ANNEX LIST – 1500 MANUAL

Annex A	**DNRC Aircraft Use Management Guidelines**
Annex B	**Aircrew Training Manual**
Annex C	**DNRC Crash Search and Rescue Guide**
Annex D	**Pilot Supervision Matrix**
Annex E	**DNRC Aircraft Billing Form**
Annex F	**Form 5700 -14 Initial Report of Incident or Accident / Incident report**
Annex G	**Maintenance Form / Daily Log Instructions**
Annex H	**FAA Public/ Civil Aircraft Utilization Dispatch Worksheet**
Annex I	**Forest Service Approval Letter**
Annex J	**DNRC Guard Operations Guide**
Annex K	**DNRC Line Officer Aviation Transition Checklist**
Annex L	**Fuel Handling**

Reference	**IHOG**
Reference	**USFS Transport of Hazardous Materials**
Reference	**Public Law Advisory Circular 00-1.1A**

ANNEX A

DNRC AIRCRAFT USE MANAGEMENT GUIDELINES

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DNRC Policy #_3-0619_____
Name: USAGE OF AIRCRAFT BY DEPARTMENT PERSONNEL
Reference MOM Vol. I 1-97-3-4 Airplane Mileage Rates
Reference Other 2-18-503, 504 MCA
DNRC Air Operations Manual
Approval:
Signature_____\S__Bud Clinch_____
Effective Date_____8-27-98_____

USAGE OF AIRCRAFT BY DEPARTMENT PERSONNEL

I. AUTHORITY

Guidelines covering aircraft usage and operations within the Department are the responsibility of the Air Operations Chief Pilot. State aircraft usage is further defined within the Department's Air Operations Manual. Reimbursement of employees when using own or rented aircraft is contained within 2-18-503 and 2-18-504 M.C.A.

II. PURPOSE

The purpose of this policy is to govern the usage of aircraft (excluding commercial airlines) to transport Department personnel while on official business.

III. PROCEDURES

Usage of Department Aircraft and Pilots

Department aircraft and pilots will be used in the normal course of business. The Air Operations Chief Pilot will ensure that Department aircraft and pilots meet all necessary standards and conditions for the safe transport of Department personnel. All requests for normal non-fire usage of Department aircraft will be coordinated through the Air Operations Chief Pilot. Department aircraft and seasonal pilots may be assigned to specific Land Offices during specific periods of the year, as during the normal fire season. Usage of these aircraft for other than fire use during the fire season must be coordinated by the Air Operations Chief Pilot through the appropriate fire dispatch center. Requests by employees for non-fire usage of Department aircraft must be first approved by the Administrator or Bureau Chief/Area Manager. All billing and documentation requirements will be as specified in the DNRC Air Operations Manual. Department owned aircraft will only be piloted with pilots approved through the Air Operations Chief Pilot.

Usage of Rented aircraft with a Pilot from an Approved Fixed Base Operator

The Department may rent aircraft with pilots from fixed base operators when it is in the best interest of the Department to do so. This may be when there is an emergency, such as a fire, or when state-owned aircraft are either not available or suitable for the specific mission. In non-

emergency situations the request for non-Department aircraft will be made through the Air Operations Section unless other specific arrangements have been approved by the Air Operations Section. The Air Operations Section will then contract with an approved fixed base operator. Requests to rent aircraft must be approved by the Administrator or Bureau Chief/Area Manager before forwarding to the Air Operations Section.

Usage of Personal or Rented Aircraft by Department Employee Pilots

Under specific guidelines Department employees may pilot their own or rented aircraft for the conduct of Department business. These guidelines are necessary to ensure the safe conduct of Department affairs. Employees must first receive written approval from their respective Administrator prior to any flight and must meet the following requirements:

1. Employee pilots must possess the following qualifications and be approved by the Air Operations Chief Pilot:

    a. Valid FAA pilot certificate (private or higher);

    b. Appropriate FAA medical Certificate;

    c. Minimum of two hundred hours pilot in command;

    d. Maintain recent flight experience in accordance with Federal Aviation Regulations Part 61.57.

2. Flights shall be advantageous to the state and be within the capability and experience limitations of the pilot.

3. Flights will not be authorized to carry other employees or passengers, freight, or cargo; or to perform detection, fire patrol, reconnaissance, or other similar or specialized missions.

4. All flights will be conducted under FAA regulations and flight plans will be filed for each flight with the appropriate flight service station.

5. Flights shall be made in daylight hours under visual flight rules.

6. Reimbursement will be based on the rate currently defined in state law, rule or management memo. Current reimbursement is based on a nautical point to point mileage at a rate twice the "high" automobile rate.

ANNEX B

AIRCREW TRAINING MANUAL

MT DNRC AIR CREW TRAINING MANUAL

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DNRC AIRCREW TRAINING MANUAL

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.

The ATMs are basic documents which standardize aviator training programs 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 ATMs, 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 also include:

1. Instruction in the appropriate provisions of the state's 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 to the operation or pilot authorization, including, when applicable, 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 9600 channel radio.

