ADMIN. OFFICER coh Schmitt 5

HELICOPTER ATTACK LIGHT SQUADRON THREE STANDARDIZATION MANUAL

APRIL 1970

HELICOPTER ATTACK (LIGHT) SQUADRON THREE

STANDARDIZATION MANUAL

for the

UH-1

HELICOPTER

COMMANDING OFFICER
HELICOPTER ATTACK (LIGHT) SQUADRON THREE
FPO SAN FRANCISCO 96627

HA(L)-3:20:dk
3510
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From: Commanding Officer, Helicopter Attack (Light) Squadron THREE
To: Distribution List

Subj: Squadron Standardization Manual; promulgation of

Ref: (a) OPNAVINST 3510.9E

1. This Manual is effective upon receipt and supersedes HA(L)-3 Standardization Manual of 20 January 1969.

2. A NATOPS Manual has not been issued for the UH-1B aircraft operated by this command. Therefore, pursuant to the provisions of reference (a), this Manual has been prepared to establish a local Standardization Program.

3. The UH-1L NATOPS Manual shall be the standard applicable to the UH-1L aircraft. However, some material is included in this Standardization Manual on the UH-1L aircraft.

4. This Manual amplifies the U.S. Army Technical Manual TM-55-1520-219-10 (Operator's Manual, Army Model UH-1B Helicopter), hereafter referred to throughout this Manual as the DASH 10. Procedures for the training of flight crews and for operating the UH-1B in a Naval environment and the operating conditions encountered by this command are covered. The Manual follows the format of a standard NATOPS Flight Manual.

5. The tactical procedures utilized by this command in the employment of the UH-1B as a gunship are set forth in the HA(L)-3 Tactics Manual.

R. Beckwith
R. BECKWITH

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HA(L)-3 STANDARDIZATION MANUAL

CHANGE SUMMARY

CHANGE NUMBER AND DATE	DATE CHANGE ENTERED	PAGES AFFECTED	PURPOSE

HA(L)-3 Standardization Manual

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HA(L)-3 Standardization Manual

FOREWORD

SCOPE

The HA(L)-3 Standardization Manual exists primarily to modify the UH-1B DASH 10. Occasionally items referring to the UH-1L, that more clearly define or deliniate an area than in the UH-1L NATOPS Manual, are also included in this publication.

The DASH 10 and the procedures herein provide the best available operating instructions for most circumstances. Unless specifically waived, compliance with standardization procedures is mandatory; however, nothing should prevent the pilot from taking necessary action to safeguard life and property under unusual or emergency conditions. All Squadron pilots are charged with the responsibility of having a complete knowledge of the DASH 10 and this Manual. All Squadron crewmen are charged with the responsibility of having a complete knowledge of the portions of these manuals which pertain to their duties as flight crewmembers.

ADDITIONAL COPIES

Request for additional copies and inquiries into the status of this Manual will be addressed to the Standardization Officer.

UPDATING THE MANUAL

To ensure that this Manual contains the latest procedures and information, a review conference will be held periodically as necessary.

RESPONSIBILITY OF EACH SQUADRON PILOT

Standardization Manuals are kept current through an active manual change program. If you find anything you don't like about the Manual, if you have information you would like to pass along to others, or if you find an error in this Manual, submit a change recommendation to the Standardization Officer at once.

CHANGE RECOMMENDATIONS

Change recommendations of an urgent nature (safety of flight, etc.) should be submitted directly to the Commanding Officer via priority message. Submit routine change recommendations to the Standardization Officer via memorandum.

CHANGE SUMMARY

The change summary is provided for the purpose of maintaining a complete record of all changes issued to the Manual. Each time the Manual is

changed, the change summary shall be updated to indicate disposition and/or incorporation of previously issued changes.

WARNING, CAUTIONS AND NOTES

The following definitions apply to "WARNINGS", "CAUTIONS" and "NOTES" found throughout the Manual.

"WARNING"

Operating procedures, practices, etc., which may result in injury or death, if not carefully followed.

"CAUTION"

Operating procedures, practices, etc., which if not strictly observed, may damage equipment.

"NOTE"

Operating procedures, practices, etc., which are essential to emphasize.

WORDING

The concept of word usage and intended meaning which has been adhered to in preparing this Manual is as follows:

"SHALL" has been used only when application of a procedure is mandatory.

"SHOULD" has been used only when application of a procedure is recommended.

"MAY" and "NEED NOT" have been used only when application of a procedure is optional.

"WILL" has been used only to indicate futurity, never to indicate any degree or requirement for application of a procedure.

"LIGHTEN SHIP" herein the term "Lighten Ship" will be used to describe a UH-1B helicopter that has all armament removed (including the XM-16 pylons and 2.75 rocket tubes).

HA(L)-3 Standardization Manual

Section I

AIRCRAFT

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Section 1

Part 1. General Description. Aircraft description as written in the DASH 10 and UH-1L NATOPS Manual applies.

Part 2. Systems. Systems descriptions as written in the DASH 10 and UH-1L NATOPS Manual, amplified as follows, apply.

MAIN ROTOR BRAKE

A rotor brake is provided for stopping rotation of the main rotor blade and for holding the rotor blade from turning while the helicopter is parked.

NOTES

During the operational employment of the UH-1B as a Light Attack Aircraft, the rotor brake will not be used as a parking brake. Once the rotor has been stopped the rotor brake shall be disengaged and the main rotor blade shall be properly tied down.

DESCRIPTION - ROTOR BRAKE

The rotor brake system consists of: an actuator and master cylinder assembly located overhead, within reach of the pilot; a hydraulic line that leads from the master cylinder to a puck mounted on the transmission drive and sump assembly; a brake disc attacked to the tail rotor drive quill; an indicator light marked ROTOR BRAKE and a PRESS TO TEST switch located on the instrument panel.

TESTING - ROTOR BRAKE

Test the rotor brake system before engine start by pressing the PRESS TO TEST switch on the instrument panel. If the ROTOR BRAKE light fails to illuminate, check the ROTOR BRAKE WARNING LIGHT circuit breaker on the overhead circuit breaker panel, push breaker in and try the test light again. The ROTOR BRAKE test light will light up when the brake is applied.

OPERATION - ROTOR BRAKE

In an emergency the rotor brake may be applied at any rpm after engine shut down. Pull down on the actuator handle toward vertical position, but do not pass the center, for maximum braking effort. To release brake, ease off on handle and place in detent.
For normal braking operations the rotor rpm will be allowed to decay to 100 rotor rpm or less. Constant light pressure will be applied to stop the blades gradually. If the rotor brake is weak, pressure may be regained by returning the brake lever to the off position and reapplying the brake.

NOTE

If pressure is not regained after two or three cycles of the brake lever discontinue use of rotor brake and allow rotor blade to coast to a stop.

FUEL PORT CAP SECURITY

The fuel cap can be installed improperly with the recess pointing in the direction of the aircraft cockpit and the locking lever not properly seated or left extended. This protruding locking lever will prevent the sliding door from opening.

CAUTION

Insure that the fuel cap is installed so the recess points aft. This may be accomplished by aligning the painted strip on the cap with the painted line on the fuselage. This permits opening of the door even if the locking lever rises inadvertently.

PILOT AND CO-PILOT SHOULDER SLIDING PANELS

CAUTION

The shoulder panel must be maintained so that it will lock in the aft position and will not lock in the forward position. If the shoulder panel cannot be locked in the rear position, or if it does lock in the forward position, a hazardous condition exists which could make it difficult for the pilot and/or co-pilot to egress if the aircraft is ditched. Each panel shall be equipped with a "TEE" handle for locking the panel aft. This "TEE" handle shall not fall in a detent when the panel is pushed forward.

NOTE

If the shoulder sliding panel does not operate as described above, it shall be repaired. These panels shall be inspected on each periodic inspection for proper action.

Part 3. Aircraft Servicing. Aircraft servicing instructions as written in the DASH 10 and UH-1L NATOPS Manual amplified as follows apply.

AIRCRAFT FUELING

Only authorized and qualified personnel shall be permitted to operate fueling equipment. The plane captain shall be responsible for refueling his aftercraft after each flight. He shall make a visual check to ensure that proper fuel is used.

The aircraft should not be located in the vicinity of possible sources of ignition, such as blasting, drilling or welding operations. A minimum of 50 feet shall be maintained from other aircraft and 75 feet from any operating radar set. The restrictions requiring 50 feet between aircraft and 75 feet from operating radar are waived for operations aboard the MRB II and when operationally necessary aboard the LST's. Aircraft servicing vehicles shall be positioned parallel to the aircraft during any servicing operation.

NOTE

The aircraft commander is responsible for determining the proper fuel load commensurate with aircraft gross weight.

WARNING

Because of the possibility of lightning or other electrical discharges setting off rockets, loaded gunships hot refueling at mini-pumps shall place their aircraft at such an angle that the rocket tubes will not be pointing toward another aircraft.

GROUNDING

Prior to fueling, grounding devices on aircraft and drag chains on trucks shall be inspected by fueling personnel for proper ground.

ELECTRICAL HAZARD

Turn off all switches and electrical equipment in the aircraft prior to commencing fueling. The battery and inverter must be on to power the fuel quantity gauge.

NOTE

Hot refueling may necessitate deviation in this area. Check that no electrical apparatus, supplied by outside power (electrical cords, drop lights, floodlights, etc.) are in or near the aircraft.

STATIC DIFFERENTIAL

Before using a fuel hose, the hose nozzle shall be brought in contact with some metal part of the aircraft, remote from the fuel tanks, to ensure that no static differential exists.

ATTACHING WIRE CLAMP

Before removing the tank filler cap, the hose nozzle ground attachment shall be connected to the aircraft ground jack or to a metal part of the aircraft at a safe distance from the filler opening and tank vents.

FIRE EXTINGUISHERS AND ATTENDANTS

During fueling a secondary operator or assistant plane captain shall man a hand extinguisher with a second extinguisher readily available.

VISUAL FUEL CONTAMINATION CHECK

A visual inspection of aviation fuel is required to avoid use of contaminated fuel. A fuel sample shall be drawn, in a clean, dry jar, on each daily inspection, to assure no contamination has reached the fuel tanks. A similiar fuel sampling shall be taken from the fuel source on each occasion of refueling prior to servicing the aircraft. The fuel sample

in the jar should be checked in both the static condition and in a swirling state. In this manner the clarity, cleanliness, and consistency of the fuel can be noted and presence of water detected.

SMOKING RESTRICTIONS

Smoking is prohibited within 50 feet of the aircraft at all times during ground operations.

Part 4. Aircraft Operating Limitations. Operating limitations as written in the DASH 10 and UH-1L NATOPS Manual apply.

Section II

INDOCTRINATION

TABLE OF CONTENTS

Indoctrination procedures in the DASH 10 and UH-1L NATOPS Manual and amplified as follows apply.

INTRODUCTION

The operating procedures contained in this manual apply to the UH-1 helicopter when performing assigned tasks within its capabilities. The information contained herein is to clarify, amplify, and standardize those areas where there is room for variance of interpretation by individuals. The procedures contained herein cannot possibly cover every conceivable situation, but are intended to govern situations most frequently encountered. Safety and success of the mission are of paramount importance with precedence depending upon the existing situation.

GROUND TRAINING SYLLABUS

A ground training program is established by separate instruction to ensure thorough training and a high degree of readiness for all flight personnel. This ground training program contains syllabi which are an expansion of the basic requirements contained herein.

PILOT GROUND TRAINING

1. Each pilot checking out in the UH-1 helicopter will be required to complete a Ground Training course of instruction. This course of instruction is approximately 35 hours in length.

2. A written examination will be given on this Standardization Manual, OPNAV Instruction 3710.7D, pertinent chapters of the "DASH 10", NWP series publications and the UH-1L NATOPS Manual.

3. Instruction and examination must be completed on the following subjects prior to completion of the flight familiarization phase:

a. Helicopter operational performance (flight characteristics, systems operations, etc.).

b. Weight and balance.

c. Communications.

d. Flight planning.

e. Contact navigation.

f. Flight safety.

g. Emergency procedures.

4. While assigned to HA(L)-3, prior to assignment to a detachment, each pilot will receive instruction in the following:

a. Survival and first aid.

b. SAR procedures.

c. Local and area flight rules.

d. Squadron mission, tasks and tactics.

e. Applicable technical orders and notes; NAVAIRSYSCOM instructions and technical directives; OPNAV instructions; federal aviation regulations.

f. Intelligence.

PILOT FLIGHT TRAINING

Pilot flight training through the familiarization phase will be completed prior to assignment to HA(L)-3. The HA(L)-3 flight training syllabus will be established to accomplish maximum training for the mission and tasks assigned. The flight training syllabus will contain the following phases; combat flight familiarization, combat flight formations, navigation, night combat flight familiarization, shipboard operations, local area familiarization, and special categories.

PILOT DESIGNATION, QUALIFICATIONS AND REQUIREMENTS

It must be emphasized that the requirements set forth herein, and in HA(L)-3 Instruction 3710.2 series, are minimum requirements. A pilot shall not be advanced in designation without thoroughly demonstrating each requirement and exhibiting the high degree of proficiency demanded by the conditions under which this Command operates. Further, any time a pilot demonstrates his inability to act in the capacity of his designation, his designation shall be revoked by the Commanding Officer.

DESIGNATION

A Naval Aviator will be designated as qualified-in-model only after he has previously been designated as a helicopter pilot under the provisions of OPNAV Instruction 3710.7D. Each pilot, as he becomes qualified will be designated as a Helicopter Second Pilot, etc., and shall have a certificate thereof, signed by the Commanding Officer. This certificate shall state the model helicopter in which he is qualified, and shall be placed in his Officer Service Record and training jacket. In addition, a notation shall be made in his Aviators Flight Log Book.

DESIGNATING AUTHORITY

The Commanding Officer is the designating authority for this Command.

PILOT QUALIFICATIONS

Pilot qualifications are delineated in HA(L)-3 Instruction 3710.2 series.

AIRCREWMEN DESIGNATION, QUALIFICATION AND REQUIREMENTS

Aircrewmen are personnel assigned aboard the helicopter for the performance of duties necessary for the successful completion of the mission of the helicopter. Aircrewmen shall be qualified in all phases as set forth in Section IX of this manual, and in addition, shall meet the requirements for qualifications as Aircrewmen set forth in HA(L)-3 Instruction 1510.2 series.

The Commanding Officer will designate helicopter aircrewmen and issue certification thereto. This certificate shall state the model helicopter and modification thereof in which each crewman is qualified. Necessary record entries will be made in accordance with current directives, in each Aircrewman's Qualification Jacket and Service Record.

NOTE

A permanent Aircrewman's Qualification Jacket shall be established for each enlisted man in a flight status and maintained to reflect his previous designations and completion of current qualifications and requirements.

ASSIGNMENT REQUIREMENTS

1. A pilot designated FTL or AHAC in model will command the aircraft and occupy one of the control positions on all combat and combat training flights. A pilot designated as HAC, or higher designation, shall command the aircraft and occupy one of the control positions on all non-combat flights and on support flights.

NOTE

All persons who are not both: (1) assigned to HA(L)-3 and (2) on DIFOT orders are considered to be passengers. Prior permission of the Commanding Officer is required before utilizing any such person as a member of the crew of a HA(L)-3 aircraft.

2. Although the UH-1B is considered a single piloted aircraft, only test or other flights which remain in the immediate vicinity of an air facility may be flown single piloted. In these instances the left seat will be occupied by a qualified observer. This observer must be thoroughly briefed in cockpit conduct and safety, to include intercom system operation and lookout responsibilities. At no time will the UH-1 transit over enemy territory single piloted.

NOTE

For non-combat flights the Squadron Flight Surgeon may occupy a pilot seat.

3. At least one qualified crewman will be assigned as a member of the crew for flights in Squadron aircraft. On test flights this crewmember may be a maintenance technician on non-crew flight orders.

ANNUAL FLYING AND CURRENCY REQUIREMENTS

Annual flying and currency requirements for all active duty Naval Aviators are set forth in OPNAV Instruction 3710.7D.

NOTES

Requirements for maintaining instrument qualifications are waived while attached to HA(L)-3.

STANDARDIZATION EVALUATION

On assignment to detachment, or re-assignment to the parent squadron or other detachment, a pilot will not be required to receive a standardization evaluation if the log book entry and pilot's qualification jacket indicates successful completion of the check within the last 12 months.

The minimum requirements to remain current as a crew chief in the helicopter will be to have performed the duties of a crewmember as outlined in this manual within the last six months and to have a current Standardization Evaluation. If the crew chief has not functioned as a crewmember during the preceding six month period he will be required to satisfactorily complete a Standardization Evaluation to regain currency.

A crew chief/aircrewman who has been functional within the previous six months, upon reassignment to the squadron from detachment or detachment from the squadron will not be required to recieve a Standardization Evaluation if the permanent flight record indicates successful completion within the preceding 12 months.

WAIVERS

The Commanding Officer will waive, in writing, minimum flight and/or training requirements where recent experience in similar model helicopters or other circumstances warrant such a waiver.

LIFE RAFTS

Mark 4 (four man) rafts are available in the AME shop at the parent squadron and shall be carried in the aircraft when extended over water flight is planned.

PERSONAL FLYING EQUIPMENT

The latest available type of flight safety and survival equipment listed below shall be worn by all pilots and crewmembers on all flights.

1. Hard hat with clear visor (dual visor optional).

2. Flight gloves.

3. Flight suit - Standard Navy one piece NOMEX Flight Suit.

4. Leather Boots (combat boots with nylon inlays shall not be worn).

5. Mae West.

6. Body armor (front and back-gunners; front- pilots)(flack vest under or over armor optional). Not required for non-gunship flights.

7. Strobe light.

8. Pencil flare.

9. Signal mirror.

10. Survival knife.

11. Military hand gun and tracer ammunition.

12. Day/night (MK 13) smoke flare (at least one per person)(six per aircraft).

CAUTION

Personnel wearing flak vest are cautioned to secure it with snaps only. The zipper is easily fouled by shrapnel, etc. and this will make removal difficult if not impossible.

CAUTION

Wearing a .45 caliber pistol between the legs for protection may limit aft cyclic movement if pilot/co-pilot seat is in up/forward position.

NOTE

All crewmembers and passengers embarked shall be provided seatbelts and the use of those belts is mandatory.

NOTE

Body armor is not required during take off and landing aboard LST's.

NOTE

All personnel engaged in flights aboard a helicopter of this Command shall be required to wear complete safety/survival equipment as required for Squadron flight crewmembers.

NOTE

Mae West shall be worn by all occupants of squadron aircraft on all over water flights. Transit of the Delta or portions thereof is considered over water flight. Passengers may wear the LPP-1 life preserver. It shall be worn around the neck, ready for inflation.

NOTE

Any survival equipment that a crewmember desires to have along when he leaves the aircraft in an emergency should be carried on his person.

