ANNEX B

AIRCREW TRAINING MANUAL

MT DNRC AIR CREW TRAINING MANUAL

TABLE OF CONTENTS

PREFACE

This publication is intended as a guide for establishing aviator qualification, refresher, mission, and continuation training programs. The DNRC Aircrew Training Program is designed to aid DNRC Air Operation Bureau at all levels in improving its readiness, safety, and professionalism.

Basic helicopter qualification will be considered complete when all 1000 series tasks and task 4011 are completed satisfactorily. Basic airplane qualification will be considered complete when all 3000 series tasks and task 4011 are completed satisfactorily.

Helicopter mission training will be considered complete when all 2000 series tasks are completed satisfactorily.

Refresher training will be accomplished when an aviator has been away from the controls for 60 days or greater. Refresher training will consist of 1000, 2000 series tasks for helicopter pilots and 3000 series tasks for airplane pilots as determined by the evaluator.

Continuation training will occur on an annual basis where all previously trained tasks can be evaluated.

During training or evaluations those tasks that are not performed satisfactorily will be retrained and re-evaluated.

Documentation of all training will be annotated in the aviators personal training record.

The ATM standardizes the aviator training program and flight evaluation procedures. The standardization of requirements, procedures, and practices ensures that standard techniques and procedures will be used in everyday flying. By using the ATM, the Chief pilot can ensure that individual aviator proficiency is matched with the mission.

The aircraft operator's manual contains aircraft operating procedures. If differences exist between the maneuver descriptions in the operator's manual and this publication, this publication is considered the governing authority for training and flight evaluation purposes. The Chief pilot must provide specific guidance for implementing the training outlined in this publication.

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

Chapter 1

QUALIFICATION TRAINING

This chapter prescribes minimum academic and flight qualification training. A qualified evaluator must monitor all instruction. Basic qualification training for aviators is conducted at Helena Regional Airport.

Section I. BASIC AND SERIES QUALIFICATION TRAINING REQUIREMENTS

2-1. ACADEMIC TRAINING

When possible, academic training should be completed before corresponding flight training. The subjects may be presented in any order. However, the introduction should be first, and the aircraft operator's manual written examination should be last. Systems instruction includes training in operation, capabilities, limitations, and malfunction analysis.

Academic training should include:

1. Instruction in the appropriate provisions of the Montana DNRC 1500 flight operations manual.
2. Appropriate provisions of FAR Part 91, 133 and 137.
3. For the type of aircraft to be flown by the pilot; the aircraft power plant, major components and system, performance, and operating limitations, standard and emergency operating procedures, the contents of the approved aircraft flight manual or equivalent, the method of determining compliance with weight and balance limitations for takeoff, landing and en route operations.
4. Navigation and use of air navigation aids appropriate for flight operations and when applicable, the use of instrument approach facilities and procedures.
5. Air traffic control procedures, including IFR procedures when applicable.
6. Meteorology in general, including the principles of frontal system, fog, thunderstorms, and windshear, ridge top wind limitations, and, if appropriate, for the operation of the company and high-altitude weather.
7. Procedures for avoiding severe weather situations and for operating in or near thunderstorms, turbulent air, icing, hail, and other potentially hazardous meteorological conditions.
8. Normal and emergency communication procedures use of NAT and Technisonic FM radios.
9. Load calculation form OAS-67/FS 5700-17.
10. Organizational breakdown of the Department.
11. Flight Physiology.
12. Safety/Safety Management System (SMS).
13. Air Crew Coordination/Crew Resource Management.
14. Radio operation procedures.
15. Sling load equipment review.

16. Accident and incident reports review.

17. Water bucket/foam operation.

2-2. FLIGHT TRAINING

1. During flight training, the aviator is trained to proficiency in the tasks identified in Chapter 2.

2. Realism is important in qualification flight training. To achieve it, the instructor pilot must ensure that training includes operation of the aircraft at or near maximum gross weight.

3. All qualification, mission, refresher, and continuation training completion as well as any other significant actions will be annotated in the flight records folder.

Required Publications

- DNRC Manuals
- 1500 Air Operations Manual
- USFS 5700 - Aviation Management http://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsm?5700
- PMS 510 NWCG Standards for Helicopter Operations
- FM 3-04.203 (Fundamentals of Flight)
- All Applicable Federal Aviation Regulations (FAR's)
- Aeronautical Information Manual (AIM)
- ATC Handbook 7110.65U www.faa.gov/documentlibrary/media/order/atc.pdf
- United States Standard for Terminal Instrument Procedures (TERPS)
- OAS-67/FS 5700-17 (Load Calculation)
- Appropriate Aircraft Operators Manuals

Chapter 2

TRAINING TASKS

TASK: 1001

Plan a VFR flight.

CONDITIONS:

Prior to flight in a DNRC aircraft and given access to weather information; NOTAMs; flight planning aids;necessary charts, forms, and publications; and weight and balance information.

STANDARDS:

1. Determine if the aircrew and aircraft are capable of completing the assigned mission.

2. Determine if the flight can be performed under VFR according to DNRC Air Operations Manual.

3. Check applicable publications and determine, without error, if there are any restrictions on departure, en route, and at destination.

4. Select course(s) and altitude(s) which best ensure mission completion, and correctly compute magnetic heading(s) within ±5 degrees.

5. Determine distance ±1 nautical mile, ground speed ±5 knots, and ETE ±3 minutes for each leg of the flight.

6. Determine fuel requirement from takeoff to destination, plus fuel reserve.

7. Without error, verify that the aircraft will remain within weight and CG limitations for the duration of the flight.

8. Complete and file the flight plan according to guidelines set forth in the DNRC flight following procedures.

DESCRIPTION:

In planning a VFR flight, first ensure that all crewmembers are current and are qualified to accomplish the mission. Then ascertain that the aircraft is capable of completing the mission. Using FAA weather facilities, obtain information about the weather. After ensuring that the flight can be completed under VFR, check NOTAMs. Obtain charts that cover the entire flight area and allow for changes in routing that may be required because of the weather or terrain. Ensure weight and balance forms kept in the aircraft logbook apply to aircraft load and CG limitations. Verify that aircraft weight and CG will remain within allowable limits for the entire flight.

REFERENCES:

DNRC Air Operations Manual
All Applicable Federal Aviation Regulations
Aircraft Operators Manuals

TASK: 1002

Plan an IFR flight.

CONDITIONS:

Prior to IFR flight in a DNRC aircraft and given access to weather information; NOTAMs; flight planningaids; necessary charts, forms, and publications; and weight and balance information.

STANDARDS:

1. Determine if the aircrew and aircraft are capable of completing the assigned mission.

2. Check applicable publications and determine, without error, if there are any restrictions on departure, en route, and at destination.

3. Select route(s) which avoid severe weather hazards, conform to know preferred routing, and are within the capability of aircraft equipment. If off-airway, determine course(s) within ±5 degrees.

4. Select altitude(s) which avoid icing level and turbulence, are above minimum altitudes, conform to the semicircular rule (when applicable), and do not exceed aircraft or equipment limitations.

5. Select an approach, which is compatible with the weather, approach facilities, and aircraft equipment, and determine if an alternate airfield is required.

6. Determine distance ±1 nautical mile, true airspeed ±3 knots, ground speed ±5 knots, and ETE ±3 minutes for each leg of the flight.

7. Determine fuel requirement from takeoff to reach the destination and alternate airfield (if required), plus fuel reserve, ±25 pounds.