9. Load calculation form FS-5700-17.

10. Organizational breakdown of the Department.

11. Briefing on all applicable waivers.

12. Flight Physiology.

13. Radio operation procedures.

14. Sling load equipment review.

15. Accident and incident reports review.

16. 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. After successful completion of each task, the DNRC check pilot will complete the Training and Evaluation Slip, once the Aviator has completed all required training a entry shall be made on DNRC Pilot Training form. (example: "2014 Recurrent Training Completed" This form will be renewed annually and kept in the pilot's individual training jacket.

DNRC AIRCREW TRAINING MANUAL

Required Publications

- DNRC Manuals
  Air Operations Manual
- USFS 5700 - Aviation Management http://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsm?5700
- USFS 5709.12 - Helicopter Operations Handbook
- D.A. Field Manuals
  - 1-203 (New: FM 3-04.203)
  - 1-51 (New FM 3-04.203)
- All Applicable Federal Aviation Regulations http://www.faa.gov/regulations_policies/
- All Applicable Aircraft Operators Manuals
- ATC Handbook 7110.65U www.faa.gov/documentlibrary/media/order/atc.pdf
- TERPS
- FS-5700-17
- OAS-67
- Appropriate Aircraft Operators Manuals

TASK 1001

TASK:

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

TASK:

Plan an IFR flight.

CONDITIONS:

Prior to IFR 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. 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, and 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

TASK:

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

TASK:

Perform pre-flight inspection

CONDITIONS:

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

STANDARDS:

1. 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 aircraft operator'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

TASK:

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 appropriate 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 HIT Log
Operator's and Crewmember's Checklist
DNRC Air Operations Manual

TASK 1006

TASK:

Perform confined area operations.

CONDITIONS:

In a DNRC helicopter with before landing check completed.

STANDARDS:

1. 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:

Perform slope operations.

CONDITIONS:

In a DNRC helicopter with aircraft cleared.

STANDARDS:

1. Maintain heading perpendicular to slope ±5 degrees.

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

3. Execute a smooth and controlled descent and touchdown.

4. 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 OR NVG CONSIDERATIONS:

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 1-203
Aircraft Operator's Manual

TASK 1008

TASK:

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 1-203
Aircraft Operator's Manual

TASK 1009

TASK:

Perform simulated engine failure at altitude.

CONDITIONS:

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

STANDARDS:

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

2. Select a suitable landing area.

3. 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 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 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 1-203
Aircraft Operator's Manual
Operator's and Crewmember's Checklist

TASK 1010

TASK:

Perform manual throttle operation, emergency governor mode.

CONDITIONS:

In a DNRC helicopter with an IP and aircraft cleared.

STANDARDS:

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

2. Maintain 6400 RPM, ±200 RPM.

3. Smoothly coordinate throttle and collective controls.

4. Maintain altitude ±1 foot.

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

6. 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, N1 (?) , N2, and EGT.

DESCRIPTION:

While on the ground with RPM stabilized at 6600 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 6400 RPM. Increase the collective and manipulate the throttle carefully to maintain 6400 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 6400 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 6600. 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

TASK:

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

TASK:

Perform pinnacle or ridgeline operation.

CONDITIONS:

In a Dnrc helicopter with before-landing check completed.

STANDARDS:

1 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 1-203
Aircraft Operator's Manual
Operator's and Crewmember's Checklist

TASK 1013

TASK:

Perform external load operations.

CONDITIONS:

In a DNRC helicopter with an operational cargo hook; 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. 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 attain a constant angle of climb that will permit safe obstacle clearance. Continue the climbout 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 over populated 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 1-203
FM 1-204
Aircraft Operator's Manual
DNRC Air Operation Manual

TASK 1014

TASK:

Perform vertical reference longline operations.

CONDITIONS:

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

STANDARDS:

1. 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 overtorque 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.

TASK 1015

TASK:

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 overtorque 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.

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 70 lbs. empty.

Capacity:	96 gals. maximum @ 8 lbs.	768 lbs.
	240 gals. maximum @ 8 lbs.	1,920 lbs.
	324 gals. maximum @ 8 lbs.	2,592 lbs.

External hauled with its own release mechanism.

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.

Another feature of the bucket is its frusto-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; 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 60 to 90 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:

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 climbout 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 is higher than the sling length.

NOTES:

1. **Avoid flight over populated areas.**

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

TASK 2001

TASK:

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, BETA range, 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, BETA range, 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 1-203
Local SOP
Operator's Manual

TASK 2002

TASK:

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. Climb as rapidly as possible until single-engine maneuvering altitude is reached (not less than 500 feet AGL).

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

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

7. Perform initial climb after lift-off at the appropriate airspeed (best rate or best angle of climb) +5, -0 KIAS with the maximum of 16 degree attitude.