NOTE

One pilot and one crewman in each aircraft will be designated to carry on his person one each of the survival radios.

NOTE

Pilots and crewmembers shall not wear the survival knife attached to the Mae West.

NOTE

Flight suit pockets will be zippered closed in flight to preclude the possibility of their catching on obstructions during emergency egress.

ADHERENCE

The pilot in command is charged with the responsibility of assuring that all crewmembers are properly attired.

MANIFEST REQUIREMENTS

A manifest shall be made out to record the names, rank/rate, and service nubmers of each passenger carried. This manifest will be left with a responsible person at the location at which the passengers embark.

HA(L)-3 Standardization Manual

SECTION III

NORMAL PROCEDURES

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PART 1, MISSION PLANNING

PART 2. BRIEFING/DEBRIEFING

PART 3, SHORE BASED PROCEDURES

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Section III

Part 1. Mission Planning. Topics concerning mission planning as written in the DASH 10 and UH-1L NATOPS Manual and amplified as follows apply.

INTRODUCTION

Thorough planning of any flight is necessary to ensure the successful completion of the mission. No matter how familiar a pilot believes himself to be with an area and his aircraft he is failing to meet his responsibilities if he eliminates mission planning. Although strategy and tactics comprise a large portion of mission planning, the topics discussed herein are restricted to factors affecting the capabilities and limitations of the UH-1.

FACTORS AFFECTING HELICOPTER LIFT CAPABILITY

TEMPERATURE

High outside air temperature (OAT) results in increased inlet air temperatures which have an adverse effect on the power output of gas turbine engines. On the T53-L-11 engine, one percent loss in horsepower can be expected for each 1°C above standard day temperature. For each 2°C above standard, approximately 0.1 percent decrease in gas producer (N_1) rpm for maximum power can be expected. An increase in OAT at a constant pressure altitude causes an increase in density altitude, which results in decreased hover performance.

HUMIDITY

The effect of humidity on gas turbine engines is negligible.

ALTITUDE

Altitude has a marked effect on the performance of all aircraft engines. Air density and temperature decrease as altitude increases. As air density decreases, the mass flow of air through the gas turbine decreases. However the gas turbine operates more efficiently at the lower temperatures encountered at high altitudes. At altitude, the power output of gas turbine engines decreases and the specific fuel consumption (engine fuel consumption in pounds per hour divided by engine shaft horse power) decreases due to increased engine efficiency. This will be evidenced in the cockpit by a decrease in the torque pressure reading. With the collective pitch control set, the Nf will begin to droop as higher altitudes are reached. Operating RPM can be reestablished by reducing the angle of attack of the blades (by decreasing collective).

WIND

If a helicopter can take off and land into a steady wind, its payload can be increased because less power is required for the same flight performance with wind than without wind. Helicopters operating from the decks of ships underway are in an excellent position to take advantage of the relative wind generated by the ship's movement. However, an allowance for deck edge turbulence must be made. Consideration must be given to winds in the landing zone ashore when at maximum gross weight conditions.

GROUND EFFECT

For hovering flight closer than one-half rotor diameter to the earth, the lifting ability of a helicopter is increased by ground effect. Since the power required to hover increases with an increase in height above the ground, the helicopter can hover at heavier gross weights in-ground effect (IGE) then out-of-ground effect (OGE).

Part 2. Briefing/Debriefing. Briefing and Debriefing as written herein applies.

BRIEFING

1. The primary responsibility for briefing the crew rests with the pilot in command of the aircraft. This briefing should be in such detail as to allow a complete understanding of the mission. The pilot should give specific instructions where necessary to cover any special situations, that may occur.

2. The briefing will be conducted using a standard briefing outline. On training flights, the appropriate syllabus guide should be used. Each pilot will maintain a knee-pad and record all flight numbers, call signs and other data necessary to successfully assume tha lead. The briefing will include the following items:

a. General

(1) Helicopter assignment, and back up (if applicable).

(2) Flight leader

(3) Time for manning helicopter, engine and rotor start, air taxi and/or take off.

b. Mission

(1) Primary

(2) Secondary

(3) Operating and landing areas

(4) Control agency

(5) Time on station

c. Flight Planning and Operational Data

(1) Fuel aboard, fuel required for flight, minimum fuel state and fuel availability at destination.

NOTE

The following definitions for minimum and emergency fuel states will apply.

Minimum Fuel: A condition wherein the available fuel permits continuation to destination with normal traffic handling plus a wave-off.

Emergency Fuel: A condition wherein the available fuel requires priority routing to the nearest useable runway and immediate landing.

(1) Gross weight limitations

(2) Approach and retirement routes

(3) Obstacles to flight

(4) Charts and communications packet

(5) Alternate fuel stops available enroute

d. Communications

(1) Frequencies and call signs

(2) Radio procedure and discipline

(3) Navigational aids

(4) Identification and recognition procedures

e. Weather

(1) Local area

(2) Local area, enroute and destination forecast

(3) Procedures when inadvertently encountering IFR conditions

(4) Minimum operational weather

f. Emergency Procedures

(1) Aborts

(2) Downed pilot/aircraft

(3) SAR facilities

(4) Radio failure

(5) Loss of visual contact with flight

(6) Aircraft emergencies

(7) System failure

(8) Wave-off patterns

(9) Landing sites available prior to reaching emergency fuel state

g. Special Instructions

(1) Intelligence

(2) Fire plans

(3) Aircraft and landing zone lighting for night flights

DEBRIEFING

1. A proper debriefing conducted under tactical or training conditions can be, in many instances, the most important part of a flight. All mistakes can be discussed in an atmosphere free from distractions. Under tactical conditions debriefing is a primary source of information leading to the location of targets, distribution of troops, and many other important considerations. An outline should be followed when debriefing a flight and should contain all of the items for briefing plus the following:

a. All unusual circumstances encountered.

b. Discrepancies arising which do not conform to an established doctrine.

2. A proper debriefing should contain constructive criticism and be conducted in such a manner that all concerned can participate and present their ideas on the conduct of the flight.

Part 3. Shore-Based Procedures. Shore-based procedures as written herein apply.

INTRODUCTION

The procedures covered herein are of a standard nature and although not all inclusive are intended to cover most operational procedures. Further information may be obtained from Local Directives, NWIP 41-6, NWP 41 and OPNAV Instruction 3710.7D.

HELICOPTER ACCEPTANCE

The pilot in command should not accept the helicopter for flight until he is assured that the helicopter is satisfactory for safe flight and equipped to accomplish the assigned task. The two major steps to be taken prior to acceptance of the helicopter are a careful examination of the recent helicopter discrepancies and a thorough pre-flight inspection.

YELLOW SHEETS

At least the last ten discrepancy portions of the yellow sheet will be made available to the pilot for his examination in accordance with OPNAV Instruction 3710.7D. Any additional discrepancies should also be brought to the pilot's attention.

1. The pilot will ensure that the crew chief has conducted a standard Daily and Pre-flight inspection as set forth in the NAVWEPS 01-110-HCA-6 and has signed the pre-flight and yellow sheet prior to each flight. Daily cards must be signed off each 24 hours.

2. The pilot, when satisfied with the yellow sheet information, will fill in and sign the applicable portion of the yellow sheet.

PRE-FLIGHT INSPECTION

Prior to flight, the pilot and aircrewmen will conduct a complete visual check of the helicopter.

EXTERIOR INSPECTION (UH-1B)

On a pilot's first two FAM hops, exterior pre-flight inspection will be conducted in accordance with MRC cards. Minimum pre-flight requirements for normal operations are as follows:

1. Right cargo doors (latched or removed)

2. Fuel quantity and cap security

3. Transmission oil level

4. Engine oil level

5. Hydraulic fluid level
6. Oil or fuel leaks in transmission and engine compartments
7. Wiring, hoses and linkage to engine and transmission
8. All access doors and panels secured right side
9. Right skid tube and aft cross tube
10. Mast, control linkage, blades and dampers from right side
11. Tail rotor coupling and hanger beneath tailpipe
12. Tail rotor cable on pulley
13. Antennas
14. Tailpipe, thermocouples, N2 turbine blades
15. Fuselage and tail boom right side
16. Elevator for damage or excessive play
17. 42 gearbox oil level and cap, feel for leaks
18. 90 gearbox oil level and cap
19. Tail stinger
20. Tail rotor
21. Tail rotor drive shaft cover
22. Elevator for damage or excessive play
23. Fuslage and tail boom left side.
24. Tail rotor cable on pulley
25. Mast, control linkage, blades and dampers from left side
26. Left skid tube
27. Landing light
28. All access doors and panels secured, left side
29. Left cargo and crew doors
30. Froward landing gear cross tube

31. Search light

32. Nose section for security and damage

33. Pitot cover removed

34. Windshield

35. Cargo mirror if installed

36. Inspect pilot's door for proper operation and latching

INTERIOR COCKPIT INSPECTION (UH-1B)

The following items represent minimum inspection requirements for normal operations:

1. Portable fire extinguisher - Charged and secure

2. First aid kits and two canteens - Full and secure

3. Seats - Locked to tie-down fittings

4. Survival Equipment - Check

5. All loose gear secured

6. Internal Cargo - Locked to tie-down fittings, properly distributed (if applicable)

7. Special equipment - Properly installed (if applicable)

8. Crew doors - Secure, emergency release handles seated

9. Pilot's and copilot's seats - Adjusted

10. Directional control pedals - Adjusted

11. Shoulder harness and sagety belts - Adjusted and check lock

INTERIOR INSPECTION (NIGHT FLIGHTS) - (UH-1B)

In addition to the preceding interior inspection, the pilot should inspect the following:

1. Flashlights - Available

2. All interior lights - Check operation

3. All exterior lights - Check operation

PRESTART (UH-1B)

1. Main rotor tiedown - Removed and stowed

2. Armament panel - All off

3. Radios - Off

4. ICS - As desired

5. Bleed air and defrost - Off

6. Windshield Wiper - Off

7. Lights - As desired

8. Pitot heater - Off

9. Circuit breakers - In

10. Starter Generator - Start

11. DC Voltmeter - Check battery voltage

12. Main generator - On

13. Inverter - Off

14. APU - Connect (if practicable)

15. Battery - On (Off for APU start)

NOTE

Power to energize the starter may be supplied by either of the following sources:

a. Battery. Set battery switch to ON and battery will supply power for the 29 volt DC common bus. Set start switch to start, pull start-ignition trigger switch (on collective control lever), and starter will energize. A minimum of 23 volts is required for a battery start (14 volts or more with starter engaged).

b. APU connected to DC External Power Receptable. Set battery switch to OFF. Connect APU to external DC power receptacle, set start switch to start, and starting power will be available to the starter. Pull start-ignition trigger switch and starter will energize.

c. The starting sequence outlined in a. above is the type most commonly used. Starting sequence b. is preferred, whenever practicable, because an APU prevents drain on the battery and preculdes prolonged starter operation.

CAUTION

To prevent battery drain, the battery switch should be in OFF position when APU is being used. Reversed polarity between helicopter electrical system and APU will result in damage to the aircraft and its equipment.

16. Rotor brake - Off

17. Warning lights - Press-to-test

18. Force trim - On

19. Hydraulic boost - On

20. Caution Panel/Master Caution Lights - Test and reset

21. Engine de-ice - Off

22. Main fuel - On

23. Start fuel - On

24. Fuel Governor (fuel control) - Auto

25. Throttle - Operate to full open, return to cut-off (check flight idle stop), and reset to just below flight idle stop

26. RPM increase-decrease switch - Decrease and hold for about ten seconds

27. Rotor path - Check clear

FIRE GUARD (UH-1)

Prior to starting the engine, a qualified fire guard shall be stationed hear the engine and remain in readiness with a fire bottle until the engine is operating.

WARNING

The fire guard will remain clear of the exhaust and compressor blade area.

STARTING ENGINE AND ROTOR (UH-1B)

A qualified pilot shall be in one of the pilot's seats whenever the engine and rotor are started. Before the engine and rotor are started, the main rotor tie down shall be removed and a positive visual check shall be made to ensure that the surrounding area is clear of unnecessary personnel, equipment and obstructions. The pilot will receive and acknowledge LSE,

crew chief and/or fire guard's all-clear signal before starting the engine and rotor. Goggles that provide adequate peripheral vision should be worn by flight line personnel. To avoid excessive exhaust gas temperatures, engine starting should not be attempted with a tail wind component of 15 knots or more except in operational emergencies. During high, gusty wind conditions (15 knots or more), the engine should be started with a crewmember steadying the rotor blade by hand to preclude the blade from bottoming against the mechanical stops or the mast. Once the engine has reached approximately 25 percent gas producer (N1) turbine speed, the rotor blade must be released by the crewmember and allowed to accelerate to engine speed. During the acceleration it may be necessary for the pilot to adjust the tip path plane to keep the main rotor hub from coming against the stops.

1. Starter-igniter trigger - Pull on and hold

2. Oil Pressure Warning Lights - Check out

CAUTION

If Warning Light is not extinguished by the time the engine has reached 40% N1, shut down immediately and investigate cause. DO NOT attempt restart until cause of defect has been corrected.

3. Start fuel switch - Off at 400°C

4. Starter ignition trigger - Release at 40% N1 speed

CAUTION

Monitor EGT to avoid a hot start. If a hot start is imminent, ABORT start by depressing flight idle stop and retard throttle to cut-off position. Continue to motor engine for approximately 20 seconds with starter, DO NOT exceed 40 second limitation on continuous cranking. Do not restart engine until cause has been determined and corrected.

CAUTION

If uneven or intermittent acceleration is accompanied by a rapid rise in EGT, shut down the engine and investigate. During starting or accelaration, the maximum allowable measured EGT shall be 760°C. If this limit is exceeded, record a hot start. If during the start operation, EGT exceeds 650°C for more than 5 seconds, record a hot start.

5. Inverter - On (check voltage 109 to 121 volts, all phases)

6. Transmission and engine oil pressure gages - Check (minimum 25 psi engine oil pressure)

7. Flight idle rpm - Check stablized at 58 to 62% N1

NOTE

Slight twist grip friction may be required to assure that flight idle position will be maintained with hands off the controls. This condition will vary due to variations within fuel controls, but should never require sufficient friction as to be objectionable during normal operation.

CAUTION

Virtually all hot start overtemps can be avoided with increased attention to the prestart check list; aborting starts with low (less than 14 volts) battery power-starter engaged, accepting slow N1 acceleration, and being prepared to depress the flight idle stage button for instantaneous throttle roll-off.

8. APU - Disconnect

9. Battery - On

POST START (UH-1B)

1. Radios - On

2. Visually check APU - Clear

3. Flight controls - Check for proper response with force trim on and off. Check for proper response with hydraulic boost off.

4. Hydraulic boost - On

5. Force trim - On

NOTE

The force trim switch shall be left in the ON position during all phases of flight including take-off and landing. If temporary release of the force trim system is desired the cyclic release button shall be depressed.

6. Fuel quantity gage - Press-to-test (a 200 pound drop is sufficient to check gage operation)

7. DC fuel boost pump pressure - Check gage indication and caution panel warning light.

8. Governor - Check (Set power to ground idle, GOV switch to EMER, note N1 decrease, ensure power at ground idle, GOV switch to AUTO)(First flight of each day)

9. Throttle - Full open. Check rpm decrease (6000 rpm plus or minus 50 rpm)

NOTE

Advance throttle slowly, paying particular attention to EGT, engine oil pressure, and torque pressure during engine acceleration.

11. RPM audio warning switch - On

12. RPM increase-decrease switch - Increase to check rpm at full increase setting (6700rpm plus or minus 50 rpm) and adjust to 6600 rpm.

NOTE

Increase rpm in short increments to avoid overspeed.

13. AC inverter voltage - Check (115 volts, all phases)

14. DC generator voltage - Check (approximately 28 volts)

NOTE

It is recommended that the search light be pre-positioned prior to take-off for use during night landing. This should be done prior to sunset to avoid interference with night vision of pilots and support personnel.

PRETAKE-OFF (UH-1B)

1. Anti-collision light - On (LEAD BIRD ONLY)

2. Crew - Checked

3. Take-off checklist on instrument panel - Completed

NOTE

The use of the take-off checklist on the instrument panel is mandatory.

AIR TAXING (UH-1)

Movement of the helicopter from one ground position to another can be accomplished by air taxiing at an altitude of 3 to 5 feet (skid tube to ground surface).

NORMAL TAKE-OFF (UH-1)

Raise the collective smoothly, simultaneously adding sufficient left rudder to prevent yaw, and adjusting cyclic position to fly the helicopter straingt up to a two foot hover. Refer to the go-no-go chart to ensure that there is

a 2% N1 power reserve required to perform a normal take-off. Lower the nose attitude slightly and move into forward flight using additional collective pitch to maintain altitude. Remain in ground effect until translational lift is acquired. Climb at 60 knots (70 knots for UH-1L).

OBSTACLE TAKE-OFF (UH-1)

If the obstacle as viewed from the cockpit is not obstructed by the rotor plane, the obstacle may be cleared using the obstacle take-off procedure which requires a 3% N1 power reserve.

CAUTION

Clearing an obstacle which appears from the cockpit to be obstructed by the rotor plane requires a vertical take-off, and no less than a 4% N1 power reserve.

After ensuring that a 3% power reserve in a two foot hover exists, smoothly increase collective pitch and adjust rudder pedals to prevent yaw. Climb at an angle sufficient to clear the obstacle. After the obstacle is cleared, continue acceleration to the 60 knot climb airspeed.

MAXIMUM GROSS WEIGHT LANDING (NO HOVER LANDING)(UH-1)

Simulated maximum gross weight landings should be practiced to simulate landing without hovering at high gross weights and high density altitudes. This type of landing may be employed where a transition to a hover is not possible or a sliding landing is not feasible. The helicopter is flown as in a normal approach with the exception that a straightaway of 400 to 500 feet, 60 knots IAS, and 150 feet of altitude is desirable. At this point raise the nose attitude to slow airspeed and adjust collective pitch control to slow the rate of descent. As the airspeed decreases, continue to adjust collective pitch control to maintain a slow, controlled rate of descent. As translational lift is lost, level the helicopter and assume the landing attitude. Continue to increase collective pitch control to maximum power available to prevent a hard landing. Touchdown should be at less than 5 knots ground speed. Once the helicopter is firmly on the ground, smoothly lower the collective pitch control to the bottom to complete the landing.

NOTE

No hover landings should be made, whenever possible, when operating in sandy or dusty areas to minimuze wear on engine and rotor blades.