8. Without error, verify that the aircraft will remain within weight and CG limitations for the duration of the flight.

9. Complete and file the flight plan according to FAA.

DESCRIPTION:

In planning an IFR flight, first ensure that all crewmembers are current and qualified to accomplish the mission. Then ascertain that the aircraft is capable of completing the mission. Using FAA, obtain information about the weather. Compare destination forecast and approach minimums to determine if an alternate airfield is required. Check NOTAMs for any restrictions applicable to the flight. Obtain charts that cover the entire flight area and allow for changes in routing or destination that may be required because of the weather. Select the route(s) and course(s) and altitude(s) that will best facilitate mission accomplishment. When possible, select preferred routing. Use a CPU-26A/P computer/Weems plotter (or equivalent) to plot the flight, and determine magnetic heading, ground speed, and ETE for each leg, including flight to the alternate airfield if required. Compute total distance and flight time and calculate required fuel using the appropriate charts in the aircraft operator's manual. Ensure weight and balance forms kept in the aircraft logbook apply to aircraft load and CG limitations are within limits. Verify that aircraft weight and CG will remain within allowable limits for the entire flight. File the flight plan with the appropriate agency.

REFERENCES:

DNRC Air Operations Manual
All applicable Federal Aviation Regulations
Aircraft Operators Manuals

TASK: 1003

Prepare Helicopter Load Calculation Form.

CONDITIONS:

Given cargo weight and dimensions, crew weights, aircraft configuration, aircraft weight and balance information, aircraft operator's manual, and a blank copy of the appropriate helicopter load form calculation.

STANDARDS:

1. Correctly compute the allowable payload.

2. Correctly compute the actual payload.

3. Determine if aircraft gross weight imposes limitations on the proposed flight.

DESCRIPTION:

Complete FS-5700-17 or OAS-67 according to the listed references. Also verify that the aircraft will remain within allowable limits for the entire flight.

REFERENCES:

Aircraft Operator's Manual
FS-5700-17
OAS-67

TASK: 1004

Perform pre-flight inspection

CONDITIONS:

Given a DNRC aircraft, aircraft operator's manual, and checklist.

STANDARDS:

Without error, perform the pre-flight inspection according to the checklist.

DESCRIPTION:

Using the checklist, verify all pre-flight checks. Perform the crew briefing as outlined in the aircraftoperator's manual.

NOTE:

The aircraft operator's manual contains details about procedures outlined in the checklist.

REFERENCES:

Aircraft Logbook
Aircraft Operator's Manual
DNRC Air Operations Manual

TASK: 1005

Perform engine-start, run-up, and before-takeoff checks.

CONDITIONS:

In a DNRC aircraft with the checklist.

STANDARDS:

Without error, perform procedures and checks according to the checklist.

DESCRIPTION:

Start the engine according to the checklist and accomplish aircraft system checks in the appropriate sequence. Record required information on applicable aircraft logbook forms.

NOTE:

The aircraft operator's manual contains details about procedures outlined in the checklist.

REFERENCES:

Aircraft Operator's Manual
Engine PAC Log
Operator's and Crewmember's Checklist
DNRC Air Operations Manual

TASK: 1006

Perform confined area operations.

CONDITIONS:

In a DNRC helicopter with before landing check completed.

STANDARDS:

Prior to the approach

a. Establish desired altitude ±100 feet.
b. Establish desired airspeed ±10 KIAS.
c. Properly perform a landing area reconnaissance.

2. During the approach

a. Maintain ground track alignment with the selected approach path with minimum drift.
b. Maintain a constant approach angle.
c. Maintain an appropriate rate of closure.
d. Properly perform a low reconnaissance.
e. Execute a smooth and controlled termination in the forward one-third of the landing area.

3. Prior to takeoff

a. Properly complete the ground reconnaissance and select a suitable takeoff path.
b. Perform a hover power check if required and complete the before-takeoff check without error.
c. Properly clear the aircraft.

4. Prior to clearing obstacles

a. Maintain heading ±10 degrees.
b. Maintain ground track alignment with minimum drift.
c. Use power as required to clear obstacles safely while not exceeding aircraft limitations.

5. After clearing obstacles

a. Establish climb airspeed ±10 KIAS.
b. Maintain rate of climb ±100 FPM.
c. Maintain aircraft in trim.
d. Maintain ground track alignment with the selected takeoff path with minimum drift.

DESCRIPTION:

1. Upon approaching the area, evaluate the overall suitability of the terrain. Select a flight path, airspeed, and an altitude that afford best observation. If approaching the area in the terrain flight mode, it is not necessary to increase altitude to perform the landing area reconnaissance. If landing is intended, determine if the landing area is suitable, identify obstacles, and estimate the effects of the wind. Select a touchdown point and a tentative flight path for the approach and departure.

2. On final approach, perform a low reconnaissance and confirm the suitability of the selected landing area. Evaluate obstacles, which constitute a possible hazard, and confirm the suitability of the departure path selected during the landing area reconnaissance. If a successful landing is doubtful, initiate a go-around before reducing airspeed below ETL or before descending below obstacles. Maintain the aircraft in trim above obstacles and maintain landing area alignment below obstacles. If instability is detected during the landing, reposition the aircraft. After landing and before takeoff or movement in the landing area, perform a ground reconnaissance to determine the suitability of the area for ground operations or to formulate the takeoff plan. (The ground reconnaissance may be performed from the cockpit.) Formulate the takeoff plan by evaluating the wind, obstacles, and shape of the area. Select the route to the takeoff point and ensure adequate main and tail rotor clearance while maneuvering. For takeoff over an obstacle, it may be necessary to move the aircraft as far downwind from the obstacle as possible. Complete the before-takeoff check and perform a hover power check if required. During takeoff, clear the aircraft. Use power as necessary to clear the obstacle safely while maintaining a constant ground track and climb angle.

NOTE:

Hover OGE power is required for confined area operations.

REFERENCES:

Aircraft Operator's Manual
DNRC Air Operations Manual

TASK: 1007

Perform slope operations.

CONDITIONS:

In a DNRC helicopter with aircraft cleared.

STANDARDS:

Maintain heading perpendicular to slope ±5 degrees.

1. Do not exceed a 1-foot drift prior to and no drift after skid contact with the ground.

2. Execute a smooth and controlled descent and touchdown.

3. Execute a smooth and controlled ascent.

DESCRIPTION:

Select a suitable area for slope operations. If possible, orient the aircraft into the wind. The degree of slope chosen should not be so great as to create a need for large cyclic inputs to accomplish the landing. After selecting the area, establish the aircraft perpendicular to the slope. Reduce the collective until the upslope skid contacts the ground. Continue reducing the collective and simultaneously apply lateral cyclic into the slope to maintain the position of the upslope skid until both skids are firmly on the ground. When the collective is fully down, neutralize the pedals and cyclic. For takeoff, apply lateral cyclic into the slope to maintain the position of the upslope skid. Increase collective to raise the down slope skid, maintain heading with the pedals, and coordinate the cyclic until the aircraft is level. Ascend slowly to a hover.

NOTE:

Before conducting slope operations, the aviator must understand dynamic rollover characteristics.

NIGHT OCONSIDERATIONS:

When conducting slope operations, select reference points to determine slope angles. References will probably be limited and difficult to ascertain. If, at any time, successful completion of the landing is doubtful, abort the maneuver.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual

TASK: 1008

Perform hovering autorotation.

CONDITIONS:

In a DNRC helicopter with an IP; aircraft heading into the wind; in a locally approved touchdown area; with aircraft cleared.

STANDARDS:

1. Prior to entry

   Establish a stationary 3-foot over, ±1 foot.

2. After entry

   a. Maintain heading ±10 degrees.
   b. Maintain position over the ground ±1 foot.
   c. Execute a smooth and controlled descent and touchdown with no lateral or rearward drift.

DESCRIPTION:

From a stationary 3-foot hover, retard the throttle to engine idle stop. Simultaneously apply right pedal to maintain heading and adjust the cyclic to maintain position over the ground. (While retarding the throttle, do not raise or lower the collective.) As the helicopter settles, apply sufficient collective to make a smooth descent and touchdown. Do not stop the descent by overapplying the collective and be alert for lateral or rearward drift. When the helicopter is resting firmly on the ground, smoothly lower the collective to the full-down position while neutralizing the pedals and cyclic.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual

TASK: 1009

Perform simulated engine failure at altitude.