REFERENCES:

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

TASK 2003

TASK:

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 1-203
Operator's Manual

TASK 2004

TASK:

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/torque, etc.) 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. During two-engine inoperative training, the maneuver should be practiced with propellers at simulated feathered and unfeather and with the aircraft configured for cruise and for landing. Propeller feathering will be simulated by setting engines to zero thrust.

e. Two-Engine Inoperative Glides (Day, VMC, With an IP): This maneuver is performed to gain proficiency in maneuvering the aircraft when both engines have failed. To gain the maximum training benefit, the IP may simulate failing the engines individually or simultaneously. After the pilot performs the proper procedures for engine failure, the IP will configure the propellers and power to obtain zero thrust. During the descent, control airspeed with pitch attitude to obtain maximum glide or the glide speed recommended in the operator's manual. Practice turns using various angles of bank and with the aircraft in clean and landing configurations.

NOTE:

During training in aircraft with piston-driven engines, the maneuver should be terminated as soon as the 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 1-203
Operator's Manual

TASK 2005

TASK:

Perform turns.

CONDITIONS:

In 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 1-203
Operator's Manual

TASK:

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 prestall 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.

NOTE:

When performing this maneuver, pilots should keep in mind that the airspeed may be well below that given for Vmc. In the event of an actual engine failure, power should be reduced immediately while simultaneously reducing pitch attitude. Maximum controllable power should then be applied and single-engine emergency procedures performed.

REFERENCES:

DNRC Air Operation Manual
FARs
FM 1-203
Operator's Manual

TASK:

Perform stalls and recoveries.

CONDITIONS:

In a utility airplane, VMC.

STANDARDS:

1. Correctly recognize the approach to a stall.
2. Correctly recover from a stall.
3. Recover with a minimum loss of altitude.
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:

1. Aircraft Characteristic Stall.

   Clear the area while reducing airspeed to slow cruise and configure aircraft for takeoff, climb, cruise, or landing. Set power to at least 50 percent of available power for power-on stalls or idle for power-off stalls. Enter stalls from level flight. Increase angle of attack slowly to obtain the stall. The maneuver may be entered straight ahead or while turning. Speed bleed-off should be at zero rate of climb while performing power-off stalls. During power-on stalls, pitch attitude should be smoothly raised to a climb attitude obviously impossible for the aircraft to maintain, and held at that attitude until the stall occurs. In any case, do not exceed 20 degrees pitch attitude. Recover by reducing the angle of attack as required to "break the stall" and adding power, if available, to assist recovery. After initial training and after the pilot has learned the stall characteristics of the airplane, there is no need to continue the maneuver beyond buffet onset. Recover should then be made at the first physical indication of a stall (usually the buffet) by reducing the angle of attack to level flight attitude (for the airspeed) and adding power, if available, to assist recovery. Consider turbine lag involved on recovery, if applicable.

NOTES:

A. Recovery from a full-stall condition must be demonstrated/practiced, (day, VMC with IP), during qualification/refresher training or as deemed necessary by the IP. Reduced power stalls may be practiced from idle to 50 percent power.

B. Recovery should be initiated at the first physical indication of a stall, such as uncontrollable pitching, buffeting, rapid decay of control effectiveness or the application of full elevator without producing further stall development.

2. Takeoff Configuration Stall Over-rotation.

Reduce airspeed to slow cruise and configure the aircraft as for takeoff. Clear the area and begin the maneuver by reducing power to decrease airspeed just above stall speed (Vs) while setting the trim for takeoff. Apply power to at least 65 percent of available power, then level the aircraft, simulating a takeoff roll from a level runway. Approaching Vr speed, increase pitch attitude (angle of attack) to simulate an exaggerated takeoff pitch angle (over-rotation), to clear an obstacle at the end of the runway. At the first physical indication of a stall (usually the buffet), recover by reducing the angle of attack to level flight attitude (for the airspeed). Do not add power during recovery. This maneuver is simulating the takeoff condition where no additional power is available.

3. Landing Configuration Stall.

Reduce airspeed to slow cruise and configure the aircraft for landing. Clear the area while flying a simulated pattern for base and final approach legs. After establishing the appropriate final approach speed (normally with full flaps), smoothly increase pitch attitude (angle of attack) while reducing power to establish a landing attitude. Do not exceed pitch attitude required for normal landing. Trim as required. Slight while flaring (aligning with runway) or simulated crosswind correction make the practice of the maneuver more effective. At the first physical indication of a stall (buffet), recover by reducing the angle of attack to level flight attitude (for the airspeed) and simultaneously adding maximum allowable power. Establish a positive climb attitude while accelerating to Vy.

4. Accelerated Stall.

Reduce airspeed to slow cruise. Clear the area and establish a simulated traffic pattern base leg. Begin a medium bank turn to a simulated final approach. After the turn is established, increase bank slightly (simulating "overshooting" final approach) and simultaneously increase pitch attitude (angle of attack) at a moderately rapid rate to increase wing loading and stalling speed. At the first physical indication of a stall (usually the buffet), recover by simultaneously reducing the angle of attack, leveling the wings, and adding maximum allowable power.