SLIDING LANDING AND TAKE-OFF (UH-1)

1. Sliding landings and take-offs should be practiced to simulate conditions when hovering in ground effect is not possible. They also aid the pilot in assessing the feasibility of an operation requiring maximum aircraft performance. They have value in that they familiarize the pilot with the characteristics of skid-type landing gear on various landing surfaces and they afford the opportunity to evaluate possible landing sites in case of engine failure. If an emergency autorotative approach is necessary, a sliding landing has the advantage of greater controllability during touchdown. It affords a softer landing with heavy gross weights as well.

2. To practice sliding landings, select a firm, smooth surface of sufficient length and free of obstructions. The helicopter is flown as in a normal approach until just prior to touchdown. Maintain sufficient forward speed to retain translational lift and smoothly and slowly lower the helicopter to the ground with the collective pitch control. Maintain heading with the directional control pedals. Do not land the helicopter in a crab. Compensate for any crosswind with the "wing down" method. Landing attitude should be level to prevent any pitching of the helicopter at touchdown. Do not lower collective pitch control abruptly during slide. Apply smooth aft cyclic to maintain level attitude and slow the slide. Once the helicopter is on the ground, stop collective pitch control movement and allow the aircraft to slide to a gradual stop. Normal ground slide is 20 to 30 feet. When the helicopter has stopped, lower the collective pitch control to the bottom.

A sliding take-off is made as follows: Apply power until the aircraft is light on the skids. Smoothly apply a slight amount of forward cyclic in order to begin a ground slide. Do not attempt to such the forward motion of the helicopter as it will "dig in". As transitional lift is gained, the aircraft will fly off in a near level attitude. Maintain this attitude until reaching 40 knots at which time a normal climb may be initiated.

CAUTION

Sliding landings on soft surface such as mud, loose sand, and plowed fields may cause the landing skids to dig in. This could result in a damage or a nose-over crash.

AUTOROTATIONS, GENERAL RULES (UH-1)

1. The following rules shall apply to the performance of all types of practice autorotations:

a. Practice autorotations shall not be conducted when rockets or incendiaries are aboard. Passengers may not be carried while practicing autorotations.

b. Practice autorotations shall not be conducted in areas considered to be insecure due to a combat environment and/or suspected enemy presence.

c. Practice autorotations shall not be conducted at gross weights exceeding 8000 pounds, or at marginal center of gravity loadings.

d. Practice autorotational landings or recoveries shall be made with the wind forward of the beam of the helicopter, and the crosswind component shall not exceed five knots.

e. The landing or power recovery area must be flat, hard, and smooth permittion a safe landing with a minimum available ground run of 200 feet.

f. Practice autorotations shall be performed during daylight hours only.

2. The following rules shall apply to the performance of power recovery autorotations:

a. The autorotation shall be performed under the supervision of an aircraft commander.

b. When power recovery autorotations are conducted at an airport, recovery and wave-off shall be conducted above three feet of altitude.

c. When power recovery autorotations are performed to a non-airport surface in developing pilot proficiency in maneuvering to a predetermined spot, the final leg of the autorotation shall be flown directly into the wind. A flare shall not be conducted and recovery shall be effected above 75 feet.

d. Practice instrument autorotations shall be terminated no lower than 200 feet above the terain and 70 knots of airspeed.

3. The following rules shall apply to the performance of full autorotations:

a. Full autorotations shall be conducted under the direct supervision of the NATOPS Evaluator and Assistant NATOPS Evaluators only.

b. Full autorotational landing practice shall be conducted only at an airport. The landing area must be a non-PSP prepared surface such as dirt, asphalt or concrete.

c. Unless specifically waived by the Commanding Officer, full autorotational landings shall be conducted at an airport having crash rescue/fire fighting equipment.

AUTOROTATIONS, PROCEDURES (UH-1B)

1. Autorotation procedures of the UH-1L are outlined in the UH-1L NATOPS Manual.

2. Normal autorotations include straight in, 90°, and 180° autorotations. They shall be conducted in the following manner:

a. The collective will be smoothly lowered to the full down position, simultaneously rolling the throttle to flight idle, maintaining 6400 to 6600 apparent rotor RPM, and adjusting the rudder pedals to maintain balanced flight. A 60 knot attitude will be assumed and a coordinated turn shall be commenced to final approach course. On final approach the helicopter must be aligned to the landing direction. A crosswind will require that the "wing down top rudder" method be used. The normal flare altitude is approximately 75 feet. Under conditions of high gross weight the flare must be commenced at a slightly higher altitude and executed with moderation. Low headwinds also require a slightly higher than normal flare altitude. The flare is executed by smoothly, but positively raining the nose to approximately 15° nose up, and containing the rotor rpm if necessary by a slight increase in collective pitch. If a power recovery is to be executed, decelerate in the flare to reach approximately 10 knots at 10 feet, ensuring that an excessively high rate of descent does not develop. At approximately 10 feet while still in the flare, smoothly roll the throttle firmly back into the flight position, lower the nose to a level attitude, and smoothly increase collective pitch to recover above 3 feet of altitude with 5 to 10 knots airspeed. If a full autorotation landing is to be performed, decelerate in the flare to reach approximately ten feet at ten knots ground speed, and lower the nose slightly to ensure that an excessively tail low landing does not occur. During the last 10 to 12 feet of altitude smoothly increase pitch as necessary to cushion the landing. The ground run should not exceed two helicopter lengths. When the helicopter comes to a stop, lower the collective and smoothly roll on the throttle to 6600 RPM.

b. Low altitude autorotations shall be commenced at a minimum airspeed of 60 knots, and a minimum altitude of 50 feet. The entry is the same as a normal autorotation. Immediately after entry a smooth flare must be executed to dissipate airspeed, and slow the rate of descent. Care must be taken not to assume an excessively tail low attitude at a low altitude. Recovery or landing is effected in the same manner as in a normal autorotation.

WARNING

If an excessively high sink rate or nose high attitude, or any lateral drift develop during the latter stages of an autorotation, wave off immediately.

c. A hovering autorotation is classified as a full autorotation. From a normal hover (not more than 5 feet), roll off the throttle to flight idle, taking care not to raise or lower the collective inadvertently. Use rudder and cyclic to maintain heading and ensure a vertical descent. The helicopter will tend to maintain altitude momentarily, then will commence to settle. As it settles apply up collective to cushion the landing. After the helicopter is firmly on deck, lower the collective to the full down position and smoothly roll on the throttle to 6600 RPM.

AUTOROTATION, FLIGHT CHARACTERISTICS (UH-1)

1. Section IV contains information regarding autorotational flight characteristics following actual engine failure.

2. When maneuvering in autorotational flight to land on a predetermined spot most effective method is to approach the spot in such a manner that the projected autorotational glide path overshoots the spot. At this point commence S-turns in balanced flight to dissipate the excess altitude, planning the final approach course to be into the wind. A conventional approach wherein the helicopter is turned downwind followed by a course reversal usually results in an undershoot.

CAUTION

Rotor RPM tends to build up during turns and flares, and may exceed the maximum allowable (339 RPM or 6950 apparent) unless collective pitch is used to contain the RPM.

3. The optimum rotor RPM during an autorotational descent is 6400 apparent rotor RPM. Higher RPM result in considerably higher rates of descent.

NOTE

The minimum rate of descent autorotational airspeed for the UH-1B is 45 knots IAS, and the maximum glide airspeed is 73 knots. 60 knots is a compromise between these two airspeed values, and is the airspeed at which autorotations should be practiced for the purpose of standardization.

AT 295 RPM

NOTE

See attached sheet.

4. Due to the prevailing high density altitude in country, zero airspeed autorotations shall be avoided except in the event of an actual engine failure when terrain features dictate no ground run.

5. Lowering the collective after an autorotative landing and before the helicopter has come to a stop may cause the skids to dig in soft terrain and flip the helicopter. For training and standardization purposes, the collective shall be kept in the up position after landing on all surfaces until the helicopter comes to a stop.

WAVE-OFF UH-1

1. From Power-on Approach

   a. Collective pitch control - Smoothly increase to take-off power

   b. Airspeed - Increase to 60 knots IAS (70 knots UH-1L)

   c. Cyclic control - Establish a climb

2. From Autorotative Approach

   a. Throttle - (Roll on) Full Open

b. Collective pitch control - Smoothly increase to take-off power

c. Airspeed - Increase to 60 knots IAS (70 knots UH-1L)

d. Cyclic control - Establish a climb

LANDING (UH-1)

1. Pre-landing check list (On instrument panel) - Complete

NOTE

The use of the pre-landing checklist on the instrument panel is mandatory.

SHUTDOWN (UH-1)

Pilots will ascertain prior to shutdown that the area is clear, and that personnel around the helicopter are either outside the tip path of the main rotor or within arm's length of the fuselage. During any operations, the pilot is responsible for keeping personnel around the helicopter to a minimum number for safe operations.

1. Anti-collision light - Off

2. RPM increase-decrease switch - Full decrease

3. RPM audio warning switch - Off

4. Throttle - Rool off to 70% N1 for two minutes (set UH-1L at 5500 NF for two minutes)

5. Radios - Off

6. Throttle - Flight idle (10-15 seconds)

7. Invertor - Off

8. Throttle - Idle cut-off (engine idle stop release switch must be depressed)

9. Main and Start fuel - Off

CAUTION

If a rapid rise in EGT is noted, with throttle closed and fuel off, motor engine to allow temperature to stabilize within limits. Do not exceed 40 seconds continuous starter application.

NOTE

The main fuel valve must be closed as soon as the engine has been

stopped to ensure that fuel does not drain from the fuel control and allow air to enter the fuel system. Fuel valve should remain in closed position at all times when engine is not running.

10. Rotor brake- Apply smoothly and steadily at 100 rotor rpm or less until rotor blades stop.

NOTE

The minimum rate of descent autorotational airspeed for the UH-1L is 58 knots IAS, and the maximum glide airspeed is 95 knots. Eighty knots is a compromise between these two airspeed values, and is the airspeed at which autorotational should be practiced for purposes of standardization.

NOTE

Rotor brake may be applied at 130 rotor rpm or below with the engine shut down; however, 100 rotor rpm is recommended as maximum to extend brake life. For maximum braking action, do not move rotor brake handle over center position.

NOTE

Do not use rotor brake as a parking brake.

11. Battery - Off

12. Lights - Off

POSTFLIGHT PROCEDURES

A postflight inspection should be make by the pilot leaving the helicopter after completing the assigned task. This inspection is a general visual inspection of the landing skids, fuselage, main rotor, tail rotor and transmission systems, tail assembly and engine compartment. In addition to the established requirements for reporting any systems defects, the pilot will also make entries on the yellow sheet to indicate when any normal operating limits have been exceeded. When an emergency fuel (fuel other than JP-4 or JP-5) is used, report the type fuel and length of operation.

CAUTION

The T53 engine is susceptible to second stage compressor blade fatigue damage if intake guide vanes pick up enough foreign objects to provide disrupted airflow.

NOTE

A notation of any contact with salt water spray should be noted on the "Yellow Sheet".

DEBRIEFING

For detailed debriefing, refer to part 2 of this section. Debrief those portions applicable to the flight.

DISCREPANCY REPORTING

Immediately following each flight the pilot shall complete all items on the yellow sheet in accordance with OPNAV Instruction 3710.7 series, noting all discrepancies in detail. To aid in discrepancy analysis, specific information such as position of controls, movement of controls and results, instrument readings, etc., should be recorded in flight, if practical, and be included on the yellow sheet. When possible maintenance troubleshooters should be abailable for consultation. The pilot will ensure that he has conveyed his complete knowledge of the discrepancy orally and in writing.

NIGHT FLYING

The procedures for night flying will be essentially the same as those for days; however, visual reference and depth perception are reduced.

RESTRICTIONS ON NIGHT FLYING

Helicopters will not be flown at night if any of the following equipment is not in operating condition.

REQUIRED FOR NIGHT:

1. Pilot's compartment instrument and console lights.
2. All exterior lights.
3. UHF radio.
4. Pilot's gyro horizon.
5. Pilot's compass.

POSTFLIGHT PROCEDURES (NIGHT)

Postflight procedures and the postflight inspection are performed in the same manner with the same detail as is required for daylight operations.

DEBRIEFING

For detailed debriefing, refer to part 2 of this section. Debrief those portions applicable to the flight.

Part 4 - Shipboard Procedures - Shipboard procedures as written herein apply.

COMMAND RESPONSIBILITY

Shipboard procedures must be as normal as those associated with shore based activities. All detachments embarked become a part of the overall ships functions for coordination, control, and support. The OinC of the detachment is responsible at all times for the combat readiness of his detachment. Command relations and general procedures are contained in NWP 41 and NWIP 41-6.

FIELD SHIP LANDING PRACTICE

Field ship landing practice (FSLP) is required of first tour pilots within 30 days prior to ship qualification to ensure maximum crew proficiency. The number of periods will depend on the experience and ability of the individual pilot. FSLP's will be conducted to simulate shipboard operations. as closely as possible.

NOTE

When facilities permit, pilots should complete night FSLP's prior to night ship qualification to familiarize themselves with night shipboard landing procedures.

BRIEFING PRIOR TO FSLP

Briefing prior to FSLP's will include the information set forth in Part 2 of this section and shall, in addition, include the following:

1. Patterns, altitudes, and airspeed.

2. Helicopter director signals.

SHIP QUALIFICATION

The term "ship qualification" referred to herein encompasses all shipboard landing operations. Initial day/night ship qualification should be made under ideal weather conditions including a visible horizon.

SHIP QUALIFICATION REQUIREMENTS

1. Day initial qualification: Not less than 10 landings and take-offs.

2. Night initial qualification: Day qualified and not less than 6 night landings and take-offs. At least 2 day landings must be made on the day of night qualification.

BRIEFING

All pilots will receive an appropriate briefing prior to each flight. Flight briefings will include the information set forth in Part 2 of this section and shall, in addition, include the following:

1. Use of helicopter lights (if night operation).

2. Special safety precautions.

3. Weather forecast.

4. Pathfinder technique.

FLIGHT DECK OPERATIONS

Flight deck procedures are found in NWIP 41-6 series.

FLIGHT DECK OPERATIONS

1. Flight deck handling procedures and aircraft handling signals are contained in NWP 41.

2. Personnel not required for plane handling will remain clear of the flight deck during launch and recovery of helicopters.

3. Starting engine and rotor will be done only upon direction of the ship's LSE.

4. Air taxiing and movement of helicopters will be under the positive control of the ship's LSE.

STARTING ENGINE AND ROTOR

Responsibilities and procedures for helicopter acceptance, yellow sheet completion, pre-flight inspection, pre-start, fire guard , starting engine and rotor, post start, pre-take off, shutdown and post flight inspection are outlined in Part III of this section. Additional requirements for starting engine and rotor aboard ship consist of the following:

1. Relative wind velocity consistent with safe operating procedures.

2. Clearance from the OOD and cleared signal from the LSE.

RELATIVE WIND FOR LAUNCH AND RECOVERY

Launch and recovery should be made into a relative wind of less than 45 knots. In an emergency, the UH-1B may be launched in a 60 knot relative wind.

LAUNCH PROCEDURES

1. Helicopter will not take off until cleared by the OOD and a signal has been received from the helicopter director.

2. When the ship is underway, helicopters will avoid crossing the bow of the ship at low altitudes.

RECOVERY PROCEDURES

Any of the following signals may be given by flag hoist, blinker and/or radio:

1. Signal DELTA. The flight leader will orbit his flight in the designated pattern.

2. Signal PREP CHARLIE. The flight leader will maneuver his flight into the specified landing pattern and commence approach in anticipation of a signal CHARLIE.

3. Signal CHARLIE. Cleared to land.

DELTA PATTERN (HOLDING PATTERN)

The DELTA pattern for helicopters is as designated in the CVA/CVS NATOPS Manual or by the individual ship. More than one delta pattern may be designated. This pattern may be assigned to any helicopter or recovery operation. When helicopters are orbiting in a DELTA pattern, they will be prepared to break on order from the OOD to join the CHARLIE pattern.

FINAL LANDING PROCEDURES

Pattern airspeed is 80 knots. Approaching the 180° position, initiate a power adjustment to reach the final approach position at 400 feet, and 60 knots, adjusting speed as necessary to maintain a comfortable rate of closure. The final approach should be relatively flat to eliminate the necessity for exaggerated power changes or excessibe flares near the deck. Final movement of the helicopter to the deck position is normally accomplished by air taxi. The pilot's maneuvers are governed by signals from the helicopter director. Touchdown must be smooth.

NOTE

A wave-off from the helicopter director is mandatory.

DEBRIEFING

When based aboard ship, debriefing can be equally as beneficial as when based ashore. For detailed debriefing, refer to part 2 of this section. Debrief those portions applicable to the flight.

EMERGENCY PROCEDURES

Any helicopter experiencing trouble in flight will immediately notify the flight leader, ship, or controlling agency by radio or by visual signals as the situation dictates. If the nature of the emergency warrants an immediate return to the ship, a radio call will be made to enable the ship to prepare for landing. In any case, the following information will be transmitted to the ship:

1. Side number or call sign of the helicopter.

2. Position.

3. Difficulty.

4. Intentions.

If radio communications are lost, the helicopter shall signal to indicate an emergency as follows; Turn external lights to FLASH and landing light to ON during the approach to the ship. If possible, visually relay difficulty to another airborne unit for radio relay to the ship.

NIGHT OPERATIONS

1. PRE-FLIGHT PROCEDURES

The pilot's red-lensed flashlight will be used in making the external inspections. In addition to the normal cockpit inspections, ensure that all light switches are positioned properly. Lighting at night becomes a critical area, and the general rule of not showing white lights on the flight deck should be rigidly observed.

2. TAXI AND FLIGHT

The first rule the pilot should remember concerning night shipboard operations is that the tempo of operations, both in volume and speed is considerably reduced from day operations. Slow and careful handling of helicopter by both helicopter directors and pilots is mandatory. If the pilot has any doubt about the helicopter director's signals, he should hold his position until clarification is obtained.

DEBRIEFING

For detailed debriefing, refer to part 2 of this section. Debrief those portions applicable to the flight.

LST OPERATIONS

It is necessary to include a separate description of LST operations in order to acquaint the pilot with the variations from standard shipboard operations and to point out particular LST operating procedures.

1. DEFINITIONS:

a.	CIC	(Combat Information Center) All information concerning scrambles as well as any other combat information concerning the operating area.
b.	"KILO AT THE DIP"	Flight deck being readied for launch or recovery of aircraft. Approximately ten minutes or less.
c.	"KILO CLOSE UP"	Ship is conducting flight operations, ready to land or launch aircraft. Synonomous with "green deck" and signal "charlie".
d.	LSE	(Landing Signalmen Enlisted) Enlisted member of the ship's company who assists the pilot during take-off, approach, and landing through the use of hand signals or wands.
e.	SHIP'S BEACON	Each LST is outfitted with a bright white flashing beacon located on top to the mast. This beacon can be an invaluable aid in locating the ship on dark, overcast nights.
f.	GREEN DECK	Ship will announce "Green Deck", "Signal Charlie" when ready to recover helos.
g.	RED DECK	Flight deck is fouled. Ship will give estimate when they expect a green deck.
h.	SHIP'S HEAD	The ship will announce "Ship's head" steady, ship's head swinging to port (starboard) to aid the pilot in planning his approach.

i. SHIP'S WIND — The ship announces wind conditions on the flight deck in the following manner: Wind direction is given in degrees relative to the ship's head, i.e., 060 port, 060 starboard.

