

.15 Observe and record filter separator differential pressure and discharge pump pressure during recirculation.	X	X			X

_____
(Signature/Date)

.16	Flush fuel hose.	X X X X X
	_____ (Signature/Date)	
.17	Obtain a fuel sample from the pressure refueling nozzle.	X X X X X
	_____ (Signature/Date)	
.18	Perform clear and bright test. *	X X X X X
	_____ (Signature/Date)	
.19	Check nozzle strainers.	X X X X
	_____ (Signature/Date)	
.110	Check tank vents for obstructions.	X X X
	_____ (Signature/Date)	
.111	Strip service filter/separator.	X X X X X
	_____ (Signature/Date)	
.112	Obtain and record fuel quantity in service tank.	X X X
	_____ (Signature/Date)	
.113	Determine quantity of fuel required by the aircraft.	X X X X
	_____ (Signature/Date)	
.114	Refuel aircraft using the pressure refueling nozzle.	X X X X X
	_____ (Signature/Date)	

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge of required safety precautions.
D. Demonstrate required control/coordination.
E. State conditions requiring this infrequent task.
F. Perform or simulate this task.

		A	B	C	D	E	F
.21	Refuel aircraft using gravity refueling nozzle.	X	X	X	X	X	X
	_____ (Signature/Date)						
.22	Install and flush HIFR rig.	X	X	X	X	X	X
	_____ (Signature/Date)						
.23	Obtain fuel sample from storage tanks.	X	X	X	X		X
	_____ (Signature/Date)						
.24	Obtain and record fuel quantity from storage tanks.	X	X			X	X
	_____ (Signature/Date)						
.25	Inspect fuel hose.	X	X			X	X
	_____ (Signature/Date)						
.26	Cure new fuel hose.	X	X	X	X	X	X
	_____ (Signature/Date)						
.27	Obtain fuel samples for lab analysis.	X	X	X		X	X
	_____ (Signature/Date)						
.28	Check grounds for continuity.	X	X	X		X	X
	_____ (Signature/Date)						

.29	Replace fuel hose.	X X X X X X
	_____ (Signature/Date)	
.210	Replace filter/separator elements.	X X X X X X
	_____ (Signature/Date)	
.211	Replace go-no-go fuse.	X X X X X X
	_____ (Signature/Date)	
.212	Replace nozzle strainer.	X X X X X X
	_____ (Signature/Date)	
.213	Set up system to receive fuel from a supplier.	X X X X X
	_____ (Signature/Date)	
.214	Set up system for pressure defueling aircraft.	X X X X X X
	_____ (Signature/Date)	
.215	Set up system for gravity defueling aircraft.	X X X X X X
	_____ (Signature/Date)	
.216	Hot refuel HH-65A	X X X X X X
	_____ (Signature/Date)	
.217	Clean JP-5 storage tank.	X X X X X X
	_____ (Signature/Date)	

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this abnormal condition.

		A	B	C	D	E	F
.31	Excessive or sudden pressure drop across filter/separator.	X	X	X	X	X	X
	_____ (Signature/Date)						
.32	Excessive pressure drop at flight deck refueling nozzle.	X	X	X	X	X	X
	_____ (Signature/Date)						
.33	Clear and bright test shows signs of fuel contamination.	X	X	X	X	X	X
	_____ (Signature/Date)						
.34	Fuel hose/nozzle fails continuity test.	X	X	X	X	X	X
	_____ (Signature/Date)						
.35	Excessive fuel pressure at flight deck pressure refueling nozzle.	X	X	X		X	X
	_____ (Signature/Date)						
.36	Service pump overheating.	X	X	X	X	X	X
	_____ (Signature/Date)						
.37	Excessive fuel fumes in JP-5 pump room.	X	X		X	X	X
	_____ (Signature/Date)						

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this emergency condition.

		A	B	C	D	E	F
.31	Large fuel spill on flight deck.	X	X	X	X	X	X

_____
(Signature/Date)

.42	Fuel hose ruptures during refueling,	X	X	X	X	X	X

_____
(Signature/Date)

.43	Fuel hose coupling fails during refueling.	X	X	X	X	X	X

_____
(Signature/Date)

.44	Refueling nozzle fails during refueling.	X	X	X	X	X	X

_____
(Signature/Date)

.45	Aircraft fuel cell ruptures during refueling.	X	X		X	X	X

_____
(Signature/Date)

.46	Fitting or pipe ruptures in JP-5 pump room.	X	X	X	X	X	X

_____
(Signature/Date)

.47	Aircraft fire during refueling/defueling.	X	X		X	X	

_____
(Signature/Date)

.5 WATCHES - None.

313 AVIATION FUEL KING WATCHSTATION

Before starting qualification for this watchstation, you must complete:

PQS Qualification: Aviation Fuel Handler

Cross Qualification: Personnel completing USN JP-5 Aviation Fuels Systems Course (J-651-0466) are exempt from the requirements annotated with *.

.1 TASKS

For the tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge or required safety precautions.
D. Demonstrate required control/coordination.
E. Perform this task.

		A	B	C	D	E
.11	Maintain JP-5 fuel logs.	X	X			X

_____
(Signature/Date)

.12	Run a MK 1 test on a JP-5 sample. *	X	X	X	X	X

_____
(Signature/Date)

.13	Run a MK 3 test on a JP-5 sample. *	X	X	X	X	X

_____
(Signature/Date)

.14	Run an FSII test on a JP-5 sample. *	X	X	X	X	X

_____
(Signature/Date)

.15	Prepare and ship a JP-5 sample for laboratory analysis.	X	X	X	X	X

_____
(Signature/Date)

.16	Pass report on solids/water contamination to senior aviator.	X	X			X

_____
(Signature/Date)

.17 Transfer fuel from storage tank to service tank. X X X X X

_____
(Signature/Date)

.2 INFREQUENT TASKS

For the infrequent tasks listed below:

A. Demonstrate/perform the steps of this procedure.
B. Explain the reasons for each step.
C. Show knowledge or required safety precautions.
D. Demonstrate required control/coordination.
E. State conditions requiring this infrequent task.
F. Perform or simulate this task.

		A	B	C	D	E	F
.21	Change out standards in MK 1 Free Water Detector. *	X	X			X	X

_____
(Signature/Date)

.22	Calibrate MK 3 detector. *	X	X			X	X

_____
(Signature/Date)

.23	Supervise defueling of aircraft.	X	X	X	X	X	X

_____
(Signature/Date)

.24	Arrange Occupational Health Survey for JP-5 pump room.	X	X			X	X

_____
(Signature/Date)

.3 ABNORMAL CONDITIONS

For the abnormal conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions may occur if immediate action is not taken.
F. Perform or simulate this task.

		A	B	C	D	E	F
.31	Excessive solids in fuel sample. *	X	X	X	X	X	X
	_____ (Signature/Date)						
.32	Excessive free water in fuel sample. *	X	X	X	X	X	X
	_____ (Signature/Date)						
.33	Insufficient FSII in fuel. *	X	X		X	X	X
	_____ (Signature/Date)						
.34	Defueling aircraft with contaminated fuel.	X	X				X
	_____ (Signature/Date)						
.35	Defueling aircraft with JP-4/JET A on board.	X	X				X
	_____ (Signature/Date)						
.36	Excessive benzine levels in JP-K pump room.	X	X	X	X	X	X
	_____ (Signature/Date)						
.37	Fuel test reveals low flash point.	X	X	X	X	X	X
	_____ (Signature/Date)						

.4 EMERGENCIES

For the emergency conditions listed below:

A. State indications or alarms received.
B. State required immediate action.
C. Explain the probable causes.
D. State the operating limitations imposed.
E. Explain what emergencies or malfunctions. may occur if immediate action is not taken.
F. Perform or simulate the corrective/immediate action for this emergency condition.

		A	B	C	D	E	F
.31	Large fuel spill on deck.	X	X	X	X	X	X

_____
(Signature/Date)

.42	Fuel hose ruptures during fueling.	X	X	X	X	X	X

_____
(Signature/Date)

.43	HIFR emergency breakaway.	X	X			X	X

_____
(Signature/Date)

.44	Large fuel spill in JP-5 pump room.	X	X	X	X	X	X

_____
(Signature/Date)

.45	Fire in JP-5 pump room.	X	X	X	X	X	X

_____
(Signature/Date)

.5 WATCHES - None.

CHAPTER 4. QUALIFICATIONS

401

FINAL QUALIFICATION AS
TIEDOWN CREWMAN

NAME _____RATE/RANK_____

This page is to be used as a record of satisfactory completion of designated sections of the Personnel Qualification Standard (PQS). Only specified supervisors may signify completion of applicable sections either by written or oral examination, or by observation of performance. The examination or checkout need not cover every item; however, a sufficient number should be covered to demonstrate the examinee's knowledge.

QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified TIEDOWN CREWMAN (401).

RECOMMENDED _____DATE_____
(Supervisor)

RECOMMENDED _____DATE_____
(Division Officer)

RECOMMENDED _____DATE_____
(Department Head)

QUALIFIED _____DATE_____
(Commanding Officer)

PAGE 7
ENTRY _____DATE_____
(Service Record Yeoman)

TIEDOWN CREWMAN

QUALIFICATION SUMMARY

PQS QUALIFICATION

COMPLETED _____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
104	Helicopter Hand Signal	_____	
105	Helicopter Emergencies	_____	
108	Firefighting and Rescue	_____	
109	Flight Deck Protective Clothing	_____	
114	Safety Precautions	_____	

SYSTEMS

201	Primary Tiedowns	_____	
202	Secondary/Heavy Weather Tiedowns	_____	
206	Firefighting Equipment	_____	
209	LPU-30 (P) Life Vest Assembly	_____	
210	Deck Markings and Surface	_____	
211	Grounding Hook/Gloves	_____	

402

FINAL QUALIFICATION AS
LSO SOUND-POWERED TELEPHONE TALKER

NAME _____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified LSO SOUND-POWERED TELEPHONE TALKER (402).

RECOMMENDED _____DATE_____
(Supervisor)

RECOMMENDED _____DATE_____
(Division Officer)

RECOMMENDED _____DATE_____
(Department Head)

QUALIFIED _____DATE_____
(Commanding Officer)

PAGE 7
ENTRY _____DATE_____
(Service Record YEOMAN)

LSO SOUND-POWERED TELEPHONE TALKER

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED _____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
104	Helicopter Hand Signals	_____	
105	Helicopter Emergencies	_____	
107	Sound-Powered Telephone	_____	
108	Firefighting and Rescue	_____	
109	Flight Deck Protective Clothing	_____	
113	TALON Characteristics	_____	
114	Safety Precautions	_____	

SYSTEMS

206	Firefighting Equipment	_____	
207	Sound-Powered Telephone	_____	
208	Internal Communications	_____	
209	LPU-30 (P) Life Vest Assembly	_____	
210	Deck Markings and Surface	_____	

403

FINAL QUALIFICATION AS
LANDING SIGNAL OFFICER (LSO)

NAME _____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified LANDING SIGNAL OFFICER (LSO) (403).

RECOMMENDED _____DATE _____
(Supervisor)

RECOMMENDED _____DATE _____
(Division Officer)

RECOMMENDED _____DATE _____
(Department Head)

QUALIFIED _____DATE _____
(Commanding Officer)

PAGE 7
ENTRY _____DATE _____
(Service Record Yeoman)

LANDING SIGNAL OFFICER (LSO)
QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED _____
(Training Officer/Date)

LSO SOUND-POWERED TELEPHONE TALKER QUALIFICATIONS

COMPLETED _____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
106	Flight Deck Certification	_____	

SYSTEMS

201	Primary Tiedowns	_____	
202	Secondary/Heavy Weather Tiedowns	_____	
211	Grounding Hook/Gloves	_____	
212	Lighting	_____	
214	Ship/Helo Electrical Power	_____	

404

FINAL QUALIFICATION AS
FLIGHT DECK HOSEMAN

NAME _____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified FLIGHT DECK HOSEMAN (404).

RECOMMENDED _____DATE_____
(Supervisor)

RECOMMENDED _____DATE_____
(Division Officer)

RECOMMENDED _____DATE_____
(Department Head)

QUALIFIED _____DATE_____
(Commanding Officer)

PAGE 7
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(Service Record Yeoman)

FLIGHT DECK HOSEMAN

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED _____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
108	Firefighting and Rescue	_____	
109	Flight Deck Protective Clothing	_____	
114	Safety Precautions	_____	

SYSTEMS

206	Firefighting Equipment	_____	
209	LPU-30 (P) Life Vest Assembly	_____	
215	Crash/Rescue Tools (Crash Kit)	_____	

405

FINAL QUALIFICATION AS
FLIGHT DECK RESCUEMAN

NAME_____ RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified FLIGHT DECK RESCUEMAN (405).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Office)

PAGE 7
ENTRY_____DATE_____
(Service Record Yeoman)

FLIGHT DECK RESCUEMAN

QUALIFICATION SUMMARY

POS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

FLIGHT DECK HOSEMAN

COMPLETED_____
(Training Officer/Date)

406

FINAL QUALIFICATION AS
FLIGHT DECK ON-SCENE LEADER (OSL)

NAME_____RATE/RANK_____

This page is to be used as a record of satisfactory completion of designated sections of the Personnel Qualification Standard (PQS). Only specified supervisors may signify completion of application sections either by written or oral examination, or by observation of performance. The examination or checkout need not cover every item; however, a sufficient number should be covered to demonstrate the examinee's knowledge.

QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified FLIGHT DECK ON-SCENE LEADER (406).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
ENTRY_____DATE_____
(Service Record Yeoman)

FLIGHT DECK ON-SCENE LEADER (OSL)

QUALIFICATION SUMMARY

POS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
105	Helicopter Emergencies	_____	
108	Firefighting and Rescue	_____	
109	Flight Deck Protective Clothing	_____	
114	Safety Precautions	_____	

SYSTEMS

206	Firefighting Equipment	_____
209	LPU-30 (P) Life Vest Assembly	_____
210	Deck Markings and Surface	_____
211	Grounding Hook/Gloves	_____
212	Lighting	_____
213	Ship/Helo Electrical Power	_____
215	Crash/Rescue Tools (Crash Kit)	_____

407

FINAL QUALIFICATION AS
HCO SOUND-POWERED TELEPHONE TALKER

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified HCO SOUND-POWERED TELEPHONE TALKER (407).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
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(Service Record Yeoman)

HCO SOUND-POWERED TELEPHONE TALKER

QUALIFICATION SUMMARY

POS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
107	Sound-Powered Telephone	_____	
114	Safety Precautions	_____	

SYSTEMS

207	Sound-Powered Telephone	_____	
208	Internal Communications	_____	

408

FINAL QUALIFICATION AS
HELICOPTER CONTROL OFFICER (HCO)

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified HELICOPTER CONTROL OFFICER (408).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
ENTRY_____DATE_____
(Service Record Yeoman)

HELICOPTER CONTROL OFFICER (HCO)

QUALIFICATION SUMMARY

POS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

HCO SOUND-POWERED TELEPHONE TALKER QUALIFICATION

COMPLETED_____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
104	Helicopter Hand Signals	_____	
105	Helicopter Emergencies	_____	
106	Flight Deck Certification	_____	
111	Helicopter Instrument Approach	_____	
112	Air Direction Control	_____	
113	TALON Characteristics	_____	

SYSTEMS

210	Deck Markings and Surface	_____	
212	Lighting	_____	
213	Lighting Control	_____	
216	Radiotelephone Communications	_____	
217	Closed Circuit Television	_____	
218	Radar/Flight Following	_____	

409

FINAL QUALIFICATION AS
CIC FLIGHT FOLLOWER

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified CIC FLIGHT FOLLOWER (409).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
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(Service Record Yeoman)

CIC FLIGHT FOLLOWER

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
105	Helicopter Emergencies	_____	
111	Helicopter Instrument Approach	_____	
112	Air Direction Control	_____	
114	Safety Precautions	_____	

SYSTEMS

208	Internal Communications	_____	
216	Radiotelephone Communications	_____	
218	Radar/Flight following	_____	

410

FINAL QUALIFICATION AS
AIR DIRECTION CONTROLLER (ADC)

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified AIR DIRECTION CONTROLLER (410

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
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(Service Record Yeoman)

AIR DIRECTION CONTROLLER (ADC)

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

CIC FLIGHT FOLLOWER

COMPLETED_____
(Training Officer/Date)

411

FINAL QUALIFICATION AS
FLIGHT DECK DIRECTOR

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified FLIGHT DECK DIRECTOR (411).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
ENTRY_____DATE_____
(Service Record Yeoman)

FLIGHT DECK DIRECTOR

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

LANDING SIGNALS OFFICER

COMPLETED_____
(Training Officer/Date)

SYSTEMS

	SIGNATURE	DATE
205 Fuel Testing Equipment	_____	

412

FINAL QUALIFICATION AS
AVIATION FUEL HANDLER

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified AVIATION FUEL HANDLER (412).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
ENTRY_____DATE_____
(Service Record Yeoman)

AVIATION FUEL HANDLER

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

FUNDAMENTALS

		SIGNATURE	DATE
101	Terms and Definitions	_____	
102	Flight Quarters Organization	_____	
103	Helicopter Characteristics	_____	
104	Helicopter Hand Signals	_____	
105	Helicopter Emergencies	_____	
108	Firefighting and Rescue	_____	
109	Flight Deck Protective Clothing	_____	
110	JP-5 Fuel Handling	_____	
114	Safety Precautions	_____	

SYSTEMS

203	Refueling/HIFR Equipment	_____	
204	Defueling Equipment	_____	
205	Fuel Testing Equipment	_____	
206	Firefighting Equipment	_____	
209	LPU-30 (P) Life Vest Assembly	_____	

413

FINAL QUALIFICATION AS
AVIATION FUEL KING

NAME_____RATE/RANK_____

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QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee be designated as a qualified AVIATION FUEL KING (413).

RECOMMENDED_____DATE_____
(Supervisor)

RECOMMENDED_____DATE_____
(Division Officer)

RECOMMENDED_____DATE_____
(Department Head)

QUALIFIED_____DATE_____
(Commanding Officer)

PAGE 7
ENTRY_____DATE_____
(Service Record Yeoman)

AVIATION FUEL KING

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED_____
(Training Officer/Date)

AVIATION FUEL HANDLER

COMPLETED_____
(Training Officer/Date)

CHAPTER 5. ANSWER BOOK

101 TERMS AND DEFINITIONS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 EXPLAIN THE FOLLOWING TERMS USED IN SHIPBOARD HELICOPTER OPERATIONS:

a. FOREIGN OBJECT DAMAGE (FOD): FOD is any loose material that could potentially become airborne and damage a helicopter's engines or rotor blades.

b. FLICON 1, 2, 3, 4

FLICON 1: Set for takeoffs and landings.

FLICON 2: Set for flight following or when the helicopter is secured on deck for a short time; personnel may secure but all equipment remains on station. During FLICON 2, personnel must be able to reman FLICON 1 stations within five minutes.

FLICON 3: Set for vertical replenishment (VERTREP).