CONDITIONS:

In a DNRC helicopter with an IP and termination as directed.

STANDARDS:

Recognize the emergency, determine the appropriate corrective action, and perform or simulate (asrequired), from memory, all immediate action procedures described in the aircraft checklist.

1. Select a suitable landing area.

2. Correctly terminate the maneuver as directed by the IP.

DESCRIPTION:

Upon detecting engine failure, lower the collective to maintain rotor RPM within limits while adjusting the pedals to trim the aircraft. Select a suitable landing area. Use turns and vary the airspeed (between minimum rate of descent and maximum glide) as necessary to maneuver the aircraft for a safe landing at the intended landing area. The final approach should generally be into the wind. Call out rotor RPM, gas producer, and aircraft in trim. Simulate setting the emergency governor switch to EMER, setting the transponder to EMER, and transmitting a Mayday call on the "guard" frequency. Complete or simulate emergency procedures outlined in the aircraft checklist; if time permits, verify the procedures. You should plan each forced landing as continuing to the ground. Before reaching 400 feet AGL with the aircraft in a safe autorotative profile, the IP will state one of three commands: "Power recovery," "Terminate with power," or "Touchdown."

a. Power recovery.

Upon receiving the command, "Power recovery," immediately establish normal operating RPM by smoothly applying the throttle to full open. Adjust the collective as necessary while maintaining trim with the pedals. When operating RPM has been regained, apply sufficient collective to establish a normal climb. Complete the recovery prior to reaching 200 feet AGL.

b. Terminate with power.

Upon receiving the command, "Terminate with power," continue the autorotative descent. Before reaching 100 feet, establish normal operating RPM, adjust the collective as necessary, trim the aircraft with the pedals, and maintain autorotation. At approximately100 feet AGL, apply aft cyclic to initiate a smooth and progressive deceleration. Maintain aircraft alignment with the touchdown area by properly applying pedals and cyclic. Adjust the collective, if required, to prevent excessive rotor RPM. At approximately 15 feet AGL, apply sufficient collective to control the rate of descent and ground speed such that they are zero at 3 to 5 feet AGL with the aircraft in a landing attitude.

NOTE:

Normal engine RPM must be established before passing through 100 feet AGL.

c. Touchdown.

Upon receiving the command, "Touchdown," continue the autorotative descent. At approximately 100 feet AGL, apply aft cyclic to initiate a smooth and progressive deceleration. Maintain aircraft alignment with the touchdown area by properly applying pedals and cyclic. Adjust the collective, if required, to prevent excessive rotor RPM. At approximately 15 feet AGL, apply sufficient collective to control the rate of descent and ground speed. (The amount of collective applied and rate of application will depend on the rate of descent and ground speed.) Adjust the cyclic to attain a landing attitude. Apply collective as necessary just before touchdown to cushion the landing. After touchdown, maintain ground track alignment with the pedals. When the aircraft has come to a complete stop, lower the collective and neutralize the pedals and cyclic.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual
Operator's and Crewmember's Checklist

TASK: 1010

Perform manual throttle operation, emergency governor mode

CONDITIONS:

In a DNRC MT 205 helicopter with an IP and aircraft cleared.

STANDARDS:

Without error, perform the procedure to change the governor to the emergency mode according tothe description below.

1. Maintain 97% RPM, ±3% RPM.

2. Smoothly coordinate throttle and collective controls.

3. Maintain altitude ±1 foot.

4. Maintain a constant rate of turn, not to exceed 90 degrees in four seconds.

5. Without error, perform the procedure to change the governor to the automatic mode according to the description below.

CAUTION
To prevent overspeed, overtemperature, compressor stall, or engine failure, make smooth throttle and collective adjustments. Closely monitor N1, Torque, N2, and EGT.

DESCRIPTION:

While on the ground with RPM stabilized at 100% RPM and collective full down, retard the throttle to engine-idle stop. After noting a decrease in engine RPM, move the governor switch to the emergency position. Smoothly adjust the throttle to 97% RPM. Increase the collective and manipulate the throttle carefully to maintain 97% RPM until the aircraft is stabilized at a 3-foot hover. Apply cyclic and pedals as necessary to remain stationary and to maintain a constant heading. Clear the aircraft and perform a left hovering turn and a right hovering turn. Upon completion of both turns, adjust the collective and throttle to maintain 97% RPM and land the aircraft. Reduce the throttle to engine-idle stop. After noting a decrease in engine RPM, move the governor switch to the automatic position. Slowly increase the throttle to the full-open position and adjust RPM to 100%. Ensure fuel control is operating properly.

NOTE:

In case of an actual in-flight emergency that requires emergency governor operations, use the procedures outlined in the aircraft operator's manual.

REFERENCES:

Aircraft Operator's Manual
Operator's and Crewmember's Checklist

TASK: 1011

Perform or describe emergency procedures

CONDITIONS:

In a DNRC aircraft in a classroom environment; given a specific emergency condition.

STANDARDS:

Without error, perform or describe the appropriate emergency procedures.

DESCRIPTION:

Perform or describe the appropriate emergency procedures as outlined in the aircraft operator's manual.

NOTE:

Those emergency procedures that cannot be practiced in the aircraft will be discussed orally.

REFERENCES:

Aircraft Operator's Manual
Operator's and Crewmember's Checklist

TASK: 1012

Perform pinnacle or ridgeline operation.

CONDITIONS:

In a DNRC helicopter with before-landing check completed.

STANDARDS:

Reconnaissance.

a. Establish desired altitude ±100 feet.
b. Establish desired airspeed ±10 KIAS.
c. Properly perform a continuous reconnaissance.

2. Approach.

a. Maintain ground track alignment with the selected approach path with a minimum drift.
b. Maintain a constant approach angle.
c. Maintain an appropriate rate of closure.
d. Execute a smooth and controlled termination in the forward one-third of the landing area.

3. Takeoff.

a. Perform a hover power check if required, and complete a before-takeoff check without error.
b. Properly clear the aircraft.
c. Perform an airspeed-over-altitude takeoff while maintaining heading ±10 degrees.
d. Maintain appropriate airspeed ±10 KIAS.

DESCRIPTION:

1. Start the reconnaissance on the windward side of the pinnacle or ridgeline when practical. Upon approaching the area, evaluate the overall suitability of the landing site. Select a flight path, an airspeed, and an altitude that will provide the best observation. Determine if the landing site is suitable, locate obstacles, and estimate the effects of the wind. Plan the approach to the forward one-third of the landing area. Depending on the wind, density altitude, load, and forced landing areas, the approach angle can vary from a shallow to a steep angle. Continue the reconnaissance on final approach to confirm information previously gained. When surface conditions permit, land to the ground. Execute a go-around prior to going below ETL if the reconnaissance reveals that a safe landing cannot be accomplished.

2. After touchdown, check aircraft stability by slowly moving the cyclic and pedals as the collective is lowered to the full-down position. If aircraft movement is detected, reposition the aircraft. Clear the aircraft and execute an airspeed-over-altitude takeoff. If the takeoff requires clearing obstacles, do not use an angle of climb, which is greater than that required to clear them. Use power as necessary to clear the obstacles while maintaining a constant angle of climb and ground track. After clearing the obstacles, adjust attitude to gain forward airspeed.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual
Operator's and Crewmember's Checklist

TASK: 2001

Perform external load operations.

CONDITIONS:

In a DNRC helicopter with an operational cargo hook; required briefings and checks completed; andaircraft cleared.

STANDARDS:

Hookup and Hover.

a. Maintain vertical ascent heading ±10 degrees.
b. Maintain altitude of load 5 feet AGL, ±1 foot.
c. Do not allow drift to exceed 5 feet.