NOTES:

A. Accelerated stalls are caused by increasing the aircraft's weight due to centrifugal force in a turn or an abrupt pullout from a dive. Accelerated stalls may be encountered in level flight, during descents, and in various aircraft configurations, airspeeds, and bank angles. During practice, they will be performed below maximum-design maneuvering speed (Va). When performing the maneuver with flaps and/or gear extended, reduce speed so as not to exceed appropriate limit load factor normally 2G). When an accelerated stall is encountered during an actual base to final turn, a go-around should be performed. During training, complete the maneuver as directed by the IP.

B. The preceding scenarios are given for the purpose of standardization and training and evaluations. They do not preclude the IP from using other scenarios to enhance training in stall recognition and recovery. During stall practice, the desired objective is to recognize the approach to a stall and to recover before the aircraft actually stalls. This is done by reducing the angle of attack to level flight attitude (for the airspeed) as the approach to the stall (first physical indication) is detected. In the event that the approach to the stall is not detected and the aircraft actually stalls, the recovery procedure may require that the angle of attack be reduced to below level flight attitude to recover from the stalled condition.

REFERENCES:

DNRC Air Operations Manual
FARs
FM 1-203
Operator's Manuals

TASK:

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 brake, propeller reversing, or BETA range, if applicable, as necessary to slow the aircraft. Maintain directional control during the landing roll with rudders 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 1-203
Operator's Manual

TASK 2009

TASK:

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 (see **Note 1** below) and simultaneously increase pitch attitude to stop the descent with minimum loss of altitude, and then retract the landing gear. Retract the flaps to takeoff or approach setting (best L/D position), if applicable, and adjust pitch attitude to avoid an altitude loss. Accelerate to best rate-of-climb speed retracting flaps after attaining Vref speed used for the approach. Maintain Vy until single-engine maneuvering altitude. Trim as required. Complete the go-around procedure.

NOTES:

1. **If a go-around is initiated in the traffic pattern prior to the landing check, use power as required (cruise climb, slow cruise) to climb to, or maintain, the desired altitude and airspeed.**

2. **Accelerating to or above the Vref speed used for the approach before retracting flaps completely will ensure sufficient margin of speed over Vmc or Vs to prevent loss of control or a stall during this critical phase of the maneuver.**

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK:

Perform flight at minimum control speed (Vmc)(single engine).

CONDITIONS:

In a utility airplane with an IP, VMC.

STANDARDS:

1. Maintain takeoff power (or maximum allowable) on the operating engine.

2 Maintain heading ±10 degrees until Vmc.

3. Maintain a maximum of 5-degree bank angle into the operating engine.

DESCRIPTION:

At a safe altitude, configure the aircraft IAW conditions given in the operator's manual. (Zero thrust will be set to simulate feathered conditions on aircraft that Vmc criteria require a feathered propeller). Clear the area while reducing airspeed to, or maintaining, single-engine best rate-of-climb speed. Set takeoff power (or maximum allowable) on the right engine. Reduce airspeed at a rate not to exceed 1 knot per second by gradually increasing pitch attitude, while banking a maximum of 5 degrees into the operative engine. Maintain heading as airspeed dissipates by using proper rudder, aileron, and elevator coordination. At Vmc, full rudder deflection and 5 degrees bank angle into the operative engine will be required to maintain heading. Note airspeed and then increase pitch attitude slightly to demonstrate loss of directional control that occurs with a decrease in airspeed. Regain heading control immediately by reducing power on operative engine and decreasing pitch attitude. During this maneuver, rapid rolling tendencies may develop if airspeed reduction is abrupt or the maneuver is performed at a height at which the aircraft stalls before or at Vmc. In this event, immediate reduction of power and pitch attitude (angle of attack) is required to effect a prompt recovery. One important consideration in performing this maneuver is to plan on an altitude, when possible, where takeoff power can be developed. Complete the maneuver by reducing pitch attitude to increase airspeed, then configure the aircraft for normal flight with both engines operating.

NOTES:

1. **If the maneuver must be performed at an altitude where takeoff power cannot be attained and the aircraft tends to stall before decelerating to Vmc, the maneuver can still be effectively performed by limiting rudder travel or by the use of flaps during the execution of the maneuver.**

2. **The increase in Vmc speed must be demonstrated and practiced during qualification/refresher training or as deemed necessary by the IP. This increase in VMC speed is caused by the two following conditions:**

   - **Maintaining wings level (ball centered).**
   - **Windmilling of the inoperative engine propeller at right RPM on those airplanes that have an auto-feathering system (but can be flown with an inoperative system).**

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK:

Perform emergency procedures for engine failure during cruise flight.

CONDITIONS:

In a utility airplane, with an IP, VMC, or simulated IMC.