FLICON 4: Set for helicopter in-flight refueling (HIFR).

c. LANDING SIGNAL OFFICER (LSO): The person directly responsible for the preparation and supervision of the flight deck during all flight operations.

d. HELICOPTER CONTROL OFFICER (HCO): Person responsible for the overall management of shipboard helicopter evolutions.

e. CRASH AND SALVAGE DETAIL: (AKA: Flight Deck Fire Party) Consists of an On-Scene Leader (OSL), two primary hose teams, a secondary (designated backup) hose team and a rescue crew. The OSL supervises the fire party and reports directly to the LSO.

f. FLIGHT DECK ON-SCENE LEADER (OSL): Person who supervises the hose teams and rescue crew. The OSL takes charge of all flight deck personnel after a helicopter crash on deck.

g. DECK STATUS LIGHT: A visual landing aid which passes clearances to the helicopter for landings, takeoffs, starting engines, engaging rotors, VERTREP and HIFR.

h. CLEAR DECK: The condition that exists when the flight deck is free of obstacles which would prevent a helicopter from landing. This condition may exist when the cutter is not in complete readiness.

i. FOUL DECK: The condition that exists when a helicopter landing cannot safely be made because of obstacles and/or restrictions on the flight deck.

j. START AND ENGAGE: A clearance passed to the pilot for starting the helicopter engines and engaging the rotors when signalled by the LSO. The HCO will clear the aircraft to start and engage by radio and/or with the deck status light. The LSO will clear the aircraft using hand signals.

k. MANNED: After a specific FLICON is set and all personnel are at their required stations.

l. READY: This is the next step after MANNED. All personnel have completed all the required tests of equipment, are properly dressed out and are ready to conduct the evolution.

m. PRIMARY TIEDOWNS: A nylon strap device with quick release fittings used for initial and/or temporary securing of the helicopter to the deck. There are high and low primary tiedowns.

n. SECONDARY TIEDOWNS: A chain type device equipped with quick release turnbuckles used to secure the helicopter to the deck when motion or length of stay require greater security than primary tiedowns.

o. HEAVY WEATHER TIEDOWNS: Installed whenever excessive wind and/or motion is anticipated. This consists of the installation of additional secondary tiedowns and tail tiedown straps (HH-65A).

p. CHOCKS AND CHAINS: USN helicopters on CG cutters or CG helicopters on USN vessels will use wheel chocks and tiedown chains. Chocks are installed first to keep the helicopter from rolling. Then the chains are installed but not tightened on the mooring rings on the landing gear only. They are tightened after engine/rotor shutdown. The chains are removed first then the chocks (chocks may be left in place during takeoff at the discretion of the pilot).

q. TALON GRID: The talon grid is a six foot diameter, high strength stainless steel, honeycomb grid mounted in a trough in the flight deck, flush with the deck near the center of the landing circle. The grid provides a securing point for the self-contained, hydraulically-

powered, pilot-activated hook that lowers from the helicopter and hooks into the grid (HH-65A only). Use of the TALON system eliminates the need for primary tiedowns.

r. HELICOPTER IN FLIGHT REFUELING (HIFR): The process of refueling a hovering helicopter. Used to refuel helicopters too large or heavy for the flight deck, when the weather causes flight deck motion to be out of safe limits or to reduce turnaround time. Fuel is added to the helicopter while hovering through a closed connection between the HIFR rig and the helicopter fuel tank(s).

s. VERTICAL REPLENISHMENT (VERTREP): The transfer of carbo or personnel by cargo sling or hoist if conditions prohibit a shipboard landing.

t. HOT REFUELING: The process of refueling a helicopter on deck with the engines running and the rotor turning when a rapid turnaround is desired.

u. EMISSION CONTROL (EMCON): Periods when communications are limited to certain frequencies (or no comms at all). Use of radars may also be affected.

v. PRIMARY HOSE: A 1 1/2 inch hose equipped with a 125 GPM varinozzle connected to the ships installed firefighting/AFFF system. A primary hose team consists of a nozzleman and two tenders. The second hoseman also acts as the plugman.

w. BACKUP HOSE (SECONDARY HOSE): A 1 1/2 inch hose equipped with a 95 GPM varinozzle and an in-line eductor for AFFF. This hose team consists of four personnel: one nozzleman, two hose tenders and an AFFF handler. A backup hose team is not required on station during flight quarters but should be designated to man the hose in case of a helicopter crash/fire.

x. FIREGUARD:

a. Hot Refueling: PKP ready at the helicopter fueling point in position to discharge the extinguisher at the first indication of fire.

b. Engine start fire guard: A member of the fire party (not the OSL) or AVDET is stationed with a CO2 extinguisher with extension at the side of the helicopter ready to discharge the extinguisher into the engine compartment as directed by the flight crewmember in case of an engine fire on start.

y. READY BOAT: A ship's boat designated as a rescue resource in case of a helicopter ditch. The boat crew and cutter swimmer are on standby throughout flight operations.

z. WAVEOFF/GO AROUND: A signal which will abort an approach or landing. May be initiated by the LSO, HCO or the pilot. It is the only signal that demands mandatory compliance.

aa. LANDING CIRCLE (TOUCHDOWN CIRCLE): A 24 FT diameter circle indicating the desired landing position of the helicopter.

ab. PERIPHERAL LINES: Shows the perimeter of the landing, VERTREP or HIFR area.

ac. TOUCH AND GO: A dual clearance for landing followed by a takeoff. A very brief stay on deck may occur.

ad. CATWALKS (DECK EDGE PROTECTION/SAFETY NETS): Nylon webbing "nets" designed to prevent personnel from falling overboard or onto the fantail from the flight deck. Tiedown crew may stand in the catwalks during flight operations on 210 ft cutters.

ae. NETS: Navy-style safety nets which serve the same primary function as catwalks. Safety nets do not allow for easy escape and therefore tiedown crews may not stand in them during flight ops.

af. BLADE FOLDING: The process of folding the helicopter blades to facilitate hangaring or prevent damage due to severe weather.

ag. DITCHING: An emergency helicopter landing at sea.

ah. EMERGENCY BREAKWAY: During a HIFR evolution an occasion may arise where a quick disconnect between the helicopter and the fuel line (hose) may be necessary. A shut off system is built into the fuel hose to stop the fuel flow instantly as the fuel hose is jettisoned. A breakaway can be initiated by the HCO, LSO or the pilot. The waveoff lights, the waveoff signal (from the LSO) and "BREAKAWAY! BREAKAWAY! BREAKAWAY!" on the radio are used to initiate.

ai. VISUAL LANDING AIDS (VLA): All of the shipboard lighting and markings designed to provide visual information to assist the pilot in making a safe landing, completing VERTREP or HIFR.

aj. TAIL STINGER: A piece of metal beneath the tail rotor to protect the tail section from damage in case of an excessive nose high attitude during landing.

ak. MUSHROOM: A raised deck fitting (approx. 2 inches high) used to secure primary/secondary tiedowns from the helicopter.

al. LINEUP LINE: A solid white line painted on the flight deck to facilitate approach and landing. Obstruction clearances are assumed only if the helicopter lands with its centerline parallel to the lineup line.

am. VERTREP "T" 's: A series of white "T" 's in an athwartships line painted on the flight deck to indicate the forward limit of the helicopters rotor hubs for a safe completion of VERTREP.

an. EMERGENCY LOW VISIBILITY APPROACH (ELVA): An emergency procedure consisting of a radar assisted instrument approach designed to bring the helicopter into a safe position for landing during weather conditions below normal instrument approach minimums.

ao. TACAN (TACTICAL AIR NAVIGATION): An electronic navigation aid capable of providing a visual presentation of both azimuth and distance information.

ap. DME (DISTANCE MEASURING EQUIPMENT): Equipment installed with TACAN sets or separately which provides visual indication of range from a TACAN or DME transmitter.

aq. FEET DRY: Term used for an aircraft proceeding from sea to land than has crossed the shoreline and is over land.

ar. BINGO: An order to an aircraft to proceed immediately to a divert field. Bearing, range and destination will be provided. Term is also used to denote the point at which the aircraft must proceed to its final destination in order to land with the required fuel reserve.

as. CLEAR AND BRIGHT: A visual inspection of aviation fuel. Clear refers to clean fuel with no visible contamination or moisture. Bright refers to the fluorescent appearance of fuel which has no haze or cloud.

at. GO-NO-GO FUSE: A filter element installed prior to the JP-5 fuel hose. It is designed to close automatically to prevent the passage of water or

particulate contamination into the fuel hose and helicopter fuel system.

au. PRESSURE REFUELING NOZZLE (CARTER NOZZLE): Fuel nozzle which provides a single point, closed-connection to the helicopter for refueling.

av. GRAVITY (OVERWING) NOZZLE: The fuel nozzle used for gravity refueling the helicopter. This is an alternate method and seldom used due to increased hazard of fuel spills.

aw. WILDEN DEFUELING PUMP: An air operated pump used to defuel the helicopter. Usually done to reduce helicopter weight for a specialized mission or to perform maintenance on the helicopter fuel system.

ax. STATIC DISCHARGE: Aircraft tend to acquire a static electric charge due to the motion of the rotors through the air. Because the buildup of charge can lead to a potential difference between the aircraft and ground that can exceed 200,000 volts, they must be discharged for safe VERTREP and HIFR.

102 FLIGHT QUARTERS ORGANIZATION FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
a. Cutter Swimmer, COMDTINST 16134.2 (series)

.1 STATE THE DUTIES AND RESPONSIBILITIES OF THE FOLLOWING PERSONNEL:

a. HELICOPTER CONTROL OFFICER (HCO): In charge of the overall operation by ensuring that the cutter, flight deck and helicopter are ready for each phase of the flight evolution. The HCO handles radio communications, passes flight operations clearances and is responsible for all flight operations.

b. LANDING SIGNAL OFFICER (LSO): In charge of the flight deck during helicopter ops. Usually an officer but can be a CPO/senior petty officer or member of the aircrew. Responsible for ensuring the flight deck is properly manned and ready and providing hand signals to ensure safe operation during the helicopter launch and recovery evolutions.

c. FLIGHT DECK ON-SCENE LEADER (OSL): Supervises the primary and secondary hose teams and the rescue crew, and takes command of the flight deck following a

helicopter crash on deck. Must be familiar with helicopter firefighting procedures.

n. FLIGHT DECK DIRECTOR (FDD): Responsible for the safe traversing of the helicopter in or out of the hangar. In charge of the flight deck during these evolutions, supervising all preparations and ensuring the security of the helicopter.

e. TIEDOWN: Responsible for hooking up/removing primary tiedowns from the helicopter. Part of a coordinated and rapid team effort critical to a safe ship/helicopter operation.

f. HOSEMAN: One of normally three members of a firefighting team. The leading hoseman, called the nozzleman, actually directs the hose discharge in firefighting. The remaining hoseman assist in the movement of the hose.

g. RESCUEMAN: Person(s) designated to extract injured personnel from inside a helicopter that has crashed on deck. Also conducts a "charlie" check and overhaul after a fire has been extinguished.

h. CUTTER SWIMMER: Assigned to the ready boat during helicopter ops. Always tethered to the ship/boat with approximately 150-200 yds of P.P. line. Responsible for assisting crewmembers who have escaped from a ditched helicopter.

i. AVIATION FUEL KING: Usually a petty officer (under the supervision of the engineering officer) who is responsible for the maintenance and operation of the ship's JP-5 fuel system.

j. AVIATION FUEL HANDLER: Assists the fuel king during aircraft refueling operations.

k. READY BOAT CREW: Assigned to the ready boat which is prepared for immediate lowering in case of an emergency. Usually consists of three members (coxwain, engineer and seaman) plus the cutter swimmer. During TALON operations, the ready boat crew may also be assigned as a standby tiedown team in case of TALON failure.

l. MEDICAL DETAIL: Consists of the cutter's leading Health Services Technician (HS) and his/her assistants. They are on immediate standby throughout flight quarters at a location determined in the helicopter ops bill.

m. AIR DIRECTION CONTROLLER: Responsible for providing flight following and traffic advisories during level II and III operations and exercising positive control

during level I conditions. Levels refer to type of equipment available, operator skill and meteorological conditions.

n. CIC FLIGHT FOLLOWER: On Ships not equipped with an air-search radar capability, these personnel maintain communications with and a position plot (D/R, supplemented by position reports and/or surface search radar/x-band transponder fixes) of the helicopter.

o. HCO PHONE TALKER: The communication link between the HCO and the flight deck on the bridge. Must be familiar with terminology and overall operations in order to pass quick, accurate information.

p. LSO PHONE TALKER: The communication link on the flight deck between the LSO and the rest of the vessel. Must be familiar with operations in order to pass quick, accurate information under noisy conditions.

q. AVIATION EQUIPMENTMAN: A member of the AVDET designated to assist the ships crew during flight operations with any required aircraft specific equipment.

r. AFFF STATION OPERATOR: A crewmember detailed to stand by ship's AFFF pump and tank to ensure proper operation and replenish the tank with AFFF.

.2 STATE THE EQUIPMENT USED BY THE PERSONNEL LISTED IN .1 ABOVE:

a. HCO: Needs good radio comms (usually three freqs.), sound-powered phone comms with those involved in flight ops, operational closed circuit television (CCTV), operating flight deck lighting system.

b. LSO: Needs proper flight deck equipment - Cranial helmet, goggles, jersey, safety shoes, life vest and wands (night).

c. OSL: Needs the same equipment as the LSO (except wands) plus flash gear.

d. FDD: Needs flight deck life vest and safety shoes.

e. TIEDOWNMAN: Same as the LSO except for the wands, and appropriate primary tiedown.

f. HOSEMAN: Needs cranial helmet, goggles, jersey, flash gear, safety shoes and life vest.

g. RESCUEMAN: Needs proximity suit with hood, fireman's boots, gloves and V-blade knife.

h. CUTTER SWIMMER. Must be properly outfitted with hypothermia protective clothing, mask, snorkel, fins, harness, safety line and SAR life vest.

i. AVIATION FUEL KING: Needs goggles, jersey, safety shoes, life vest, bucket, rags, sample bottle and Gammon fitting. For hot refueling add cranial helmet.

j. AVIATION FUEL HANDLER: Needs same as aviation fuel king (see "i" above).

k. READY BOAT CREW: Need three personnel (not including the rescue swimmer), helmets, life vests, stokes litter, throwable line and a radio.

l. MEDICAL DETAIL: Need cranial helmet, jersey, life vest, medical kit and stretcher (if on the flight deck).

m. AIR DIRECTION CONTROLLER: Needs radios/radars as agreed upon in the preflight brief and a log for positions.

n. CIC FLIGHT FOLLOWER: Same as "m" above.

o. HCO PHONE TALKER: Needs sound-powered phones, and good knowledge of the overall operation.

p. LSO PHONE TALKER: Needs cranial helmet, jersey, life vest, sound-phone, and depending on the time and flight condition, wands or flags/paddles.

q. AVIATION EQUIPMENTMAN: Needs necessary tools provided from the HSK (helicopter support kit), applicable publications and flying gear (helmet, flight suit etc.). Will need cranial helmet, goggles and life vest if maintenance is to be performed on an operating helicopter.

r. AFFF STATION OPERATOR: Needs to know how to operate the equipment in case of an emergency.

.3 IDENTIFY THE COLORS OF THE FLIGHT DECK CLOTHING WORN BY THE FOLLOWING PERSONNEL:
a. LANDING SIGNAL OFFICER (LSO): Yellow (cranial helmet with leadership stripes)

b. FLIGHT DECK ON-SCENE LEADER (OSL): Red (cranial helmet with leadership stripes)

c. TIEDOWN: Blue

d. HOSEMAN: Red

e. LSO PHONE TALKER: Blue with white, sound-powered phone equipped cranial helmet.

f. AVIATION FUEL HANDLER: Purple

g. AVIATION FUEL KING: Purple

h. MEDICAL DETAIL: White

i. SHIP/HELICOPTER INSTRUCTOR: Green (cranial helmet with leadership stripes)

.4 DESCRIBE THE FOLLOWING JOBS, TERMS AND EQUIPMENT AS THEY APPLY TO VERTICAL REPLENISHMENT (VERTREP):

a. LANDING SIGNAL OFFICER (LSO): Stands as far forward of the T line as possible keeping eye contact with the pilot at all times. Directs the hook-up crew into position ensuring the helicopter is properly grounded (if required) followed by signals when the hook-up is complete and the crew is clear. All signals are advisory (except waveoff). For unhooking, the LSO waits until the load is on deck and there is slack in the pendant. He then orders the release of the cargo hook. Cargo is to be moved ASAP after helicopter departs. Grounding/hook-up people wear chemlights at night.

b. GROUNDING WAND MAN: Attaches the grounding wand to the deck with the alligator clip. He/she then grounds the device by touching and maintaining contact with the wand to the lowest part of the basket, hoist or cargo hook. He/she is to wear insulated gloves during the evolution. Static electricity builds instantly when helicopter is no longer grounded.

c. HOOKUP MAN: Hooks the pendant to the helicopter external cargo hook.

d. SPOTTER: A crewmember from the receiving ship who works with the helicopter's flight crewmember and the LSO determining where the cargo is to be placed.

e. GROUNDING WAND: Approx. three feet long with a thick handle, a grounding strap at one end and along hooked piece of metal at the opposite end. The hooked end is used to snare the hoist hook, cable, or to touch the basket depending upon which type of hoist is being performed.

f. EXTERNAL LOAD HOOK: This is a hook attached to the bottom of the helicopter and used during external transfer of cargo.

g. CARGO NET: Most VERTREPs are conducted using a cargo net. The nets are constructed with 1/2" wide nylon straps. At each of the four corners are oblong rings. The cargo is placed in the middle of the net as it lays flat. The rings are then placed on top of the cargo. When lifted, the rings snug the net around the cargo for transfer.

h. PENDANT: A single ring attachment with a stiffener attached to lower assemblies known as "legs". The single upper ring attaches to the helo's external hook. Various lower attachments hook to a variety of slings. The MK 105/128 pendants are grounded with PVC pipe.

i. PALLET/PALLET SLING: Pallets are approx. 40" long by 48" wide and 4" high. Made of welded steel or wood. Pallets can be hoisted using a pallet sling which is a two loop wire rope. Pallets can also be hoisted using a cargo net.

j. RESCUE SLING (HORSE COLLAR): An oblong flotation collar used for hoisting of military personnel which has a single hook attachment at the top which attaches to the hoist hook. It is inserted under the arms and around the back for hoisting.

k. RESCUE BASKET: A rectangular basket with side rails and two "bales" that meet in the middle. When properly aligned, the two bales create a hole in which the hoist hook is inserted. The basket also has flotation.

l. RESCUE HOIST: A 600 lb (typical) capacity hydraulic hoist assembly a flight crewmember uses to raise or lower the rescue device/survivor.

m. STOKES LITTER: An elongated basket shaped device used to support an injured person in the horizontal position. Straps at each end allow the litter to be raised horizontally.

n. TRAIL/TENDING LINE: Line(s) attached to the hoist hook, which allows the handlers of the line(s) to control the hoisting device, preventing it from swinging out of control.

o. HOIST HOOK: Hook attached to the working end of the hoist cable, to which the rescue/hoist devices are hooked.

p. DECK STATUS LIGHT: A "stop light" that is a visual indicator to the pilots of the status of the clearance to conduct flight operations. Red indicates "not cleared" (do not land or take off), yellow has no meaning for VERTREP and green means "cleared for VERTREP".

.5 DESCRIBE THE FOLLOWING JOBS, TERMS AND EQUIPMENT AS THEY APPLY TO HELICOPTER IN-FLIGHT REFUELING (HIFR):

a. GROUNDING HOOK MAN: Attaches the alligator clip to the deck for grounding purposes, then snares the hook or cable as it is lowered from the helicopter. The ground is maintained until the hook is attached to the HIFR rig. Grounding man wears electricians gloves.

b. GROUNDING HOOK: Consists of an alligator clip, cable, non-conductive handle and a welding rod.

c. HIFR RIG: A hose approx. ten feet long with a saddle to which the helicopter hoist hook is attached. One end is attached to the end of the fuel hose the other to a HIFR nozzle. The ring is hoisted to the hovering helicopter and the nozzle attached to the HIFR receptacle inside the helicopter. When fueling is completed, the ring is lowered down to the flight deck and unhooked from the hoist cable.

d. ASSIST (HOOK-UP) MAN: Actually hooks the HIFR rig to the hoist hook after it is lowered from the helicopter. Also disconnects the rig when the HIFR is complete.

e. HOSE TENDER: Person(s) who handle the hose after the HIFR hook-up has been accomplished. The hose is taken in or fed out depending on the roll of the ship or position of the helicopter.

f. EMERGENCY BREAKAWAY: Can be initiated by the HCO, LSO or the pilot. The helicopter flight crewmember pulls the manual release cable on the HIFR rig and the fuel hose immediately falls away.

g. LANDING SIGNAL OFFICER (LSO): Controls the flight deck. When the helicopter is ready, provides advisory signals to position the helicopter over the HIFR "H", waves the hook-up and grounding personnel to attach the rig to the hoist. Uses green and red signals devices to indicate whether or not fuel is being pumped to the helicopter. Directs the pump room to start/cease pumping as desired by the helicopter flight crewmember. When the fueling is completed, signals the helicopter over the flight deck and supervises the disconnect procedures.

h. CLEAR AND BRIGHT SAMPLE: For HIFR, a clear and bright sample is taken prior to the start of the evolution. The results are passed to the HCO. The HCO can pass these results to the helicopter prior to pumping fuel. If the helicopter desires to actually see the sample, a bag must be lowered from the helicopter. The sample jar is then hoisted to the helicopter for their inspection.

After the HIFR operation is completed a second clear and bright sample is taken from the rig and the results reported to the HCO.

i. QUICK DISCONNECT COUPLINGS: These couplings allow the fuel hose to part from the HIFR rig either manually or automatically if approximately 450 lbs of tension is applied to the coupling. See "Emergency Breakaway" above.

j. HIFR "H": The letter "H" is painted on the port side aft section of the flight deck. This is where the HIFR rig is placed when it is ready for hoisting to the helicopter.

k. HIFR HEADING LIGHTS: Amber lights mounted high on the port side of 378 ft and 270 ft cutters to assist the pilot in lining up for a HIFR at night.

l. DECK STATUS LIGHT: Visual reference to indicate "Cleared for HIFR" (green) or "Not cleared for HIFR" (red).

.6 DESCRIBE THE CIRCUMSTANCES UNDER WHICH FLIGHT DECK, FIRE PARTY, AND HELICOPTER CONTROL STAFFING MAY BE MODIFIED:

a. When cutters are moored pierside or hove to in the ice, the OOD and HCO may be the same person.

b. Aboard cutters moored pierside or icebreakers hove to in the ice, the use of tiedowns and tiedown crews may be omitted with the concurrence of the Commanding Officer and the Senior Aviator. The flight deck must be free of ice and snow to operate without tiedowns.

c. For operations with non-DOD helicopters, cutters may elect not to man the positions of On-Scene Leader and primary and secondary hose teams during FLICON ONE when: (1) The cutter is equipped with a flight deck fire monitor system and foam flooding system. (2) The AFFF pump controls and the monitor control station are both manned. (3) The monitor control station is equipped with an operable CCTV monitor providing a clear view of the entire flight deck. (4) The Commanding Officer and Senior Aviator concur that safety will remain adequate.