2. FLIGHT OPERATIONS

Sustained flight operations from LSTs have proven highly successful. Launch times for "Scrambles" average approximately five minutes, and under normal launch conditions attack helicopters are launched in less than ten minutes.

NOTE

Due to the small size of the LST's flight deck only one helicopter shall be turned up at a time.

CAUTION

Spotting the helicopter is critical; therefore proper training of, and close cooperation with the LSE is mandatory.

3. FLIGHT DECK EVOLUTION

a. Take-off: When all pre-take off checks have been completed, operating rpm (6600) set, and a green deck has been indicated, a "Thumbs Up" signal is given to the LSE indicating ready to lift. A normal lift off is then executed following the hand or wand signals of the LSE. Make a visual check of allinstruments plus a careful check of "power required" to hold a 2 foot hover. The power reserve in a 2 foot hover shall be 3%. When the pilot is satisfied that there is enough power available, a normal take-off is commenced. As the helo passes over the deck edge, ground effect is lost. At this point, over controlling the helo can lead to rapid loss in rotor rpm and collision with the water. A night take-off from an LST is an instrument flying evolution and shall be handled as such. The pilot flying the helicopter will go on the gauges immediately after he has ascertained that the helicopter is clearing the deck edge. No turns shall be commenced prior to 200 feet. The co-pilot shall back up the pilot on the gauges and shall inform the pilot of any dangerous or unusual conditions.

NOTE

Refer to page 3-31 of this manual for insturment take-off procedures.

b. Approach: Approach patterns will vary with the position of the LST in relation to the river bank, the terrain along the banks, the enemy forces in the area and the weather. However, the final approach is always basically the same. A turn into the wind is made and the helo is flown toward the ship until the proper glide slope is intercepted, then a descent and decrease in airspeed is commenced. The desired result is a loss of transitional lift at the same moment the helicopter comes to a hover. Then make a normal landing. The two dangerous situations to avoid are coming to a high hover while still over the water and executing an extreme flare over the flight deck.

c. Pathfinder (Angle of Approach Lights): The Army Pathfinder Light has been evaluated and has proven to be an invaluable aid to assist in altitude and lineup control. All LST detachments have a pathfinder light in their custody and it should be employed during all night operations. Variation from this is at the discretion of the detachment OinC when emergency operations dictate. NEG.

d. Night Approach

(1) The following is a general description of the operation:

(a) Standard LST flight deck lighting is utilized with an LSE present.

(b) The pathfinder light is placed along the centerline of the flight deck on the upwind edge.

(c) The unit is adjusted for 6° elevation with the "level bubble" centered for LST operations. The unit used on an MRB is adjusted for 8° elevation.

(2) The recommended approach pattern is as follows:

(a) Enter downwind at 400'/60 knots (80 knots UH-1L)

(b) Set up a box pattern which will allow for a ½ mile base leg.

(c) The pilot will remain on the gauges until turning to the base leg heading. He shall be assisted by the co-pilot in orienting the flight pattern with the ship. Upon intercepting the glide slope turn to final approach course. Decelerate along the glide slope to reach zero groundspeed in a hover over the deck. The indicated airspeed on the glide slope will depend on the wind conditions. However, the indicated airspeed should not fall below 40 knots until visual contact with the actual landing area is firmly established.

(d) When the helo is within 20'-40' of the deck edge, the green light will be lost and an amber light observed. At this point the flight deck is well defined and a visual approach to touchdown is effected utilizing the LSE.

(e) The co-pilot will continually monitor altitude, airspeed and rpm and keep the pilot advised.

NOTE

During night approaches the pilot will have to rely to a great extent on VGI, altimeter, and airspeed indicator to keep his approach within safe parameters of closure rate and descent.

e. Wind Velocity: Wind velocity and direction are particularly critical aboard an LST because of the limited flight deck area and helo weight considerations. To avoid excessive EGT, starting should not be attempted with a tail wind component of 15 knots or more except in operational emergencies. During high gust wind conditions (15 knots or more) the engine should be started with a crewman steadying the main rotor blade by hand. Once the engine has reached approximately 25 percent gas producer N1 turbine speed, the rotor blade is released by the crewmember and allowed to accelerate to engine speed.

NOTE

The rotor blade should not be "thrown" or "pushed" by crewman, as this induces flapping. It shall simply be released.

Before take-off or landing, the LST should maneuver so that the existing wind is abeam the ship. Crosswinds, especially right crosswinds, require excessive left rudder inputs. The combination of torque and right crosswind will often require the use of full left rudder which frequently will be insufficient to maintain directional control. Take-offs and landings with crosswinds in excess of 15 knots should not be attempted. Wind limitations for start/engagement:

RELATIVE WIND (TO THE HELO)	SPEED
180°	15 KTS
160°	20 KTS
135°	25 KTS
110°	30 KTS
090°	35 KTS
000°	35 KTS

CAUTION

Severe deck edge turbulence should be expected in winds in excess of 35 knots. Only when operationally necessary should rotor engagement/ disengagement be attempted. The rotor tip path plane must be carefully monitored in order to prevent the main rotor blades from hitting against the mechanical stops.

f. Temperature: In the Delta area of Vietnam, high ambient temperatures ranging from approximately 26 degrees C at night to 40 degrees C during the day will be encountered throughout most of the year. Density altitudes of 3300' are not unusual. Due to the high density altitudes, smooth pilot technique must be employed during take-off to prevent loss of rotor rpm when carrying a combat load.

4. LAUNCH WEIGHT

Weight is the biggest factor to contend with while operating from LSTs. In each situation the pilot must determine what fuel reserve he can carry and still reach his destination with an adequate fuel reserve. He must insure that any additional weight is evenly distributed. The heavy armor plated pilot seats induce a nose heavy tendency and therefore extra weight should be placed as far aft as possible. The aircraft commander must exercise good judgement.

INSTRUMENT TAKE-OFF (ITO)

1. The following ITO procedures are mandatory for all night shipboard take-offs and for any take-off when visibility conditions dictate. Prior to take-off adjust the horizon bar of the attitude indicator so that the miniature airplane will appear level with the horizon bar. Ensure that the radar altimeter is operating by observing the absence of the cross hatched flag, and actuating the press to test button. The press to test button generates a 100 foot plus or minus 15 foot signal. Set the low altitude warning system to 75 feet. The radar altimeter requires approximately 90 seconds to warm up. Establish a two foot hover visually. Ensure that an adequate power reserve exists for the take-off. An ITO shall not be attempted with a power reserveless than 3% N1 in a two foot hover. With a steady smooth motion increase collective pitch to within ½% of maximum power N1, simultaneously lowering the nose to a level (40 knot) attitude by pushing the cyclic forward against the force gradient spring pressure. The transition from hover to climb, and the climb itself, shall be made with the force trim engaged. Care shall be taken not to exceed maximum power because main rotor droop with its associated loss in shaft horsepower will result. Until an indicated airspeed of 25 knots is reached the pitot static instruments are unreliable due to rotor downwash. During the transition to 25 knots, control of the helicopter must be achieved by reference to power setting, radar altimeter, the attitude gyro and the RMI. When the pitot static instruments become effective, reference should be made to the VSI and the barometric altimeter as well as the radar altimeter to ensure that a positive rate of climb is continuing. Upon reaching 40 knots the nose atitude must be lowered slightly to accelerate to 60 knots.

5. SAFETY TIPS FOR LST OPERATIONS

The following are safety tips concerning UH-1B flight operations on LSTs:

a. Don't overcontrol a heavily loaded UH-1B helicopter on take-off. Make smooth and precise corrections.

b. Don't attempt turns on the spot over the flight deck when two helos are on board.

c. Have the ship maneuver to place the existing wind within 45 degrees of the nose of the helicopter, depending on wind conditions, before you take-off.

d. Don't set up a sink rate on night take-offs, maintain take-off power setting.

e. On night approaches set running lights steady dim, rotating beacon off when established on final. With the running lights on steady dim, during approaches, the LST can accurately judge whether you are too high or low. Turning the rotating beacon off eliminates flicker vertigo.

f. Never come aboard the LST with the armament system "safe light" on. The co-pilot will always report to the pilot: "Guns and rockets cold, circuit breakers out". Insure door gunners have de-armed their weapons.

g. Wave-off whenever you are not satisfied with your approach. Any wave-off issued by the LST is mandatory.

6. ALTERNATE AIRCRAFT POSITIONING

a. Only during exceptional conditions with the LST riding at anchor will the wind be 090°to the ship's head. During normal operation the aircraft will be positioned heading closest to the best relative wind. This then allows minimum ship maneuvering to provide acceptable launch winds. However 180° winds shifts and tidal ebbs and floods occur daily. If it is anticipated that the aircraft are going to remain in a scramble status for an extended period of time, positioning one helicopter heading port and one starboard will allow the advantage of having one helo generally heading into the wind. While launching one, the ship can make preparations to warm up the engines and twist on the anchor or get underway as necessary. If winds permit, the second helicopter may turn on deck.

b. Positioning Phase: A normal (into the wind) approach to a landing will be executed to the center of the flight deck. Maintain a 2 to 3 foot hover. All 180° turns on deck will be made so that the tail does not pass through the relative wind. Execute a turn until facing into relative wind. A normal hover check will be made prior to a departure.

CAUTION

When turning right, there may be insufficient left rudder authority to stop the turn. Should this occur, a decrease in collective will aid in stopping the turn. All turns will be made slowly and with extreme caution. Do not exceed the aircraft limitations in order to accomplish prepositioning. Merely land normally and accept the fact that a scramble may be delayed. In this case Safety must not be compromised.

c. Launch Phase: With the aircraft heading in alternate directions, the first one to launch will be the one most generally heading into the wind. The second aircraft will then start and engage downwind and slide to the center of the deck to execute a turn on deck.

CAUTION

It must be recognized that a 180° turn on an LST flight deck is a difficult and demanding maneuver. It is imperative that pilots, crewman and all flight deck personnel are thoroughly aware of the maneuver to be executed and direction of turn. Crewmembers must keep the pilot informed of the proximity of the tail to obstructions or personnel on flight deck.

NOTE

On occasion it will be necessary to disembark the crewman to effect a safe turn on deck.

CAUTION

Turns on deck at night are prohibited except during extreme emergency conditions.

7. QUICK TURN AROUND

During times of intense operations it may be necessary to execute one or more quick turn arounds. This requires maximum effort on the part of the ship and detachment personnel in rearming and refueling the helicopter. Time saved may be of the essence.

WARNING

Do not allow the pressure of the moment to override good airmanship and basic safety precautions. The crew, aircraft and the successful completion of the mission are at stake.

HA(L)-3 Standardization Manual

SECTION IV

FLIGHT PROCEDURES

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INTRODUCTION

Flight procedures as written in the Dash 10 and UH-1L NATOPS and as amplified as follows apply. The flight characteristics of this helicopter in general are similar to other single rotor helicopters. The particularly noticeable difference is the additional stability that is evident during take-off, hovering, and all flight speeds. This stable condition is the result of the gyroscopic action of the stabilizer bar. The control system, with hydraulic serve assist, provides the pilot with a near zero force required for control feeling is induced into the cyclic stick and directional control pedals by means of a force trim system.

LEVEL FLIGHT CHARACTERISTICS AT VARIOUS SPEEDS

The level flight characteristics of this helicopter are normal throughout the operating limits range. All control response is immediate and gives positive results.

MANEUVERING FLIGHT

Action and response of the controls during maneuvering flight is normal at all times when the helicopter is operated within the limitations set forth. The pilot should note that when percent N1 and torque pressure are stabilized (collective position set such as for a cruise position) that the percent N1 and torque pressure will vary as cruise maneuvers are performed. However, the N1 and torque readings will return to the original setting when a steady state of flight is reestablished. During hard turns the pilot should be prepared to "hold" the collective up so that airframe vibration will not cause the collective to fall. Furthermore, the pilot should be aware that the angle of attack of the blades changes during cruise maneuvers even though the collective position is set. If the pilot adds collective during maneuvers it is possible to exceed the percent N1 available and cause the N2 to droop.

NOTE

Ten feet distance will be allowed for rotor to obstruction clearance at all times when the rotor is engaged. This applies for both shore and shipboard operations.

POWER SETTLING

Power settling is the inability to maintain level flight or stop a rate-of-descent when the helicopter begins to settle into a disturbed air mass. Air which the rotor has displaced is recirculated through the rotor system as a result of the vortex air flow that occurs at the blade tips and center of the rotor. The decreased rotor efficiency resulting from this recirculation will cause a loss of lift, increased roughness, and poor control response. Settling may not be recognized as power settling, nor a recovery effected, until considerable altitude has been lost. Recovery is best accomplished by increasing forward speed and decreasing collective pitch; (increased collective pitch may further aggrevate the condition).

NOTE

Power settling is most likely to occur during conditions of high gross weight, high density altitude, low airspeed, and descending powered flight.

BLADE STALL

Blade stall is caused by a high angle of attack on the retreating blade and starts at the inboard section and progresses outboard with increased airspeed. However, this condition will not be encountered when the helicopter is operated within the published limits imposed on it. Blade stall is the result of numerous contributing factors such as gross weight, rotor rpm, airspeed, acceleration (G load) and altitude. The condition is most likely to occur at the higher airspeeds. Blade stall will occur sooner at high altitude and gross weight. One of the more important features of the two-bladed, semi-rigid rotor system is its warning to the pilot of impending blade stall. Prior to progressing fully into the stall region, the pilot will feel a marked increase in both airframe vibration and vibration in the controls. Consequently, corrective action can be taken before the stall conditions become severe.

BLADE STALL - CORRECTIVE ACTION

In the event blade stall should occur, it will be characterized by a progressively increasing two-per-rev vibration, terminating in a loss of longitudinal control and severe feedback in the cyclic control stick. The nose of the helicopter will oscillate up and down violently, independent of cyclic control stick position. Recovery should be made by decreasing collective pitch, reducing airspeed, increasing rotor rpm and decreasing the severity of the maneuver. Descending to a lower altitude will allow maneuvering and increased airspeed without encountering blade stall.

WARNING

Entry into blade stall can result in structural damage to the helicopter.

WARNING

In power descents it is possible that the airspeed limits as set forth on the operating limits decal, displayed on the instrument panel, may be exceeded. Violations of these limitations may result in structural damage to the aircraft.

ROTOR DROOP

Droop is a term used to denote a change in power turbine speed and rotor speed that occurs with a demand for increased power with the governor at a constant speed setting. Droop may be further categorized as either transient or steady state. Transient droop is the momentary change in power turbine speed and rotor speed resulting from an increased power

demand, and it is compensated for by the overspeed control. Steady state droop is the decrease in power turbine speed and rotor speed which results from an increased power demand when the engine is already operating at maximum gas producer speed. This condition should be avoided during normal operation.

POST MAINTENANCE INSPECTION PROCEDURES

As a general rule, the procedures contained in this pagagraph are for information only.

A study by the Aircraft Maintenance Officer of the scope of maintenance or repair work accomplished on a helicopter will determine whether it is to be flown or is to receive a functional ground test.

NOTE

It is particularly important that a thorough preflight be held prior to starting engine and rotor for post maintenance turn up. All paper work should be checked by the turn-up pilot to assure that the aircraft is in fact ready and safe to engage.

POST MAINTENANCE FLIGHT PROCEDURES

Post maintenance flight inspection flights are performed to determine if the airframe, power plant, accessories, and items of equippage are functioning in accordance with predetermined requirements while subjected to the intended operating environment. Conditions requiring post maintenance inspection flights are outlined in NAVAIR Instruction 4700.2 series. Inspection flights will be conducted within autorotation distance of a landing field, when feasible, and must be accomplished under VFR conditions during daylight hours. Maintenance flights may be accomplished in combination with the operational flights provided the operational portion is not conducted until the flight inspection requirements have been satisfied by a designated maintenance check pilot.

SEARCH AND RESCUE

Control of the rescue is assumed by the first unit to arrive at the scene and remains with this unit until relieved by proper authorities. This involves control of aircraft in the immediate area to avoid congestion and hindrance to rescue, as well as direction of the actual rescue operation. Other aircraft, especially fixed-wing aircraft, should be used as radio relays when necessary. For detailed information on responsibilities and procedure refer to NWP 37 series - National Search and Rescue Manual.

AUTOROTATION CHARACTERISTICS

The information contained herein was compiled from TM55-1520-219-10 and -20, Bell factory technical representatives, AAR findings and squadron flight testing. The purpose of including this data is to assure that each pilot is aware of the extremely high rate of rotor decay following engine failure.

NOTE

The first indication received in most UH-1B engine failures is the RPM warning audio and light signal.

The rate of rotor RPM decay is greatly increased as gross wweight is increased. At a low gross weight rotor RPM will decay to approximately 280 (5700 engine RPM) within two seconds after engine failure if the collective is held at a cruise power setting. The higher collective pitch setting required for a climb would result in an even faster rotor RPM decay. Likewise when the helicopter is at max gross weight the collective pitch is greater and rotor RPM decay is faster.

WARNING

When the LOW RPM WARNING SIGNAL is activated the rotor RPM has already reached 305 (6200 engine RPM) and is falling. Failure to immediately respond to this waring signal, especially when flying a heavily loaded gunship, may result in rotor decay to a point from which recovery is not possible. There is a point of no return on RPM droop after which RPM will continue to decay regardless of collective position or attempted corrective action.

WARNING

All pilots must be aware of the importance of checking to ensure that the AUDIO WARNING SWITCH is in the ON position prior to and during flight.

CAUTION

Rate of descent is greatly increased if the nose is pushed over in an attempt to regain airspeed and rotor RPM. This characteristic may make recovery impossible if employed at low altitudes.

SECTION V

EMERGENCY PROCEDURES

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FAMILIARIZATION AND PROFICIENCY

Many of the emergencies that can be encountered in the UH-1 can not be simulated to afford the pilot training and proficiency. Others can be simulated only to the degree of statically practicing basic responses. The following are requirements which shall be met on a monthly and quarterly basis and the records that must be retained.

a. Twice each month each crewmember will participate in a simulated ditching drill. (One water ditching and one land ditching) Compliance with this will be recorded in the monthly training report.

b. Twice each month crews of LST detachments will hold practice fire drills. Land Dets will review the aircraft fire fighting and rescue procedures which are used at their particular base and hold drills simulating the participation of station personnel if necessary. Compliance with this will be recorded in the monthly training report.

c. Twice each month each crewman will participate in a simulated wounded pilot drill to provide proficiency in removing a pilot from the fold back pilot seat. Compliance with this will be recorded in the monthly training report.

d. Once each month each pilot will practice the use of emergency throttle on the ground to acquire and maintain a feel for its use. No report required.