STANDARDS:

1. Perform, from memory, all immediate action procedures for engine failure during flight IAW the operator's manual.

2. Maintain heading ±10 degrees (in straight flight).

3. Maintain altitude ±100 feet.

4. Maintain Vyse airspeed or above.

5. Complete and verify the emergency procedures with checklist.

DESCRIPTION:

Maintain control of the aircraft while maintaining heading or turn as required. Add power as required to keep airspeed from decaying excessively and to maintain altitude. Identify the failed engine by control pressures. If holding rudder pressure to keep the aircraft from yawing, the rudder pedal with the least pressure indicates the failed engine; the rudder pedal being pressed indicates the good engine. Identification of the failed engine should be verified by the engine instrument group and confirmed by retarding the throttle/power lever of the suspected failed engine without asymmetrical thrust change. After failed engine is positively identified, complete the remaining immediate-action emergency procedures. Use power as required to cruise at desired airspeed and altitude, if gross weight permits. If unable to maintain altitude when at single-engine best rate-of-climb speed, maintain Vyse and establish a controlled descent to an altitude where level flight can be maintained (single-engine service ceiling, if terrain clearance permits). Use checklist to verify and complete the entire emergency procedure. Perform engine cleanup procedures, if applicable. Initiate an emergency call and plan landing at the nearest suitable landing area free from obstacles and personnel. Perform fuel crossfeed/management procedures as required.

NOTE:

All complete engine shutdowns (propeller or turbine stopped) and simulated engine failure flight training will be conducted utilizing the following procedures:

Turbine-powered airplanes.

(a) Simulated engine failure will be initiated by the instructor utilizing the power lever or the condition lever (above 4,000 feet AGL), as appropriate.

(b) The pilot will complete procedures specified in the -CL for engine malfunction, as appropriate.

(c) If below 4,000 feet AGL, the instructor will move the propeller lever out of the FEATHER position before propeller rotation stops and place it at the detent. He will then restore fuel flow to the engine and verify engine operation by advancing the throttle until a yaw is produced. After obtaining a yaw, he retards the throttle to the zero-thrust setting, simulating a feathered propeller. Throughout the maneuver, the instructor should monitor cylinder-head

temperature to ascertain that the engine continues to operate and that sufficient temperature is maintained.

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK:

Perform single-engine landing.

CONDITIONS:

In a utility airplane, with an IP, VMC.

STANDARDS:

1. Maintain heading ±10 degrees.

2. Maintain altitude ±100 feet.

3. Maintain airspeed ±10 KIAS.

4. Perform the appropriate procedures IAW checklist.

5. Complete before-landing and landing checks no later than designated points during the approach.

6. Maintain approach speed until the landing is assured, then Vref (plus one-half gust speed ±5 KIAS.

7. Execute touchdown -0, +200 feet from a predetermined touchdown point within the first third of the runway and roll out with desired runway track between the main landing gear.

DESCRIPTION:

Complete descent-arrival check before entering the traffic pattern or starting instrument approach. Fly a normal traffic pattern or a normal instrument approach and perform before-landing check at the same point as with both engines operating. Plan for a normal approach allowing for sufficient straight-away on final so minor alignment, speed, and altitude corrections can be accomplished without excessive low-altitude maneuvering. Extend flaps to no more than the approach/takeoff position until there is no possibility of a go-around or missed approach. Normally, full flaps should be used for landing, but should not be extended until the landing is assured. (Landing is assured when a decrease in power or increased drag is required to land on the predetermined touchdown point.) When landing flaps are extended, complete landing check, reducing airspeed so as to be at Vref plus one-half wind gust speed at approximately 50 feet above the landing area. If not listed, use 1.3 times power-off stall speed in landing configuration plus one-half wind gust speed. Avoid abrupt changes in power and anticipate a yaw as power is reduced. Make a normal touchdown, reducing power during roundout. After touchdown, use breaks/propeller reversing, or BETA range, if applicable, as necessary to slow the aircraft. Propeller reversing must be limited to a rate consistent with directional control. Perform the after-landing procedure when clear of the runway.

NOTES:

1. **During actual engine failure, the feathered propeller will result in less drag than a windmilling propeller. It may cause the aircraft to float during landing and roll out farther than during a normal landing.**

2. **In the event of high gross weight or abnormal conditions, (ice, high altitudes, or high temperatures), during an actual emergency, or when simulated by the IP, the pilot may be required to deviate from normal procedures in order to maneuver the aircraft within its performance capabilities. In the event that before-landing check is delayed, or interrupted,**

or gear is retracted after performing the before-landing check, the entire landing check will be completed prior to landing.

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK 2013

TASK:

Perform single-engine go-around.

CONDITIONS:

In a utility airplane, with an IP, VMC.

STANDARDS:

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

2. Maintain heading ±10 degrees.

3. Maintain single-engine best rate-of-climb speed ±5 KIAS.

DESCRIPTION:

When it becomes doubtful that a safe landing can be accomplished, apply maximum controllable power and adjust pitch attitude as necessary. Establish and maintain 5-degree bank angle into operating engine (ball ½ off center), and when the descent has stopped, retract the landing gear. Retract the flaps to takeoff/approach setting (best L/D position), if applicable, and adjust pitch attitude to avoid altitude loss. Accelerate to single-engine best rate-of-climb speed, retracting flaps after attaining the Vref speed used for the approach. Trim as required and complete the go-around procedure.