When fire parties are not manned, the rescue crew lays out the primary hoses and reports readiness to the LSO.

103 HELICOPTER CHARACTERISTICS FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)
c. HOSTAC, APP 2 (series)

.1 DISCUSS THE FOLLOWING HELICOPTER CHARACTERISTICS AND THEIR SIGNIFICANCE FOR THE HH-65A AND HH-60J:

a. ROTOR DIAMETER: Approx. 39 ft (HH-65A) and approx. 54 ft (HH-60J). Rotor diameter is one of the determinants for certification as obstruction clearance must be assured.

b. MININUM ROTOR BLADE CLEARANCE DURING LAUNCH AND RECOVERY: Clearance between the tip of the turning rotor blade to the nearest obstruction over a certain height, referred to as BUFFER DISTANCE in M3710.2A. Minimum buffer distance is 10 ft to obstructions over 24" for the HH-65A and 48" for the HH-60J.

c. EXTERIOR DIMENSIONS WITH ROTOR BLADES FOLDED: HH-65A: 10.5 ft in width, 38'2" length; HH-60J: 11.5' width, 52'0" with pylon extended, 42'11" with pylon folded. Determines the requirements for hanger size to accommodate the aircraft.

d. LANDING GEAR CONFIGURATION: HH-65A: Tricycle landing gear configured with a nose wheel; HH-60J has a tail wheel configuration. Affects wheel positioning during landing.

e. MAXIMUM GROSS WEIGHT AND SHIP'S STABILITY: HH-65A: Max weight is approx. 8900 lbs. This includes fuel, crew weight and equipment; HH-60J: Max weight is approx. 21,884 lbs which includes fuel, crew weight and equipment. Another determinant for certification in that the ship must have sufficient deck strength to support the aircraft. A fully loaded aircraft on the flight deck will also affect ship's stability by raising its center of gravity.

f. FUEL CAPACITY: HH-65A: Max fuel load is 1972 lbs, approx. 290 gallons; HH-60J: Max fuel load is in excess of 6400 lbs or 900 gallons. Information is useful in determining service capabilities for the aircraft and for firefighting purposes.

g. MINIMUM CREW REQUIREMENTS: HH-65A: At least one shipboard qualified pilot and one qualified flight crewmember; HH-60J: Two pilots (at least one shipboard qualified) and two qualified flight crewmembers.

h. MAXIMUM RANGE: HH-65A: Approx. 400 NM straight line, 150 NM radius with 20 minutes on-scene and a 20 minute fuel reserve; HH-60J: Approx. 700 NM straight line, 300 NM radius with 20 minutes on-scene and a 20 minute fuel reserve (with all auxiliary tanks topped off). Essential information for flight planning.

i. MAXIMUM ENDURANCE: HH-65A: Approx. 4 hrs; HH-60J: Approx. 7.5 hrs. A flight planning option if time on-scene is more critical than range.

j. TALON OPERATIONS: The HH-65A is the only aircraft configured for TALON operations.

k. MAXIMUM HOIST WEIGHT CAPACITY: The aircraft have identical hoist capabilities: 600 lb capacity, 250' of cable.

l. CARGO HOOK WEIGHT CAPACITY: HH-65A: 2000 lb; HH-60J: 6000 lb. This hook is attached to the bottom of the helicopter used for VERTREP of external loads.

m. WHEEL BASE: HH-65A: 11' 10"; HH-60J: 29'.

n. HEIGHT: HH-65A: Approx. 12' 9"; HH-60J: Approx. 17'.

o. ROTORWASH (DOWNWASH): Two concerns. 1: Winds generated may be sufficient to knock a crewmember down or overboard; 2: May lift debris from the flight deck causing missile or FOD hazards. HH-60J downwash is significantly more severe than the HH-65A.

p. TIEDOWN POINTS: These are rings on the side of both helicopter models to which the primary and secondary tiedowns are attached. There are also tiedowns points on the wheels for landing using "Chocks and Chains" method.

q. NOSEWHEEL/TAILWHEEL LOCK: Keeps the nosewheel locked in the fore/aft position to prevent helicopter yaw after landing. (Tailwheel for an HH-60J)

r. PARKING BRAKE: Locks main landing gear wheels to keep the helicopter in place landing.

s. CONSTRUCTION MATERIALS: HH-65A: Most of the helicopter is made of strong, light weight composite material with some light weight metals. The HH-60J is constructed mostly of metals with some composite materials. Composite materials used in construction of helos can be very hazardous during a fire.

t. MAXIMUM PAYLOAD: HH-65A; approx. 2900 lb; HH-60J: approx. 8500 lb. This figure includes the crew, passengers, fuel, mission equipment and cargo.

u. ROTOR BRAKE: After engine shutdown, the rotor brake is applied to stop the rotor from turning. Rotors turning at slow speeds are vulnerable to damage from flight deck motion winds. Rotor brakes limit the time spent in this "vulnerable" phase.

v. RELATIVE WIND LIMITATIONS FOR ROTOR ENGAGEMENT/ DISENGAGEMENT, LAUNCH/RECOVERY, VERTREP AND HIFR: Relative wind must be within a certain "envelope" of speed and direction in order to conduct safe flight operations. Relative wind limits are determined by dynamic interface trials between each type of ship and the type of helicopter. Consult reference (a) Annex B to determine the appropriate limits for your ship.

w. PITCH AND ROLL LIMITS FOR LAUNCH/RECOVERY: Pitch and roll limits are determined by dynamic interface trials between each type of ship and the type of helicopter. By testing during various weather/sea conditions, safe pitch and roll limits can be established. Consult reference (a) Annex B to determine the appropriate limits for your ship.

INDICATE WHERE YOU WOULD LOOK TO OBTAIN THIS INFORMATION FOR NON-USCG AIRCRAFT: NWP 42 contains this information for DOD aircraft; APP 2 for NATO aircraft.

104 HELICOPTER HAND SIGNALS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 IDENTIFY THE FOLLOWING HAND/WAND SIGNALS AND DESCRIBE WHEN THEY WOULD BE USED:

a. CONNECT GROUND ELECTRICAL POWER (PILOT): Hands above head, left fist partially clenched, right hand moved in direction of left hand with first two fingers extended and inserted into the circle made by fingers of the left hand. this is done when battery charge is too low for safe start after pre-start checks are complete and permission is granted from the bridge.

b. CABLE CONNECTED, POWER ON (LSO): Same as "a." above. After power cable has been connected to the aircraft and helicopter start rectifier has been energized.

c. DISCONNECT GROUND ELECTRICAL CABLE (PILOT): Hands above head, left fist partially clenched, right hand moved away from left hand withdrawing first two fingers from circle made by fingers of the left hand. This is done when engines have started.

d. CABLE POWER OFF (LSO): Same as "c." above. When the helicopter start rectifier has been secured.

e. START ENGINES: Pilot moves hand in a circle perpendicular to the deck; follows with a "thumbs up" signal. Signify by number of fingers engine to be started. This is done after all checks are completed and permission has been granted from the bridge. The LSO answers the pilot with the same signal when he is ready. At night, the pilot moves a light (red) perpendicular to the flight deck; LSO answers with the same signal with the wand.

f. ENGAGE ROTORS: Pilot moves hand in a horizontal circle at eye level, index finger extended. Aircraft lights flashing bright (if capable). The LSO answers with the same signal. This is done after both engines are running. At night, pilot gives the same signal using a red light; LSO responds to the pilot with the same signal using the wand.

g. ATTACH (INSTALL) TIEDOWNS: Pilot swings arms together, thumbs extended inwards, at eye level. In a signal piloted aircraft, pilot may swing one arm alternately from each side, thumb extended inwards. At night the pilot moves a light in a horizontal plane alternately inwards from each side. The LSO, upon receiving the install tiedowns signal, rotates hands in a circle perpendicular to and in front of body. At night the signal is the same using the wands.

h. REMOVE TIEDOWNS: The pilot makes signal with fists together horizontally with thumbs out. The LSO makes a wiping motion down the left arm with the right hand to the tiedown team. At night, the signal is the same using the wands for the LSO; the pilot flashes a red light.

i. (CLEARED FOR) TAKEOFF TO PORT/STARBOARD: Pilot gives "thumbs up" signal at eye level. Aircraft lights steady bright. At night, moves red light up and down. The LSO responds with a circular motion of the right hand over the head in a horizontal plane ending with a throwing motion of arms towards direction of takeoff. At night, the signal is the same using the wands.

j. TOUCH AND GO (LSO TO THE TIEDOWN CREW): The LSO taps fists together in a vertical plane in front of body. At night, the signal is the same using wands.

k. LANDING WITH PRIMARY TIEDOWNS (LSO TO THE TIEDOWN CREW): The LSO taps fists together in a horizontal plane in front of body. At night, the signal is the same using wands.

l. HOVER: The LSO extends arms horizontally sideways, palms downward. At night, the signal is the same using wands.

m. MOVE FORWARD: The LSO extends arms from body and held horizontal with hand upraised above eye level, palms facing backwards. Execute beckoning arm motion angled backward. Rapidity indicated speed desired of aircraft. At night, the signal is the same using wands.

n. SLIDE LEFT: The LSO extends right arm horizontally sideways in direction of desired movement and other arm swung over the head in the same direction, in a repeating movement. At night, the signal is the same using wands.

o. SLIDE RIGHT: The LSO extends left arm horizontally sideways in direction of desired movement and other arm swung over the head in the same direction, in a repeating movement. At night, the signal is the same using wands.

p. ROTATE LEFT: The LSO points right arm downward, left arm is repeatedly moved upward-backward. Speed of arm movement indicates rate of turn. At night, the signal is the same using wands.

q. ROTATE RIGHT: The LSO points left arm downward, right arm is repeatedly moved upward-backward. Speed of arm movement indicates rate of turn. At night, the signal is the same using wands.

r. MOVE UP: The LSO extends arms horizontally sideways beckoning upwards, palms turned up. Speed of movement indicates rate of ascent. At night, the signal is the same using wands.

s. MOVE DOWN: The LSO extends arms horizontally sideways beckoning downwards, palms turned down. Speed of movement indicates rate of descent. At night, the signal is the same using wands.

t. MOVE BACK: The LSO places arms by sides, palms facing forward, swept forward and upward repeatedly to shoulder height. At night, the signal is the same using wands.

u. LAND: The LSO crosses and extends arms downwards and in front of the body. At night, the signal is the same using wands.

v. WAVEOFF: The LSO repeatedly crosses and un-crosses arms over the head. At night, the signal is the same using wands. This signal is MANDATORY.

w. WHEELS NOT DOWN (LOWER WHEELS): The LSO shows a cranking circular motion with the hands.

x. HOVER/LANDING LIGHTS ARE ON (TURN LIGHTS ON/OFF): See "HOVER" above. Lights on/off: The LSO points to eyes with first two fingers of one hand. At night, flash wands on and off.

y. READY FOR TAKEOFF (PILOT): The pilot gives "thumbs up". At night, move flashlight up and down.

z. COME FORWARD FROM THE HELICOPTER: The LSO makes a sweeping motion with right arm from straight out to across the chest. At night, the signal is the same using wands.

aa. CUT ENGINES: Using either arm and hand level with the shoulder, hand moves across the throat, palm downward. The hand is moved sideways with the arm remained bent. At night, the signal is the same using wands.

ab. FIRE ON THE AIRCRAFT (ENGINE FIRE): The LSO shows a large figure eight with one hand and points to the area of the fire with the other. At night, the signal is the same using wands.

ac. HOOK UP LOAD: The LSO makes a rope climbing motion with hands. At night, the signal is the same using wands.

ad. RELEASE LOAD: The LSO extends the left arm forward horizontally, fist clenched, right hand making horizontal slicing motion below the left wrist, palm downward. At night, the signal is the same using wands.

ae. LOAD NOT RELEASED: The LSO bends left arm horizontally across chest with fist clenched, palm downward; open right hand pointed up vertically to center of left fist. At night, the signal is the same using wands.

af. HOIST (WINCH) UP: The LSO has left arm horizontal in front of body, fist clenched, right hand with palm turned upwards making upward motion. At night, the signal is the same using wands.

ag. HOIST (WINCH) DOWN: The LSO has left arm horizontal in front of body, fist clenched, right hand with palm turned downwards making downward motion. At night, the signal is the same using wands.

ah. CUT CABLE: This signal is identical to the "RELEASE LOAD" signal. The LSO has the right hand palm downward

and not clenched. Rapid repetition of the right hand movement indicates urgency. At night, the signal is the same using wands.

ai. SPREAD PYLON: This means "unfold the rotor blades" which would apply to the HH-60J and various Navy helicopters which can fold/unfold blades automatically. the LSO bends the elbow across the chest, palm downward. Extend arm outward to the horizontal position, keeping palm open and facing down. At night, the signal is the same using wands.

aj. FOLD PYLON: This means "fold the rotor blades". See "SPREAD PYLON" above. The LSO extends right arm horizontally, palm downward. Bend arm keeping palm down. At night, the signal is the same using wands.

ak. I DESIRE HIFR: The helo pilot or crew brings thumb to mouth as if drinking from a glass. At night, the signal is the same using a red lens flashlight.

al. COMMENCE FUELING: The helicopter crewmember makes a circular motion with the right hand. At night, the signal is the same using a red lens flashlight.

am. AM PUMPING FUEL: The LSO holds a green device vertically over a red device. At night, the signal is the same using red and green wands.

an. CEASE PUMPING FUEL: The helicopter crewmember makes a horizontal throat cutting motion with the right hand. At night, the signal is the same using a red lens flashlight.

ao. HAVE CEASED PUMPING FUEL: The LSO holds a red device vertically over a green device. At night, the signal is the same using red and green wands.

ap. EXECUTE EMERGENCY BREAKAWAY: The LSO makes a waveoff signal (see letter "v" above). At night, the signal is the same using wands. Signal is MANDATORY.

aq. MAKE UP (OVERHAUL) TIEDOWNS: The LSO makes the install tiedowns signal (see letter "g" above). At night, the signal is the same using wands. This signal is not currently addressed in Annex C.

ar. TIEDOWN FAILURE (TIEDOWN CREW): Member holds the failed tiedown in front of the body so the LSO can see it. This signal is not currently addressed in Annex C. See reference (a) para. 11.C.1.f.(1) and (2).

as. TALKER SIGNALS TO THE LSO: For takeoff, the LSO phone talker raises hand with arm straight and taps the

LSO on the shoulder. This is done on the shoulder (left or right) on the side to which the aircraft is cleared for takeoff. For touch and go's, the LSO phone talker gives the same signal as for landings (to the appropriate side). For landings with primary tiedowns, the LSO phone talker with arms straight and fists clenched swings arms towards the LSO making contact just above the LSO'S elbows. This is not addressed in reference (a).

at. WAIT: One hand held at eye level with fist clenched. At night, wand held horizontally at eye level.

105 HELICOPTER EMERGENCIES FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 FOR THE FOLLOWING FLIGHT DECK EMERGENCIES, DISCUSS:

(1) WHAT ARE THE SYMPTOMS OR INDICATIONS?
(2) WHAT ACTION IS REQUIRED BY SHIPBOARD PERSONNEL?

a. HOT START:
(1) During start, the engine combustion chamber temperature exceeds limits due to fuel control malfunction or other problems. There will probably be no external indications of a problem.
(2) Pilot secures fuel flow to the engine. If necessary, fire guard will discharge CO2 fire extinguishers into the engine intake when directed by the helicopter flight crewmember.

b. EXTERNAL ENGINE FIRE:
(1) Flames and/or smoke will be coming out of the engine compartment.
(2) LSO will give the "FIRE" signal. If a fireguard is in position, he will discharge his CO2 into the engine compartment as directed by the helicopter flight crewmember. If the fireguard is not on station or is ineffective, the On-Scene Leader will direct the use of water/AFFF after the rotors have stopped turning.

c. INTERNAL ENGINE FIRE: Same as HOT START above.

d. ROTOR BRAKE FAILURE:
(1) Rotor will have to coast to a stop and will be vulnerable to damage from flight deck motion and relative wind.
(2) LSO will ensure no personnel move onto the flight deck until rotors have stopped turning.

e. DAMAGE/UNSAFE LANDING GEAR:

(1) Any or all landing gear not locked down. The gear may appear out of position or just have an indication in the cockpit.

(2) Command should decide whether or not to HIFR in order to buy more time to deal with the emergency. Follow appropriate emergency extension procedures as directed by a member of the AVDET. Consider mattresses secured to the deck to cushion the helicopter and keep it level.

f. BRAKE FAILURE:

(1) The helicopter may roll depending on ship movement.

(2) The pilot will attempt to limit roll using the flight controls. Aircraft chocks should be used to limit movement if they can safely be installed.

g. AUTOMATIC FLIGHT CONTROL STABILIZATION (AFCS) FAILURE:

(1) Aircraft control is less steady without AFCS, particularly in the yaw axis. Though it is not a very serious problem, computer functions will not operate and the aircraft is more difficult to control.

(2) HCO should direct the OOD to maintain a course and speed which produces the least flight deck motion.

h. GROUND RESONANCE:

(1) If the helicopter is rigidly connected to the ship (by a secondary tiedown to the airframe, for example) normal airframe vibrations will be fed back into the aircraft. Uncorrected, these vibrations will in intensity causing severe airframe damage.

(2) LSO should personally ensure that all secondary tiedowns are removed prior to engine start. If ground resonance ensues, the only possibly action is for the LSO to clear all personnel from the flight deck.

i. ENGINE FAILURE:

(1) The only indication will probably be a pilot report. Both the HH-65A and the HH-60J can fly on one engine but their ability to hover is severely restricted.

(2) Expect a steep approach prior to landing maneuvers. All personnel should clear the flight deck until after the air,craft is on deck.

j. ELECTRICAL FAILURE:

(1) Indications may range from partial to complete failure of any or all electrical equipment. Lost comms or hand signals from the pilot are clear indications.

(2) A flight crewmember should be standing by with a CO2 extinguisher in case of an electrical fire.

k. TALON FAILURE:

(1) Aircraft's TALON probe does not operate or will not engage the grid.

(2) The LSO will direct a launch of the helicopter; man tiedown crew billets; and then land/secure the helicopter using primary tiedowns.

1. FUEL SPILL:

(1) Indicated by the spilling of JP-5 either from the nozzle and hose or from the aircraft.

(2) The fuel pump should be immediately secured, the fire party moved to the immediate area standing by in case of ignition. The spill should be cleaned up immediately. During hot refueling, the fuel pump is immediately secured, the helicopter is shut down and evacuated and the spill cleaned up.

m. CRASH ON DECK:

(1) This could be anything from a hard landing causing damage to the helicopter to a catastrophic crash in which the helicopter is destroyed followed by a major fire.

(2) Fight the fire, rescue personnel and secure the aircraft remains as directed in Chapter 14 of M3710.2A.

n. DITCHING/CRASH AT SEA:

(1) Either the ditching will be visible from the ship, reported by the pilot or assumed due to lost communications.

(2) If the aircraft is in sight from the ship, the ship shall proceed to the proximity of the crash site and launch the rescue boat to assist. If communications have been lost with the helo while out of sight of the ship, the ship will proceed in the direction of the last known position of the helicopter or directly to the position if known.

o. HIFR EMERGENCY BREAKAWAY:

(1) The helicopter flight crewmember will pull the breakaway handle on the HIFR rig in response to an emergency on the aircraft or the ship. The breakaway coupling will separate with the hose falling into the water.

(2) The hose handlers on deck must pull the fuel hose aboard the ship as quickly as possible. The fuel pump is secured. If desired, the rig may be reassembled (after being returned by the aircraft) and a second attempt may be made. If HIFR cannot be continued and the ship's certification will support it, the hose may be stored and the helo landed.

p. JAMMED/FOULED HOIST CABLE:

(1) Either the hoist hook, cable or hoisting device is fouled on some obstruction or the helo hoist is

jammed so that the flight crewmember cannot take in/let out cable.

(2) All personnel should stand clear of the area in case the hoist cable snaps. The flight crewmember will cut the cable from the aircraft.

q. LOSS OF TAIL ROTOR EFFECTIVENESS:

(1) Either pilot will report a tail rotor malfunction or the helo will suddenly yaw uncontrollably (left for the HH-65A, right for all other helicopters). A crash on deck or at sea is the likely results.

(2) Follow crash on deck or ditch/crash at sea procedures (as appropriate).

r. DYNAMIC ROLLOVER:

(1) Dynamic rollover occurs when a lateral force and a pivot point combine to cause a helicopter to roll on its side. It usually starts when a part of the landing gear contacts the deck to act as a pivot point as the aircraft is sliding sideways.