NOTE

Careful monitoring of EGT and N2(NF) is essential whenever operating the engine on manual control with the GOV switch in the EMER position.

CAUTION

Ensure that the trottle is set at ground idle prior to selecting the EMER position with the governor switch.

CAUTION

Use extreme caution in manipulating the throttle while in GOV-EMER. Manual control of the fuel flow is exacting and failure to use caution will result in an overspeed or overtemp.

CAUTION

Ensure that the throttle is set at ground idle prior to returning the governor switch to AUTO

e. Once each quarter all pilots shall receive extensive ground training to review and remain familiar with the following:

1. Engine failure
2. Engine restart in flight
3. Fuel control failure
4. Compressor stall
5. Tail rotor malfunctions and responses
6. Hydraulic power system failure
7. Autorotations; characteristics and responses

Compliance with this will be recorded in the monthly training report.

DITCHING - POWER ON

a. Normal descent and pre-landing procedures - Execute
b. Passengers - Alerted
c. Helicopter position - Radio position to aid in search and rescue
d. Copilots door - Jettison while hovering a few feet above the water; assure both cargo doors are full open.
e. Have passengers leave the helicopter
f. Fly a safe distance - Avoid possible passenger injury
g. Battery switch - Off

WARNING

The helicopter is not watertight and will sink rapidly.

h. Landing - Perform a normal landing and allow aircraft to settle level in the water. If the aircraft begins to roll left or right assist it by adding full cyclic in the direction of roll
i. Apply rotor brake
j. Shoulder harness and safety belt - Release and clear helicopter as soon as all motion of the aircraft has stopped.

DITCHING - POWER OFF

a. Collective pitch - Adjust as required to maintain rotor RPM within limits.
b. Autorotative glide - Establish an autorotative glide into the wind at a minimum airspeed of 55 to 60 knots dependent on gross weight
c. Passengers - Alerted
d. Helicopter position - Radio position to aid in search and rescue
e. Copilots door - Jettison
f. Cabin doors - Full open and locked
g. Throttle - Closed
h. Fuel main switch - Off
i. Battery switch - Off
j. Shoulder harness - Lock
k. Flare - Execute flare near water surface and approach surface with moderately tail low attitude.

WARNING

The helicopter is not watertight and will sink rapidly.

l. Landing - As the tail contacts the water, allow the aircraft to settle in a level attitude. Continue applying collective pitch to slow rotor blades. Apply rotor brake. Do not assist aircraft to roll.

m. Shoulder harness and safety belt - Release and clear the helicopter as soon as all motion has stopped.

FUEL FILTER CAUTION LIGHT

Illumination of the fuel filter caution light indicates a clogged fuel filter. If the clogging continues, the fuel by-pass line opens to permit fuel to flow around the filter. Corrective action is to land as soon as practicable, and correct the clogged condition before attempting further flight.

FUEL BOOST PUMP FAILURE

The engine driven fuel pump will substain engine operation without the assistance of the fuel boost pumps at altitudes below 4600 feet. The failure of one or both boost pumps reduces usable fuel. After loss of one or both boost pumps, illumination of the twenty minute fuel warning light indicates only five minutes of fuel remaining at cruise flight. Corrective action for fuel boost pump(s) failure follows:

a. Descend to a pressure altitude of 4600 feet or less.

b. Check fuel boost pump circuit breakers in.

c. Plan for 15 minutes reduction in flight endurance.

ENGINE FUEL PUMP FAILURE

Illumination of the engine fuel pump light indicates failure of one of the two elements of the pump. Operation of at least one of the two elements is required to sustain engine operation. Corrective action:

a. Land as soon as practicable.

NOTE

Boost pumps alone will not maintain engine operation.

AIR INLET FILTER LIGHT

Illumination of engine inlet air light indicates a clogging condition in the air inlet filter. Corrective action:

a. Reduce power setting and airspeed.

b. If light still illuminated, the pilot shall, as conditions permit, proceed to the nearest practicable landing area for cleaning of the air inlet filter.

LOW SIDE GOVERNOR FAILURE

An underspeeding N2 governor will be evidenced by loss of N2 and rotor RPM. Corrective action:

a. Collective pitch - Full down, if altitude permits.

b. Throttle - decrease to Flight Idle.

c. Engine fuel GOV switch - Emergency position.

d. Throttle - Advance slowly to obtain engine operating RPM.

e. Land as soon as practicable.

An underspeeding governor may initially be confused with an engine failure. Upon entering autorotation following an apparent engine failure, check the N1 tachometer. A steady N1 reading of 40% to 60% indicates an underspeeding governor.

An N2 governor may malfunction only intermittently; N2 and rotor RPM may drop to 5900 to 6000 RPM and then return to 6600. Upon observing the first malfunction, execute the corrective action delineated above. This will preclude a second malfunction which could otherwise occur at an inopportune time.

CAUTION

Refer to the UH-1B Operator's Manual for instructions regarding flight operations in the emergency fuel position.

HIGH SIDE GOVERNOR FAILURE

An overspeeding N2 governor will be evident by increasing N2 RPM with constant throttle setting with power applied.

a. Collective pitch - Increase to put load on rotor system.

b. Roll off throttle to 6400 N2 to remove authority of N2 governor.

c. Continue flight with conventional throttle control.

d. Land as soon as practicable.

SHORT SHAFT FAILURE

A short shaft failure is indicated by an overspeeding N2, and a decaying rotor RPM. The engine is suddenly unloaded, and unable to deliver power to the rotor system. A short shaft failure is essentially an engine failure. Corrective action:

a. Autorotate to a landing immediately.

b. Secure engine

NOTE

Refer to the UH-1B Operator's Manual for an amplification of engine failure procedures.

MAIN TRANSMISSION CHIP LIGHT

Corrective action:

a. Land as soon as practicable. Enroute to landing area observe transmission oil temperature and pressure indicators.

b. At the first sign of a rising oil temperature, a loss of transmission oil or an impending transmission failure, proceed as in Main Transmission Oil Loss.

TAIL ROTOR CHIP LIGHT

Corrective action:

a. Proceed to the nearest practicable landing area and execute a precautionary low power (running) landing.

If evidence of an impending tail rotor drive failure - other than the illumination of the tail chip light - is observed, perform a full autorotative landing at the nearest secure and improved landing area.

NOTE

Refer to Tail Rotor Drive Failure in this section.

TAIL ROTOR DRIVE FAILURE, GENERAL CONSIDERATIONS

An impending tail rotor drive failure will usually be preceded by the following signs:

a. Progressive loss of effectiveness of left rudder application.

b. Intermittent feedback through the tail rotor controls. ("kicks" in the rudder pedals)

c. A medium to high pitch whine emanating from tail section.

d. In the case of 42° or 90° gearbox malfunctioning, illumination of the tail rotor chip light.

Tail rotor drive failure is indicated by a yaw of the helicopter to the right with a complete loss of effectiveness of the rudder pedals. The collective should be lowered immediately to control the yaw if altitude permits.

WARNING

If a low airspeed and altitude situation precludes bottoming of the collective following tail rotor drive failure, the throttle must be rolled to flight idle, and an autorotative landing must be executed immediately. The best course of action is an immediate autorotation to a secure and improved landing area. If the helicopter is over unfavorable terrain, powered flight may be attempted. In powered flight the degree of sideslip and the degree of roll may be varied by changing airspeeds and by varying power (throttle or pitch), but neither can be eliminated. Below an airspeed of approximately 30 to 40 knots, the sideslip angle becomes uncontrollable and the nose of the aircraft begins to revolve on its vertical axis. In autorotative flight the sideslip angle and the roll angle can be almost completely eliminated by maintaining an airspeed of 40 to 70 knots. When the airspeed is decreased through approximately 20 to 30 knots the streamlining effect is lost. The application of pitch in an autorotative landing will have a slight tendency to pull the nose of the aircraft left because of friction in the transmission. The loss of the streamlining effect and the slight tendency of the nose to yaw left upon pitch application should not cause excessive yaw, even in a zero ground speed autorotative landing. However to preclude any difficulties with aircraft yaw, the autorotative touchdown should be at an airspeed of 15 to 20 knots if runway or terrain condition permit.

If fyling over a secure and improved landing area with indications of an imminent tail rotor failure, a precautionary full autorotative landing or a low power running landing should be executed. A complete tail rotor drive failure during the latter stages of a normal approach would probably result in a severe aircraft damage.

TAIL ROTOR DRIVE FAILURE, PROCEDURES

In a hover:

a. Throttle - Retard to Flight Idle

b. Cushion landing with collective pitch.

c. Secure engine.

In cruise flight:

a. Altitude permitting, bottom collective to control yaw. Ensure airspeed at least 60 knots.

b. Slowly and smoothly increase collective pitch simultaneously applying left cyclic. Attempt to maintain level flight.

WARNING

If yaw of the helicopter becomes uncontrollable when power is applied, immediately bottom the collective again, roll the throttle to flight idle, and autorotate to a landing.

WARNING

When flying in powered flight following tail rotor drive failure, avoid turns to the left. Turns to the left tend to dissipate airspeed which results in uncontrollable spinning to the right.

c. Upon reaching a secure landing area, bottom the collective, secure the engine, and execute a full autorotative landing.

JAMMED DROOP COMPENSATOR, GENERAL CONSIDERATIONS

The fuel control unit of the T53 engine operates on the design droop principle. As the free power turbine tends to droop when collective pitch is applied, a signal is transmitted to the fuel control unit calling for an increased fuel flow to bring the free power turbine back up to speed. If the fuel control unit alone attempted to maintain a constant N2 by sensing engine parameters through its normal channels, N1, would be continually "chasing" N2. In helicopter installation of this engine the output of the fuel control unit must be trimmed to provide a constant N2 speed because the design droop feature results in undesireable low main rotor RPM values at high power settings. The output of the fuel control unit is mechanically trimmed to provide constant N2 values by the droop compensator. As the collective pitch is increased the droop compensator, through the action of a cam, sends a mechnical signal to the fuel control unit to increase output. The mechnical signal is independent of the existing value of N2. The droop compensator also functions to reduce fuel flow during a decrease in collective pitch. Under normal conditions, the combined action of the droop compensator and the fuel control unit maintains a constant value of N2. The value of N2 that is maintained is selected by the pilot by adjusting the governor RPM switch. When the droop compensator is not functioning, the output of the fuel control unit during changes in collective pitch

must be trimmed by the pilot using the governor RPM switch. The governor RPM switch is effective only in the governing range of 6000 to 6700 engine RPM. When operating without the droop compensator the pilot must exercise care that collective pitch changes do not cause N2 to leave the governing range.

JAMMED DROOP COMPENSATOR, PROCEDURES

If a bind occurs in the droop compensator linkage the collective will be jammed. Overcoming with force the jammed collective will sever the shear pin in the droop compensator linkage allowing collective movement. If a droop compensator becomes jammed in flight, proceed as follows:

a. Overcome bind in collective with moderate force.

b. Maintain 6600 N2 by adjusting governor RPM switch during changes in collective pitch.

c. Abort mission.

d. Return to home field. If based aboard ship proceed to the nearest practicable maintenance facility.

TAIL ROTOR CONTROL FAILURE

Tail rotor control failure is a malfunction involving a loss of control resulting in a fixed pitch setting, such as a severed control cable. Normally under these circumstances the directional pitch setting that is in the tail rotor at the time the cable is severed will, to some degree, remain in the tail rotor. The flight performance of the aircraft following tail rotor control failure depends on the pitch setting of the tail rotor at the time of the failure. Since the pitch setting of the tail rotor in powered flight is largely a function of the power being developed, tail rotor control failures can be grouped into three general categories:

a. High power failures

b. Cruise power failures

c. Low power failures

Following tail rotor control failure, the aircraft must be landed with a power setting close to that which existed at the time of the failure. It is this power setting which will align the aircraft to the flight path and result in little or no sideslip.

In the case of the failure at a very low power setting, an autorotation may be necessary, depending on the degree of low pitch that existed in the tail rotor at the time of the failure.

A failure at an intermediate power setting reuires a running landing. If the required touchdown speed appears to be dangerously fast the aircraft should be slowed, accepting a maximum of 45° yaw to the right as airspeed decreases and power required increases. The airspeed resulting in a 45° yaw to the right is the minimum touchdown speed. Immediately before touchdown the yaw to the right should be corrected by a reduction in the rotor RPM with a simultaneous and small increase in collective pitch to cushion the landing.

CAUTION

To prevent a hard landing do not reduce RPM with a skid to runway clearance in excess of three feet.

If a tail rotor control failure occurs at a high power setting, a slow airspeed running landing is necessary. If the power setting at the time of the failure is close to hovering power, the required touchdown speed will approach zero. During the approach phase the aircraft will be yawed to the left because of the low power setting. As power is applied for a landing, the nose will come back to the right. When landing with this type of tail rotor control failure on a very smooth surface such as high grade concrete or PSP without non-skid, some uncontrolable swerve or rotation to the left will be experienced after landing when the collective is lowered. The swerve or rotation is not sever, but the aircraft should be landed on the right side of the runway to prevent an uncontrolled departure from the runway during roll out.

NOTE

In a powered approach with any type of tail rotor control failure, a condition of left yaw indicates a need for application of more power before landing. A condition of right yaw indicates a need for a reduction in power (collective pitch or RPM) before landing.

MAIN TRANSMISSON OIL LOSS (OVER LAND)

When a transmission oil temperature above redline, or a drop of pressure below 30 PSI is encountered during flight, an immediate powered landing should be executed. The transmission is not receiving proper lubrication. If the enemy situation precludes an immediate landing, the aircraft should be flown an absolute minimum distance before landing.

a. The creditability and severity of an apparent transmission oil emergency is determined by observing the state of the transmission oil on both the gauges and the caution panel indicators. (Refer to the UH-1B Operator's Manual, paragraphs 2-77 through 2-86 inclusive)

WARNING

There will not always be a transmission oil temperature rise associated with a loss of pressure.

MAIN TRANSMISSION OIL LOSS (AT SEA)

If a main transmission oil system emergency is encountered during an over water flight a ditching may be prevented by heading for the nearest landing site (either ship or shore) at a slow speed and a low enough altitude to permit a quick flare followed by ditching at the first signs of failure.

TRANSMISSION OIL PRESSURE ZERO, TEMPERATURE WITHIN LIMITS

In this case there is a possibility that the XMSN oil pressure indicator and the XMSN oil pressure XMTR is malfunctioning. Check XMSN OIL PRESS IND circuit breaker. A popped circuit breaker indicates an electrical problem rather than oil oss problem exists. Since the transmission oil pressure caution light works independently from a pressure switch, if the caution light is not illuminated, there is probably an electrical malfunction rather than an actual oil pressure loss. Whether or not the mission is to be aborted with a purely electrical malfunction of this type depends on the urgency of the combat situation.

HYDRAULIC POWER FAILURE

The most prevalent cause of a hydraulic power failure is a loss of hydraulic fluid through one of the fittings on the armament pylons. If the leak from the pylon can be detected early, an immediate movement of the armament switch to the OFF position will prevent a hydraulics emergency.

A hydraulic power failure is usually preceded by a whining noise from the pump followed by flickering and finally illumination of the hydraulic caution light (HYD PRESSURE). After hydraulics failure the force required for control movement is increased and moderate feedback forces will be felt. Control motions will result in normal flight reactions in all respects except for the increased force required for control movement. In the event of a hydraulic power failure, proceed as follows:

a. Airspeed - Adjust as desired to obtain most comfortable control movement level.

b. HYD CONT circuit breaker - OUT, check for electrical failure of hydraulic control switch.

NOTE

The hydraulic control switch is an electrical fail safe device. Pulling the HYD CONT circuit breaker isolates any electrical malfunction, allowing the switch to activate to the ON position.

c. HYD CONT circuit breaker - IN, if electrical failure of hydraulic control switch has been eliminated and actual hydraulic failure has been confirmed.

d. HYDRAULIC CONTROL SWITCH - Recycle, ON (OFF, if power is not restored). Reset MASTER CAUTION light.

e. Land at nearest secure airport.

HYDRAULIC CHECK VALVE MALFUNCTION

WARNING

Under certain conditions, rapid operation of the cyclic controls can cause a check valve in the irreversible valve to become unseated, allowing fluid to bypass the actuating cylinder, rendering it unmovable. Should controls lock up due to too rapid movement, immediately turn hydraulic switch to the OFF position and then back to the ON position. This will allow the check valve to reseat itself.

LOST PLANE PROCEDURES

The primary requirements when lost are as follows:

a. Confess

b. Communicate

c. Climb

d. Conserve

e. Conform

For emergencies not covered in this section, the UH-1B Operator's Manual (DASH 10) applies.

SECTION VI

ALL WEATHER OPERATIONS

All weather operations as written in the Dash 10 and the UH-1L NATOPS Manual and amplified as follows apply.

SIMULATED INSTRUMENT FLIGHT

The pilot in command will ensure that the crewmembers embarked during instrument flight are thoroughly briefed on the responsibilities of lookouts.

SECTION VII

COMMUNICATIONS PROCEDURES

TABLE OF CONTENTS

Communications procedures as written in the Dash 10 and UH-1L NATOPS Manual and amplified as follows apply.

INTRODUCTION

The role of communications is to provide an effective means of control and coordination. It is of primary importance that all transmissions be as brief and accurate as possible. To accomplish this without overloading the tactical circuits requires strict adherence to proper voice procedures and radio discipline. Communications procedures and terminology are standardized by: NWP's 16(A), 32(A), 37(A), and 41(A).

RADIO COMMUNICATIONS

The helicopter's communications and associated electronics equipment is adequately described in the Dash 10 and UH-1L NATOPS Manual. Correct procedures are set forth in this section.

IMPORTANCE OF PROPER PROCEDURES

Proper communications and communications procedures are vital to the safe, efficient operation of aircraft, and are essential to the successful completion of any operation involving more than one aircraft. A continuous guard of the emergency frequency must be maintained at all times, but transmission on the guard frequency will be made only in an emergency situation. When identification would normally require the use of the bureau number; Seawolf, plus the 3 digit tail number will be used. Channelization of the UHF and VHF radios will be standardized in all squadron aircraft and a complete frequency channelization card will be placed in each helicopter. The FM liaison set installed is primarily for air-to-ground communications and command liaison.

EQUIPMENT WARM-UP TIME

The radio equipment installed in the helicopter requires various lengths of time for warm-up. In general, a warm-up time of not less than two minutes is required for all equipment prior to operation. Exceptions to the above is the UHF transceiver which require three minutes.