2. Takeoff (Below 100 Feet AGL).

a. Maintain takeoff heading ±10 degrees.
b. Maintain ground track alignment with takeoff direction.
c. Maintain power as required to clear obstacles safely.

3. Takeoff (Above 100 Feet AGL).

a. Maintain aircraft in trim.
b. Maintain airspeed ±10 KIAS.
c. Maintain rate of climb ±100 feet.

4. En Route.

a. Maintain aircraft in trim.
b. Maintain airspeed ±10 KIAS.
c. Maintain safe load obstacle clearance (minimum 50 feet AHO).

5. Approach and Load Release.

a. Maintain a constant approach angle to ensure the load safely clears obstacles.
b. Maintain ground track alignment with the selected approach path.
c. Execute a smooth and controlled termination over the intended point of landing.
d. Maintain vertical descent heading ±10 degrees.

DESCRIPTION:

1. Hookup and Hover:

Place the cargo release switch in the ARM position. Follow hand signals from the signalman to hover over the load. Apply cyclic, collective, and pedals as required to maintain vertically clear of and centered over the load. When the signalman indicates the load is hooked up, slowly apply collective until all slack is taken out of the sling. Make necessary corrections with the cyclic to remain centered over the load. Maintain heading with the pedals. Apply additional collective to raise the load vertically to 5 feet AGL. Monitor aircraft instruments to ensure aircraft limitations are not exceeded.

2. Takeoff:

a. After receiving the signal for takeoff, smoothly apply forward cyclic while increasing collective pitch to begin a coordinated acceleration and climb. Adjust pedals as necessary to maintain desired heading. Adjust cyclic and collective as necessary to attaina constant

angle of climb that will permit safe obstacle clearance. Continue the climb out at that attitude and power until obstacles are cleared.

b. Above 100 feet or obstacle clearance, adjust attitude and power as required to establish the desired rate of climb and airspeed. Make small control movements to prevent load oscillation.

NOTE:

Ensure the cargo switch is in the ARM position.

3. En Route:

Maintain desired altitude with the collective and desired flight path and airspeed with the cyclic. Maintain aircraft in trim with the pedals. Make smooth control applications to prevent load oscillation. If a lateral load oscillation occurs, reduce airspeed. If a fore-and-aft oscillation occurs, begin a shallow bank while reducing airspeed.

4. Approach and Load Release:

When the approach angle is intercepted, decrease the collective to establish the descent. Maintain entry airspeed until apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and forward airspeed until a stationary hover is attained with the load 5 feet above the intended release point. (A go-around should be made before descending below obstacles or decelerating below ETL.) Slowly reduce the collective until the load rests completely on the ground, and then release it. If ground personnel are not available, confirm load release by hovering to a point that is higher than the sling length.

NOTES:

1. Avoid flight overpopulated areas.

2. Before the mission, the pilot will ensure that all crew members are familiar with the hand-and-arm signals and forced landing procedures.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual
DNRC Air Operation Manual

TASK: 2002

Perform vertical reference longline operations.

CONDITIONS:

In a DNRC helicopter with an operational remote hook on a 50', 100' or 150' longline; required briefingsand checks completed; and aircraft cleared.

STANDARDS:

DESCRIPTION:

Preflight.

a. Check aircraft cargo hook and remote hook for proper electrical and manual operation.
b. Inspect cables and all rigging equipment for serviceability.
c. Brief the ground crew.
d. Safety briefing for the customer.

2. Take-off.

When picking up the empty hook or load keep your eyes on the hook/load until all obstacles have been cleared and the aircraft is safely flying the load. (Minimum of 100' clearance from the tallest obstacle before returning your attention to the cockpit.)

3. Approach.

a. After establishing the final approach and not less than 300' AGL the pilot will start visually monitoring the load to ensure control.
b. The pilot will, as in the take-off phase, maintain visual contact with the load, briefly looking at the landing zone. The landing zone will be kept in sight with the pilot's peripheral vision while his main attention is directed to the load.
c. All vertical reference approaches (long line) require a power on approach. Waiting too long to bring the power in could result in an over torque or settling with power.
d. When using an electrical release remote hook, release the load with the long line directly above the load, as the long line could swing and injure ground personnel.
e. Pilot must be able to place the load within a circle of a 10' radius routinely in order to be carded for his task.

4. Landing.

When landing the hook, always place the hook in front of the helicopter.

5. Passengers.

It is advised that passengers should not be carried while the long line is attached. This is to guard against the possibility of making a normal passenger operation take-off and dragging the long line.

The above is normal safety precaution during long line operations.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual
DNRC Air Operation Manual

WATER BUCKET OPERATIONS

PURPOSE:

Use for externally hauling water for firefighting during state or federal fire duty.

DESCRIPTION:

Trade name (Bambi Bucket) a portable bucket weighing 154 lbs. empty.

The bucket can be adjusted for load capacity with a cinch strap on the inside of the bucket that works like a girdle to reduce the actual volume of the bucket.

Capacity:

100%	324 gals. Maximum	2843 lbs.
90%	292 gals. Maximum	2578 lbs.
80%	259 gals. Maximum	2304 lbs.

Externally hauled with its own electrical water release mechanism.

Another feature of the bucket is its conical shape. This design allows the capacity of the bucket to vary according to operating procedures. As the bucket is lifted upward through the water, a water or head pressure is generated inside the bucket which is greater than the water pressure outside the bucket. The pilot can vary the capacity by the rate at which he lifts it from the water. A slow lift gives minimum fill, a faster lift, more fill, and a quick lift, maximum fill. This means that the pilot can determine the precise bucket load best suited to prevailing conditions.

The bucket dumps downward, producing a concentrated column of water. To dump, the support line to the valve is released by a single solenoid mechanism in the control head and the weight of the water forces the dump valve to turn inside out through the bottom of the bucket. This results in an extremely quick exit in addition to the concentrated flow. The bucket empties in about two to three seconds.

The bucket has exceptional flying characteristics even when flying empty. Airspeed, when full, is recommended at 0 to 80 knots; When empty, the bucket acts as a drogue chute and caution must be taken with high airspeeds; trailing near the tail boom and tail rotor.

PRE-FLIGHT AND INSTALLATION:

The control head is attached to the aircraft cargo hook or remote hook attached to a longline and power to operate the solenoid in the control head is wired separate from the cargo hook. The switch will be mounted on the pilots collective and arming of aircraft cargo hook is used only for emergencies to drop the complete bucket with control head.

The bucket is laid out in front of the aircraft on the ground and should be electrically checked prior to use.

FLIGHT:

Aircraft performance for out-of-ground effect must be computed for desired conditions prior to flight.

Hovering over water is recommended near shoreline for proper depth perception

Lowering the bucket into the water causes the bucket to tip to the side. With built-in counterweights the water will enter the bucket, submerge, and fill to the top.

Increasing power to pull bucket from water should be monitored by co-pilot, not to exceed limits. Once the bucket has cleared the surface of the water (5 to 10 feet), flight may begin.

NOTE:

The first load of the day should be tested prior to forward flight, i.e., dump at a hover.

Airspeed during flight may vary; high airspeeds tend to suck water out of the bucket. Recommend 0 to 80 knots in forward flight.

Arriving at the desired drop area, airspeed may vary from a hover to 30 knots, depending on conditions. Altitude may vary also but care must be taken not to fly low enough to snag a tree or drag on the ground; recommend 15 to 30 feet above drop area.

LANDING WITH EMPTY BUCKET:

Hover OGE until bucket touches ground, then hover back while descending to place the bucket in front of the aircraft.

PILOTS SAFETY CONSIDERATIONS:

Check for wires around water pick-up point, recon area where water is to be picked up and delivered, check for cables in mirror for twists, check mirror alignment after landing or work on bucket, check cable clearance from wire strike protective probes while landing and pick-up from hover, and never over-fly personnel or equipment. Attempt to have radio contact with ground prior to water drops.