(2) Follow crash on deck or crash at sea procedures (as appropriate).

s. BATTERY THERMAL RUNAWAY:

(1) Thermal runaway is a condition in which a chemical chain reaction is initiated which is self sustaining due to the confinement of heat from the reaction in the battery. The battery may bulge, buckle or explode and may become hot enough to melt the mounting bracket and the skin of the helicopter. There are indicators in the cockpit and smoke or fumes may be seen coming from the battery compartment.

(2) Follow directions of an AVDET member (if available). If not, general procedures are: cool with low velocity fog; if it explodes, extinguish with CO_2. When cooled, a fully suited rescueman should jettison it over the side.

106 FLIGHT DECK CERTIFICATION FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Aviation Facilities Resume, NAEC-ENG-7576 (series)

.1 STATE THE DIFFERENT LEVELS AND CLASSES USED FOR FLIGHT DECK CERTIFICATION:

LEVEL I: Day and night IMC (instrument) operations.

LEVEL II: Day and night VMC (visual) operations.

LEVEL III: Day only VMC operations.

CLASS 1: Landing area with service and maintenance facilities.

CLASS 2: Landing area with service facilities.

CLASS 2A: Landing area with limited service facilities.

CLASS 3: Landing area without support facilities.

CLASS 4: VERTREP area, hover height in excess of 5 feet.

CLASS 5: VERTREP area, hover height in excess of 15 feet.

CLASS 6: HIFR area.

.2 DISCUSS THE MEANING OF EACH LEVEL AND CLASS OF FLIGHT DECK CERTIFICATION:

LEVEL I: The ability of the vessel to control numerous aircraft keeping proper separation, altitude and communications between all involved day and night in any weather condition down to 200 ft ceiling and 1/2 mile visibility.

LEVEL II: May operate aircraft day and night in weather conditions of at least 500 ft ceiling and one nautical mile visibility with a visible horizon.

LEVEL III: May only operate aircraft in daylight and in weather conditions of at least 500 ceiling and one nautical mile visibility with a visible horizon.

CLASS 1: Vessel; has the capability to service and maintain aircraft it is certified to land on deck. Includes hangar facilities, fuel/defuel capabilities, AC/DC external power, washdown and nitrogen service.

CLASS 2: Vessel has the capability to service aircraft it is certified to land on deck. Includes fueling and AC/DC external power.

CLASS 2A: Vessel has limited capability to service aircraft certified to land on deck. Includes fueling and DC external power only.

CLASS 3: Vessel has landing capabilities with no service facilities.

CLASS 4: VERTREP area, hover height in excess of 5 ft.

CLASS 4: VERTREP area, hover height in excess of 5 ft.

CLASS 5: VERTREP area, hover height in excess of 15 ft.

CLASS 6: Capable of providing HIFR services. Fuel transfer is at least 50 gallons per minute at a 60 ft hover height. Class 6R provides at least 25 GPM in a 40 ft hover.

.3 STATE THE LEVEL AND CLASS FOR WHICH YOUR SHIP IS CERTIFIED OR WAIVERED:

May vary from ship to ship. See your latest certification, waiver, or authorization-to-operate message for details.

.4 DESCRIBE THE APPEARANCE OF AND CLEARANCE PROVIDED BY EACH OF THE FOLLOWING MARKINGS. See reference (a), Chapter 4, Figures 4-8 and 4-9:

a. PERIPHERAL LINES: A white line, one foot wide that defines the perimeter of the landing area.

b. LANDING SPOT: The four foot (diameter) circle in the center of the touchdown circle. Marks the optimum placement of the helicopter.

c. TOUCHDOWN CIRCLE: The 24 foot (diameter) circle in the middle of the flight deck. HH-65A should land with all wheels within the circle; HH-60J should land with forward wheels in the circle.

d. LINEUP LINE: The white line defining the proper alignment for approach and landing. Obstruction clearances are assured if the helicopter lands with aircraft centerline parallel to the lineup line.

e. VERTICAL REPLENISHMENT (VERTREP) LINE: A line of markings resembling the letter "T" that are painted athwartships through the aft part of the touchdown circle. During VERTREP operations, helicopter must hover with both main and tail rotor hubs over or aft at the VERTREP line.

f. HIFR "H": The letter "H" is painted on the aft left corner of the flight deck indicating where the HIFR rig is placed prior to hoisting for use.

.5 DISCUSS AIRCRAFT LIMITATIONS IMPOSED ON YOUR SHIP: See your ship's Helicopter Operations (HELO OPS) Bill.

.6 DISCUSS WHEN AND WHY WAIVERS ON SHIP CERTIFICATION ARE REQUIRED:

In some cases, equipment may not fully meet certification standards, but may be safe for operations. Waivers or an authorization to operate in lieu of certification are issued in these cases to allow time to correct the condition.

107 SOUND-POWERED TELEPHONE FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Ships's Organization and Regulations Manual
c. Telephone Talkers Manual, COMDTINST M9430.1
d. Basic DC PQS, NAVEDTRA 43119.2 (series)
e. Surface Ship Survivability, NWP 62.1 (series)

.1 STATE THE PURPOSE OF DESIGNATING SOUND-POWERED TELEPHONE CIRCUITS:

Designation of circuits provides an accurate means of channelling communications among vital stations during shipboard operations.

.2 DESCRIBED THE SIGNIFICANCE OF CIRCUIT NOMENCLATURE:

This allows for standard terminology and practices. Consequently, there is less chance for a mistake to be made by using slang or difficulty in using the system due to too much talking by others on the same line.

.3 DESCRIBED THE FOLLOWING SOUND-POWERED PHONE CIRCUITS:

a. 1JV: Maneuvering and docking

b. 1JG: Aircraft Control

c. JL: Battle Look-Outs

d. JA: Captains Battle Control

.4 DESCRIBE THE FOLLOWING TYPES OF SOUND-POWERED TELEPHONE EQUIPMENT:

a. HANDSET: Similar to a regular telephone. It has an ear piece and a mouth piece with a button in the middle that is pressed to talk and listen.

b. HEADSET: Has two ear pieces and a mouth piece that when properly adjusted is approximately one-half inch from the user mouth. Push button on the mouth piece to talk and release to listen.

c. DRUM TYPE SELECTOR SWITCH: Most ships have a box with a "T" handle which is turned to the desired circuit. A similar box (smaller) with a smaller "pointer" handle which is also turned to the desired circuit is installed on some vessels.

d. CALL SIGNAL STATION BOX: A box that has a lever switch which when depressed rings an alarm at a specific station within the ship.

.5 DESCRIBED THE FOLLOWING BASIC MESSAGE PARTS:

a. STATION CALLED: The part of the ship you are calling; i.e. Main Control.

b. STATION CALLING: This is your station; I.E. Bridge.

c. TEXT: The contents of the message/conversation.

.6 STATE THE CHARACTERISTICS OF A GOOD PHONE TALKER:

A good phone talker always uses proper procedure and terminology. Also, the talker is alert for those who are abusing the system and takes steps to solve the problem.

.7 STATE THE RULES TO BE OBSERVED TO MAINTAIN GOOD CIRCUIT DISCIPLINE:

See .6 above. In addition, only transmissions pertaining to the subject at hand; flight ops, fire drill etc, should be passed over the phones.

108 FIREFIGHTING AND RESCUE FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Surface Ship Survivability, NWP 62.1 (series)
c. NSTM 079 Vol. II
d. NSTM Chapter 555

.1 DISCUSS THE PROPER PROCEDURES FOR REPORTING A FIRE FOR CASUALTY ON THE FLIGHT DECK:

Word can be passed through the phone talker, yelling, or may be witnessed from the bridge through the closed circuit TV (CCTV) system.

.2 DEFINE THE FIRE TRIANGLE IN TERMS OF PREVENTING AND FIGHTING FIRES:

The fire triangle consists of HEAT, OXYGEN and FUEL. If one of those items is missing, there will be no fire. Current technology states there is a FIRE TETRAHEDRON (four sides). In addition to the three previous items, there is a fourth side for CHEMICAL REACTION (free radicals). HEAT can be removed through cooling of the

fuel (usually by water). FUEL can be removed by shutting off the fuel flow. OXYGEN can be removed by providing some sort of inert barrier such as foam or CO2. CHEMICAL REACTION can be removed by using a chemical inhibitor such as PKP or HALON.

.3 DESCRIBE THE CONDITIONS THAT MUST EXIST FOR SPONTANEOUS COMBUSTION:

See .2 above. As long as all three items are present, spontaneous combustion may occur.

.4 EXPLAIN WHY AREAS AND MATERIALS MUST BE KEPT NEAT AND CLEAN:

This will virtually eliminate the chance of spontaneous combustion. If an accident of some kind should happen, the chances of controlling the fire/damage are greater.

.5 DESCRIBE THE FOUR CLASSES OF FIRES AND THEIR CHARACTERISTICS:

CLASS A: A fire involving combustible solids such as paper, pillows, rags, cushions, lifevests, etc.

CLASS B: A fire involving combustible liquids such as oil, gasoline, hydraulics, etc.

CLASS C: An electrical fire.

CLASS D: Fires which require special extinguishing procedures, usually involving combustible metals.

.6 STATE THE RECOMMENDED EXTINGUISHING AGENTS FOR EACH CLASS OF FIRE:

CLASS A: Water/AFFF.

CLASS B: AFFF, CO2 (in enclosed areas), halon, PKP.

CLASS C: Halon, CO2, PKP.

CLASS D: Water (fog) from a safe distance.

.7 DESCRIBE THE EFFECTS OF EXTINGUISHING AGENTS ON AIRCRAFT AND OTHER EQUIPMENT:

WATER: Damages electronics.

AFFF: Damages electronics, corrodes airframe materials.

CO2: None.

PKP: Damages electronics, corrodes airframe materials, clogs engines ingestion systems.

HALON: No damage.

.8 EXPLAIN THE PROTECTION PROVIDED BY THE PROXIMITY SUIT:

If the suit is properly worn and is in good condition, it allows the wearer to work close to a fire for short periods without suffering injury from thermal radiation.

.9 DESCRIBE THE PROPER USE AND CARE OF THE PROXIMITY SUIT:

When using the proximity suit, be careful not to damage the outer aluminized coating which is essential to heat reflectivity. Dirt, AFFF, soot and grease can be removed with warm soap and water. Allows the suit to hang until completely dry. The liners should be removed and washed per the instructions. The face shield must be replaced as soon as it becomes scratched or marred. Keep the protective cover over the face shield when not in use.

.10 DISCUSS THE TYPES OF FLAMMABLES ASSOCIATED WITH HELICOPTERS:

There is occasional use of JP4 (usually some on board the helicopter when it first arrives). JP5 - although not as flammable as JP4, is still very dangerous. Large amounts of hydraulic fluids which control the aircraft, landing gear, etc. Engine and transmission lubricating oils, pyrotechnics, occasionally weapons.

.11 DISCUSS FORCIBLE ENTRY:

Use caution! Forced entry is time consuming and dangerous and should be done only as a last resort. Personnel are best evacuated through one of the doors. Otherwise occupants can be injured by the tools used for entry. There is danger of the tools rupturing fuel lines and bladders or cutting into live electrical circuits producing shock or arcing which could ignite fuel.

.12 DISCUSS ORDINANCE FIRES:

Ordnance is not normally carried aboard USCG helicopters. When operating with armed DOD helicopters, one fire hose team must be dedicated to keeping ordinance cooled, and secured from moving by chocking, during flight deck fires.

.13 DISCUSS THE POTENTIAL FOR A FIRE SPREADING FROM THE FLIGHT DECK INTO THE SHIP:

If a helicopter landed hard enough to rupture a fuel bladder and a fuel fire started, the fuel could quickly spread along the flight deck onto the fantail; forward into the hanger; over the port or starboard side onto the main deck; or through a leaky hatch on the flight deck. The flight deck is required to have a lip around the periphery which serves to reduce the risk of fuel spilling off the flight deck. The hangar door must be closes during flight operations to prevent spilled fuel from entering the hangar. The flight deck must be sealed to prevent leaks and any drains must lead directly over the side for the flight deck to be certified. If the preceding precautions are carried out, the potential for spread of a flight deck fire is very small.

.14 DISCUSS THE SPECIAL HAZARDS ASSOCIATED WITH THE BURNING OF COMPOSITE MATERIALS FOUND ON THE HH-65A:

About 70% of the HH-65A airframe is constructed using KEVLAR and Carbon-fiber composite materials. These panels are combustible and when burned, produce toxic gases and microscopic carbon fiber fragments. These fragments pose potential serious health risks, in that they may readily penetrate skin, eye, and lung tissue. They are also highly conductive and can cause serious damage to electrical and electronic equipment.

109 FLIGHT DECK PROTECTIVE CLOTHING FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 EXPLAIN THE PROTECTION PROVIDED BY THE FOLLOWING:

a. LPU 30 (P) (MK1) LIFE PRESERVER ASSEMBLY: The life vest holds an inflatable bladder for flotation (manual or CO2 activated), a strobe light, a whistle, and a dye marker pouch.

b. FLIGHT DECK JERSEY: This is a long sleeve jersey made of fire resistant material which provides protection from flash burns.

c. SAFETY BOOTS: Rubber soled full ankle length leather boots with steel toes.

d. CRANIAL HELMETS: Provide protection from noise and flying debris. Have an outer shell, padding inside and aural protection.

e. GOGGLES: Provide eye protection. Dark lenses are used for day operations and clear lenses for night operations.

f. FLASH HOODS AND GLOVES: Required for all fire party personnel except rescuemen. Provide protection from flash burns and some thermal radiation.

.2 DESCRIBE THE PROPER USE AND CARE OF EACH OF THE ITEMS LISTED IN .1 ABOVE:

a. LPU 30 (P) (MK1) LIFE PRESERVER ASSEMBLY: Check all components ensuring required parts are attached. Check for twists in the bladder and tears in the vest.

b. FLIGHT DECK JERSEY: Should be clean and properly fitting. Machine wash when necessary.

c. SAFETY BOOTS: Shall be in good condition and must be worn on the flight deck.

d. CRANIAL HELMETS: Ensure proper fit for comfort, hearing protection and FOD protection.

e. GOGGLES: Ensure a snug fit with both clear and dark lenses available in good condition.

f. FLASH HOODS AND GLOVES: Ensure proper fit and cleanliness. May be machine washed.

110 JP-5 FUEL HANDLING FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 EXPLAIN THE MEANING OF THE FOLLOWING TERMS AS THEY APPLY TO AIRCRAFT REFUELING:

a. JP-5: Kerosine-based turbine fuel. This is the only aviation fuel authorized for storage on ships. Its flash point approximately 140 deg F.

b. JP-4 Also kerosine-bases, but blended with gasoline. This aviation fuel is authorized and used frequently at Navy and Coast Guard shore stations. JP-4 has a flash point ranging from - 10 deg f to +80 deg f. JP-4 fires spread rapidly and are more difficult to extinguish than those involving JP-5.

c. JET A/JP-8: This aviation fuel commonly used at Air Force Based and civilian facilities, has an intermediate

flash point of 100 deg f and is not authorized for shipboard storage.

d. FLASH POINT: This is the temperature at which a fuel may ignite.

e. PARTICULATES: These are solid contaminates which will not dissolve in fuel. Examples are: iron, rust, sand, and rubber.

f. FREE WATER: This is water which is not dissolved in the fuel, but exists as droplets.

g. ENTRAINED WATER: This is tiny droplets of water suspended in the fuel which may or may not be visible to the naked eye. The fuel will have a cloudy or hazy appearance.

h. DISSOLVED WATER: Water in solution in the fuel. Dissolved water is not a problem to the helicopter and cannot be removed by practical means.

i. MICROORGANISMS: These are microscopic organisms which normally live at the fuel-water interface. They may clog fuel system filters if allowed to grow unchecked.

j. SURFACTANTS: A contraction of "SURFACE ACTIVE AGENTS." These are detergent-like materials that occur naturally in fuel or may be introduced in the refining process. They tend to attach themselves to the filters in the fuel system or metal surfaces causing contamination or clogging.

k. FUEL SYSTEM ICING INHIBITOR (FSII): This is an additive to the fuel which lowers the freezing point of small quantities of free water and restricts biological growth in the fuel.

l. MK 1 TEST KIT: A box in which water sensitive filters are compared to known standards under ultraviolet light to determine the level of free water in the fuel.

m. MK 3 TEST KIT: This tester determines the amount of solid contaminates contained in fuel. It operates by passing 800 ml of fuel through two semi-permeable (millipore) filters. The resultant relative opacity of the filters is then measured which, when compared on a calibration chart, yields the fuel's level of solids.

n. CLEAR AND BRIGHT TEST: A fuel sample bottle is filled and capped. The bottle is swirled causing a vortex in the fuel. Any visible contaminants will accumulate at the bottom of the vortex.

o. GROUND WIRE: Prior to any fueling, the helicopter must be grounded. Grounds lead from aircraft to ship and aircraft to nozzle.

p. CONTINUITY: Each length of hose must be grounded. Grounding cables are installed in each length of authorized hose and should be fine as long as the hose remains usable. Maximum allowable resistance is 0.8 ohms per foot of hose.

q. FLUSHING: Fuel is flushed through the hose and nozzle prior to refueling in order to clean out any contaminants.

r. RECIRCULATION: Fuel is recirculated through the entire system daily when a helicopter is embarked and weekly when there is no helicopter embarked. Recirculation allows the filter separators to remove contaminants from the fuel.

s. STRIPPING: This is pumping (usually by hand) all the accumulated free water from the bottom of the tanks to a separate holding tank. Accomplished daily with an embarked helicopter, otherwise, weekly prior to recirculating or transferring.

t. TRANSFER PUMP: Used to transfer fuel from storage tank to storage tank or storage tank to service tank. All the fuel goes through the transfer filter separator.

u. SERVICE PUMP: Transfers fuel from the service tank, through the service filter separator, the GO-NO-GO filter, the fuel hose, and nozzle into the helicopter.

v. NOZZLE STRAINERS: The last filter system (a wire mesh screen) before the fuel enters the helicopter. Should be checked daily with a helicopter embarked, otherwise, weekly.

w. GO-NO-GO FILTER: Acts like a fuse, closing off fuel flow when a slug of free water or excessive solid contaminants attempts to pass through.

x. FILTER/SEPARATOR: When fuel is transferred it travels through a filter/separator which is designed to coalesce water droplets and remove solid contaminants. Both storage and service tanks are equipped with such filters.

y. STORAGE TANK: These tanks contain the bulk of the JP-5 fuel stored on your ship.

z. SERVICE TANK: Fuel in this tank has been filtered and can be sent to the helicopter when required.

aa. PRESSURE REFUELING NOZZLE: A single point with a closed-connection attachment which prevents fumes from escaping and fuel from spilling.

ab. GRAVITY REFUELING NOZZLE: Similar to what would be used on a car. No protection from fumes or fuel spills.

ac. HIFR RIG: A special assembly used to refuel a helicopter while it is hovering. One end attached to the JP-5 fueling hose through a special "breakaway" coupling which can be separated manually by a helicopter flight crewmember or automatically when 450 lb of tension is applied. The other end is connected to an aircraft fueling receptacle.

ad. DEFUELING PUMP: An air operated, 25 GPM (or greater) portable pump for removing fuel from the aircraft.

.2 STATE THE POSSIBLE EFFECTS RESULTING FROM DELIVERY OF CONTAMINATED FUEL TO THE HELICOPTER: Solid particulates may clog fuel lines or injectors or damage engine components resulting in engine damage and/or failure. Water may freeze in lines or injectors causing engine failure due to fuel starvation. A large amount of water may result in engine flameout.

.3 EXPLAIN WHY IT MIGHT BE NECESSARY TO DEFUEL A HELICOPTER ABOARD SHIP: Contamination of fuel in aircraft fuel system. Also, mission change which requires removal of fuel to comply with aircraft weight limitations.

.4 EXPLAIN WHY HELICOPTERS WHICH HAVE BEEN REFUELED ASHORE WILL NOT ORDINARILY BE ALLOWED TO DEFUEL ABOARD SHIP:

The helicopter may arrive with JP-4 or JP-8 in the tanks. Because of the lower flash point, defueling is not recommended. It takes several refuelings using JP-5 to bring the flash up to a safe level in the helicopter.

111 HELICOPTER INSTRUMENT APPROACH FUNDAMENTALS

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP-42 (series)

.1 STATE THE CIRCUMSTANCES WHICH WOULD ORDINARILY REQUIRE A HELICOPTER TO EXECUTE AN INSTRUMENT APPROACH TO RETURN TO THE SHIP: Anytime a helicopter returns when the

ceiling is less than 500 ft and/or visibility is less than 1 NM.