VISUAL COMMUNICATIONS

Helicopter shipboard radio and visual operating signals will be in accordance with NWP 41(A) and NWIP-41-6(A).

AIRCRAFT LIGHTING

Aircraft lighting during night operations ashore and aboard ship will be used as set forth in NWP 41(A) and OPNAVINST 3710.7 series. Running lights will not be used as a means of interplane communication.

GROUND-TO-AIR SIGNALS

Ground-to-air signals, which include body signals, panel signals, and international ground-air emergency code, will be in accordance with NWP 41(A). Aircraft maneuvers as an acknowledgement of ground-to-air signals will be in accordance with NWP 41(A). When a pyrotechnic kit is carried inside the helicopter, all crewmembers will familiarize themselves with its contents and the operation of the components.

PASSING CONTROL OF THE AIRCRAFT

NOTE

When control of the helicopter is passed from one pilot to the other, the pilot in command shall ensure that the pilot in control has his transmitter selector switch in the UHF position.

FLIGHT FOLLOWING

NOTE

When utilizing flight following the pilot in command shall ensure that communications are established with the new controlling agency before relinquishing contact with the old agency.

SECTION VIII

WEAPONS SYSTEMS

Weapons systems as written in the Dash 10 apply.

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SECTION IX

FLIGHT CREW COORDINATION

TABLE OF CONTENTS

INTRODUCTION

The crew chief performs essential functions as an integral member of the helicopter crew. The crew chief is an aircrewman assigned aboard the helicopter for the performance of duties necessary for the successful completion of the mission. Basic requirements for qualification and requalification as an aircrewman are outlined in paragraph 1242 of OPNAV Instruction 3710.7 series. HA(L)-3 Instruction 1510.2 series, Subject: Aircrewman (Airborne Gunner); selection, training, qualification, and designation of, amplifies and implements these basic requirements providing procedural guidance leading to Aircrewman designation.

All aircrewmen not so designated are considered to be in training for that designation and therfore are expected to have knowledge of the responsibilities and performance requirements of the crew chief as outlined in this section commensurate with their experience and length of time in training.

PROFICIENCY

Proficiency in all of the requirements for initial qualification must be maintained and demonstrated periodically. Regular performance requirements for crewmembers are as follows:

a. PUBLICATIONS AND RELATED DIRECTIVES

The crew chief will demonstrate current knowledge of the content and use of applicable publications and related directives. This will include the Illustrated Parts Breakdown (IPB), Maintenance Instruction Manual (MIM), Handbook of Inspection Requirements (HIR), Failure Unsatisfactory Removable Report (UR), Aircraft Log Books, etc.

b. SURVIVAL AND FIRST AID

Crew chiefs will maintain proficiency in land and water survival techniques, with particular emphasis on proper use of personal survival gear and operation of all items of survival equipment normally carried in the helicopter. This will include knowledge of the latest first aid techniques.

c. COMMUNICATIONS PROCEDURES

The crew chief will be familiar with the operation of the helicopter's radios, navigation equipment and basic techniques, and ICS. He will understand procedures to be followed in the event of lost communications with the pilot.

c. MAINTENANCE PROCEDURES

The crew chief will demonstrate the ability to perform preventative maintenance and Periodic Inspections on all systems and equipment in the helicopter.

d. SEARCH AND RESCUE

The crew chief will be familiar with ground-to-air signals, which include body signals, panel signals, and international ground-to-air emergency code.

e. HELICOPTER LOADING

The crew chief will maintain proficiency in loading procedures with emphasis on center of gravity limitations of the helicopter. He shall be able to properly secure internal cargo to prevent shifting in flight.

f. SAFETY

The crew chief will demonstrate a thorough understanding of prescribed safety procedures in and around the helicopter during ground operations.

g. WEAPONS ORIENTATION

The crew chief will maintain proficiency in use and maintenance of all weapons systems incorporated on the helicopter.

BRIEFING

The primary responsibility for briefing the crew rests with the pilot. This briefing should be conducted before the flight commences and should be in such detail as to allow a complete understanding of the task assigned. The pilot should give specific instructions where necessary to cover any special situations that may occur. In addition, the crew chief will ensure that all passengers are manifested prior to flight and will be prepared to brief all passengers on:

a. Fitting, wearing, and use of survival equipment.
b. Adjustment and use of safety belts.
c. Procedures to follow in the event of an emergency.
d. Smoking regulations.

PRE-FLIGHT

The crew chief will:

a. Perform a thorough preflight of the helicopter and complete the necessary forms (Daily/Preflight Sheets and Yellow Sheet).

INTRODUCTION

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a. Fitting, wearing, and use of survival equipment.
b. Adjustment and use of safety belts.
c. Procedures to follow in the event of an emergency.
d. Smoking regulations.

PRE-FLIGHT

The crew chief will:

a. Perform a thorough preflight of the helicopter and complete the necessary forms (Daily/Preflight Sheets and Yellow Sheet).

b. Secure all loose gear in the helicopter.

c. Correct any minor discrepancies found.

d. Ensure that any special equipment required by the task assigned is aboard the helicopter.

e. Ensure that the fire bottle, life vest, and first aid kits are inspected, serviced, and properly sealed.

f. Supervise internal loading of the helicopter under direction of the pilot.

g. Ensure that all helicopter lights are in operating condition prior to a night flight.

h. Accompany and assist the pilot in his preflight inspection. He will advise the pilot of any limitations on the aircraft.

STARTING/ROTOR START

The crew chief will:

a. Act as fire guard during starting.

b. Watch for and inform the pilot of irregularities during engine rotor start.

WARNING

The fire guard will remain clear of the plane of rotation of the compressor and turbine area at all times.

c. Act as lookout during engine/rotor start to ensure area is clear.

TAXI/TAKE-OFF

The crew chief will:

a. Act as taxi director if necessary.

b. Maintain a listening watch on ICS and inform pilot of any potential hazards.

c. Advise pilot of the condition of internal cargo.

d. Ensure that passengers are strapped in.

NOTE

All passengers will use seat belts, not gunner's belt.

IN-FLIGHT

The crew chief will:

a. Be responsible for condition and conduct of operations in the cabin under the pilot's supervision.

b. Act as lookout. During simulated instrument flight, he will maintain a lookout on the same side as the pilot who is simulating instrument flight.

c. Ensure that passengers remain secured in their seats.

d. Advise the pilot of any unusual conditions.

e. Ensure security of internal cargo.

f. Maintain ICS contact with the pilot. Advise the pilot if his duties require him to break ICS contact.

WARNING

When any crewman is not secured in his seat with a seat belt he shall be secured with a gunner's belt. Passengers should always be secured in their seats with a seat belt.

ROUGH AREA LANDINGS

The crew chief will:

a. Observe the landing zone for any potential hazards.

b. Advise the pilot when tail rotor and tail skid are clear of obstacles for landing.

TACTICAL TROOP LIFTS

The crew chief will:

a. Assist in the embarkation and debarkation of troops.

b. Advise pilot when troops are properly loaded.

c. Ensure removal of troop life vests when overwater flight is terminated.

d. Signal troops when clear to debark.

e. Ensure no smoking in cabin.

LANDING

The crew chief will:

a. Same as during take-off.

b. Maintain a lookout at the tail skid and tail rotor and under the helicopter for clearance of obstacles at the landing site, and keep the pilot advised.

POST FLIGHT

The crew chief will:

a. Notify passengers when they may disembark.

b. Perform post flight inspection.

c. Service, secure, and tie down the helicopter as required.

d. Be prepared to remain with helicopter if security forces are not available.

DE-BRIEFING

It is the responsibility of the crewman to pass on any information obtained during the flight so that pilot may include this information on the required reports.

VIP FLIGHTS

The crew chief must present a neat appearance and maintain the proper bearing at all times. His helicopter must be immaculate, with particular care taken to ensure a clean passenger compartment. The crew chief will do everything within his power to ensure the comfort of his passengers.

EMERGENCY PROCEDURES

It is important that two-way communication between the pilot and crew chief be maintained at all times. In the following emergencies the crew chief will be responsible for action indicated:

a. ENGINE FIRE ON THE GROUND

1. Fight the fire through the engine inspection access panel.

2. Signal the pilot to continue to start or to shut down as appropriate.

b. FIRE IN THE AIRCRAFT ON THE GROUND

1. Advise the pilot of the location and type of fire.

2. Attempt to bring the fire under control.

3. In the event the fire cannot be controlled, he will assist the passengers in evacuating the cabin.

c. TAKE-OFF AND LANDING EMERGENCIES

1. Remain secured in seat.

2. Abandon helicopter after rotor stops.

d. FIRE IN FLIGHT

1. Advise the pilot of location and type of fire.

2. Close cabin doors to prevent fanning the fire, if applicable.

3. Attempt to bring the fire under control.

4. Prepare for emergency landing.

e. SMOKE, CARBON MONOXIDE, AND GAS FUMES

1. Advise pilot.

2. Open the cabin doors.

WARNING

This procedure not to be followed in the event of fire.

f. ENGINE FAILURE IN FLIGHT

1. Notify passengers.

2. Prepare for emergency landing.

3. Do not allow passengers to leave the helicopter until the rotor has stopped.

g. DITCHING

1. Notify passengers.

2. Open cabin doors.

3. Remain secured in seat until rotor stops.

4. Assist passengers to evacuate cabin.

5. Remove survival equipment upon departing cabin.

PERSONAL FLYING EQUIPMENT

In the interest of safety and survival, aircrewmen shall wear flying equipment as required by Section II of this Manual.

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SECTION X

STANDARDIZATION EVALUATION

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CONCEPT

The standard operating procedures prescribed in this Manual represent the optimum method of operating UH-1B aircraft. The Standardization Evaluation is intended to evaluate compliance with Standardization procedures by observing and grading individuals. This evaluation is tailored for compatability with various operational commitments and missions of the Squadron. The prime objective of the Standardization Evaluation Program is to improve readiness and safety through constructive comment. Maximum benefit from the Standardization Program is achieved only through the active vigorous support of all pilots and flight crewmembers.

IMPLEMENTATION

Individual and Standardization Evaluations will be conducted periodically; however, instructions in the observation of adherence to Standardization procedures must be on a daily basis to obtain maximum benefits from the program. The Standardization Officer, and Standardization Instructors shall administer the program as outlined in OPNAV Instruction 3510.9 series and this Manual. Evaluees who receive a grade of unqualified on a ground or flight evaluation shall be allowed 30 days in which to complete a re-evaluation. A maximum of 60 days may elapse between the date the initial ground evaluation was commenced and the date the flight evaluation is satisfactorily completed.

EVALUATION PROCEDURES

a. PILOTS NONTACTICAL EVALUATION

Local Standardization Instructors shall conduct the Ground Evaluation and the Nontactical Flight Evaluation of pilots in their detachments or units. Examinations and Flight Evaluation Worksheets shall be forwarded to the Squadron Standardization Officer for grade determination and completion of the Standardization Evaluation Report. Local Standardization Instructors shall be evaluated by the Squadron Standardization Officer.

b. CREWMEN EVALUATION

Crewmen shall receive a Ground Evaluation and a Flight Evaluation which will be administered by the Squadron Enlisted Standardization Evaluator.

DEFINITIONS

The following terms, used through this section, are defined as to their specific meaning within the Standardization Program.

a. STANDARDIZATION EVALUATION

A periodic evaluation of individual flight crewmember standardization consisting of an open book examination, a closed book examination, an oral examination, and a flight evaluation.

b. STANDARDIZATION RE-EVALUATION

A partial Standardization Evaluation administered to a flight crewmember who has been placed in an unqualified status by receiving an unqualified grade for any of his ground examinations or the flight evaluation. Only those areas in which an unsatisfactory level was noted need be observed during a re-evaluation. A grade of unqualified on the re-evaluation will result in the convening of an Aircrew Screening Board to determine whether the crewman should receive additional training or be removed from flight status.

c. QUALIFIED

That degree of standardization demonstrated by a very reliable flight crewmember who has a good knowledge of standard operating procedures and a thorough understanding of aircraft capabilities and limitations.

d. CONDITIONALLY QUALIFIED

That degree of standardization demonstrated by a flight crewmember who meets the minimum acceptable standards. He is considered safe enough to fly as a pilot in command or to perform normal duties without supervision, but more practice is needed to become qualified.

e. UNQUALIFIED

That degree of standardization demonstrated by a flight crewmember who fails to meet minimum acceptable criteria. He should receive supervised instruction until he has achieved a grade of qualified or conditionally qualified.

f. AREA

A routine or preflight, flight or postflight

g. SUB-AREA

A performance sub-division within an area, which is observed and evaluated during an evaluation flight.

h. CRITICAL AREA/SUB-AREA

Any area or sub-area which covers items of significant importance to the over-all mission requirements, the marginal performance of which would jeopardize safe conduct of the flight.

i. EMERGENCY

An aircraft component, system failure, or condition which requires instantaneous recognition, analysis, and proper action.

j. MALFUNCTION

An aircraft component or system failure or condition which requires recognition and analysis, but which permits more deliberate action than that required for an emergency.

GROUND EVALUATION

Prior to commencing the flight evaluation, an evaluee must achieve a minimum grade of qualified on the open book and closed book examinations. The oral examination is also part of the ground evaluation, but may be conducted as part of the flight evaluation.

a. OPEN BOOK EXAMINATION

The purpose of the open book examination portion of the written examination is to evaluate the crewmembers knowledge of appropriate publications and the aircraft. The maximum time for this examination should not exceed seven days.

b. CLOSED BOOK EXAMINATION

The purpose of the open book examination portion of the written examination is to evaluate the crewmans knowledge of specific areas. Questions designated critical will be so marked. An incorrect answer to any question in the critical category will result in a grade of unqualified being assigned to the examination.

c. ORAL EXAMINATION

The questions may be taken from appropriate manuals and drawn from the experience of the Instructor/Evaluator. Such questions should be direct and positive and should in no way be opinionated.

d. GRADING INSTRUCTIONS

Examination grades shall be computed on a 4.0 scale and converted to an adjective grade of qualified or unqualified.

1. Open Book Examination.

To obtain a grade of qualified, an evaluee must obtain a minimum score of 3.5

2. Closed Book Examination.

To obtain a grade of qualified, an evaluee must obtain a minimum score of 3.3

3. Oral Examination.

A grade of qualified or unqualified shall be assigned by the Instructor/Evaluator. The grade of conditionally qualified does not apply to written and oral examinations.

FLIGHT EVALUATION

The Standardization Flight Evaluation is intended to evaluate detachment/individual compliance with approved standardized operating procedures. The successful completion of all ground evaluations and examinations is required prior to commencement of the flight evaluation. Evaluation flights will be scheduled so as not to interfere with Squadron operations. Determination of the final flight evaluation grade will be made as outlined in the Final Grade Determination section.

NOTE

Areas/sub-areas to be evaluated are listed. Critical areas/sub-areas are marked by an asterisk.

PILOT'S NONTACTICAL FLIGHT EVALUATION

Critical areas are marked with an asterisk*.

a. BRIEFING

b. PREFLIGHT
   1. Records check
   2. Preflight check*
   3. Crew briefing

c. ENGINE AND ROTOR START
   1. Start*
   2. Post start

d. AIR TAXI

e. TAKE-OFF*/TRANSITION
   1. Procedures*
   2. Type take-off*
      (a) Vertical
      (b) Cross-wind
      (c) Maximum gross weight
      (d) Sliding
   3. Transition

f. CLIMB/CRUISE

1. Procedures
2. Power control
3. Helicopter control

g. APPROACH AND LANDING*

1. Procedures
2. Power control
3. Helicopter control
4. Type of landing*
   (a) Vertical
   (b) Sliding
   (c) Cross-wind
   (d) Maximum gross weight

h. CONFINED AREA LANDING*

1. Procedures
2. Approach*
3. Power control*
4. Helicopter control*

i. AUTOROTATION*

1. Procedures
2. Airspeed control*
3. Recovery*

j. EMERGENCY PROCEDURES*

1. Procedures
2. Helicopter control*

k. SHUTDOWN/POSTFLIGHT

1. Shutdown
2. Postflight inspection

l. CREW COORDINATION

m. DEBRIEFING

n. NAVIGATION

PILOTS EXAMINATION GRADING CRITERIA

Critical areas are marked with an asterisk*.

a. ORAL EXAMINATION GRADING CRITERIA

Final oral examination grade is to be determined by the Evaluation Instructor.

1. EMERGENCIES

QUALIFIED. Completes questions on emergencies with minimum grade of 100 percent.

CONDITIONALLY QUALIFIED. Completes questions on emergencies with only minor deviation in sequence not detrimental to proper corrective action.

2. MALFUNCTIONS

QUALIFIED. Exhibits thorough knowledge of, and familiarity with all cockpit switches and controls in the application of corrective action necessary in combating system malfunctions. Completes 30 question oral examination with minimum grade of 90 percent with no deviation in the oral outline of corrective action required.

CONDITIONALLY QUALIFIED. Exhibits adequate knowledge of, and familiarity with cockpit switches and controls. Completes oral examination with minimum grade of 85 percent and minor procedural deviation in combating malfunctions not affecting or detrimental to the continuation of flight.

UNQUALIFIED. Shows lack of familiarity with cockpit switches and controls sufficient to ensure proper application of corrective action necessary to cope with helicopter system malfunctions. Is slow and hesitant in the recognition of corrections of malfunctions.

3. HELICOPTER SYSTEMS

QUALIFIED. Exhibits a thorough knowledge of helicopter systems and their operation. Answers all questions on the systems satisfactorily.

CONDITIONALLY QUALIFIED. Shows sufficient familiarity with helicopter systems to ensure proper corrective action in case of emergency or malfunctions of any system.

UNQUALIFIED. Shows a definite lack of familiarity with helicopter systems and their operation. Could not have applied proper corrective action in case of emergency or malfunction of a system due to this lack of knowledge.

b. WRITTEN EXAMINATION

1. OPEN BOOK GRADING CRITERIA

QUALIFIED. Pilot completes examination with a minimum grade of 3.5

2. CLOSED BOOK GRADING CRITERIA

QUALIFIED. Pilot completes examination with a minimum grade of 3.3 and no errors on critical questions.

c. PILOT'S NON-TACTICAL FLIGHT EVALUATION

1. BRIEFING

QUALIFIED. The briefing was conducted in an orderly, well organized manner. Ample time was allowed to ensure adequate digestion of all material presented.

CONDITIONALLY QUALIFIED. The briefing was conducted in an orderly manner, but with errors and/or omissions.

UNQUALIFIED. Did not brief the mission.

2. PREFLIGHT

RECORDS CHECK (YELLOW SHEET)

QUALIFIED. Consulted "yellow sheet" for the status of the helicopter and ensured its completeness and accuracy. Reviewed the ten previous "yellow sheets" for discrepancies and ascertained that the corrections had been made. Filled out the "yellow sheet" without errors or omissions.