TASK: 2003

Perform Water Bucket Operations

CONDITIONS:

In a DNRC helicopter with an operational cargo hook or remote hook with a longline; required briefings and checks completed; and aircraft cleared.

STANDARDS:

1. Hookup and Hover:

   a. Maintain vertical ascent heading ±10 degrees.
   b. Maintain altitude of load 5 feet AGL, ±1 foot.
   c. Do not allow drift to exceed 5 feet.

2. Takeoff (Below 100 feet AGL):

   a. Maintain takeoff heading ±10 degrees.
   b. Maintain ground track alignment with takeoff direction.
   c. Maintain power as required to clear obstacles safely.

3. Takeoff (Above 100 feet AGL):

   a. Maintain aircraft in trim.
   b. Maintain airspeed ±10 KIAS.
   c. Maintain rate of climb ±100 feet.

4. En Route:

   a. Maintain aircraft in trim.
   b. Maintain airspeed ±10 KIAS.
   c. Maintain safe load obstacle clearance (minimum 50 feet AHO).

5. Approach and Load Release:

   a. Maintain a constant approach angle to ensure the load safely clears obstacles.
   b. Maintain ground track alignment with the selected approach path.
   c. Execute a smooth and controlled termination over the intended point of landing.
   d. Maintain vertical descent heading ±10 degrees.

DESCRIPTION:

1. Hookup and Hover: Place the cargo release switch in the ARM position. Apply cyclic, collective, and pedals as required to remain vertically clear of and centered over the load. Slowly apply collective until all slack is taken out of the sling. Make necessary corrections with the cyclic to remain centered over the load. Maintain heading with the pedals. Apply additional collective to raise the load vertically to 5 feet AGL. Monitor aircraft instruments to ensure aircraft limitations are not exceeded. Monitor aircraft instruments to ensure aircraft limitations are not exceeded. Monitor aircraft mirror to ensure cables are not twisted or caught on airframe.

2. Takeoff:

   a. After takeoff, smoothly apply forward cyclic while increasing collective pitch to begin a coordinated acceleration and climb. Adjust pedals as necessary to maintain desired heading. Adjust cyclic and collective as necessary to attain constant angle of climb that will permit safe obstacle clearance. Continue the climb out at that attitude and power until

obstacles are cleared.

b. Above 100 feet or obstacle clearance, adjust attitude and power as required to establish the desired rate of climb and airspeed. Make small control movements to prevent load oscillation.

3. En route: Maintain desired altitude with the collective and desired flight path and airspeed with the cyclic. Maintain aircraft in trim with the pedals. Make smooth control applications to prevent load oscillation. If a lateral load oscillation occurs, reduce airspeed. If a fore-and-aft oscillation occurs, begin shallow bank while reducing airspeed.

4. Approach and Load Release: When the approach angle is intercepted, decrease the collective to establish the descent. Maintain entry airspeed until apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and forward airspeed until a stationary hover is attained with the load 5 feet above the intended release point. (A go-around should be made before descending below obstacles rests completely on the ground and then release it. If ground personnel are not available, confirm load release by hovering to a point that ishigher than the sling length.

NOTES:

1. Avoid flight overpopulated areas.

2. Hover OGE power is required for water bucket operations.

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual
DNRC Air Operation Manual

TASK: 2004

Perform water bucket operations with a 50', 100', or 150' vertical reference longline.

CONDITIONS:

In a DNRC helicopter with an operational remote hook on a 50', 100', or 150' longline; required briefings completed; and aircraft cleared.

STANDARDS:

1. Preflight.

   a. Check cargo hook for proper electrical and manual operation.
   b. Inspect cables and all rigging equipment for serviceability.
   c. Brief the Co-Pilot.
   d. Safety briefing for the customer.

2. Take-off.

   When picking up the water bucket attached to the longline, keep your eyes on the hook/load until all obstacles have been cleared and the aircraft is safely flying the load. (Minimum of 100' clearance from the tallest obstacle before returning your attention to the cockpit.)

3. Approach.

   a. After establishing the final approach and not less than 300' AGL the pilot will start visually monitoring the load to ensure control.
   b. The pilot will, as in the take-off phase, maintain visual contact with the load, briefly looking at the drop zone. The drop zone will be kept in sight with the pilot's peripheral vision while his main attention is directed to the water bucket.
   c. All vertical reference approaches (longline) require a power on approach. Waiting too long to bring the power in could result in an over torque or settling with power.

4. Landing.

   When landing the water bucket attached to the longline, always place the hook in front of the helicopter.

5. Passengers.

   It is advised that passengers should not be carried while the longline is attached. This is to guard against the possibility of making a normal passenger operation take-off and dragging the longline.

The above is normal safety precaution during longline operations.

DESCRIPTION:

REFERENCES:

FM 3-04.203
Aircraft Operator's Manual
DNRC Air Operation Manual

TASK: 3001

Perform aircraft taxi.

CONDITIONS:

In a utility airplane.

STANDARDS:

1. Complete before-taxiing procedure IAW the operator's manual.
2. Complete taxiing procedure IAW the operator's manual.
3. Remain within approved taxi area.
4. Use proper power and brakes as necessary to maintain safe taxi speed.

DESCRIPTION:

1. Complete the before-taxiing procedure IAW checklist.
2. Complete the taxiing procedure IAW checklist.
3. Remain within approved taxi areas.
4. Follow taxi lines when applicable.
5. Maintain a safe taxi speed compatible with airfield conditions and other obstacles.
6. Use proper power and brakes. Avoid excessive use of brakes.
7. Comply with taxi clearance.
8. Use controls as required for wind condition.
9. Maintain proper power settings when aircraft is stopped.

REFERENCES:

Checklist
DNRC Air Operations Manual
FM 3-04.203
Local SOP
Operator's Manual

TASK: 3002

Perform normal takeoff and climb/obstacle clearance climb.

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Perform before-takeoff, lineup, and after-takeoff procedures IAW the operator's manual.

2. Maintain a predetermined track (normally runway centerline) between the main landing gear and the takeoff roll.

3. Obtain computed takeoff power before reaching 50 percent rotation speed.

4. Do not exceed any limits prescribed by the operator's manual.

5. Lift off at recommended lift-off speed (Vlof) +5, -0 KIAS.

6. Perform initial climb after lift-off at the appropriate airspeed (best rate or best angle of climb) +5, -0 KIAS.

REFERENCES:

A/C Checklist
DNRC Air Operations Manual
Operator's Manual

TASK: 3003

Perform straight-and-level flight.

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Maintain heading ±10 degrees.
2. Maintain altitude ±100 feet.
3. Maintain airspeed ±10 KIAS.
4. Maintain coordinated flight (ball ¼ out maximum).
5. Set mixture control, if applicable, IAW operator's manual.

DESCRIPTION:

Approaching the desired altitude, adjust pitch attitude as necessary to intercept and maintain that altitude. If leveling off from a climb at normal cruise airspeed, maintain climb power after level-off until cruise speed is attained, then adjust power as required. (Use cruise charts, power computers, or predetermined training power setting.) When leveling off at cruise climb airspeed, adjust power as necessary to maintain desired airspeed. If leveling off from a descent, adjust pitch attitude and power simultaneously when approaching the desired altitude so as to level off at cruise airspeed. Cross-check all flight instruments to ensure that the desired heading, altitude, and airspeed are being maintained. Correct heading and adjust pitch attitude and power as required to maintain straight-and-level flight. Trim as required throughout the maneuver. Complete the cruise-check procedure, if applicable.

REFERENCES:

DNRC Air Operations Manual
FM 3-04.203
Operator's Manual

TASK: 3004

Perform climbs and descents.