.2 EXPLAIN THE FOLLOWING TERMS AS THEY APPLY TO HELICOPTER INSTRUMENT APPROACHES:

a. CEILING: The height of the bases of the lowest layer of clouds covering more than 50% of the sky (broken or overcast)

b. VISIBILITY: Greatest horizontal distance that an object can be identified.

c. VISUAL METEOROLOGICAL CONDITIONS (VMC): For CG shipboard operations, VMC requires a minimum of 500 ft ceiling and 1 NM of visibility.

d. INSTRUMENT METEOROLOGICAL CONDITIONS (IMC): Conditions are such that constant reference to the aircraft instruments is required for safe flight. For CG shipboard operations, IMC is any time the ceiling is less than 500 ft and/or visibility is less than 1 NM.

e. MATCH PROCEDURE: Acronym for Manual Approach To A Controlled Hover. Pilots manually control the HH-65A helicopter through an approach which terminates in a 50 foot hover, 500-800 feet down wind of the ship.

f. CATCH PROCEDURE: Acronym for Computer Approach To A Coupled Hover. A feature of the HH-65A autopilot which allows the helicopter to be flown through a MATCH-like approach completely hands-off.

g. PROCEDURE TURN APPROACH: This is a timed turn where a helicopter proceeds in a certain direction for a specified amount of time and then through a series of maneuvers designed to put it on a reciprocal course.

h. TEARDROP PROCEDURE: This is a specific form of procedure turn approach where a helicopter proceeds on a course for a certain amount of time and then completes a 210 degree turn to the final approach course.

i. TACAN APPROACH: A helicopter proceeds to an initial approach fix (IAF). The pilot then uses the ship's TACAN to position this aircraft along a certain approach path leading to the ship.

j. NDB APPROACH: The pilot uses ADF equipment in the aircraft to track a ship's transmitters to fly a teardrop approach. Timing is used to determine turn point and missed approach point.

k. GROUND CONTROLLED APPROACH: Any approach in which course guidance is provided to the helicopter by a ship's radar operator.

1. EMERGENCY LOW VISIBILITY APPROACH (ELVA): This is an EMERGENCY procedure. An ELVA is a form of ground-controlled approach in which the air controller uses the cutter's surface search or fire control radar to conn a helicopter into position for a safe approach/landing under conditions less than 200/1/2. An actual ELVA should not be attempted unless the helicopter does not have enough fuel to divert to a precision approach-equipped facility. (See reference (a), Chapter 7)

m. FINAL APPROACH COURSE: Course flown which positions an aircraft in a safe position for transition to landing or a missed approach.

n. GLIDE PATH: An approach profile which allows a helicopter to safely descend to the ship.

o. MISSED APPROACHED POINT: Point in an instrument approach at which the missed approach procedure is executed if the ship is not in sight.

p. MINIMUM DESCENT ALTITUDE: The lowest safe altitude to which a helicopter may descend without visual contact with the ship or the surface of the water.

q. MISSED APPROACH PROCEDURE: If the vessel is not in sight at the missed approach point (MAP) an immediate waveoff/missed approach shall be executed. The pilot climbs to 400 feet on a heading which will allow his helicopter to clear the vessel. If no instructions are received prior to reaching three miles or three minutes, the pilot executes a left turn to downwind and proceeds to the designated holding point to attempt another approach. If conditions exist that preclude a safe landing and enough fuel is available, the aircraft should be diverted to a more suitable landing site.

r. LOST COMMUNICATIONS PROCEDURES: If a helicopter misses an Operations Normal report by more than five minutes, communication is to be attempted on secondary and tertiary frequencies. If fifteen minutes pass without communications, initiate the UNCERTAINTY SAR PHASE. After 30 minutes, initiate the ALERT SAR PHASE. When the fuel endurance of the helicopter is reached, initiate the DISTRESS SAR PHASE. See reference (a), Chapter 5 for specific requirements for the ship (and helicopter for each phase.

s. RADAR: An electronic device which gives direction and distance to the helicopter from the ship.

t. TRAFFIC ADVISORIES: Advisories to a helicopter of courses, speeds, and relative positions of other aircraft in its area.

u. ANTI-SUBMARINE AIR CONTROLLER: A radar operator specially trained both in air traffic control and anti-submarine battle tactics.

v. BINGO FUEL: Point at which the aircraft must proceed to its final destination, or alternate, in order to land with required fuel reserves.

.3 WHAT INFORMATION MUST BE PASSED TO THE HELICOPTER PRIOR TO THE INITIATION OF AN INSTRUMENT APPROACH:

a. Type of approach

b. Holding instructions (if required)

c. Steering as required

d. Estimated recovery time

e. Altimeter setting, wind, weather

f. Ships course

g. Cutter certification/waiver

h. Appropriate range and altitude at which visual contact can be expected

.4 WHAT CONDITIONS MUST EXIST FOR THE PILOT TO DISCONTINUE AN INSTRUMENT APPROACH AND PROCEED VISUALLY TO THE SHIP:

a. Landing area is in sight

b. Safe approach to a landing can be accomplished

112 AIR DIRECTION CONTROL FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 STATE THE FOLLOWING FOR THE THREE FORMS OF AIRCRAFT CONTROL:

a. UNDER WHAT METEOROLOGICAL CONDITIONS MAY IT BE USED?
b. WHO IS RESPONSIBLE FOR AIRCRAFT NAVIGATION?
c. WHO IS RESPONSIBLE FOR AIRCRAFT COLLISION AVOIDANCE?

POSITIVE CONTROL: (a) Under all meteorological conditions; (b) and (c) CIC Air Direction Controller.

ADVISORY CONTROL: (a) Day and Night, ceiling at least 500 ft and visibility at least 1 NM; (b) and (c) Pilot (with advisories from the CIC ADC).

FLIGHT FOLLOWING: (a) Day and Night, ceiling at least 500 ft and visibility at least 1 NM; (b) and (c) Pilot (with advisories of known hazards from CIC Flight Follower).

.2 AFTER LAUNCH, WHEN SHOULD THE CIC CONTROLLER TAKE CONTROL OF THE HELICOPTER?

After both the "Operations Normal" call is received from the helicopter and radar contact is established.

.3 DURING THE APPROACH PHASE, WHEN SHOULD HELICOPTER CONTROL BE PASSED FROM CIC TO THE HCO?

When requested by the HCO after the bridge has the helicopter in visual contact. During instrument conditions it may be necessary to obtain a clearance to land from the HCO and pass it to the helicopter during the instrument approach.

.4 STATE THE INFORMATION THE CONTROLLER MUST OBTAIN OR PROVIDE DURING THE FOLLOWING SITUATIONS:

a. NEW HELICOPTER CHECKING IN.

S - State and Souls: Ascertain aircraft's fuel state and the number of personnel on board.

L - Location: Ascertain current location of the aircraft relative to the ship.

A - Altimeter Setting: Pass the current barometer reading in inches of mercury.

N - No Comms: Pass lost communications procedures.

T - Tell: Advise the CIC Watch Supervisor and the OOD that the aircraft has checked in.

b. REPORTING AIR TRAFFIC TO A CONTROLLED HELICOPTER.

D - Direction: Pass the direction of the traffic relative to the controlled aircraft. If controlled helicopter is maintaining a steady heading, use the clock format (i.e. 000R = 12 o' clock, 090R = 3 o' clock, 240R = 8 o' clock). If the controlled helicopter is turning, pass the magnetic direction the traffic bears (i.e. North, Southeast)

D - Distance: Pass the distance of the traffic from the controlled helicopter in nautical miles.

H - Heading: Pass a rough direction the traffic is heading (i.e. North, Southeast).

A - Altitude: Pass the altitude of the traffic or "Altitude Unknown".

c. HELICOPTER CHECKING OUT.

S - Steer: Pass the recommended heading for the helicopter in degrees magnetic.

P - Pigeons: Pass the direction and distance (from the helicopter) of the helicopter's destination.

S - State: Obtain the fuel state of the helicopter.

d. HELICOPTER EMERGENCY.

L - Location: Obtain the location of the helicopter (if not previously known).

I - Intentions: Ascertain the pilot's intentions (i.e. return to the ship, divert to a landing field).

N - Needs: Ascertain what pilot needs the ship to do.

T - Tell: Advise the CIC Watch Supervisor and the OOD immediately.

.5 DEFINE THE FOLLOWING CONTROLLER COMMANDS AND DESCRIBE THE CORRECT DIALOG IN THEIR USE:

a. TURN: Directs the helicopter to a new heading along with a direction of turn. Example: "6500, DALLAS, turn right, heading 310."

b. VECTOR: Directs the helicopter to a new heading, leaving the direction of turn to the discretion of the pilot. Example: "6500, DALLAS, vector 310."

c. CLIMB: Directs the helicopter to climb to a higher altitude. Example: "6500, DALLAS, climb to 1500."

d. DESCEND: Directs the helicopter to descend to a lower altitude. Example: "6500, DALLAS, descend to 500."

e. SPEED: Directs the helicopter to either increase or decrease indicated airspeed. Examples: "6500, DALLAS, increase speed to 120 knots." "6500, DALLAS, decrease speed to 90 knots."

f. REPORT: Directs the helicopter to advise the controller of the completion/occurrence of a particular event. Examples: "6500, DALLAS, climb to 1500, report when level." "6500, DALLAS, report when ship in sight."

.6 WHEN SHOULD A CONTROLLED AIRCRAFT BE ADVISED OF OTHER AIR TRAFFIC IN THE CONTROLLERS AREA?

At a minimum, a controlled aircraft should be advised whenever any other air traffic is passing within 10NM of his position.

.7 STATE THE MINIMUM REQUIRED HORIZONTAL SEPARATION BETWEEN ALL AIRCRAFT DURING POSITIVE CONTROL:

3 NM within 50 NM of the cutter's radar antenna, 5 NM beyond 50 NM.

.8 STATE THE REQUIRED VERTICAL SEPARATION BETWEEN THE FOLLOWING TYPES OF AIRCRAFT DURING POSITIVE CONTROL:

a. FIXED-WING AND ROTARY-WING: 1000 ft
b. ROTARY-WING: 500 ft
c. FIXED-WING: 1000 ft

113 TALON CHARACTERISTICS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST 3710.2 (series)

.1 STATE THE FUNCTION OF THE TALON SYSTEM: The grid provides a securing point for the hydraulically operated talon probe which is lowered from the helicopter and attaches to the grid. Used in lieu of the primary tiedowns.

.2 STATE THE SEQUENCE OF OPERATIONS OF A HELICOPTER LANDING USING THE TALON SYSTEM:

a. The helicopter lands on deck over the TALON grid.

b. The probe is lowered and attaches to the grid securing the helicopter to the deck.

c. The helicopter is shut down and (if needed) secondary tiedowns are installed.

.5 DESCRIBE THE PROCEDURES TO BE FOLLOWED IN THE EVENT OF A TALON EQUIPMENT FAILURE:

a. The helicopter lifts off from the flight deck.

b. A designated tiedown team quickly musters with primary tiedowns.

c. The helicopter lands and is secured to the deck using primary tiedowns.

.4 DESCRIBE SAFETY PRECAUTION TO BE FOLLOWED DURING PERIODS WHEN THE TALON SYSTEM IS NOT IN USE:

The talon grid cover must be installed whenever TALON is not planned for use.

114 SAFETY PRECAUTIONS FUNDAMENTALS

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.1 DISCUSS SAFETY PRECAUTIONS APPLICABLE TO THE FOLLOWING:

a. ENGINE/ROTOR NOISE: Whenever the helicopter has the engines or rotors operating, hearing protection should be worn.

b. FOREIGN OBJECT DAMAGE (FOD): Any objects which could become airborne due to rotor wash or relative wind may damage the engines and/or rotors and should be removed from the flight deck and adjacent areas.

c. COMPRESSOR AND TURBINE BLADES: Due to the stress associated with the high RPM and close tolerances, blades are very vulnerable to FOD.

d. HOT EXHAUST AREAS: These areas should be avoided while the engines are running unless required for tiedown installation/removal, or for work by a qualified mechanic.

e. FLUIDS UNDER PRESSURE: Normally any fluids under pressure are hot. If a leak should occur, someone could be injured from the heat or from the pressure of the fluid escaping.

f. COMPRESSED AND LIQUEFIED GASSES: On USCG helicopters compressed gasses are used for emergency extension of the landing gear and deploying the floatation bags. Compressed gas canisters may explode if heated by fire or damaged by impact.

g. INTAKE DUCTS: Air is drawn through these as part of the engine operation. It is important that ONLY air enters the ducts. See letter "b" above.

h. EXHAUST NOZZLES: Engine exhaust gas temperature is approximately 550 deg Centigrade. Severe burns will result if the exhaust nozzles are touched during, or soon after, flight operations.

i. HANDLING OILS AND FUELS. Normally, the AVDET will handle oils required by the helicopter. Fueling must be done carefully and safely to avoid spills, helicopter damage, or damage to the ship's fueling system.

j. FUELING AND DEFUELING: If possible, always pressure refuel an aircraft. Use the prescribed methods to complete the operation safely. Always work with the helicopter flight crewmember to avoid accidental damage to the aircraft. When defueling use prescribed methods. Ensure the removed fuel is not placed back in the JP-5 service system.

k. WORKING AREA: This area should be clean and neat. In the helicopter shack, store items neatly and carefully. If working around the aircraft, bring only items you will need to do the job and clean the area thoroughly when done.

l. GROUNDING OF ELECTRICAL EQUIPMENT: All electrical equipment should be properly grounded to prevent electrical shock.

m. FUEL, OIL AND HYDRAULIC LEAKS: Find the source if possible and advise the AVDET. Keep all unnecessary people away from the area. If in a confined space, vent the area. Thoroughly clean up the area when done.

n. APPROACHING HELICOPTER WITH ROTORS TURNING: While on deck, pitch in the rotor blades is minimal which results in reduced downwash. Approach the helicopter from 045 or 315 relative when signalled by the pilot. During HIFR or VERTREP be careful of the strong downwash. generated by the rotors.

o. GROUND RESONANCE: Rigid tiedowns (secondaries) should not be applied while engines/rotors are turning. Such installation may cause feed back vibrations within the airframe and lead to destructive harmonic. oscillations.

p. TAIL ROTOR: When operating, the tail rotor is virtually invisible. There is a great danger of personnel walking into or being sucked into the tail rotor.

q. COMPOSITE MATERIALS: These materials are seen more and more on aircraft because of their high strength to weight ratios. Composite panels present sharp edges if fractured and produce toxic gasses and hazardous fiber fragments when burned.

r. AIRCRAFT ANTENNAE: These are relatively fiber. If touched during transmission, electrical shock or burns may result.

s. STEEL-TOED SAFETY BOOTS: Required footwear for personnel on the flight deck during flight operations.

t. FLIGHT DECK CLOTHING: The following is required during flight operations: Flight deck vests with all required attachments operational, flash hoods (firefighters only), jerseys, cranial helmet assemblies and safety boots. Rescueman must wear a proximity suit with rubber boots.

u. HANGAR DOOR: Remains closed during flight operations. Operator should warn all personnel in the vicinity of the door when raising or lowering. If installed, the auto-reversing switch should operate as designed.

v. LIGHTING AT NIGHT: The VLA (Visual Landing Aids) drawing shows required lighting for each vessel. When energizing at night, set the intensity about half way for all lights and adjust (brighter or dimmer) to conform to the desires of the flight crew.

w. SAFETY NETS/CATWALKS: Ensure these are properly maintained. Periodically check net tension and check netting for tears or chafing. Check securing pins for proper operation. All nets and frame must be load tested annually.

x. HATCHES ON DECK: Ensure all deck hatches are secured properly.

y. ORDNANCE: Weapons-carrying aircraft present a special firefighting hazard. One hose team must be dedicated to cooling the warheads to prevent explosions.

z. TALON EQUIPMENT: Ensure the talon grid covers have a properly installed non-skid surface. When removed, ensure grid and surrounding area are clean and FOD free.

aa. VERTREP EQUIPMENT: Various hoists, pallets, cargo nets, cargo hooks, and etc. are addressed in Chapter 10 of reference (a).

ab. TIEDOWNS: Primary tiedowns consist of straps with specially designed attachments to secure the helicopter to the deck. For the HH-65A, the aft (high) tiedowns have a pelican hook on one end which attaches to the helicopter and a hook at the other which is designed for a specific type of deck fitting. Low tiedowns have hooks at both ends with a ratchet assembly for tensioning. All should be checked periodically for wear and proper operation. Typical problems are chafing of the straps caused by dragging them across the deck and salt water corrosion on the ratchet/pelican hook assemblies.

ac. WHEEL CHOCKS: Periodically check for proper operation.

ad. PIVOTABLE ANTENNAE: Flight deck personnel should be aware that some aircraft (Navy) have external antennae that actually can pivot or move.

ae. NIGHT OPERATIONS: Check equipment for proper operation in a lighted area and ensure all required exterior lights are operational. Flight deck personnel shall wear goggles with clear lenses and conduct a FOD walkdown. Use caution to avoid trip hazards and other obstructions more difficult to see in darkness.

af. HEAVY WEATHER OPERATIONS: Personnel need to be careful while moving about on deck both around the helicopter and near the deck edge. Once the helicopter has shut down, if possible, traverse it into hangar. Install secondary tiedowns as soon as possible. Blade folding/removal should be considered.

ag. COLD WEATHER OPERATIONS: Most of the particulars of cold weather ops for the helicopter will be handled by the AVDET. It is important that topside personnel dress for the conditions. Operating the tiedowns may be hampered when gloves or mittens are worn.

ah. FLASH EQUIPPED CAMERAS. Flash pictures are not to be taken during flight operations.

201 PRIMARY TIEDOWN SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: It allows the helicopter to be secured to the deck immediately after landing.

.2 DISCUSS THE FUNCTION, LOCATING, MODES OF OPERATION AND INDICATIONS OF COMPONENT FAILURE:

.21 HIGH TIEDOWN ASSEMBLY

a. PELICAN HOOK: Features an extension arm to facilitate attachment to the high ring and a quick-release hook attached to the "aircraft" end of that tiedown. Failure is indicated by the ability to reset the hook or by a jammed strap.

b. BALE ASSEMBLY: Locking mechanism which holds tiedown strap on the pelican hook. Failure is indicated by a jammed strap or by failure to lock down.

c. STRAP AND RATCHET: Strap is attached to the pelican hook and led through the bale assembly to the ratchet. Once the entire assembly is hooked to the helicopter and the deck, the ratchet is used to apply tension to the strap. Failure is indicated by jammed ratchet or by a frayed or torn strap.

d. RAISED CLOVERLEAF/BULBHOOK: Bulbhook is used to attach the tiedown to cloverleaf deck fittings. The bulbhook design distributes the load over the entire fittings. Failure is indicated by deformation or cracking of the fitting or the bulbhook.

e. FLUSHDECK CLOVERLEAF/BULBHOOK: Same as "d" above.

f. BAR FITTING/OPEN HOOK: Open hook is used for bar-type deck fittings. Failure is indicated by deformation or cracking of fitting or hook.

.22 LOW TIEDOWN ASSEMBLY

a. HOOK: Hook is at aircraft end of the tiedown. This attaches to the forward (low) tiedown ring on the HH-65A helicopter. Failure is indicated by jammed retaining clip or by deformation or cracking of the hook.

b. STRAP AND RATCHET: Similar to the high tiedown assembly.

c. RAISED CLOVERLEAF/BULBHOOK: Similar to the high tiedown assembly.

d. FLUSHDECK CLOVERLEAF/BULBHOOK: Similar to the high tiedown assembly.

e. BAR FITTING/OPEN HOOK: Similar to the high tiedown assembly.

.31 DESCRIBE THE SEQUENCE OF ATTACHMENT OF PRIMARY TIEDOWNS: Installed simultaneously upon signal from the LSO.

.32 DESCRIBE THE SEQUENCE OF REMOVAL OF PRIMARY TIEDOWNS: Both low tiedowns, then both high tiedowns.

.33 DESCRIBE THE PROCESS OF OVERHAULING HIGH AND LOW TIEDOWNS.

HIGHS: Reset quick release hook; pull strap through bale assembly to achieve maximum length; unwind excess turns from ratchet; fake out strap to prevent tangling.

LOWS: Pull all turns out of the ratchet; pull strap through ratchet to achieve maximum length; fake out strap to prevent tangling.

.61 WHAT SAFETY PRECAUTIONS APPLY TO RELEASING PRIMARY TIEDOWNS UNDER HIGH TENSION: If unable to release by normal method, loosen the strap by easing the ratchet. If strap is too tight, it may snap off damaging the tiedown or the aircraft, or it may pull the ring out of the helicopter.

.62 DESCRIBE ACTION TAKEN AS A RESULT OF ONE OR MORE TIEDOWN FAILURES: During installation, if you cannot immediately fix the problem, hold up the tiedown so the LSO can see it. The LSO will abort tiedown installation by waving all tiedown crew away from the aircraft. During removal, LSO may signal you to cut the strap or signal for reinstallation of all tiedowns. The aircraft is considered secure as long as one tiedown (high or low) is installed on each side. If both tiedowns fail on one side, the other side tiedowns should be removed; aircraft launched; and spare tiedowns rigged.

202 SECONDARY/HEAVY WEATHER TIEDOWN (TD-1A) SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: It provides additional security when the helicopter is on deck for an extended period of time or during heavy weather.