NOTES:

1. **When operating at high pressure altitudes or heavy gross weights, it may be necessary to trade off altitude for airspeed while accelerating to Vyse. For this reason, the decision to go around on single engine must be made as early as possible. Many aircraft have a minimum altitude at which a single-engine go-around can be successfully completed once landing flaps have been fully extended. Normally, once the flaps have been fully extended on final approach, or emergency extension of landing gear has been performed, a go-around will not be attempted.**

2. **Accelerating to or above Vref speed used for the approach before retracting flaps completely will ensure sufficient margin of speed over Vmc and Vs to prevent loss of control or a stall during this critical phase of the maneuver.**

3. **On some reciprocating engine aircraft, Vyse -5 KIAS may be at or below Vmc when operating at extremely low temperatures. When this condition exists, do not allow airspeed to decay below Vmc +5 KIAS.**

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK:

Perform emergency procedures for engine failure during takeoff.

CONDITIONS:

In a utility airplane, with an IP, VMC.

STANDARDS:

1. Complete, from memory, all immediate action emergency procedures for engine failure during takeoff IAW the operator's manual.

2. Maintain heading ±10 degrees.

3. Maintain 5-degree bank angle into operating engine (ball ½ off center).

4. Obtain and maintain single-engine best rate-of-climb speed ±5 KIAS.

5. Complete and verify the procedure with the checklist.

DESCRIPTION:

Maintaining control of the aircraft is the primary consideration. When an engine is identified as failing by control pressures and engine instrument indications and the aircraft has not accelerated to the recommended lift-off speed, retard throttle/power levers immediately to idle. Stop the aircraft with brakes and reverse thrust, if applicable. If airborne when an engine fails and sufficient runway remains to land and stop, check gear down, retard throttle/power levers, land, and use brakes or reverse thrust if applicable, to bring the aircraft to a stop. If the engine fails without sufficient runway remaining to safely land and stop, maintain Vyse. If airspeed is below Vyse, maintain whatever airspeed has been attained (between Vlof and Vyse) until sufficient altitude can be obtained to trade off altitude for airspeed to assist in acceleration to Vyse. Complete the immediate action procedures as listed in the operator's manual for engine failure after takeoff (flight continued). If takeoff was made with flaps extended, ensure that airspeed is above flaps-up stall speed before retracting flaps. Climb to single-engine maneuvering altitude at Vyse. Use power as necessary to encircle and land or continue en route climb. Use checklist to verify and complete the entire procedure. If altitude cannot be maintained, maneuver for a landing in the best available area clear of obstructions. Do not allow airspeed to decay below Vlof while maneuvering for landing.

NOTES:

1. **The variables such as airspeed, runway remaining, aircraft weight, altitude at time of engine failure, temperature, and single-engine performance must be considered in deciding whether it is safer to land immediately or accelerate to Vyse and continue flight.**

2. **During training, there is nothing to preclude IPs from performing engine failure after takeoff and other critical maneuvers at altitude to demonstrate aircraft characteristics and to practice procedures. Simulated engine failure will not be initiated at an airspeed below Vsse.**

3. **To simulate an engine failure with an armed autofeather, the instructor will slowly retard the affected power lever to IDLE while simultaneously placing the propeller lever in FEATHER. After the pilot acknowledges that the propeller has autofeathered, the**

instructor moves the propeller lever to the DETENT and advances the power lever or condition lever to set zero thrust.

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK:

Perform emergency procedures for engine failure during final approach.

CONDITIONS:

In a utility airplane, with an IP, VMC, or simulated IMC.

STANDARDS:

1. Perform, from memory, all immediate action emergency procedures for engine failure during final approach IAW the operator's manual.

2. Complete and verify the procedure with the checklist.

3. Maintain heading ±10 degrees.

4. Maintain 5-degree bank angle into operating engine (ball ½ off center).

5. Maintain airspeed (Vref plus ½ gust speed).

DESCRIPTION:

Maintaining control of the aircraft is the primary consideration. Continue approach to landing, maintaining aircraft control and computed approach speed. The distance from the runway at which the engine fails will determine the extent of the corrective procedures applied. If conditions require it, perform procedures for engine failure during flight. If distance remaining (short final) is minimal, perform procedures for engine failure during final approach.

NOTES:

1. **Final approach is understood to be a position from the final turn where landing is assured and time does not permit a complete engine failure procedure.**

2. **For procedures used to simulate engine failures, refer to Note following Task 1024.**

3. **When conducting this task, the instructor should not use the fuel selector for initiating engine failure, and he should exercise extreme alertness to preclude the pilot inadvertently exceeding maximum controllable power.**

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK 2016

TASK:

Perform emergency landing gear extension.