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Maintain heading ±10 degrees (unless turning).
2. Maintain airspeed ±10 KIAS.
3. Maintain power within prescribed limits.
4. Maintain coordinated flight (ball ¼ out maximum).
5. Adjust mixture control, if applicable, for altitude IAW operator's manual.

DESCRIPTION:

1. Climbs:

   Establish the climb by adjusting power (RPM/manifold pressure) and pitch attitude to obtain the airspeed prescribed in the operator's manual for the desired climb, such as best rate-of- climb and cruise climb. Monitor instruments to ensure operating limitations are not exceeded. Adjust mixture as necessary, if applicable. Trim as required throughout the maneuver.

2. Descents:

   a. En Route Descents: Establish the descent by reducing power and adjusting pitch attitude to maintain desired airspeed (normally cruise airspeed) and the desired rate of descent. During the descent, control airspeed by adjusting pitch attitude. The rate of descent will depend on the amount of power reduced. Adjust mixture as necessary, if applicable. Trim as required throughout the maneuver.

   b. Slow Cruise Descents: Reduce power to a setting below that required for level flight at slow cruise. Maintain altitude while decelerating to slow cruise. Approach slow cruise airspeed, adjust pitch attitude and power to maintain slow cruise airspeed and the desired rate of descent. During the descent, control airspeed by adjusting pitch attitude. The rate of descent will depend on the amount of power reduced. Trim as required throughout the maneuver.

   c. Maximum Rate Descents: Establish the descent by reducing the power to idle (or minimum allowable) and configure the aircraft as recommended in the operator's manual.Adjust pitch attitude to maintain maximum operating speed -10 KIAS. In order to maintain positive G-forces and for proper clearing of altitudes below, a 25-degree to 45- degree bank should be established in the initial descent for at least a 90-degree heading change. During the descent, control airspeed by adjusting pitch attitude. Trim as required throughout the maneuver. Unless an actual emergency exists, the maneuver should only be performed during daylight under VMC.

   d. Glides: Establish the glide by reducing the power to idle (or to the minimum prescribed in the operator's manual for RPM and airspeed) and adjusting pitch attitude to maintain maximum glide airspeed as listed in the operator's manual. During the descent, control airspeed by adjusting pitch attitude. To recover to level flight, set power as required to

maintain desired airspeed and stop descent. Retract landing gear and flaps.

NOTE:

During training in aircraft with piston-driven engines, the maneuver should be terminated as soon asthe prescribed procedures are completed. A prolonged descent in these aircraft may cause engine damage due to rapid cooling of the cylinders.

REFERENCES:

DNRC Air Operations Manual
Checklist
FM 3-04.203
Operator's Manual

TASK: 3005

Perform turns.

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Maintain altitude ±100 feet.

2. Establish/maintain angle of bank, ±5 degrees for steep. Do not exceed bank limitation as published in the operator's manual.

3. Roll out on desired heading ±5 degrees for shallow, ±10 degrees for medium and steep.

4. Maintain airspeed ±10 KIAS.

5. Maintain coordinated flight (ball ¼ out maximum).

DESCRIPTION:

Turns are classified as shallow (up to 25-degree bank angle), medium (25-degree to 45-degree bank angle), and steep (45-degree to 60-degree bank angle). The maneuver should be performed using maximum outside visual reference and minimum reference to instruments. To enter a turn, apply control pressures, which will result in a smooth and uniform rate of change in the banking attitude until the desired angle of bank is established. As the angle of bank increases, adjust pitch attitude and power as necessary to maintain airspeed and altitude. During the turn, rudder, elevator, aileron and power must be used as required to correct for torque, overbanking tendency, and to maintain airspeed and altitude. Plan the rollout to the desired heading using a smooth and uniform reduction of bank at the same rate as roll-in. Coordinate pitch attitude and power as required during the rollout. Use trim as required throughout the maneuver.

REFERENCES:

DNRC Air Operations Manual
FM 3-04.203
Operator's Manual

TASK: 3006

Perform flight at minimum controllable airspeed (slow flight)

CONDITIONS:

In a utility airplane, VMC.STANDARDS:

1. Maintain heading ±10 degrees (unless turning).

2. Maintain altitude ±100 feet.

3. Maintain airspeed within +5, -0 KIAS of minimum controllable airspeed.

DESCRIPTION:

1. This is a training maneuver used to demonstrate and practice the degree of controllability available while close to the pre stall buffet. It provides practice of control techniques and shows the capabilities and limitations of the aircraft in the low-speed regimes. Recommended propeller setting for this task is as specified in the operator's manual for climbs. The maneuver should be performed using maximum outside visual references and minimum reference to instruments.

2. While maintaining heading and altitude, set propeller RPM, reduce power, slowing the aircraft to minimum controllable airspeed. As airspeed is reduced, adjust pitch attitude as necessary to maintain altitude. At the point where pitch attitude alone does not increase, lift sufficiently to maintain altitude (area of reverse command), add power to maintain altitude. Maneuver the airplane in cruise and landing configuration, in straight-and-level flight, in climbs and descents, and in turns to obtain maximum training value. The following items should be demonstrated and practiced as applicable:

    a. Airplane attitude during the maneuver.
    b. Power required as airspeed is changed.
    c. Control effectiveness.
    d. Rate of turn versus degree of bank.
    e. Increase in stall speed with increase in bank angle.
    f. Adverse aileron yaw.
    g. Effect of flap extension and retraction.
    h. Operation in the area of reverse command.
    i. Complete the maneuver by performing a simulated go-around. Maintain altitude during recovery or climb to a predetermined altitude. Complete the go-around procedure and level off at desired altitude and airspeed. Trim as required throughout the maneuver.

REFERENCES:

DNRC Air Operation ManualFARs
FM 3-04.203
Operator's Manual

TASK: 3007

Perform stalls and recoveries.

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Correctly recognize stall characteristics and impending and full stall indications.
2. Correctly recover from a stall.
3. Recover with a minimum loss of altitude no lower than 1500 feet AGL.
4. Remain within engine and aircraft limitations prescribed in the operator's manual.
5. Maintain heading within ±10 degrees and bank within ±10 degrees.
6. Maintain coordinated flight (ball ¼ out maximum).

DESCRIPTION:

Practice in both power-on and power-off stalls is important because it simulates stall conditions that could occur during normal flight maneuvers.

1. Power Off: To set up the entry for a straight-ahead power-off stall, airplanes equipped with flaps or retractable landing gear should be in the landing configuration. After extending the landing gear, applying the carburetor heat (if applicable) and retarding the throttle to idle (or normal approach power), hold the airplane at a constant altitude in level flight until the airspeed decelerates to normal approach speed. The airplane should then be smoothly pitched down to normal approach attitude to maintain that airspeed. Wing flaps should be extended, and pitch attitude adjusted to maintain the airspeed.

   When the approach attitude and airspeed have stabilized, the pilot should smoothly raise the airplanes nose to an attitude that induces a stall.

2. Power On: To set up the entry for power on stalls, establish the airplane in the takeoff or climb configuration. Slow the airplane to normal lift off speed while continuing to clear the area of other traffic. Upon reaching the desired speed, set take off power or the recommended climb power for the power on stall (often referred to the departure stall) while establishing a climb attitude. The purpose of reducing the airspeed to lift-off airspeed before the throttle is advanced to the recommended setting is to avoid an excessively steep nose-up attitude for a long period before the airplane stalls.

   After establishing the climb attitude, smoothly raise the nose to increase the Angle of Attack (AOA) and hold that attitude until the full stall occurs.