.2 DISCUSS THE FUNCTIONS, LOCATIONS, OPERATION AND INDICATIONS OF COMPONENT FAILURE:

.21 CHAIN AND HOOK ASSEMBLY: A ten foot chain with an open hook at one end and an adjustable turnbuckle assembly at the other. It provides additional security when used with primary tiedowns.

.22 HOUSING ASSEMBLY:

a. TENSION NUT: Allows the tension to be adjusted by turning clockwise or counterclockwise. Failure is indicated by a jammed nut.

b. RELEASE LEVER: After easing the tension, this releases the chain locking arm for easy removal of tiedown. Failure is indicated by inability to lock lever down or to release it.

c. LOCKING ARM: Holds one length of chain in the turnbuckle for tightening tiedown. Failure is indicated by inability to hold or lock link in place.

d. LINK RETAINER: Holds chain link within locking arm.

.23 TAIL TIEDOWN STRAP: Used to reduce yawing during heavy weather. Similar in operation to primary low tiedowns. Failure is indicated by a jammed ratchet, frayed or torn strap, or by a deformed or cracked hook.

.31 DESCRIBE THE ARRANGEMENT OF SECONDARY TIEDOWNS ON THE HH/65A HELICOPTER: Fore and aft from the forward and aft-most low rings on helicopter. Profile when installed is the letter "M". See Figure 11-3 of reference (a).

.32 DESCRIBE THE ARRANGEMENT OF HEAVY WEATHER TIEDOWNS ON THE HH-65A: Same as .31 above. In addition, fore and aft from the middle "low" ring and from the tail ring to each side of the flight deck. A member of the AVDET should install the tail tiedowns. See Figure 11-4 of reference (a).

.61 WHAT SAFETY PRECAUTIONS APPLY TO RELEASING TD-1A TIEDOWN ASSEMBLIES UNDER HIGH TENSION: Be sure to turn in the correct direction so as not to tighten further. If the tiedown is too tight, it could damage the helicopter or snap the tiedown ring.

.62 DESCRIBE PROCEDURES TO BE TAKEN PRIOR TO THE REMOVAL OF SECONDARY TIEDOWNS: 1. Primary tiedowns/TALON should be checked secure. 2. Obtain permission from OOD/HCO. 3. Remove when directed by the aircrew.

.63 EXPLAIN THE REASON SECONDARY TIEDOWNS MUST BE REMOVED PRIOR TO ENGINE START/ROTOR ENGAGEMENT: Rigid tiedowns cause feedback of aircraft vibrations (ground resonance) which may damage or destroy the aircraft.

203 REFUELING/HIFR EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: Delivers the required amount of clean fuel to an aircraft.

.2 DISCUSS THE FUNCTION, LOCATION, OPERATION AND INDICATION OF COMPONENT FAILURE:

.21 REFUELING HOSE: Located on the fantail. Provides link from the pump room to the refueling nozzle or HIFR assembly. Failure is indicated by any leaks, dirt in the fuel, kinking, or lack of electrical continuity.

.22 QUICK DISCONNECT COUPLING: Link between end of refueling hose and pressure refueling nozzle. Facilitates checking/replacement of nozzle strainer. Failure is indicated by leaks.

.23 PRESSURE REFUELING NOZZLE: Connects fuel hose to the aircraft with a fuel-tight seal. Features a locking poppet valve for flow control. Locks closed when nozzle is not attached and does not allow detachment unless valve is closed. Failure is indicated by leaks or flow failure.

.24 GRAVITY (OVER WING) REFUELING NOZZLE: Similar to refueling a car. Nozzle is inserted in an open port on the side of the aircraft. Fueler must be cautious of fumes and over-filling. Not normally done on Coast Guard aircraft. Failure indicated by leaks, flow failure, or dirty fuel samples.

.25 HIFR RIG: Length of fuel hose with a HIFR connection on one end, a breakaway hose coupling on the other and a saddle for hoisting. Failure is indicated by leaks, fuel flow failure, dirty fuel, lack of continuity, or failure of the breakaway coupling.

.26 SAMPLE (GAMMON) FITTING: This fitting is used when taking a fuel sample directly out of the fueling nozzle for MK1/MK3 or clear and bright tests. Failure is indicated by leaks or fuel flow failure.

.27 RECIRCULATION DECK FITTING: Commonly called the "Fuel Tree". The fuel hose can be attached to two fittings on the "tree" allowing fuel to be recirculated through the entire service system or flushing of the fuel hose and nozzle.

.28 GROUNDING WIRE: The grounding wire is attached to the fueling nozzle. It is attached to the aircraft prior to connecting the fuel nozzle to dissipate static charge on the aircraft. Prevents electrical/static build up during fueling which could cause an explosion. The helicopter itself is grounded to the deck.

.29 NOZZLE STRAINER: The nozzle strainer is a cone shaped screen inside the fueling nozzle. It is the last filter before the fuel enters the helicopter and is designed to trap any debris coming through the fuel hose.

.210 FILTER SEPARATOR: The filter separators are located in the pump room. They feature filter elements which remove solid contaminants, and coalescers which remove free water from the fuel. Failure is indicated by dirty fuel or pressure differentials greater than 15 PSI.

.211 GO-NO-GO FUSES: Filters normally located near the fueling station designed to cut-off fuel flow if a large slug of water or excessive dirt passes through them. Failure is indicated by lack of fuel flow, dirty fuel or pressure differential greater than 20 PSI.

.212 TRANSFER PUMP: The transfer pump moves the fuel between storage tanks or from storage tanks to the service tank.

.213 SERVICE PUMP: The service pump moves fuel from the service tank to the flight deck for fueling the helicopter. It is also used to recirculate fuel through the refueling system back to the service tank.

.215 FLIGHT DECK/FUELING STATION JP-5 EMERGENCY SHUT-OFF: This is a button located inside a box on or near the flight deck. The button can be pushed, if there is a problem, to instantly shut down the fuel pump.

.31 DISCUSS THE PRINCIPLE OF CONTINUITY IN REFUELING EQUIPMENT AND WHY IT IS REQUIRED FOR FUELING OPERATIONS: If a static charge discharges during fueling, it may ignite fuel fumes, causing a major fire.

.32 STATE THE MANNING REQUIREMENTS FOR REFUELING AIRCRAFT ABOARD YOUR SHIP: At least two people are needed at the nozzle; a sound-powered phone talker with comms to the pump room; the On-Scene Leader; and a hose team assisting the helicopter flight crewmember.

.33 STATE HOW OFTEN THE FOLLOWING PROCEDURES MUST BE CARRIED OUT AND WHY:

A. RECIRCULATION OF STORAGE AND SERVICE TANKS: Daily when a helicopter is aboard and weekly when operating without a helicopter.

b. STRIPPING OF TANKS: Same as a (above). Tanks should be stripped prior to recirculating fuel.

C. FLUSHING REFUELING HOSE AND NOZZLE: The fuel hose and nozzle must be flushed prior to each aircraft refueling.

d. CLEAR AND BRIGHT TEST: Conducted prior to and after refueling the helicopter; after recirculation from the appropriate tank; after a component replacement (down stream of the component); and anytime fuel condition is suspect.

e. CONTAMINATION AND FREE-WATER TESTS: Conducted after replenishing storage tanks. Conducted daily, when a helicopter is aboard, from the service tank or after service tank is topped off prior to the next fueling. Conducted weekly with no helicopter, weekly after recirculation from each tank (service and storage tanks); after maintenance on any component (downstream); and anytime fuel condition is suspect.

f. INSPECTION OF NOZZLE STRAINERS: Daily if helicopter is on board, otherwise, weekly.

g. REPLACEMENT OF FILTER-SEPARATOR ELEMENTS: Every three years; one million gallons of fuel dispensed; or when the differential pressure between inlet and outlet sides reaches 15 psi.

h. LAB ANALYSIS OF JP-5 STORES: Immediately after replenishing the storage tanks with a sample from each tank. Also, quarterly with samples from the fueling nozzle, service tank(s) and storage tanks.

i. FUEL HOSE/NOZZLE CONTINUITY CHECK: Check upon hose installation and at least quarterly thereafter.

.34 STATE THE DIFFERENT TYPES OF TURBINES FUEL AND WHICH ARE ALLOWED TO BE CARRIED ABOARD SHIP: JP-5 only. Flash points of other types of fuel are too low to permit safe storage aboard ships.

.41 STATE THE MAXIMUM AND MINIMUM ALLOWABLE FUEL PRESSURE AT THE NOZZLE FOR PRESSURE REFUELING: No minimum, Max allowed: 55 psi

.42 DISCUSS THE MAXIMUM ALLOWABLE CONCENTRATION OF SOLIDS AND FREE WATER IN JP-5 AND HOW THESE LEVELS ARE DETERMINED: Solids: 2.0 mg/liter, free water: 5 ppm.

.43 DISCUSS THE MINIMUM REQUIRED CONCENTRATION OF FUEL SYSTEM ICING INHIBITOR (FSII) AND WHY IT IS REQUIRED IN JP-5: .08-920% by volume. Lowers the freezing point of fuel and keeps biological contaminates from growing in the fuel tanks.

.51 EXPLAIN WHAT EMCON PROCEDURES APPLY DURING AIRCRAFT REFUELING AND WHY THEY ARE NECESSARY:

- No emissions at power levels greater than a transmitter's rated power.

- No emissions from shipboard antennae located within 25 feet of the helicopter.

- No emissions with power output greater than 500 watts from antennae located within 50 feet of the helicopter.

- Shipboard radar antennae capable of main beam illumination of the helicopter shall be secured.

- No emissions from aircraft's HF, IFF, radar or TACAN.

- Measures above are required to prevent the potential of an electrical arc during fueling.

.61 DISCUSS THE PERSONAL SAFETY EQUIPMENT REQUIRED BY PERSONNEL INVOLVED IN HANDLING JP-5, TESTING AND FUELING AIRCRAFT: Testing: well ventilated space/rages. fueling: rags, goggles, bucket, fire extinguisher, and purple flight deck vest and helmet.

.62 DISCUSS THE HEALTH HAZARDS POSED BY THE FOLLOWING MATERIALS:

a. KEROSINE FUMES: See M3710.2A pg 8-29 & 8-30

b. BENZENE FUMES: See M3710.2A pg 8-30

c. DIEGMME FSII: Mutagenic Carcinogen, VERY HAZARDOUS

.63 DISCUSS THE PROCEDURES FOR ELECTRICAL GROUNDING OF THE AIRCRAFT AND WHY IT IS NECESSARY PRIOR TO REFUELING: Prevents an electrical spark from static discharge during fueling. Attach only to specified points on the helicopter. May have to scratch some paint off a point on the deck to ensure a good contact.

204 DEFUELING EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST 73710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: Used to reduce the weight of the helicopter for a specific mission or to perform maintenance on the aircraft fuel system.

.21 EXPLAIN THE FUNCTION OF THE FOLLOWING EQUIPMENT USED IN CONJUNCTION WITH THE AIRCRAFT DEFUELING PUMP:

a. PRESSURE REFUELING NOZZLE: Used for defueling. attached to the helicopter with the strainer removed.

b. FUEL HOSE: Attached to the suction side of the pump.

c. PNEUMATIC LINES: Hooked to operate the air driven pump.

d. FUEL STORAGE TANKS: If only JP-5 is on board the helicopter, you may defuel into the cutter's JP-5 storage tanks. Other fuel should go into the waste oil tank or the diesel storage tanks with the CO's permission.

.22 STATE THE EQUIPMENT REQUIRED FOR GRAVITY DEFUELING: Special adapter (in HSK) attached to the drain sumps on helicopter fuel cells. Drain into an open container or a fuel hose connected directly to an appropriate fuel tank.

.31 WHAT IS THE NORMAL RATE OF FUEL TRANSFER WHEN USING THE DEFUELING PUMP: 25 gpm

.32 HOW MUCH FUEL CAN BE REMOVED FROM THE AIRCRAFT USING THE DEFUELING PUMP: Generally, only "usable" fuel can be removed. The small amount of fuel remaining varies between helicopters.

.33 TO WHICH TANKS ABOARD SHIP WOULD THE FOLLOWING TYPES OF FUEL NORMALLY BE TRANSFERRED:

a. CLEAN JP-5: JP-5 storage tanks.

b. CONTAMINATED JP-5: Waste oil or diesel storage tanks (with CO permission).

c. JP-4/JET-A: Waste oil or diesel storage tanks (with CO permission). If tested for a flash point of greater than 140 deg F, JP-5 storage tanks.

.51 EXPLAIN WHAT EMCON PROCEDURES APPLY DURING AIRCRAFT DEFUELING AND WHY THEY ARE NECESSARY: All antennas within 25 ft of the helicopter and those antennas within 50 ft of the helicopter that transmit with 500 watts of power or greater could cause a spark and/or be hazardous to personnel on the flight deck.

.61 DISCUSS THE PROCEDURES FOR GROUNDING THE AIRCRAFT AND THE DEFUELING EQUIPMENT: Ground the helicopter only in the specified locations. You may have to scratch off some paint on the ship to ensure a good connection. Be sure goggles are worn if working around fuel, proper firefighting equipment/personnel are available and all fueling connections are secure.

205 FUEL TESTING EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS EQUIPMENT: Ensures that fuel being loaded onto the helicopter is within parameters for water and sediment contamination.

.11 EXPLAIN WHY IT IS NECESSARY TO TEST FUEL PRIOR TO REFUELING THE HELICOPTER: Contaminated fuel can cause major equipment damage or a failure of the engines leading to a crash.

.2 DISCUSS THE FUNCTION, OPERATION AND FREQUENCY OF USE FOR THE FOLLOWING COMPONENTS:

.21 MK 1 FREE WATER DETECTOR: Shows amount of water in the tested fuel by comparing it against a known set of standards. the MK I is a small box with a black (ultraviolet) light inside. After the light is turned on, the sample filter is examined under the light and lined up with a "standard" that is already attached inside.

.22 MK I DETECTOR PAD: Designed to absorb any water in the sampled fuel. This filter is compared under UV light with the known standards to determine the amount of water in the fuel. Water droplets on the pad glow under the UV light.

.23 MK 3 CONTAMINATED FUEL DETECTOR: The MK III pumps sampled fuel through two filters to determine the amount of sediment in the fuel. Used daily when a helicopter is on board, otherwise weekly.

.24 WRATTEN FILTERS: Wratten filters are delivered with the MK3 test kit and are used for calibration. Calibration is done every 90 days; whenever the machine is moved; or if any maintenance is performed.

.25 MILLIPORE FILTERS: Millipore filters are the filters used in the MK3 test kit to determine sediment content.

.26 FSII TEST KIT: The FSII Test Kit measures the amount of Ice Inhibitor in the fuel. Mix designated amounts of fuel and water together. Place a drop of the mixture onto the "refractometer" (part of the test kit) and read the amount off the graph. Weekly tests are required.

.27 FLASH POINT TEST KIT: Flash point test kits may not be aboard your vessel. If not, refer to the laboratory analysis for your fuel. If a tester is available, a designated amount of fuel is heated. When a "pop" is heard, check the attached thermometer which will show the flash point. Fuel should be tested whenever flash point data is unavailable or in doubt.

.41 STATE THE MAXIMUM ALLOWABLE CONCENTRATIONS OF PARTICULATES AND FREE WATER IN JP-5 USED TO REFUEL THE AIRCRAFT: Particulates (sediment) 2.0 mg/l; Free Water: 5 ppm.

.42 STATE THE MINIMUM REQUIRED CONCENTRATION OF FSII IN JP-5 USED TO REFUEL THE AIRCRAFT: .08-.20%.

.61 STATE THE SAFETY PRECAUTIONS TO BE FOLLOWED WHEN TAKING FUEL SAMPLES: Wear goggles, secures area, have rags ready, ensure there are no leaks in the hoses or nozzle.

.62 STATE THE PERSONAL SAFETY EQUIPMENT REQUIRED WHEN FUEL TESTS ARE RUN IN AN ENCLOSED SPACE: Ensure proper ventilation. Consider respirator use. See .61 above.

.63 STATE THE PROCEDURES NORMALLY FOLLOWED WHEN CONTAMINATED FUEL IS DETECTED AT THE REFUELING STATION: Re-flush the hose and nozzle and repeat the MK1 and MK3 tests. Be sure the sampling container is clean. If the fuel is still bad, troubleshoot the system.

.206 FIREFIGHTING EQUIPMENT SYSTEM

Reference

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: To extinguish quickly, efficiently and safely any fires that may start by fuel spills, leaks,or helicopter crashes on deck.

.2 DISCUSS THE FUNCTION, LOCATION, OPERATION AND PROTECTION OF THE FOLLOWING COMPONENTS:

.21 CARBON DIOXIDE (CO2) FIRE EXTINGUISHER: The CO2 extinguisher is primarily used for extinguishing engine fires occurring on start-up. unlike PKP, CO2 leaves no residue. Two CO2 extinguishers should be in the immediate vicinity of the flight deck. To operate, pull the safety pin, squeeze the handle, and using a sweeping motion aim the cone at the base of the fire. Keep the extinguisher on the deck for proper grounding.

.22 DRY CHEMICAL EXTINGUISHER (PKP)l The dry chemical (PKP) extinguisher is effective on small open air fuel fires. These normally must be brought to the flight beck for flight ops. To operate, remove safety pin on activation plunger on top of the cylinder, depress plunger to activate the cylinder, depress the nozzle squeeze handle at the end of the nozzle, point the nozzle at the base of the fire, and use short bursts with a sweeping motion.

.23 FIREHOSE: Firehoses are normally located in the vicinity of the flight deck and laid out for flight ops ready for immediate use. Transports water/foam to the flight deck during an emergency.

.24 IN-LINE EDUCTOR: The in-line-eductor is normally located in the vicinity of the flight deck and made ready for use during flight ops. It is installed at the designated secondary hose station.

.25 PROPORTIONER: The proportioner is part of the installed AFFF system and is permanently installed in the firemain to provide a means of mixing fireman water with AFFF. The proportioner utilizes a venturi which mixes the AFFF into the firemain at a concentration of at least 6% by volume. The AFFF system features a holding tank for AFFF, at least 50 gallons; an AFFF pump; and a balancing valve. The balancing valve adjusts the AFFF concentrate flow into the system based on fire main pressure.

.26 VARIABLE STREAM FOG NOZZLE (VARINOZZLE): The variable stream fog nozzle is located at both the primary and secondary fire stations for the flight deck. Turn the end of the nozzle clockwise/counterclockwise to adjust the amount of water/foam desired. The first V-notch on the varinozzle produces a 30 degree fog pattern and the second V-notch produces a 45 degree fog pattern.

.27 ALL-PURPOSE NOZZLE: No longer authorized for flight deck use.

.28 SPANNER WRENCH: Spanner wrenches should be located at each fire station. They should work properly to allow for quick responses to hose or nozzle problems.

.29 SEAWATER STATIONS: Seawater stations supply water to the secondary hose stations.

.210 AFFF STATIONS: Thee are two AFFF stations, one on either side of the flight deck. These stations supply AFFF from the fixed AFFF system to the primary fire hoses.

.211 FLIGHT DECK AFFF ACTIVATION SWITCH: The flight deck AFFF activation switch is located in the vicinity of the flight deck on both port and starboard sides. It automatically activates the pump on the fixed AFFF system.

.212 PROXIMITY SUITS: The proximity suits are normally located in the DC locker or a locker near the flight deck. The suits provide the rescuemen protection from fire and heat in the event of an accident.

.213 FLASH HOODS AND GLOVES: Flash hoods and gloves are worn by all members of the fire party. These items are made from fire retardant material and are intended to protect personnel from flash burns (also provides limited protection from heat).

.214 CRASH KIT: The crash kit is normally located in the helicopter shack. It contains an array of tools to be utilized in the event of an accident to help remove the flight crew and/or overhaul a fire.

.215 RESPIRATORS: May be worn by personnel on the flight deck for protection from microscopic particles released from helicopter composite material during a crash/fire.

.216 SELF-CONTAINED BREATHING APPARATUS: See .215 above. SCBA may be worn by personnel who are working very close to a helicopter crash/fire, i.e. rescuemen.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: All items in this section may be required to fight a fire. They provide protection for firefighters and those involved in overhaul operations. All types of fires can be properly contained using some or all of the components previously listed in this section. Although particular items may not be used for every fire, they provide ready backups for safety.

.32 WHAT IS THE SEQUENCE OF COMPONENT INVOLVEMENT TO ACCOMPLISH THE FOLLOWING:

a. SEAWATER ACTIVATOR: See ship's DC Doctrine for activation of firemain system.

b. AFFF ACTIVATION: Normally the AFFF system is aligned to the flight deck stations for flight operations. If it is needed, the activation button is pushed at the remote box to start the pump.

.41 WHAT MINIMUM CONCENTRATION OF AFFF IS REQUIRED AT THE FLIGHT DECK STATION FOR CERTIFICATION: 6%.

.42 FOR CERTIFICATION, WHAT IS THE MAXIMUM TIME ALLOWED BETWEEN ACTIVATION OF THE AFFF SYSTEM AND DELIVERY OF FOAM TO THE FLIGHT DECK NOZZLES: 30 seconds.