CONDITIONS:

In a utility airplane, with an IP, VMC, or IMC.

STANDARDS:

1. Extend the landing gear IAW operator's manual.

2. Complete and verify the procedure with the checklist.

DESCRIPTION:

Determine that normal gear extension has not occurred. If applicable, recycle the landing gear using the procedures prescribed in the operator's manual. If recycling has not caused normal gear extension, perform emergency gear extension IAW the procedures listed in the operator's manual. If possible, have the gear visually checked by another aircraft to verify its position.

REFERENCES:

DNRC Air Operations Manual
Checklist
Operator's Manual

TASK 2017

TASK:

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 2018

TASK:

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:

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 2020

TASK:

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 reintercept. 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 reintercepted, 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.

NOTE:

For RNAV procedures, refer to equipment manufacturer's technical manual.

REFERENCES:

DNRC Air Operations Manual
Operator's Manual

TASK 2021

TASK:

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 2022

TASK:

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:

1. Correctly identify the unusual attitude.

2. 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 2023

TASK:

Perform radio communications procedures.

CONDITIONS:

In a Helicopter or utility airplane; with two-way radio communications established.

STANDARDS:

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 2024

TASK:

Perform nonprecision 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 2025

TASK:

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:

Perform non-precision approach.

CONDITIONS:

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

STANDARDS:

1. Execute approach IAW 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.

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

NOTES:

1. **Instrument approach speed is Vref + KIAS.**

2. **When this task is being performed simultaneously with performed single engine landing and the approach is a circling approach, the decision to complete the before-landing check prior to the final descent inbound must be tempered with other factors such as gross weights, weather conditions, and aircraft performance. If while circling to land, the aircraft will not maintain altitude, retract the landing gear. However, once this is done, the entire check must be repeated prior to the landing.**

REFERENCES:

DNRC Air Operations Manual
ATC Handbook 7110.65
FAR, Part 91
Operator's Manual
TERPS

TASK 2027

TASK:

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 2028

TASK:

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:

When it is determined that a missed approach is necessary, advance power to maximum allowable (if single engine, use maximum controllable power) and simultaneously increase pitch attitude to stop the descent with minimum loss of altitude and then retract the landing gear. Establish a positive climb-pitch attitude. Retract flaps (if required) to best L/D position. Trim the aircraft. Accelerate to best rate-of-climb speed, retracting flaps after attaining Vref speed used for the approach. Maintain Vy until single-engine maneuvering altitude. Trim as required. Maneuver Vy until single-engine maneuvering altitude is reached. 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.

REFERENCES:

DNRC Air Operations Manual
Checklist
FAR, Part 91
Operator's Manual

ANNEX C

DNRC CRASH SEARCH AND RESCUE GUIDE

MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

2014

AIRCRAFT CRASH, SEARCH, AND RESCUE GUIDE

May 2008

GENERAL INFORMATION

This guide establishes the actions to take in the event of:

- **Overdue Aircraft**
- **Downed Aircraft Away from Airfield/Helibase**
- **Downed Aircraft**

The scope of this guide outlines the basic procedures necessary to activate all emergency, crash, search, rescue, and associated support services as rapidly and orderly as possible.

Each category lists priorities and actions to follow.

- **This Guide should be posted in a manner/place that is accessible to whoever might need it.**
- **The names/phone numbers should be posted in pencil and updated periodically.**

SOMEONE'S LIFE MAY DEPEND ON YOUR ACTIONS.

OVERDUE AIRCRAFT

NOTE: *Overdue time may vary with the length of flight, but aircraft may be considered overdue after 30 minutes have elapsed beyond Estimated Time of Arrival (ETA). Check airstrips/ airports, FAA Control Tower, etc., along the flight path before a report of an overdue aircraft is turned in to any agency outside of the Department of Natural Resources and Conservation.*

Although one or two items in the sequence may be unknown at the time, *START THE ACTION.* Keep an accurate written log or fill in the blanks as best you can.

As much as possible obtain the following information on the overdue aircraft:	
1.	**Name of pilot(s):**
2.	**Name of passenger(s). How many?**
3.	**Aircraft registration number "N":**
4.	**Type of aircraft:**
5.	**Color of aircraft:**
6.	**Type of mission:**
7.	**Last known location, time, latitude, and longitude:**
8.	**Point of takeoff and time:**
9.	**Date and time aircraft due at destination:**
10.	**Was flight plan filed with FAA FSS or someone else?**
11.	**Amount of fuel on board or maximum flight time for aircraft:**
Caution: Do not announce over the radio the names of individuals in overdue aircraft.	