3. Accelerated Stalls: Stalls encountered any time the G-load exceeds 1 G are called “accelerated maneuver stalls”. The most common accelerated stall procedure starts from straight and level flight at an airspeed at or below Va Roll the airplane into a coordinated, level flight 45°turn and then smoothly

REFERENCES:

DNRC Air Operations Manual
FARs
FM 3-04.203
Operator's Manuals

TASK: 3008

Perform normal landing

CONDITIONS:

In a utility airplane, VMC

STANDARDS:

1. Maintain required altitudes ±100 feet.
2. Maintain appropriate airspeeds ±10 KIAS.
3. Maintain required ground track.
4. Complete before-landing and landing checks no later than designated points during the approach.
5. Attain landing approach speed (Vref plus one-half wind gust speed) ±5 KIAS.
6. Execute touchdown on the predetermined touchdown point minus 0, plus 200 feet with the desired runway track between the main gear during landing to rollout.

DESCRIPTION:

Complete descent-arrival check before entering the traffic pattern. Maneuver aircraft into position to enter the downwind leg at midfield at a 45-degree angle, at traffic pattern altitude, and at the proper airspeed. Straight-in or base-leg entry may be used, if approved by air-traffic control. Complete the before-landing check on downwind leg prior to turning base leg (prior to 2 miles on straight-in or extended base leg). Reduce power as required to adjust airspeed and begin descent. If using a straight-in or base-leg entry, reduce power at a point that will result in a flight path comparable with that of the 180-degree approach. Turn base leg when appropriate to maintain the desired ground track. Extend flaps as required. Adjust pitch and power to maintain the required airspeed and descent angle. Trim as required. Turn final so as to complete the turn at or above 500 feet AGL. When established on final approach, select landing flaps and start reducing airspeed gradually so as to arrive at Vref plus one-half the wind gust speed at approximately 50 feet above the landing area. Complete the landing check. As the aircraft nears the runway, coordinate pitch and power as necessary to control rate of descent and airspeed for a smooth touchdown. Depending on the type of aircraft and conditions, reduce power to idle and touch down on main gear or touch down on the main gear as power is smoothly reduced to idle. After touchdown, gently lower the nosewheel to the runway and use brakes if applicable, as necessary to slow the aircraft. Maintain directional control during the landing roll with rudder and/or nosewheel steering. Perform the after-landing procedure when clear of the runway. During crosswind conditions, use the crab-into-the-wind method to correct for drift on all legs of the traffic pattern until short final. The crab-into-the-wind is changed to a slip-into-the-wind for roundout and touchdown. During the after-landing roll, use normal rudder or nosewheel steering for directional control and position ailerons as required to correct for crosswind effect.

NOTES:

1. **Although designated points are given for completing the before-landing and landing checks throughout the approach, this does not preclude the aviator from performing these procedures earlier than the designated points. If performing the before-landing procedure early, maintain airspeed at Vref +30 KIAS until turning base leg.**

2. **If Vref or approach speed is not listed, use 1.3 times power-off stall speed in the landing configuration (Vso).**

3. **When performing circling approach during instrument flight, maintain circling approach altitude until normal approach can be made to the runway.**

4. **Normal landings are made with full flaps. However, in gusty winds or strong crosswinds, a lesser flap setting may be used.**

REFERENCES:

DNRC Air Operations Manual
Checklist
FM 3-04.203
Operator's Manual

TASK: 3009

Perform go-around

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Perform go-around IAW operator's manual.

2. Maintain heading ±10 degrees.

DESCRIPTION:

When it becomes doubtful that a safe landing can be accomplished, apply maximum allowable power. The airplane executing a go around must be maintained in an attitude that permits a buildup of airspeed well beyond the stall point before any effort is made to gain altitude or execute a turn. After the descent has been stopped, the landing flaps are partially retracted or placed in the takeoff position as recommended by the manufacture. Accelerate to best rate-of-climb speed. Complete the go-around procedure.

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK: 3010

Describe or perform emergency procedures.

CONDITIONS:

In a utility airplane or conference; given a specific emergency.

STANDARD:

Simulate performing or stating the appropriate emergency procedure IAW the operator's manual.

DESCRIPTION:

All emergency procedures which cannot be practiced in the aircraft will be discussed.

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK: 4001

Perform instrument climb, descent, and straight-and-level flight.

CONDITIONS:

In a Helicopter or utility airplane, IMC or simulated IMC.

STANDARDS:

1. Constant airspeed, constant power climbs:

    a. Maintain heading ±10 degrees.
    b. Maintain airspeed ±10 KIAS.
    c. Maintain power IAW the operator's manual or assigned training power setting.
    d. Maintain coordinated flight (ball ¼ out maximum).
    e. Adjust mixture for pressure altitude, if applicable.

2. Constant airspeed, constant rate of climb/descent:

    a. Maintain heading ±10 degrees.
    b. Maintain airspeed ±10 KIAS.
    c. Maintain desired rate of climb/descent within ±10 feet per minute.
    d. Maintain coordinated flight (ball ¼ out maximum).
    e. Adjust mixture for pressure altitude, if applicable.

3. Straight-and-level flight:

    a. Maintain heading ±10 degrees.
    b. Maintain airspeed ±10 KIAS.
    c. Maintain altitude ±100 feet.
    d. Maintain cruise power (normal cruise, maximum range) IAW the operator's manual or assigned training power settings.
    e. Maintain coordinated flight (ball ¼ out maximum).
    f. Adjust mixture for pressure altitude, if applicable.

REFERENCES:

DNRC Air operations manual
Operator's manual

TASK: 4002

Perform instrument turns.

CONDITIONS:

In a Helicopter or utility airplane, IMC or simulated IMC.

STANDARDS:

1. Half-standard rate (1.5 degrees per second):

    a. Establish desired bank attitude ±5 degrees.
    b. Maintain altitude ±100 feet (unless climbing or descending).
    c. Maintain airspeed ±10 KIAS.
    d. Maintain coordinated flight (ball ¼ out maximum).
    e. Recover to assigned heading ±5 degrees.

2. Standard rate (3 degrees per second):

    a. Establish desired bank attitude ±5 degrees.
    b. Maintain altitude ±100 feet (unless climbing or descending).
    c. Maintain airspeed ±10 KIAS.
    d. Maintain coordinated flight (ball ¼ out maximum).
    e. Recover to assigned heading ±10 degrees.

3. Steep turn (any turn greater than standard rate or exceeding a 30-degree bank):

    a. Establish desired bank attitude ±5 degrees.
    b. Maintain altitude ±100 feet (unless climbing or descending).
    c. Maintain airspeed ±10 KIAS.
    d. Maintain coordinated flight (ball ¼ out maximum).
    e. Recover to assigned heading ±10 degrees.

4. Timed turns:

    a. Establish desired bank attitude ±5 degrees.
    b. Maintain altitude ± 100 feet.
    c. Maintain airspeed ±10 KIAS.
    d. Recover to assigned heading ±10 degrees.
    e. Maintain coordinated flight (ball ¼ out maximum).

5. Compass turns.

    a. Establish desired bank attitude ±5 degrees.
    b. Maintain altitude ±100 feet.
    c. Maintain airspeed ±10 KIAS.
    d. Recover to assigned heading ±10 degrees.
    e. Maintain coordinated flight (ball ¼ out maximum).

DESCRIPTION:

Refer to FM 1-5 for description of basic instrument turns.

REFERENCES:

DNRC Air Operations Manual
Operator's Manual

TASK: 4003

Perform radio navigation.

CONDITIONS:

In a Helicopter or utility airplane.

STANDARDS:

Perform the following elements of radio navigation as needed to navigate the intended route and reach the desired destination:

1. Navigational radio turning.
2. Station identification.
3. Orientation.
4. Course interception.
5. Tracking.
6. Position fixing.
7. Identification of station passage.

DESCRIPTION: Perform the following:

1. Equipment Check.

   Check all radio navigational equipment to be used during the mission. Needed equipment must be operable and within accuracy tolerances specified.

2. Station Identification.

   Obtain correct frequency for desired navigational station and tune equipment. Make positive identification of the station.

3. Aircraft Position.

   Determine the position of aircraft with respect to a specified navigational ground station IAW procedures in FM 1-5.