.43 STATE HOW LONG THE SUPPLY OF AFFF IN THE STORAGE TANK WILL LAST IN THE EVERY OF A FIRE ON THE FLIGHT DECK: This depends on the size of the AFFF storage tank and the capacity of the AFFF pump on the vessel. Assuming the proportioner is set for 6% concentration, the AFFF pump is 7.5 GPM, and the firemain pressure is 150 psi, a 50 gallon system should last between 7 and 10 minutes.

.44 STATE HOW LONG THE SUPPLY OF AFFF IN A 5 GALLON STORAGE CAN WILL LAST WHEN BEING USED WITH AN EDUCTOR ON A FLIGHT DECK FIE: With a 95 GPM nozzle being used, 1 five gallon can of AFFF will be expended in approximately 45 seconds.

.51 HOW DOES LOSS OF FIREMAIN PRESSURE AFFECT THIS SYSTEM: No firemain pressure means no foam at the flight deck.

.61 WHAT GENERAL SAFETY PRECAUTIONS APPLY TO THIS SYSTEM: Ensure the system is properly aligned and that required amounts of foam are at each station. Make sure operators know the system. Check hoses for wear and nozzles for proper operation.

.62 WHAT ARE THE PRECAUTIONS WHEN OPERATING AFFF HOSES IN THE VICINITY OF PROXIMITY SUITED RESCUEMEN: Try to avoid getting the rescuemen wet as this may cause steam to form placing them in danger. If they do get wet, continue to apply water onto them for cooling purposes.

207 SOUND-POWERED TELEPHONE SYSTEM
References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Telephone Talkers Manual, COMDTINST M9430.1
c. Basic DC PQS, NAVEDTRA 43119.2 (series)
d. Surface Ship Survivability, NWP 62.1 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: Provides communications with various stations (areas) throughout the vessel.

.2 DISCUSS THE FUNCTION, LOCATION, SOURCE OF POWER AND CONTROL SIGNALS FOR THE FOLLOWING COMPONENTS:

.21 JACKBOXES: Jackboxes are boxes with plug receptacles for sound-powered phone hook-up. These are located throughout the ship.

.22 SELECTOR SWITCHES: The selector switches designate a specific office or a specific circuit for use during flight ops.

.23 Headset

a. TRANSMITTER: The transmitter is the mouthpiece. Push the button to talk and release when not talking. Some sets are voice activated.

b. RECEIVER: The receiver(s) is/are the earpiece(s).

c. SWITCH: The switch is located in the vicinity of the jackbox.

.24 HANDSET (similar to a regular telephone)

a. TRANSMITTER: The transmitter is the mouthpiece.

b. RECEIVER: The receiver is the earpiece.

c. SWITCH: The switch is located in the vicinity of the jackbox.

.25 LOUDSPEAKER: Loudspeakers are used for comms in the event of sound-powered phone system failure or in an emergency. Normally, there is a speaker directed at the flight deck. All outside speakers can be controlled from the bridge.

.26 CALL BELL STATION BOX: A call bell station box is located on the bridge or other locations on the vessel. A specific station can be selected and a bell activated to alert personnel to pick up the sound-powered phone.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: For FLICON I, sound-powered phone comms are established with all stations involved in the operation. Good comms are essential for safety and a smooth evolution.

.32 WHAT ARE THE EFFECTS ON THE SYSTEM WHEN A PRESS-TO-TALK SWITCH REMAINS CLOSED: The transmitter will pick-up ambient noise, degrading communications on the circuit.

208 INTERNAL COMMUNICATIONS SYSTEM
References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Ship's CIC Doctrine
c. Ship's Technical Manuals

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: This system uses all the transmitting/receiving components on the vessel in order to communicate information on or near the vessel.

.2 DISCUSS THE FUNCTION, LOCATION AND MODES OF OPERATION OF THE FOLLOWING COMPONENTS:

.21 MULTI-CHANNEL UNITS (21MC) The 21MC is a component used to "dial" another area of the ship and establish comms. If both stations are manned, hold the lever down to speak and release to listen.

.22 SHIP'S SERVICE TELEPHONE: The ship's service telephone is similar to a regular telephone. You dial the number of another phone to communicate.

.23 GENERAL ANNOUNCING SYSTEM (1MC): The 1MC is a loudspeaker system for communicating throughout the ship. It is located on the bridge and can be set to pipe throughout, or to a specific area, of the ship.

.24 SOUND-POWERED TELEPHONE: Provides voice communications throughout the vessel. See Section 207.

.25 VHF-FM RADIO SETS: VHF-FM radio sets are an independent comms system, sometimes used in conjunction with the sound-powered phones. For flight ops, normally used to communicate with the ready boat.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: By using any or all of the components, the bridge can talk or pass orders to any part of the vessel. It can be used whether or not a

specific area is manned, or if a malfunction in the system has occurred.

.32 WHAT IS THE SEQUENCE OF COMPONENT INVOLVEMENT TO ACCOMPLISH COMMUNICATIONS BETWEEN STATIONS: For flight ops the sound-powered phone is the normal means of communicating. If that system fails, any of the other systems will work. A decision has to be made which system is most appropriate for a given condition.

.51 HOW DOES HEAVY TEMPO OF OPERATIONS AFFECT THIS SYSTEM: Heavy use of the sound-powered phone system can slowdown the passage of vital information; circuit discipline is important! Similar problems exist if too many people are working on a particular radio frequency.

.52 HOW DOES A LOSS OF ELECTRICAL POWER AFFECT THE DIFFERENT COMPONENTS OF THIS SYSTEM: Loss of electrical power will render all but the sound-powered phones and battery operated radios inoperative.

209 FLIGHT DECK SURVIVAL EQUIPMENT SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS EQUIPMENT: To ensure flight deck personnel are protected from debris (FOD) while on deck during flight ops and to save their life in the event of water entry.

.2 DISCUSS THE FUNCTION, LOCATION, OPERATION AND WHAT SHOULD BE CHECKED FOR EACH OF THE FOLLOWING COMPONENTS:

.21 LPU-30 (P) LIFE PRESERVER ASSEMBLY:

a. MK1 VEST: The life vest is designed to hold all of the survival equipment mentioned in this section. Vests are normally located in, or close to, the helicopter shack. To check, put the vest on and button the snaps.

b. BLADDER ASSEMBLY: The bladder assembly fits inside the life vest. It is designed to hold air for buoyancy and is inflated manually through inflation tubes or automatically by activating CO2 cartridges. For proper inflation, it is very important that there are no twists in the bladder.

c. CO2 INFLATION ASSEMBLY: The CO2 inflation assembly consists of a toggle lever attached to two CO2 cartridges. When the lever is moved from the up

position to the down position, CO2 from the cartridges inflates the bladder.

d. STROBE LIGHT AND POUCH: The strobe light is a powerful flashing light that will assist searchers locate individuals in the water. The light is located in a pouch on the life vest, attached with a lanyard, and is operated by pushing the activation switch on the bottom of the light.

e. SEA DYE MARKER AND POUCH: The sea dye marker contains a bright green dye compound that will spread over the water when released to assist searchers. The dye marker is contained in a pouch attached to the life vest. Check to make sure you have the dye marker and that it is attached to the vest with 4 ft of string.

f. WHISTLE: A whistle is attached to the life vest. It is used to assist rescuers locate someone in the water. Check for proper operation when donning the life vest.

.22 CRANIAL HELMET: The cranial helmet consists of hard shell protection for the head and noise attenuators for ear protection. Prior to use, check for proper assembly and ensure ear pads are soft to provide proper sound-protection.

.23 GOGGLES: Goggles are used for eye protection and are usually kept with the cranial to prevent loss. There are both clear (for night ops) and dark lenses (for day ops). Check that the lenses are properly seated and that there are no "openings" to allow FOD to enter. Replace severely scratched lenses.

.24 DESCRIBE THE REQUIRED MARKINGS FOR CRANIAL HELMETS: All cranial helmets have reflective tape on the front and the back. LSO's and OSL's have leadership markings which are 1" red vertical strips over the standard reflective tape.

.31 DESCRIBE THE DIFFERENT METHODS OF INFLATING THE LPU-30 LIFE VEST: To inflate the LPU-30 either pull the toggle lever on the lower right part of the vest expending the CO2 cartridges or use the manual method by blowing into the inflation tube.

.61 WHAT PROBLEMS MAY RESULT WHEN THE BLADDER ASSEMBLY IS TWISTED OR KINKED INSIDE THE VEST: If the bladder is kinked or twisted, proper inflation will not occur. The bladder will either inflate to the kink (halfway), which means you will float on an angle, or it will burst allowing no buoyancy.

.62 WHAT PROBLEMS MAY RESULT WHEN THE RETAINING NUT ON THE CO_2 INFLATION ASSEMBLY IS LOOSE OR TOO TIGHT: When activated, CO_2 may leak out because the nut is too loose. If the nut is too tight, it may destroy the gasket which ruins the air tight seal.

210 FLIGHT DECK MARKINGS AND SURFACE SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: The function of this system is to have consistency of coatings and visual landing aids among USCG/USN vessels. The markings are made up of lines and lights to assist the aircraft and flight deck personnel in conducting safe ship/helicopter operations.

.2 DISCUSS THE FUNCTION, LOCATION AND PROTECTION PROVIDED BY THE FOLLOWING COMPONENT PARTS:

.21 PERIPHERAL LINES: The peripheral lines mark the perimeter of the landing area showing the pilots the extreme edges on which the helicopter may safely land.

.22 LINEUP LINE: The lineup line is a white line painted on the flight deck to indicate proper orientation of the helicopter during approach/landing. Obstruction clearances are assured only if the helicopter lands with aircraft centerline parallel to the lineup line.

.23 T-LINE: The T-line is an athwartships line located on the flight deck which marks the forward limit of the area designated for VERTREP. This line s made up of symbols resembling the letter "T". Obstruction clearances are assured only if the helicopter hovers with both its main and tail rotor hubs over or aft of the "T-line".

.24 TOUCHDOWN CIRCLE: The touchdown circle (landing circle) is a 24 ft diameter circle near the center of the flight deck which serves as a target for helicopter landings. Acceptable landing positions relative to the touchdown circle vary from aircraft type to aircraft type. However, for the HH-65A, it is required to land with all wheels within the circle.

.25 LANDING SPOT: The landing spot is at the center of the landing circle. This is a "target" for the pilots and the LSO to land the helicopter over this circle.

.26 HIFR PICKUP SPOT: The HIFR pickup spot is located on the port quarter of the flight deck. It is marked by the letter "H". When rigged and ready, the HIFR rig is placed near the "H" for pickup by the helicopter.

.27 FLIGHT DECK NON-SKID: Flight deck non-skid is a coarse coating over the entire flight deck which is designed to prevent the helicopter and/or personnel from slipping.

.28 FRAME MARKINGS: Frame markings are painted on the flight deck on some vessels. These markings designate the specific frames, the same as inside the vessel.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: All of the lines and markings assist the pilot and LSO in conducting a safe operation whether it be HIFR, VERTREP or takeoffs and landings. The lines show where specific operations should take place on the flight deck and indicate the safety limits for obstruction clearance.

.51 HOW DOES THE LOSS OF LIGHTING AFFECT THIS SYSTEM: Loss of lighting renders the system useless unless an alternate light source is utilized to illuminate the flight deck.

211 GROUNDING HOOK/GLOVES SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Air Capable ships Aviation Facilities Bulletin 1 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: The function of this system is to reduce the risk of electrical shock from the discharge of static electricity from operating helicopters during VERTREP or HIFR operations.

.2 DISCUSS THE FUNCTION, LOCATION, PROTECTION PROVIDED AND INDICATIONS OF FAILURE OF THE FOLLOWING COMPONENTS:

.21 METAL CONTACT: Metal contact is required to ensure a proper ground. When using grounding clips, make sure paint is scraped away, if necessary, so the clips contact bare metal.

.22 INSULATION: Insulation is required so personnel working around electricity are not accidently shocked. For flight deck evolutions, insulation is usually provided by rubber gloves.

.23 GROUNDING WIRE: The grounding wire is usually kept rolled on a bracket until ready for use. At one end is a clip to attach it to the vessel. At the other end is either another clip or an electrical plug which is connected to the aircraft's grounding receptacle (if equipped).

.24 GROUND DISCONNECT: The ground disconnect is the port or hole on the aircraft where the prong on the grounding wire is inserted or removed.

.25 ELECTRICAL GROUNDING CLIP (ALLIGATOR): The electrical grounding clip (alligator clip) is the end of the grounding wire which is attached to the vessel.

.26 GROUNDING WAND: The grounding want (dead mans stick) is an insulated pole with a grounding wire and alligator clip attached. The wand is used during HIFR and VERTREP operations (when an insulated, approved VERTREP pendant is not used) to safely discharge the static electric charge carried by the aircraft.

.27 INSULATED GLOVES: Insulated gloves are worn by personnel to provide additional protection from electrical shock. Personnel using the grounding wand during VERTREP or HIFR should wear electrical gloves.

.31 WHAT IS THE SEQUENCE OF COMPONENT INVOLVEMENT TO ACCOMPLISH A HOOKUP: Normally, the alligator clip is first attached to the vessel. Insulated gloves are donned, and the grounding wand is used to snare the cable or touch the basket as it is lowered from the helicopter. If the helicopter is already on deck, attach the clip first, and then insert the prong into the helicopter.

.32 WHAT INDICATIONS WILL YOU RECEIVE IF THE SYSTEM IS MALFUNCTIONING: You should see a spark from the discharge when the wand contacts the device. If this doe not occur, or an electrical shock is felt, the system is not working properly.

.4 PARAMETERS/OPERATING LIMITS

.41 FOR CERTIFICATION, WHAT IS THE MINIMUM VOLTAGE INSULATION RATING FOR THE GLOVES: 25,000 volts

.61 WHAT GENERAL SAFETY PRECAUTIONS APPLY TO THIS SYSTEM: Operating helicopters acquire a large static electrical charge due to the motion of their rotors through the air. Generally speaking, the larger the helicopter, the larger the static charge. It is important that proper grounding equipment and procedures are used during flight deck operations, as a static electrical shock

from even the smallest helicopter can cause serious injury and large helicopters can cause death.

.62 HOW MUCH TIME IS NORMALLY REQUIRED FOR A HOVERING HELICOPTER TO BUILD UP A STATIC ELECTRICAL CHARGE: When the ground is removed from an operating helicopter, the static charge builds to a maximum almost instantaneously.

212 LIGHTING SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)
c. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: The function of the lighting system is to illuminate the flight deck and superstructure to facilitate safe helicopter operations at night. There are also specific lights which assist the pilot on approach, HIFR and waveoff.

.2 DISCUSS THE FUNCTION, LOCATION AND MODES OF OPERATION OF THE FOLLOWING COMPONENTS:

.21 HOMING BEACON: The homing beacon is normally located on the highest part of the mainmast and is white in color. It revolves at 90 RPM and is used to assist the aircraft in locating the vessel.

.22 DECK-EDGE LIGHTS (PERIPHERAL): The deck edge (peripheral) lights are red in color and located along the peripheral line and mark the outer edges of the flight deck. On ships with centerline approaches, deck edge lights are found only on the aft peripheral line. On ships with oblique (angled-deck) approaches, they are also installed in the peripheral lines on the side of the flight deck.

.23 LINEUP LIGHTS: The lineup lights are located on or parallel to the lineup line(s) and serve to provide reference for aligning the helicopter during approach and landing. They are white in color and can be shown steady or set to flash in sequence from aft to forward.

.24 OVERHEAD FLOODLIGHTS: The overhead floodlights are amber in color (red during wartime) and are used to illuminate the forward part of the flight deck. They are located on the top of the hangar or superstructure overlooking the flight deck and should be aimed at the forward peripheral line for CG helicopters.

.25 HIFR HEADING LIGHTS: The HIFR heading lights are amber lights located on the port side of the superstructure of the vessel. When used, they assist the pilot in keeping a proper lineup and reference during the HIFR evolution. WMEC 210 class cutters do not have these lights.

.26 DECK SURFACE AND HANGAR WASH FLOODLIGHTS: These lights are box shaped projectors which are used to illuminate the flight deck by casting a horizontal beam across the deck and by illuminating the hangar or superstructure during flight ops. These lights have red lenses which appear amber when the lights are energized.

.27 EXTENDED LINEUP LIGHTS: The extended lineup lights are vertical lights extending up the superstructure to the flight deck. They work in conjunction with the lineup lights and are white in color.

.28 VERTICAL DROP LINE LIGHTS: A bar with 3-6 red lights mounted vertically down from the flight deck to the fantail. They serve to show the height of the flight deck. They are operated from the same circuit as the lineup lights, but do not strobe.

.29 STABILIZED GLIDE SLOPE INDICATING SYSTEM: The stabilized glide slope indicating system is a gyro stabilized device which projects a tricolored beam (green/amber/red) to assist the pilot in an approach to the ship at night or in poor visibility. If the pilot flies the interface between the amber and red beams, the aircraft will maintain a 3 deg glideslope to the ship. WAGB and WMEC 210 class cutters do not have SGSI(s).

.210 WAVEOFF LIGHTS: The waveoff lights are two flashing red lights located on either side of the SGSI projector. They provide the pilot with a visual signal to abort an approach or landing. WAGBs and WMEC 210 class cutters are not equipped with these lights.

.211 LIGHTING CONTROL PANELS: The lighting control panels are located on the bridge on WHEC 378, WMEC 210, and WAGB 400 cutters. It is in the hangar WMEC 270 cutters. The on/off and intensity of all flight deck lights can be controlled from this panel.

.212 HELICOPTER ANTI-COLLISION LIGHT: Helicopters are equipped with one or more strobing or rotating lights, usually white or red in color, which help make them more visible to other aircraft. These lights should be secured during night shipboard operations as their brightness tends to wash out the low light level closed circuit TV cameras and blind crewmembers.

.213 HELICOPTER NAVIGATION LIGHTS: All helicopters are equipped with navigation lights identical in color and function to a ship's running lights.

.214 HELICOPTER SEARCHLIGHT: The helicopter searchlight is a very powerful, narrow beam, light. Some lights can put out up to three million candle power.

.215 HELICOPTER LANDING/HOVER LIGHTS: Landing/hover lights are white lights normally located on the bottom of the helicopter. They are used to illuminate the area directly under or around the helicopter to provide the pilots with a visual reference for hovering or landing.

.216 HELICOPTER WHEELS DOWNLOCK LIGHT: Some aircraft are equipped with a small light which illuminates when the landing gear has been lowered and locked in place. This is a blue light near the nose strut on the HH-65A.

.217 SHIP'S STERN LIGHT: The ships stern light is located at the center of the stern approximately at maindeck level. It is a white light, required for ships, and can serve as an added visual reference for an approaching helo.

.218 SHIP'S RUNNING LIGHTS: The ships running lights are located well forward and are red and green in color. They provide a visual reference of the ship's heading.

.219 SHIP'S RESTRICTED MANEUVERABILITY LIGHTS: The ship's restricted in ability to maneuver lights are energized for flight ops. They are located on the mast, red over white over red. They serve to advise other ships that an operation is in progress which prevents the ship from maneuvering normally.

.220 SHIP'S AIRCRAFT WARNING LIGHTS: The ship's aircraft warning lights are the two red lights located at the highest point on the mast. These show the height of the highest obstruction to aircraft. They are not utilized when underway.

.221 DECK STATUS LIGHT: The deck status light is a traffic light-like device located at the forward end of the flight deck on the port side. This light is controlled by the HCO and is a visual cue to the pilot that he is cleared for a flight evolution (green), not cleared for a flight evolution (red) or cleared to start/shutdown engines and rotors (amber).

.222 FLASH SEQUENCER: The flash sequencer is used in conjunction with the in-deck and extended lineup lights. If energized, the lights flash in sequence aft to forward. If not, the lights are steady.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: When used together, the lights provide adequate illumination and visual cues for the pilot to perform safe and efficient ship/helicopter evolutions.

.41 WHERE IS THE LIGHTING CONTROL PANEL LIGHT VOLTAGE MONITORED: Voltage monitoring varies from ship class to ship class. Consult your engineering department.

.51 HOW DOES THE LOSS OF ELECTRICAL POWER AFFECT THIS SYSTEM: If electrical power is lost, the system will not operate.

213 LIGHTING CONTROL SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. Air Capable Ships Aviation Facilities Bulletin 1 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: The function of this system is to be able to control all of the required VLA lighting from one location.

.2 DISCUSS THE FUNCTION, LOCATED AND MODES OF OPERATION FOR EACH OF THE FOLLOWING COMPONENTS:

NOTE: The control boxes for this system are located in different places on each ship class. On WAGB, WHEC and WMEC 210 cutters, the system is on the bridge. On WMEC 270 cutters, the system is located in the hangar. Some switches may be located away from the main control box.

.21 HOMING BEACON ON/OFF SWITCH: The homing beacon ON/OFF switch activates the homing beacon.