CONDITIONALLY QUALIFIED. Consulted the "yellow sheet" for the status of the helicopter, but failed to avail himself of all the information contained therein and/or neglected to review the ten previous "yellow sheets".

UNQUALIFIED. Failed to sign the acceptance of the helicopter and/or failed to ascertain if all of the discrepancies had been corrected. Accepted a helicopter that was not ready for flight.

PREFLIGHT CHECK*

QUALIFIED. Accomplished the preflight inspections as outlined in this Manual. Ensured proper servicing of the helicopter in accordance with the planned mission.

CONDITIONALLY QUALIFIED. Accomplished the preflight inspection as outlined in this Manual, with minor ommissions or errors, none of which would affect safety of flight.

UNQUALIFIED. Performed the required preflight inspection as outlined in this Manual, but with errors and/or omissons which could involve safety of flight. Failed to verify that the helicopter was serviced and ready for flight.

CREW BRIEFING

QUALIFIED. Briefed the crew on the nature of the mission and instructed him (them) on any emergency and/or unusual aspects of the mission.

CONDITIONALLY QUALIFIED. Did not brief the crew completely on the mission and/or did not instruct him (them) on the emergency and/or any unusual aspects of the mission.

UNQUALIFIED. Did not brief the crew. Showed complete unconcern for the safety and the knowledge of the crew with regards to the mission.

3. ENGINE AND ROTOR START

START*

QUALIFIED. Standardization Manual procedures and checklist followed without deviation, omission, or errors. Displayed excellent knowledge and familiarity with the cockpit. Properly utilized his co-pilot and/or crew chief.

CONDITIONALLY QUALIFIED. Omitted not more than two items on the checklist. Deviations and omissions of the prescribed procedures caused delayed and erratic starting. Poor timing in the manipulation of the controls.

UNQUALIFIED. Committed more than two errors or omissions on the checklist. Could not start the engine and demonstrated a complete lack of proper technique. Did not meet the standards set forth to be conditionally qualified.

POST-START

QUALIFIED. Performed all checks subsequent to the engine and rotor start and prior to taxi, in accordance with this Manual. Ensured the proper operation of equipment.

CONDITIONALLY QUALIFIED. Deviations and/or omissions in use of check-off list did not involve safety of flight.

UNQUALIFIED. Failed to use check-off list. Did not perform required post start cockpit checks in accordance with this Manual.

4. AIR TAXI

QUALIFIED. Proper procedures used to effect smooth safe operation. Desired directional control maintained without abrupt changes.

CONDITIONALLY QUALIFIED. Proper procedures followed, but with deviations, none of which jeopardized safe operation. Directional control slightly erratic.

UNQUALIFIED. Proper procedures were not followed which allowed errors and omissions that jeopardized safe operation.

6. TAKE-OFF*/TRANSITION

PROCEDURES*

QUALIFIED. All procedures followed as prescribed by this Manual with no errors or deviations. Proper operating limitations observed.

UNQUALIFIED. Procedures not performed as outlined in this Manual.

TYPE TAKE-OFF*

QUALIFIED. Checklist used. Power control used was proper for performance required. Power was applied smoothly and positively, headings remained constant. Hover check performed, where applicable

(a) Vertical - above applies
(b) Max Gross Weight - Cyclic correctly used to attain proper airspeed to prevent settling
(c) Cross Wind - Applied cyclic properly to maintain a straight course.
(d) Sliding - Applied proper cyclic and power to lift off in nearly level flight.
(e) Control of rudder.

UNQUALIFIED. Power control used was not correct. Checklist not used. Hover check not performed, where applicable. Drooped rotor RPM to an unsafe minimum.

(a) Vertical - Above applies
(b) Max Gross Weight - Touched surface after take-off. Exceeded torque limits.
(c) Cross Wind- Overcontrol caused erratic course.
(d) Sliding - Allowed helicopter to tuck. Exceeded torque limits.

TRANSITION

QUALIFIED. Transition to climb made with an addition of collective pitch, which in turn prevented a loss of altitude. All control applications smooth.

CONDITIONALLY QUALIFIED. Transition to climb was made, but with a marked loss of altitude. Power control applied abruptly to cause slight heading change.

UNQUALIFIED. Not up to standard of conditionally qualified. Flew into ground. Drooped rotor RPM to an unsafe minimum.

7. CLIMB/CRUISE

PROCEDURES

QUALIFIED. Standardization procedures followed without error and/or deviation. Fuel planning in accordance with existing charts and within planned usage. Proper procedures utilized.

CONDITIONALLY QUALIFIED. Standardization procedure followed with deviations, none of which jeopardized the mission. Fuel planning allowed variance from planned schedule.

UNQUALIFIED. Standardization procedures not followed, mission jeopardized as a result. Fuel planning made continuance of mission inadvisable. Improper voice procedures utilized.

POWER CONTROL

QUALIFIED. Used recommended power settings as appropriate to gross weight. Application was smooth with no abrupt changes required.

CONDITIONALLY QUALIFIED. Recommended power settings as appropriate to gross weight used. Control fluctuated and/or abrupt changes required. Directional control varied as a result of power changes.

UNQUALIFIED. Selection of power required for gross weight, as recommended, in error. Excessive fluctuation and/or exceeding engine limits.

HELICOPTER CONTROL

QUALIFIED. Standardization procedures followed without error or deviation. Airspeed as recommended was constant with smooth acceleration/deceleration at the proper altitude. The helicopter control accomplished the intended maneuver with proper attitude. Held course within 5° of the desired heading. Held altitude with plus or minus 50 feet.

CONDITIONALLY QUALIFIED. Deviated from standard procedure, but not to the extent to jeopardize safety of flight. Airspeed other than that recommended in Standardization Manual and/or varied, which required abrupt deceleration or acceleration to accomplish desired maneuver. Helicopter altitude held within plus or minus 100 feet, heading held within plus or minus 10°.

UNQUALIFIED. Standardization procedure was not followed. Excess airspeed and/or slow speed jeopardized safety of flight. Helicopter attitude not appropriate for desired maneuver.

7. APPROACH AND LANDING*

PROCEDURES

QUALIFIED. Checklist used. Site selected for landing was adequate; pattern to selected site showed proper planning.

CONDITIONALLY QUALIFIED. Standardization procedures followed, but with deviation, which did not jeopardize safety of flight.

UNQUALIFIED. Standardization procedures were not followed. Failed to use checklist.

POWER CONTROL

QUALIFIED. Recommended power setting as appropriate to gross weight. Application was smooth with no abrupt changes required. Power control commensurate with type maneuver, reached simultaneously with desired ground speed and desired altitude.

CONDITIONALLY QUALIFIED. Recommended power settings appropriate to gross weight used. Control fluctuated and/or abrupt changes required. Directional control varied as a result of power changes.

UNQUALIFIED. Selection of power required for gross weight, as recommended, in error. Excessive fluctuation and/or exceeding engine limits.

HELICOPTER CONTROL

QUALIFIED. Airspeed as recommended was constant with deceleration at the proper altitude. The helicopter control accomplished intended maneuver with proper attitude, altitude, and no deviation in heading.

CONDITIONALLY QUALIFIED. Airspeed other than that recommended and/or varied, which required abrupt deceleration or acceleration to accomplish desired maneuver. Helicopter attitude required slight changes in altitude and heading to accomplish desired maneuver.

UNQUALIFIED. Excess airspeed and/or slow speed jeopardized safety of flight. Helicopter attitude not appropriate for desired maneuver.

8. TYPE OF LANDING*

VERTICAL LANDING

QUALIFIED. Transition from forward flight to hover was deliberate and smooth. Hover was constant in position and altitude. Descent from hover was with a smooth and constant rate. Touchdown was with no motion other than vertical.

CONDITIONALLY QUALIFIED. Transition to hover was smooth without a porpoising motion. Hover was allowed to drift and altitude was not constant. Slight sideward motion was allowed at touchdown.

UNQUALIFIED. Transition to hover required abrupt change in altitude. Hover position varied to extreme. Descent and touchdown rough which resulted in a hard landing. Failed to use checklist.

SLIDING LANDING

QUALIFIED. Transition from glide was constant and smooth. Attitude permitted smooth touchdown. Approach speed as prescribed in this Manual. Landing was straight ahead with no drift.

CONDITIONALLY QUALIFIED. Transition from glide was erratic with slight porpoising motion. Approach speed was allowed to vary plus or minus 5 knots over that prescribed in this Manual. Slight drift allowed on touchdown.

UNQUALIFIED. Did not meet condition of conditionally qualified. Approach speed exceeded plus 15 knots from that prescribed in this Manual. Failed to use checklist.

CROSS-WIND LANDING

QUALIFIED. Transition from forward flight to hover was deliberate and smooth. Hover was constant in position and altitude. Heading was maintained. Descent from hover was with a smooth and constant rate. Compensation was made with cyclic control to allow touchdown with no sideward motion.

CONDITIONALLY QUALIFIED. Transition to hover was smooth without a porpoising motion. Hover was allowed to drift and altitude was not constant. Slight sideward motion was allowed.

UNQUALIFIED. Transition to hover required abrupt change in attitude. Hover position varied to extreme. Sideward motion as a result of crosswind was not stopped with cyclic. Failed to use checklist.

MAXIMUM GROSS WEIGHT LANDING

QUALIFIED. Followed prescribed procedures as outlined in this Manual, to place the helicopter in a position for a proper approach. Power controls were handled in a smooth manner so as to effect proper approach speed. Helicopter controlled so as to arrive on or over the touchdown point with proper attitude, speed, rpm, and power.

CONDITIONALLY QUALIFIED. Approach speed - 10 knots from that prescribed in this Manual. Power control erratic, but within tolerance. Helicopter control was erratic with abrupt changes in attitude.

UNQUALIFIED. Engine limits prescribed by this Manual were exceeded. Allowed speed to decrease to an unsafe value or less than shown on deadman's curve. Allowed skids to scuff deck prior to point of intended touchdown. Failed to use checklist.

9. AUTOROTAION*

NOTE

Autorotation criteria contained herein applies to any type autorotation; i.e., straight in, 90°, 180°, or 360°autorotations.

PROCEDURES

QUALIFIED. Adhered to procedures as set forth in this Manual without error or deviation. Area selected for landing in accordance with OPNAV Instructions and adequate for practice autorotation.

UNQUALIFIED. Deviation from procedure as set forth in this Manual. Procedures if allowed to continue would jeopardize safety of flight. Area selected for landing, highly improbable for successful completion.

AIRSPEED CONTROL*

QUALIFIED. Airspeed selected for autorotation was in accordance with this Manual. Transition from cruise speed to autorotation smooth without abrupt movement of collective or cyclic. Maintained proper speed of 60 knots, plus or minus 5 knots, throughout maneuver to break-off point.

CONDITIONALLY QUALIFIED. Airspeed selected was in accordance with that prescribed in this Manual. Airspeed was allowed to vary within plus or minus 10 knots of prescribed speed, but made immediate effort to correct this deviation. Hesitated in transition from cruise to rotation speed and applied abrupt control movements.

UNQUALIFIED. Airspeed selected was not in accordance with that prescribed in this Manual. Airspeed allowed to exceed and/or fall below that required for safety of flight and/or altitude versus speed.

RECOVERY*

QUALIFIED. Properly analysed the emergency situation and took the appropriate immediate action outlined in this Manual without deviation, error, or omission.

CONDITIONALLY QUALIFIED. Properly analyzed the emergency situation and accomplished required action, but with minor errors or omission which did not preclude the successful completion of the immediate action.

UNQUALIFIED. Not up to the standards of conditionally qualified. Made errors that, if allowed to continue, would jeopardize safety of flight.

HELICOPTER CONTROL*

QUALIFIED. Power, attitude, and airspeed were maintained within limits prescribed in this Manual while taking corrective action.

CONDITIONALLY QUALIFIED. Power, attitude, and airspeed varied excessively, but were within safe limits. The helicopter control was returned to the prescribed limits set forth in this Manual before an unsafe condition developed.

UNQUALIFIED. Exceeded operating limitations, or entered into any dangerous condition of altitude, airspeed, or attitude.

NOTE

Overall grading in Emergency Procedures is the lowest score obtained while undergoing evaluation in any one emergency.

10. SHUTDOWN AND POSTFLIGHT

SHUTDOWN*

QUALIFIED. The securing of the rotors, engine, and all auxiliary equipment was done in accordance with this Manual and in the prescribed order with no exceptions, deviations, or omissions.

CONDITIONALLY QUALIFIED. The securing of the rotors, engine and all auxiliary equipment was performed, but not in the order prescribed in this Manual. Minor deviation, or omissions are allowed unless these deviations or omissions are injurious to the equipment or to personnel.

UNQUALIFIED. Did not shut down the rotors, engine, or auxiliary equipment in accordance with the procedures outlined in this Manual. Deviations or omissions in the procedures that if allowed to perpetrate would be injurious to the equipment or personnel.

POSTFLIGHT INSPECTION

QUALIFIED. The postflight engine check and the securing of the cockpit was as prescribed in this Manual, with no exceptions or deviations. Completed records "yellow sheets".

CONDITIONALLY QUALIFIED. The postflight engine check and securing of the cockpit was performed as described in this Manual, but with minor omissions or deviations.

UNQUALIFIED. Did not meet the standards set forth in conditionally qualified. Failed to fill out records "yellow sheets" properly.

11. CREW COORDINATION

QUALIFIED. Coordination was smooth and efficient with other flight crewmembers, as required by this Manual.

CONDITIONALLY QUALIFIED. Coordination with other flight crewmembers incurred frequent delays and/or misunderstanding which were corrected without precluding successful completion of the mission or jeopardizing safety.

UNQUALIFIED. Coordination with other flight crewmembers was lacking to the extent that successful accomplishment of the mission and/or safety was jeopardized.

12. DEBRIEFING

QUALIFIED. Debrief conducted in accordance with this Manual. Debriefing was conducted in a professional manner, contained constructive and adverse criticism of the entire flight.

CONDITIONALLY QUALIFIED. Debriefing was conducted in less than a professional manner, and did not follow the guidelines set forth in this Manual. The debriefing was not complete and did not cover the entire flight.

UNQUALIFIED. No debriefing guide was used and/or the debriefing was omitted. Did not meet the standards of conditionally qualified.

13. CONFINED AREA LANDING*

PROCEDURES

QUALIFIED. Followed prescribed procedures as outlined in this Manual to place the helicopter in position for a proper approach. Completed checklist without error or omission.

CONDITIONALLY QUALIFIED. Approach speed plus or minus 10 knots of that prescribed in this Manual. Power control erratic, but within tolerance. Completed checklist without error or omission.

UNQUALIFIED. Power control exceeded the allowance prescribed by this Manual. Allowed speed to decrease to an unsafe value. Allowed skids to scuff deck prior to point of intended touchdown. Failed to use checklist.

APPROACH*

QUALIFIED. Approach route was the optimum considering all factors of safety, terrain, wind and local conditions. Made a clearing pass prior to landing approach (unless situation dictated otherwise).

CONDITIONALLY QUALIFIED. Failed to properly consider all the factors, but approach was safely completed. Made a clearing pass prior to landing approach (unless situation dictated otherwise).

UNQUALIFIED. Failure to properly consider wind, altitude, site, and obstacle clearance precluded the completion of a safe approach. Did not make clearing pass when situation allowed it.

POWER CONTROL*

QUALIFIED. Recommended power settings as appropriate to gross weight used. Application was smooth with no abrupt changes required. Power used commensurate with type maneuver reached simultaneously with desired ground speed versus desired altitude.

CONDITIONALLY QUALIFIED. Control fluctuated and/or abrupt changes required. Directional control varied as a result of power changes.

UNQUALIFIED. Selection of power setting required for gross weight, as recommended, in error. Excessive fluctuation and/or exceeding engine limits.

HELICOPTER CONTROL*

QUALIFIED. Initial approach speed in accordance with this Manual and with smooth deceleration. The helicopter control accomplished throughout the intended maneuver with proper attitude, altitude, and heading.

CONDITIONALLY QUALIFIED. Standardization procedure deviated, but not to the extent to jeopardize safety of flight. Initial airspeed other than that recommended in this Manual varied, which required abrupt deceleration or acceleration to accomplish desired maneuver. Helicopter required slight changes in attitude, altitude, and heading to accomplish desired maneuver.

UNQUALIFIED. Exceeded operating limitations, or entered into any dangerous condition of altitude, airspeed, or attitude.

14. NAVIGATION*

QUALIFIED. Maintained knowledge of position of helicopter at all times. Utilized all navigational aids available with ease and confidence.

CONDITIONALLY QUALIFIED. Did not maintain knowledge of position of helicopter at all times. Was not familiar with all navigational aids available.

UNQUALIFIED. Unable to read map and/or failed in attempt to locate helicopter's position in relation to available references and navigational aids. Exceeded limitations for conditionally qualified.

CREWMEMBER EVALUATION AREAS

a. Preflight/Daily/Intermediate Inspection*.

b. Yellow Sheet/Daily/Intermediate Inspection Forms.

c. Storage and Security of aircraft equipment.

d. Ground safety precautions*.

e. Trouble shooting aircraft and related weapons systems.

f. Fueling and servicing of aircraft*.

g. Weapons disassembly, cleaning, reassembly*.

h. Infield boresighting.

i. Loading internal cargo (weight and balance).*

j. Briefing of passengers.

k. Post flight inspection.

l. Maximum use of safety equipment*.

m. Emergency procedures.*

o. Alertness.

p. Voice procedures.

q. Lookout during takeoff.*

r. Lookout during landing.*

s. Pilot crew coordination.

t. Door gunner duties.

u. Handling and firing M-60 machine gun.*

v. First aid.

CREW MEMBER EXAMINATION GRADING CRITERIA

Critical areas are marked with an *.

a. PREFLIGHT/DAILY/INTERMEDIATE INSPECTION*

QUALIFIED. Demonstrated proper techiniques as outlined in the appropriate inspection for(s) with no errors or omissions.

CONDITIONALLY QUALIFIED. Errors or ommissions, none of which would affect safety of flight.

UNQUALIFIED. Allowed error or omission which would involve safety of flight.

b. YELLOW SHEET/DAILY/INTERMEDIATE INSPECTION FORMS

QUALIFIED. Properly fills out all applicable forms with no errors or missions, Ensures pilot is aware of any discrepancies.

CONDITIONALLY QUALIFIED. Filled out all applicable forms with only minor errors or omissions, that would not materially affect the accomplishment of the assigned task.

UNQUALIFIED. Failed to sign yellow sheet and/or preflight form, or intermediate inspection form. Forms filled out incorrectly or with major omissions, and/or failed to naote aircraft limitations on appropriate part of yellow sheet.

c. STORAGE AND SECURITY OF AIRCRAFT EQUIPMENT

QUALIFIED. All internal gear in proper location, clean, in good repair and secured properly for flight.