4. Course Interception.

   After identifying the desired station, turn the aircraft to parallel the desired course. Determine the aircraft's location in relation to the desired course. Turn 45 degrees toward the course (90 degrees to expedite). Maintain intercept heading until approaching an on-course indication, then turn to maintain course.

5. Course Tracking.

   Maintain desired heading until navigation instrument shows an off-course condition. Turn 20 degrees toward the course to re intercept. If navigation instruments do not indicate movement toward the course in a reasonable period of time, turn 45 degrees toward the course to compensate for unusually strong winds. When the course is re intercepted, use bracketing heading changes of progressively lessening magnitude to maintain the course.

6. Intersection Arrival.

   Determine arrival at radio intersections.

7. Station Passage.
   Identify VOR station passage by observing reversal of the TO-FROM indicator or reversal of the RMI needle. Identify NDB station passage by observing reversal of the indicator needle. Identify TACAN station passage by DME mileage reversal.

REFERENCES:

DNRC Air Operations Manual
Operator's Manual

TASK: 4004

Perform holding procedures.

CONDITIONS:

In a Helicopter or utility airplane, IMC, or simulated IMC.

STANDARDS:

1. Maintain assigned altitude ±100 feet.
2. Maintain holding airspeed ±10 KIAS.
3. Properly tune and identify NAVAIDS.
4. Correctly enter holding pattern.
5. Fly correct holding pattern.
6. Use correct tracking procedures.

DESCRIPTION:

1. Timed Holding.

   Before arrival at the holding fix, analyze holding instructions to determine holding pattern and entry. Upon arrival at the holding fix, turn, if required, to the predetermined outbound heading. Check navigation instruments to confirm the aircraft's location in relation to the inbound course. When using time, the outbound heading should be maintained IAW DOD FLIP or as directed by ATC. Adjust subsequent outbound leg elapsed time to obtain the desired inbound leg time. Apply normal tracking procedures to maintain inbound course. Note the time required to fly the inbound leg. Begin outbound time when abeam the station if holding at a navigational aid. When holding at an intersection, begin outbound time upon establishing outbound heading.

2. DME Holding.

   Before arrival at the holding fix (normally a radial and DME from a VORTAC or TACAN station) determine holding pattern and entry. Upon arrival at the holding fix, turn, if required, to the predetermined outbound heading. Check navigation instruments to confirm the aircraft's location in relation to the inbound course. The length of the outbound leg will be attained as specified IAW DOD FLIP or as directed by ATC. Begin inbound turn at the appropriate DME point and apply normal tracking procedures to maintain inbound course.

REFERENCE:

DNRC Air Operations Manual

TASK: 4005

Perform unusual attitude recovery.

CONDITIONS:

In a Helicopter or utility airplane, with CFI or CFII simulated IMC with an emergency or full-panel configuration.

STANDARDS:

Correctly identify the unusual attitude.

1. Use the correct recovery sequence without exceeding the operating limits of the aircraft.

DESCRIPTION:

Recognize and recover from unusual attitudes.

REFERENCE:

DNRC Air Operations Manual

TASK: 4006

Perform radio communication procedures.

CONDITIONS:

1. Use correct radio procedures IAW DOD FLIP during all applicable radio transmissions.

2. Operate all onboard aircraft communication equipment IAW operator's manual.

DESCRIPTION:

Not applicable.

REFERENCES:

DNRC Air Operations Manual
Operator's Manual

TASK: 4007

Perform non precision approach.

CONDITIONS:

In a utility airplane, IMC, or simulated IMC.

STANDARDS:

1. Execute approach, approved instrument procedure.

2. Maintain prescribed altitudes ±100 feet. Complete before-landing check prior to final descent inbound.

3. Maintain required airspeed ±10 KIAS.

4. Maintain prescribed courses as follows:

   a. NDB courses--±5 degrees.
   b. VOR, VOR/DME, RNAV, SDF, and TACAN courses--within ½ scale deflection using the course indicator or ±5 degrees using the RMI.
   c. LOC, LDA courses--remain within full-scale deflection of the CDI.

5. Do not descend below the published minimum descent altitude during approaches or circling.

REFERENCES:

DNRC Air Operations Manual
Operators Manual

TASK: 4008

Perform procedures for two-way radio failure

CONDITIONS:

In a Helicopter or utility airplane; conference.

STANDARD:

Comply with two-way radio failure procedures.

DESCRIPTION:

Attempt to re-establish radio communications. If unable to re-establish radio communications, comply with lost communication procedures.

REFERENCES:

DNRC Air Operations Manual
Operator's Manual

TASK: 4009

Perform precision approach.

CONDITIONS:

In a Helicopter or utility airplane, IMC, or simulated IMC.

STANDARDS:

1. Maintain headings ±5 degrees.

2. Maintain altitudes ±100 feet.

3. ILS remain within full scale deflection of CDI. On final approach, maintain glide-slope indicator within full-scale deflection.

4. Perform before-landing check prior to final-approach descent.

5. Make immediate heading and altitude corrections as issued by ATC.

6. Do not continue the approach below DH.

7. Complete landing check and adjust airspeed to Vref plus ½ wind gust speed.

NOTE:

Final approach speed is Vref + 20 KIAS.

REFERENCES:

DNRC Air Operations Manual
DOD FLIP
FAR, Part 91
Operator's Manual
TERPS

TASK: 4010

Perform missed approach.

CONDITIONS:

In a Helicopter or utility airplane, IMC, or simulated IMC.

STANDARDS:

1. Comply with ATC or published missed approach procedures at missed-approach point.

2. Maintain prescribed course or heading ±5 degrees.

DESCRIPTION:

1. Airplane: When it is determined that a missed approach is necessary, advance power to maximum allowable and simultaneously increase pitch attitude to stop the descent with minimum loss of altitude. Establish a positive climb-pitch attitude. Retract flaps and trim the aircraft as necessary. Accelerate to best rate-of-climb speed. Maintain Vy and trim as required. Maneuver the aircraft so as to follow the missed-approach path shown on the approach plate or the alternate route assigned by ATC. If the approach is terminated while circling for a landing, make a climbing turn toward the runway unless otherwise specified. Remain within the circling obstruction clearance area before turning to intercept the published missed approach course. As soon as practical, inform ATC of the missed approach and state intentions for additional ATC clearance. Do not sacrifice aircraft control for the sake of communicating with ATC. Complete go-around procedure.
2. Helicopter: When it is determined that a missed approach is necessary, advance power to maximum allowable and simultaneously increase pitch attitude to stop the descent with minimum loss of altitude. Establish a positive climb-pitch attitude. Maneuver the aircraft so as to follow the missed-approach path shown on the approach plate or the alternate route assigned by ATC. If the approach is terminated while circling for a landing, make a climbing turn toward the runway unless otherwise specified. Remain within the circling obstruction clearance area before turning to intercept the published missed approach course. As soon as practical, inform ATC of the missed approach and state intentions for additional ATC clearance. Do not sacrifice aircraft control for the sake of communicating with ATC. Complete go-around procedure.

REFERENCES:

DNRC Air Operations Manual
Checklist
FAR, Part 91
Operations Manual

TASK: 4011

Instrument Recovery Procedure.

CONDITIONS:

In a Helicopter or utility airplane, IMC, or simulated IMC.

STANDARDS:

1. At your position recover to an altitude for IFR operations.
2. Comply with ATC clearance.
3. Request clearance to recovery airfield.

DESCRIPTION:

At first sign of inadvertent IMC:

1. Level your wings.
2. Maintain heading, turn only to avoid known obstacles.
3. Adjust power for maximum climb.
4. Adjust airspeed for maximum climb.
5. Contact ATC on emergency frequency.
6. Request a clearance to the nearest suitable recovery airfield.

REFERENCES:

DNRC Air Operations Manual
Checklist
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