.22 HOMING BEACON VARIABLE DIMMER KNOB: The homing beacon variable dimmer knob is normally located below the ON/OFF switch. It is used to raise or lower the intensity (brightness) of the beacon.

.23 DECK-EDGE LIGHTS ON/OFF SWITCH: The deck-edge lights on/off Switch is located on the control box. It allows the operator to turn the lights on or off.

.24 DECK-EDGE LIGHTS VARIABLE DIMMER KNOB: The deck-edge light variable dimmer knob is located below the ON/OFF switch and allows the operator to control the brightness of the lights.

.25 LINEUP LIGHTS ON/OFF, LEFT/RIGHT SWITCH: The lineup lights ON/OFF/RIGHT/LEFT switch is located on the

control box. It allows the operator to turn the lineup lights and vertical drop lights on or off and select the approach direction, if the ship is configured for dual (oblique) approaches.

.26 LINEUP LIGHTS VARIABLE DIMMER KNOB: The lineup lights variable dimmer switch is located next to the ON/OFF/RIGHT/LEFT switch. It allows the operator to control the brightness of the lineup and vertical drop lights.

.27 OVERHEAD FLOODLIGHTS ON/OFF SWITCH: The overhead floodlights ON/OFF switch is located on the control box. It allows the operator to turn the lights on or off.

.28 OVERHEAD FLOODLIGHTS VARIABLE DIMMER KNOB: The overhead floodlights variable dimmer knob is located next to the ON/OFF switch. It allows the operator to control the brightness of the lights.

.29 HIFR HEADING LIGHT ASSEMBLY ON/OFF SWITCH: The HIFR heading light assembly ON/OFF switch is located on the control box. It allows the operator to turn the lights on or off.

.210 HIFR HEADING LIGHT ASSEMBLY VARIABLE DIMMER KNOB: The HIFR heading light assembly variable dimmer knob is located next to the ON/OFF switch. It allows the operator to control the brightness of the lights.

.211 DECK STATUS SIGNAL SYSTEM RED/GREEN/AMBER ON/OFF SWITCH: The deck status signal system on/off switch and red/amber/green push-buttons are located on the control box. They allow the operator to turn the light on or off and change the color displayed on the deck status light.

.212 DECK STATUS SIGNAL SYSTEM VARIABLE DIMMER KNOB: The deck status signal system variable dimmer knob is located next to the ON/OFF switch. It allows the operator to control the brightness of the lights.

.213 DECK SURFACE AND HANGAR WASH FLOODLIGHTS ON/OFF SWITCH: The deck surface and hangar wash floodlights ON/OFF switches are located on the control box. They allow the operator to turn the lights on or off.

.214 DECK SURFACE AND HANGAR FLOODLIGHTS VARIABLE DIMMER KNOB: The deck surface floodlights/hangar-superstructure wash lights variable dimmer knob is located next to their respective ON/OFF switches. It allows the operator to control the brightness of the lights.

.215 FLASH SEQUENCER ON/OFF SWITCH: The flash sequencer ON/OFF switch is located on the control box. It allows the operator to activate the progressing strobe function of the lineup lights.

.216 SGSI ON/OFF SWITCH: The SGSI ON/OFF switch is located on the SGSI control panel and controls the light projector of the SGSI.

.217 SGSI VARIABLE DIMMER KNOB: The SGSI variable dimmer knob is located next to the ON/OFF switch. It allows the operator to control the brightness of the SGSI display.

.218 WAVEOFF LIGHT SYSTEM ON/OFF SWITCH: The waveoff light system ON/OFF switch is located on the waveoff light control panel with remote activation switches controlled by the LSO phone talker and CO. All can turn the lights on or off if a waveoff becomes necessary. The lights are energized by pushing a button.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: The components control the flight deck lighting in order to provide illumination and visual cues for helicopter flight operations.

.51 HOW DO THE FOLLOWING OUTSIDE INFLUENCES AFFECT THE SYSTEM:

a. LOW VISIBILITY: Atmospheric obscurations may cause glare in the lighting.

b. LOSS OF ELECTRICAL POWER: Loss of electrical power will render the system inoperable.

c. FLIGHT DECK OPERATIONS: Lights may be damaged or burn out during flight operations. The LSO should report any equipment casualties at once.

d. HIFR OPERATIONS: During HIFR operations, the HIFR heading lights provide an additional visual reference to help the pilot maintain a stable hover.

214 SHIPBOARD/HELICOPTER ELECTRICAL POWER SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: This system is designed to supply the helicopter with compatible external electrical power if needed or desired.

External power is generally used during start or maintenance on the aircraft's electrical components.

.2 DISCUSS THE FUNCTION, LOCATION, MODES OF OPERATION AND SAFETY/PROTECTIVE DEVICES FOR THE FOLLOWING COMPONENTS AND COMPONENT PARTS:

.21 28 VOLT DC CABLE: This is a heavily-insulated cable connected to the 28 Volt DC helicopter start rectifier at one end and a standard aircraft DC (three prong) connector at the other. It is used to carry electrical power from the rectifier to the aircraft for start assist.

.22 115 VOLT 400 Hz CABLE: This is a heavily-insulated electrical cable connected to the 115 Volt/400 Hz transformer at one end and a standard aircraft AC (six prong) connector at the other. It is used to carry electrical power from the rectifier to the aircraft, primarily for electrical system maintenance.

.23 MASTER SWITCH: The master switch is located at the control box. It is either ON or OFF. The system should not be energized or secured unless directed by the LSO.

.24 CABLE SELECTOR SWITCH: On ships equipped with multiple power outlets, the switch allows selection of the cable to which the output of the rectifier can be directed.

.25 POWER INDICATOR LIGHT: Indicates whether or not power is being supplied to the unit from the ship's electrical system.

.26 CONTROL PANEL: This panel controls power to the system and includes gauges to indicate how the system is operating.

.27 POWER OUTPUT GAUGES: These gauges display voltages and currents being supplied to the aircraft.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: Lights and gauges from both AC and DC systems indicate whether the shipboard electrical power system is operating properly, or if there are problems which could damage the helicopter's electrical system. If the system is working correctly, the cable (AC or DC) should be attached to the helicopter to supply power either for engine start assist (DC) or maintenance purposes (AC).

.41 AC VOLTAGE (LINE TO NEUTRAL): 113.5-118.5 volts.

.42 AC AMPERAGE: Each phase should provide a minimum of 2 amperes and a maximum which allows for a combined output

equal to the kVa rating for the system. On CG cutters, this is usually 10 kVa, which equates to maximum phase amperage of 35.

.43 AC FREQUENCY: 400 H

.44 DC VOLTAGE: 24-29 volt

.45 DC AMPERAGE: 0-300 ampere

.51 HOW DOES LOSS OF ELECTRICAL POWER AFFECT THIS SYSTEM
Loss of power from the entire ship or the system itself will render it inoperable.

.52 WHAT WILL RESULT IF THE INCORRECT VOLTAGE, AMPERAGE FREQUENCY (AC) IS APPLIED TO THE HH-65a HELICOPTER:
Protection circuits mounted in the aircraft will sense "bad" power and will not close connections into the aircraft's electrical system.

.61 DISCUSS ELECTRICAL SAFETY HAZARDS DURING POWER CAB ATTACHMENT. Power should be secured both to the cable and at the aircraft until after the cable is plugged in and the pilot has signalled the LSO he is ready for external power.

.62 DISCUSS CARE OF THE POWER CABLE. The cable should not be dragged or dropped on the deck. When not in use, it should be stored neatly out of the way to avoid damage.

.63 DISCUSS LOAD TESTING REQUIREMENTS. Load tests a required upon installation, every three years or after major maintenance. They are completed by connecting the external cables to a load bank and applying loads equivalent to ship's power rating requirements.

.64 DISCUSS HAZARD TO EQUIPMENT AND PERSONNEL DURING WET WEATHER START. Water on the aircraft, or cable connections, greatly increases the risk of a short-circuit which could damage aircraft or ship components and result in personnel injury or death. Take extra care to ensure components are kept as dry as possible. Avoid touching the connection when power is being supplied.

215 CRASH/RESCUE TOOLS (CRASH KIT) SYSTEM
References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: The crash kit contains equipment used for emergency access or overhaul of the helicopter in the event of a crash on board the ship.

.2 DISCUSS THE FUNCTION AND LOCATION OF THE FOLLOWING COMPONENTS:

.21 FIRE AX: A fire ax is normally located in a DC lock but is readily available for use in case of an accident. It can be used to provide access to the interior of the aircraft for personnel rescue and/or post-crash overhaul.

.22 HALLIGAN TOOL: The halligan tool is normally carried by the rescuemen as they conduct a rescue of the helicopter crew and a post-crash overhaul. It is shaped like a combined pick and pry bar.

.23 CANVAS TOOL ROLL: The canvas tool roll is the "crash kit". It is designed to provide a convenient means of carrying a variety of tools which may be needed in the event of a helicopter crash. All of the following items should be in your crash kit:

.24 METAL CUTTING SAW: The metal cutting saw is used to saw through areas of the helicopter in order to gain access.

.25 WRENCH (VICE GRIP): The vice grips (wrench) can be used for many things depending on the situation.

.26 COMMON 4-INCH SCREWDRIVER: The common 4 inch screwdriver is normally used to loosen or tighten screws.

.27 COMMON 8-INCH SCREWDRIVER: The common 8 inch screwdriver is normally used to loosen or tighten screws.

.28 PHILLIPS 4-INCH SCREWDRIVER: The phillips 4 inch screwdriver is normally used to loosen or tighten phillips head screws.

.29 PHILLIPS 8-INCH SCREWDRIVER: The phillips 8 inch screwdriver is normally used to loosen or tighten phillips head screws.

.210 LINEMAN'S PLIERS: The linemans pliers are used for gripping or twisting objects.

.211 CABLE CUTTER: The cable cutter can be used for cutting cables, wire or chord.

.212 HACKSAW BLADE: The hacksaw blade attaches to the hacksaw frame and is used to cut through metal or other hard substances.

.213 HACKSAW FRAME: The hacksaw frame holds the hacks blade (see .212).

.214 V-BLADE RESCUE KNIFE; The V-blade rescue knife is a versatile tool normally carried by the rescuemen to help cut seat belt and harness straps during personnel rescue.

.215 RESCUE KNIFE BLADE; Replacement blades for the rescue knife.

.216 RIB JOINT PLIERS: The rib joint pliers may be used for loosening nuts or other objects.

.217 OPEN-END ADJUSTABLE 12-INCH WRENCH: The open-end adjustable 12 inch wrench is a versatile tool that can be used to pry, twist or bend as necessary.

.218 FLASHLIGHT: Used to illuminate enclosed areas during access and overhaul.

.219 ZEUS KEY: The zeus key is similar to a screwdriver which is used to open panels that are held together by a spring-loaded connector. A regular screwdriver can be used but does not properly fit the slot.

216 RADIOTELEPHONE COMMUNICATION

Reference:

a. Ship Helo Manual, COMDTINST M3710.2 (series)
b. Ship's CIC Doctrine

.11 WHAT IS THE FUNCTION OF THIS SYSTEM: This system provides the primary means of communications between the ship and the aircraft during flight operations.

.2 DISCUSS THE FUNCTIONS AND LOCATION OF THE FOLLOWING COMPONENT

.21 REMOTE RADIOTELEPHONE UNIT:

a. HANDPHONE/HEADSET: The handphone/headset is the part of the unit which contains the speaker/earpiece to hear/receive messages.

b. START/STOP BUTTONS AND LIGHT: The start/stop buttons and light activate the remote handset.

c. EARPHONE LEVEL CONTROL: The earphone level (volume) control adjusts the intensity of sound through the earphone.

d. TRANSMIT LIGHT: The transmit light comes on when the transmit button is depressed.

.22 SPEAKER AMPLIFIER UNIT:

a. POWER SWITCH: The power switch controls whether the unit is ON or OFF.

b. VOLUME CONTROL KNOB: The volume control knob increase or decreases the volume through the speaker.

.23 SECURE VOICE UNIT:

a. TRANSMIT LAMP: The transmit lamp illuminates when the transmit button is depressed.

b. POWER ON LAMP AND SWITCH: The power on lamp and switch illuminates when the unit is energized.

c. MUTING SWITCH: The muting switch shuts off the speaker.

d. VOLUME KNOB: The volume knob increases or decreases the volume through the speaker.

.24 REMOTE CHANNEL SELECTOR UNIT:

a. CONTROL (START/STOP/VOLUME): The control (start/stop/volume) system allows these three functions to be controlled at a location different from the actual transmitter.

b. SELECTOR DIAL: The selector dial allows you to select from a number of different transceivers.

.25 REMOTE HANDSET CONTROL UNIT:

a. SELECTOR KNOB: The selector knob allows you to select from a number of different transceivers.

b. VOLUME CONTROL: The volume control increases or decreases the volume through the speaker.

.51 HOW DOES LOSS OF ELECTRICAL POWER AFFECT THIS SYSTEM
Loss of electrical power will render all but battery powered units inoperative.

.52 DESCRIBE THE COMMUNICATION CAPABILITIES OF THE HH-65A:
The HH-65A has two radios which can transmit and receive on HF, VHF-AM/FM and UHF-AM/FM. It also has dedicated HF and VHF-FM transceivers and a LF/MF receiver.

217 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM

Reference:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)

.11 WHAT IS THE FUNCTION OF THE SYSTEM: The system allows viewing of flight operations from the bridge, CIC and the helicopter control station. Various obstructions would otherwise prevent a clear view of the flight deck from these locations. The system is also used to record flight operations on VCR tape.

.2 DISCUSS THE FUNCTION AND LOCATIONS OF THE FOLLOWING COMPONENTS:

.21 VIDEO CAMERA: The video camera records the flight deck activities. A trainable camera is located above the flight deck and a fixed camera with a wide-angle lens is mounted on the starboard side of the hangar/superstructure.

.22 HCO STATION CCTV CONTROL CONSOLE: The HCO station CCTV control console is located on the bridge. WMEC 270 cutters also have a monitor in the hangar.

a. CAMERA DIRECTIONAL CONTROL: Directional control is accomplished by a joystick near the TV monitor.

b. FOCUS CONTROL: Focus is controlled by buttons near the monitor.

c. ZOOM CONTROL: The zoom function is controlled by buttons near the TV monitor.

.31 HOW DO THE COMPONENTS WORK TOGETHER TO ACHIEVE THE SYSTEM'S FUNCTION: The system controls allow the operator to view the entire flight deck or zoom in to a specific area on demand.

5. HOW DO THE FOLLOWING OUTSIDE INFLUENCES AFFECT THE SYSTEM:

a. LOW VISIBILITY: Low visibility can make viewing more difficult but the system can still pick up activity on the flight deck.

b. NIGHT OPERATIONS: Night operations make viewing more difficult. The camera features a low-light lens but activity at the aft end of the flight deck is difficult to see due to decreased ambient light.

c. LOSS OF ELECTRICAL POWER: If electrical power is lost, the system will not operate.

218 RADAR/FLIGHT FOLLOWING SYSTEM

References:

a. Ship/Helo Manual, COMDTINST M3710.2 (series)
b. USN Ship/Helo Manual, NWP 42 (series)
c. Ships CIC Doctrine

.11 WHAT IS THE FUNCTION OF THE SYSTEM: The system allows the vessel to follow the aircraft through its assigned flight plan, providing course guidance and a means to locate the aircraft in case of an emergency.

.2 DISCUSS THE FUNCTION, MODES OF OPERATION AND EFFECTIVE RANGES FOR THE FOLLOWING COMPONENTS:

.21 SURFACE SEARCH RADAR: The main function of the surface search radar is to detect surface targets for the ship. Using a specialized X-Band transponder, the surface search radar can be used to track an aircraft out to 45-50 NM. Maximum rated range of the AN/SPS-64V is 64 NM.

.22 AIR SEARCH RADAR: The air search radar incorporates very high powered transmitter and can track air targets. Most air search radars incorporate an IFF interrogator with which the radar can track target out to 160 NM.

.23 FIRE-CONTROL RADAR: Fire control radars are designed detect and track surface and air targets, and direct the fire of the ship's guns. This radar can and should be used to track and direct the aircraft during an ELVA. The maximum instrumented range of the MK 92 system currently found on WHEC 378s and WMEC 270s is 128 NM with lock-on tracking out to 64NM.

.24 X-BAND TRANSPONDER: The X-band transponder is designed to enhance the return signal from the helicopter to a surface search radar.

.25 MODE 3C IFF: The mode 3C IFF enhances signal return to air search radar and transmits a 4-digit ID code and aircraft altitude.

.26 TACAN: Acronym for Tactical Air Navigation. A full TACAN unit transmits a magnetic-referenced azimuth signal and features a distance measuring system which provides aircraft with their slant range to the transmitter. WAGBs, WHECs and WMEC 270s are equipped with a full TACAN SET. WMEC 210s are equipped with an aircraft TACAN set which provides only the distance measuring function when the aircraft and ship sets are set 62 channels apart. Effective range is line-of-sight out to 80 NM.

.27 AIRCRAFT RADAR: The HH-65A radar is capable of both surface search and weather detection. The effective range of the surface radar is 15 NM for small targets and 25 NM for large targets in the surface search mode and up to 80 NM in the weather mode.

.28 SHIP'S HOMING BEACON: The ship's homing beacon is a radio transmitter which can be used to continuously transmit the ship's call sign.

.29 UHF RADIO: The UHF radio allows "line of sight" communications on UHF frequencies.

.210 VHF-AM RADIO: The VHF-AM radio allows "line of sight" communications on VHF-AM frequencies.

.211 VHF-AM RADIO: The VHF-FM radio allows "line of sight" communications on VHF-FM frequencies.

.212 HF RADIO: The HF radio allows for long range communications on HF frequencies.

.213 DEAD RECKONING TRACER (DRT): The dead reckoning tracer (DRT) facilitates plotting of the aircraft's position during a flight.

.31 AT WHAT POINT IN THE FLIGHT DOES CIC NORMALLY TAKE CONTROL OF AIRCRAFT OPERATIONS: CIC normally takes control of the aircraft shortly after takeoff following an "ops normal" report from the helicopter, or when an aircraft is arriving/departing the "vicinity" of the vessel and checks in.

.32 HOW OFTEN ARE POSITION MARKS TAKEN ON THE AIRCRAFT: Position marks are taken every five minutes. If an air search radar is available, a position fix should be plotted. If not, a DR should be plotted every five minutes supported by position reports from the helicopter every 15 minutes.

.33 HOW OFTEN ARE FLIGHT OPERATIONS CHECKS REQUIRED: Flight operations are checked every fifteen minutes.

.41 WHAT IS THE MAXIMUM RANGE OF THE HH-65A: The maximum range of the HH-65A, given a maximum fuel load is 400 NM.

.42 FOR FLIGHT PLANNING PURPOSES, WHAT IS THE USUAL RANGE THE HH-65A: The usual range is approximately 200 NM.

.43 WHAT IS THE NORMAL CRUISING SPEED OF THE HH-65A: The normal cruising speed is 120-140 kts.

.44 STATE THE REASON FLIGHT PLANS HAVE TO BE FILED AND DAILY IF SQUAWK CODE OBTAINED PRIOR TO OPERATING THE HELICOPTER IN OR NEAR FOREIGN AIRSPACE: Flying without assigned codes in or near foreign airspace may result in a flight violation and/or interception.

.51 STATE HOW A LOSS OF ELECTRICAL POWER WOULD AFFECT THE SYSTEMS: Loss of electrical power would render the system inoperative.

.61 DESCRIBE THE PROCEDURES FOLLOWED IN EVENT OF LOST COMMUNICATIONS WITH THE AIRCRAFT:

a. If the aircraft is five minutes overdue for an "Operations Normal" report, attempt contact on secondary and tertiary frequencies.

b. If communications have not been established after 15 minutes, activate UNCERTAINTY SAR phase:

(1) Set course for the last known or estimated position of the helicopter.

(2) Monitor primary, secondary and tertiary frequencies and, if equipment permits, VHF-AM guard (121.5 MHz), UHF-AM guard (243.0 MHz) and VHF-FM channel 16 for Class C EPIRB.

(3) Activate TACAN and provide a continuous beacon (NDB) on the pre-briefed frequency.

(4) At night, turn on the homing beacon, SGSI and lineup lights. Turn on search lights and train skyward (if practicable).

(5) Notify ships OPCON and cognizant SAR coordinator.

(6) Activate appropriate sections of the SAR bill.

b. After 30 minutes, activate ALERT SAR phase:

(1) Make best possible speed for the last known position of the helicopter.

(2) Request additional SAR forces from the SAR coordinator.

(3) Initiate immediate response procedures contained in the Aircraft Pre-Accident Plan.

(4) Set FLICON ONE for immediate recovery, should the aircraft arrive overhead.

c. When aircraft's fuel endurance time is reached, activate DISTRESS SAR phase:

(1) Issue and/or request the SAR coordinator to issue an urgent marine information broadcast. Continue attempts to communicate with the helicopter.

(2) Contact other vessels in the area for possible assistance.

(3) Initiate secondary response procedures contained in the aircraft Pre-Accident Plan.