CONDITIONALLY QUALIFIED. Not all internal equipment stowed properly. However, made no errors that would effect accomplishment of the mission.

UNQUALIFIED. Little or no care evident in storage or cleanliness of equipment. Equipment not secured and potential missiles and hazards evident.

d. GROUND SAFETY PRECAUTIONS*

QUALIFIED. Observes all safety precautions. No conduct that could jeopardize safety of aircraft or personnel.

UNQUALIFIED. Conduct or actions that could cause damage to aircraft, or injury to personnel.

NOTE

Flagrant disregard of safety precautions will be cause for termination of standardization check.

e. TROUBLE SHOOTING AIRCRAFT AND RELATED WEAPONS SYSTEMS

QUALIFIED. Understands principles of trouble shooting appropriate to level of experience. Performs trouble shooting duties surely and confidently.

CONDITIONALLY QUALIFIED. Generally understands trouble shooting principles, but not at a level expected of a person with his experience. Not sure of himself. Performs trouble shooting duties with some confusion.

UNQUALIFIED. Clearly lacks an understanding of trouble shooting procedures. Performs trouble shooting hesitantly and with little or no confidence.

f. FUELING AND SERVICING OF AIRCRAFT*

QUALIFIED. Clearly understands and observes all procedures and safety precautions for refueling of aircraft. Aircraft is properly fueled and serviced for flight. Observes all fuel contamination precautions.

CONDITIONALLY QUALIFIED. Aircraft not serviced as required for mission, but flight not delayed. Safety precautions observed.

UNQUALIFIED. Fails to observe safety precautions and does not understand proper fueling procedure. Aircraft flight delayed by incomplete servicing of aircraft. Does not observe fuel contamination precautions.

g. WEAPONS DISASSEMBLY, CLEANING, REASSEMBLY*

QUALIFIED. Demonstrates a thorough knowledge of disassembly, cleaning, reassembly of weapons used. Observes all safety precautions pertaining to each weapon. Make no errors which would affect safety of personnel or aircraft.

UNQUALIFIED. Does not follow proper procedures for disassembly, cleaning, reassembly of weapons used. Flagrant violations of safety precautions shall terminate the standardization check.

h. INFIELD BORESIGHTING

QUALIFIED. Does job with confidence. Demonstrates a thorough knowledge of and uses proper procedures for boresighting in both stowed and flex positions. Ensures all systems safe to boresight. Violates no safety precautions.

CONDITIONALLY QUALIFIED. Sometimes fails to observe proper procedures, but violates no safety precautions.

UNQUALIFIED. Improper techniques or violates safety precautions. Standardization check shall be terminated if safety precautions are flagrantly violated.

i. LOADING INTERNAL CARGO (WEIGHT AND BALANCE)*

QUALIFIED: All internal cargo loaded properly in relation to aircraft limitations. Cargo secured to prevent shifting in flight.

CONDITIONALLY QUALIFIED. Internal cargo not loaded in accordance with aircraft limitation, but does not enter upon a dangerous nose heavy or tail heavy condition. Insufficient tie down straps used.

UNQUALIFIED. Cargo loaded in such a way as to cause serious danger of a nose heavy or tail heavy conditon in flight. Aircraft clearly over loaded. Internal cargo not secured.

j. BRIEFING OF PASSENGERS

QUALIFIED. Performs duty of briefing passengers confidently and with no errors or omissions. Follows proper procedures.

CONDITIONALLY QUALIFIED. Performs duty of briefing passengers hesitantly and with ommissions. No errors and/or omissions in emergency procedures.

UNQUALIFIED. Does not understand passenger briefing procedures. Serious errors and/or omissions in briefing.

k. POST FLIGHT INSPECTION

QUALIFIED. Properly secured aircraft, checked aircraft for combat damage, and for leaks of any kind.

CONDITIONALLY QUALIFIED. Did not properly secure aircraft. Made minor omissions none of which affect safety of equipment or personnel.

UNQUALIFIED. Failed to secure aircraft. Did not check for combat damage or leaks.

l. MAXIMUM USE OF SAFETY EQUIPMENT*

QUALIFIED. Had available and in useable and complete conditon, all safety equipment required.

CONDITIONALLY QUALIFIED. Used safety equipment but with minor errors or omissions that did not endanger himself, other personnel or the aircraft.

UNQUALIFIED. Failed to make use of safety equipment provided and/or committed errors or omissions that could endanger the aircraft or personnel if continued.

m. COMPLIANCE WITH SAFETY REGULATIONS*

QUALIFIED. Has a good understanding of all safety precautions. Imparts the idea of safety to others. Makes no errors or omissions.

CONDITIONALLY QUALIFIED. Complied with the requirements of safety regulations but with minor errors or omissions that did not endanger personnel or equipment.

UNQUALIFIED. Failed to comply with the requirements of safety regulations or committed errors or omissions that could endanger personnel or cause damage to the aircraft if continued.

n. EMERGENCY PROCEDURES*

QUALIFIED. Properly analyzed the emergency situation and took the appropriate immediate action outlined without deviation, errors or omission.

CONDITIONALLY QUALIFIED. Properly analyzed the emergency situation and accomplished required action, but with minor errors or omissions which did not preclude the successful completion of the immediate action

UNQUALIFIED. Did not know required actions to be taken in an emergency or made errors that if allowed to continue would jeopardize safety of flights.

n. ALERTNESS

QUALIFIED. Maintained an alert professional attitude during the entire flight. Proceeded about his duties confidently and proficiently.

CONDITIONALLY QUALIFIED. Did not maintain an alert attitude to the best possible condition, however not so bad as to endanger mission completion.

UNQUALIFIED. Obviously lacking in the watchful, vigilant attitude required by the crew position.

o. VOICE PROCEDURES

QUALIFIED. Know and practiced the proper voice procedures at all times.

CONDITIONALLY QUALIFIED. Hesitant in the practice of voice communications with some confusion evident.

UNQUALIFIED. Did not know standard voice procedures or was confused on transmissions.

p. LOOK-OUT DURING TAKEOFF*

QUALIFIED. Keeps constant look-out outside and to the rear. Advises pilot of obstacles or other aircraft which may cause danger to the take-off.

CONDITIONALLY QUALIFIED. Occassionally fails to advise pilots of obstacles or other aircraft sometimes lax in keeping a look-out to the rear.

UNQUALIFIED. Fails to keep look-out to outside and to rear. Does not advise pilot of obstacles or other aircraft which may endanger the take off.

q. LOOK-OUT DURING LANDING*

QUALIFIED. Observed the landing area and surrounding area. Notified the pilot of any obvious dangers observed in the landing area. Notified the pilot when tail rotor and tail skid were clear of obstructions.

CONDITIONALLY QUALIFIED. Did not observe the landing area and did not notify the pilot of tail clearance.

UNQUALIFIED. Fails to keep look-out to outside and to rear. Does not advise pilot of obstacles or other aircraft which may endanger the landing.

r. PILOT/CREW COORDINATION

QUALIFIED. Coordination was smooth and efficient with other crew members.

CONDITIONALLY QUALIFIED. Coordination with other crew members incurred delays and/or misunderstanding which were corrected without jeopardizing successful completion of the mission or jeopardizing safety.

UNQUALIFIED. Coordination with other crew members was lacking to the extent that successful completion of the mission and/or safety was jeopardized.

s. DOOR GUNNER DUTIES

QUALIFIED. Thoroughly understands proper procedures of target observation, target marking, target attack, and receiving fire.

CONDITIONALLY QUALIFIED. Understands proper procedures of target observation, target marking, target attack and receiving fire. Makes only minor errors or omissions, none of which effect safety of personnel or aircraft.

UNQUALIFIED. Makes major error or omission, which, if allowed to continue would effect safety of personnel or aircraft.

t. HANDLING AND FIRING M-60 MACHINE GUN*

QUALIFIED. Demonstrates thorough knowledge of handling and firing techniques. Does not violate any safety regulations.

CONDITIONALLY QUALIFIED. Knows how to handle and fire his weapon. Makes only minor errors nonw of which would effect safety of personnel or aircraft.

UNQUALIFIED. Flagrantly violates safety regulations. Endangers safety of personnel or aircraft.

u. FIRST AID

QUALIFIED. Has adequate knowledge of first aid. Knows location of first aid kits in aircraft.

UNQUALIFIED. Has an inadequate knowledge of first aid. Does not know locations of first aid kits in aircraft.

FLIGHT EVALUATION GRADING CRITERIA

Only those sub-areas provided or required will be graded. The grades assigned for a sub-area shall be determined by comparing the degree of adherence to standard operating procedures with adjectival ratings listed below. Momentary deviations from standard operating procedures will not be considered as unqualifying provided such deviations do not jeopardize flight safety and the evaluee applies prompt corrective action.

QUALIFIED. Well standardized; evaluee demonstrated highly professional knowledge of and compliance with standards and procedures; momentary deviations from or minor omissions in non-critical areas are permitted if prompt and timely remedial action is initiated by the evaluee.

CONDITIONALLY QUALIFIED. Satisfactorily standardized; one or more significant deviations from standards and procedures, but no errors in critical areas and no errors jeopardizing flight safety.

UNQUALIFIED. Not acceptabley standardized; evaluee fails to meet minimum standards regarding knowledge of and/or ability to apply standard procedures; one or more significant deviations from standards and procedures which could jeopardize flight safety.

FLIGHT EVALUATION GRADE DETERMINATION

The following procedure shall be used in determining the flight evaluation grade: A grade of unqualified in any critical area/sub-area will result in an overall grade of unqualified for the flight. Otherwise, flight evaluation (or area) grades shall be determined by assigning the following numerical equivalents to the adjective grade for each sub-area. Only the numerals 0, 2, or 4 will be assigned in sub-areas. No interpolation is allowed.

Unqualified 0.0

Conditionally Qualified 2.0

Qualified 4.0

To determine the numeral grade for each area and the overall grade for the flight, add all the points assigned to the sub-areas and divide this sum by the number of sub-areas graded. The adjective grade shall then be determined on the basis of the following scale:

0.0 to 2.19 - Unqualified

2.2 to 2.99 - Conditionally Qualified

3.0 to 4.0 - Qualified

EXAMPLE: (Add sub-area numerical equivalents)

$$\frac{4+2+4+2+4}{5} = \frac{16}{5} = 3.20 \text{ Qualified}$$

FINAL GRADE DETERMINATION

The final standardization evaluation grade shall be the same as the grade assigned to the flight evaluation. An evaluee who receives an unqualified on any ground examination or the flight evaluation shall be placed in an unqualified status until he achieves a grade of conditionally qualified or qualified on a re-evaluation.

RECORDS AND REPORTS

A NATOPS Evaluation Report (OPNAV Form 3510-8) shall be completed for each evaluation and forwarded to the Commanding Officer. This report shall be filed in the individual flight training record and retained therein for 18 months. In addition, an entry shall be made in the pilot flight log book under "Qualifications and Achievements" as follows:

	QUALIFICATION	DATE	SIGNATURE/UNIT
Example:	STAN EVAL UH-1B	10-25-69	J.M. DUNN HA(L)-3

In the case of enlisted crewmembers, an entry shall be made in the Administrative Remarks Section of his personnel record upon satisfactory completion of the Standardization Evaluation as follows:

(Date) Completed a Standardization Evaluation in (Aircraft Designation) as (Flight crew position) with an overall grade of (Qualified or Conditionally Qualified).

STANDARDIZATION EVALUATION FORMS

Four forms will be used for recording standardization qualifications as follows:

a. OPNAV Form 3510-8 (NATOPS EVALUATION FORM) This form will be filed in the pilots/crewmembers flight jacket when completed.

b. Local Form 1a (Pilots Non Tactical Flight Evaluation) This form will be destroyed after completion of OPNAV Form 3510-8.

c. Local form 2a (Crew Members Evaluation Areas) This form will be destroyed after completion of OPNAV Form 3510-8.

d. Local form 3a (Pilot/Crewmember Flight/Safety Equipment) This form will be destroyed after completion of OPNAV Form 3510-8.

NATOPS EVALUATION REPORT

OPNAV FORM 3510-8 (8-65) 0107-723-0000

NAME *(Last, first initial)*	GRADE	SERVICE NUMBER

SQUADRON/UNIT	AIRCRAFT MODEL	CREW POSITION

TOTAL PILOT/FLIGHT HOURS	TOTAL HOURS IN MODEL	DATE OF LAST EVALUATION

NATOPS EVALUATION

REQUIREMENT	DATE COMPLETED	GRADE		
		Q	CQ	U
OPEN BOOK EXAMINATION				
CLOSED BOOK EXAMINATION				
ORAL EXAMINATION				
*EVALUATION FLIGHT				

FLIGHT DURATION	AIRCRAFT BUNO	OVERALL FINAL GRADE

REMARKS OR EVALUATOR/INSTRUCTOR

☐ CHECK IF CONTINUED ON REVERSE SIDE

GRADE, NAME OF EVALUATOR/INSTRUCTOR	SIGNATURE	DATE

GRADE, NAME OF EVALUEE	SIGNATURE	DATE

REMARKS OF UNIT COMMANDER

RANK, NAME OF UNIT COMMANDER	SIGNATURE	DATE

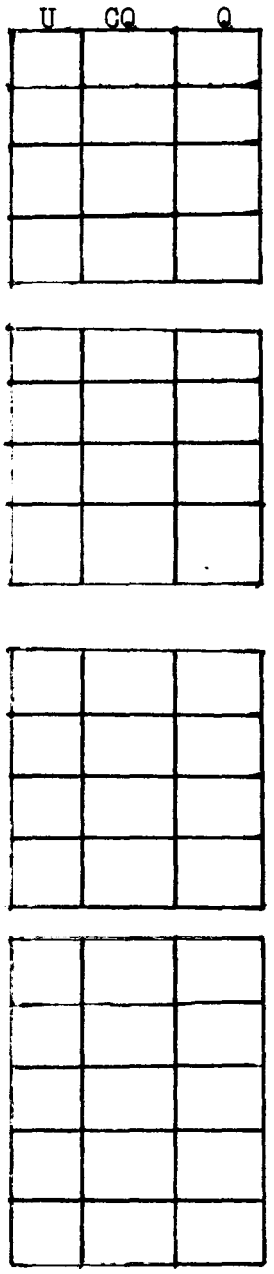
**WST, OFT, COT, or cockpit check in accordance with OPNAVINST 3510.9 (effective edition).*

A-7247

FORM 1a-1 PILOTS NON-TACTICAL FLIGHT EVALUATION

	U	CQ	Q
1. BRIEFING			
2. PREFLIGHT (overall)			
a. Records Check			
b. Preflight Check*			
c. Crew Briefing			
3. ENGINE AND ROTOR START			
a. Start*			
b. Post Start			
4. AIR TAXI			
5. TAKE-OFF/TRANSITION*			
a. Procedures			
b. Type Take-off			
(1) Vertical			
(2) Cross-wind			
(3) Maximum Gross Weight			
(4) Sliding			
c. Transition			

Form la-2



6. CLIMB/CRUISE
   a. Procedures
   b. Power Control
   c. Helicopter Control

7. APPROACH AND LANDING*
   a. Procedures
   b. Power Control
   c. Helicopter Control
   d. Type of Landing
      (1) Vertical
      (2) Sliding
      (3) Cross-wind
      (4) Maximum Gross Weight

8. CONFINED AREA LANDING
   a. Procedures
   b. Approach
   c. Power Control
   d. Helicopter Control

FORM 1a-3

	U	CQ	Q
9. AUTOROTATION*			
a. Procedures			
b. Airspeed Control			
c. Recovery			
10. EMERGENCY PROCEDURES*			
a. Procedures			
b. Helicopter Control			
11. SHUTDOWN/POSTFLIGHT			
a. Shutdown			
b. Postflight			
12. CREW COORDINATION			
13. DEBRIEFING			
14. NAVIGATION			

CRITICAL AREAS ARE MARKED WITH AN *

FORM 2a-1 CREW MEMBERS EVALUATION AREAS

	U	CQ	Q
1. INSPECTIONS*			
a. Preflight*			
b. Daily*			
c. Intermediate*			
2. INSPECTION FORMS			
a. Yellow Sheet			
b. Daily			
c. Intermediate			
3. AIRCRAFT EQUIPMENT			
a. Storage			
b. Security			
4. GROUND SAFETY PRECAUTIONS*			
5. TROUBLE SHOOTING SYSTEMS			
a. Aircraft			
b. Weapons			
6. FUELING AND SERVICING*			

FORM 2a-2

	U	CQ	Q
7. WEAPONS			
a. Disassembly			
b. Cleaning			
c. Reassembly			
8. INFIELD BORESIGHTING			
9. LOADING INTERNAL CARGO*			
10. BRIEFING OF PASSENGERS			
11. POST FLIGHT INSPECTION			
12. MAXIMUM USE OF SAFETY EQUIPMENT*			
13. COMPLIANCE WITH SAFETY REGULATIONS*			
14. EMERGENCY PROCEDURES*			
15. ALERTNESS			
16. VOICE PROCEDURES			
17. LOOKOUT DURING TAKE-OFF*			
18. LOOKOUT DURING LANDING*			
19. PILOT CREW COORDINATION			
20. DOOR GUNNER DUTIES			
21. HANDLING AND FIRING M-60			
22. FIRST AID			

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FORM 3a-1 PILOT/CREW MEMBER FLIGHT/SAFETY EQUIPMENT

	U	CQ	Q
1. HARD HAT WITH CLEAR VISOR			
2. GLOVES			
3. FLIGHT SUIT			
4. LEATHER BOOTS			
5. MAE WEST			
6. BODY ARMOR			
7. STROBE LIGHT			
8. PENCIL FLARE			
9. SIGNAL MIRROR			
10. SURVIVAL KNIFE			
11. MILITARY HAND GUN AND TRACER AMMO			
12. DAY/NIGHT (MK-13) FLARE			

SECTION XI

PERFORMANCE DATA

Performance data as written in the Dash 10 applies.

APPENDIX A

LIST OF REFERENCES

The following references are pertinent and govern the operation of Naval helicopter:

a. NWP 37 Series - National Search and Rescue

b. NWP 41 Series - Naval Air Operating Procedures

c. NWIP 41 Series - Helicopter Operations

d. OPNAVINST 3710.7 Series - General Flight and Operating Instructions for Naval Aircraft

e. OPNAVINST 3510.9 Series - NATOPS Program

NOTE

Throughout this Manual the specific references to other publications, instructions, etc., are to be interpreted as referring to the latest effective edition thereof or change thereto.

① STAN.
② TACTICS
③ POCKET V LIST
④ FILLOUT EXAM
⑤ STUDY OLD EXAM
⑥ -10
⑦ MAP