(Continued to next page)

DOWNED AIRCRAFT

ACTION	COMMERCIAL	FTS	HOME
Call Dispatcher. Dispatch will notify the following:			
DNRC Air Operations Duty Officer	C. Brenton Cell 431-0747 T. Williams Cell 461-5590 R. Yaeger Cell 459-5580 A. Fandrich Cell 431-0045		
DNRC Land Office Fire Program Manager			
Local Federal Aviation Administration (FAA) Flight Service Station (FSS)			
DNRC Aviation Safety Officer	T. Williams Cell 461-5590 444-4766 R. Yaeger Cell 459-5580 A. Fandrich Cell 431-0045		

DOWNED AIRCRAFT

Although one or two items in the sequence may be unknown at the time, *START THE ACTION*. KEEP AN ACCURATE WRITTEN LOG AND FILL IN THE BLANKS AS BEST YOU CAN.

As much as possible, obtain the following information on the downed aircraft.

1. **Name of pilot(s):**
2. **Name of passenger(s): How Many?**
3. **Aircraft registration number "N":**
4. **Type of aircraft:**
5. **Color of aircraft:**
6. **Type of mission:**
7. **Location of accident. Give latitude and longitude, if known.**
   a. **Locate on forest map.**
   b. **Locate on aviation sectional map. Plot from very high frequency Omni-Range Station (VOR). Take radials from at least two VOR stations.**
8. **Date and time of accident.**
9. **Injuries or fatalities, if known. If information is given via radio, the names of deceased and/or seriously injured will not be stated. Express need for coroner if there are fatalities.**
10. **Name, address, telephone number of person reporting accident.**
11. **Assistance at or on way to accident site.**
12. **See emergency medical services portion of this guide, if applicable.**

(Continued to next page)

• DOWNED AIRCRAFT •

Call Area/Interagency Dispatcher. Inform the Dispatcher if there are any injuries. State if there is a fatality and express the need for a coroner. *If the emergency is reported via radio, the names of the deceased and/or seriously injured will not be stated.*

ACTION	COMMERCIAL	FTS	HOME
Call Dispatcher. Dispatcher will notify:			
DNRC Air Operations Duty Officer	C. Brenton 444-0747 Cell 431-0747 T. Williams 444-4766 Cell 461-5590 R. Yaeger 444-0780 Cell 459-5580 A Fandrich 444-0741 Cell 431-0045		
DNRC Land Office Fire Program Manager			
Local Law Enforcement officials. They will notify local search and rescue unit, if needed. Inform them if there is a need for a coroner.			
Local FAA/FSS			
DNRC Aviation Safety Officer Tal Williams Randy Yaeger Abe Fandrich	444-4766 Cell 461-5590 444-0780 Cell 459-5580 444-0741 Cell 431-0045		
DNRC Safety Officer	542-4250		

DNRC Aviation Safety Officer will notify the DNRC Safety Officer and the Director of the Department of Natural Resources and Conservation. If Safety Officer is not available, the Air Operations Duty Officer will notify the Director.

Director, Department of Natural Resources and Conservation	444-2074		

CRASH, SEARCH, AND RESCUE PLAN CHECKLIST

Crash, search, and rescue planning includes good prevention programs. Following is a recommended checklist to be used:

1. **Crash, Search, and Rescue Plan:**
   - a. **Posted and *VISIBLE*;**
   - b. **Telephone numbers current;**
   - c. **Plan should have priorities and sequence to follow in an emergency.**
2. **Hazard Map:**
   - a. **Posted and *VISIBLE*;**
   - b. **Current;**
   - c. **Available to be read by all aviation personnel.**
3. **Diagram and photo of airport and helibase.**
4. **Hospital with helipad:**
   - a. **Flight routes--all headings will be in magnetic and in nautical miles;**
   - b. **Radio frequencies;**
   - c. **Hazards;**
   - d. **Telephone number.**
5. **Fire Extinguishers:**
   - a. **Proper type;**
   - b. **Proper size for operation;**
   - c. **Inspected and operational;**
   - d. **Ready available, and *VISIBLE*.**
6. **First Aid Kit:**
   - a. **Available and *VISIBLE*;**
   - b. **Complete;**
   - c. **Litter.**
7. **Fixed-wing and helicopter parking areas will be marked.**
8. **Cleanliness of airport ramp and helibase.**
9. **Signs posted:**
   - a. **Flammable;**
   - b. **No Smoking;**
   - c. **Authorized Personnel Only;**
   - d. **Vehicle Parking.**

• CRASH, SEARCH, AND RESCUE PLAN CHECKLIST •

EMERGENCY MEDICAL SERVICES (EMS)
HELICOPTER AMBULANCE REQUEST INFORMATION

Date _____
Time _____

INJURY INFORMATION

1. Number of patients: _____
2. Type or extent of injuries (vitals, time of injury, type of medical personnel on scene): _____

INCIDENT SITE INFORMATION

3. Agency: _____
   Radio frequency: VHF/AM_____ VHF/FM _____
4. ¼ Section_____ Township_____ Range _____
   Elevation _____
5. Landmark: _____ Distance
   _____ Direction
6. Loran C: Latitude_____ Longitude _____
7. Heading: Bearing _____ Distance _____
   VOR or reference used: _____
8. Ground contact: _____
   Radio frequencies: Primary: VHF/AM _____
   VHF/FM _____
   Secondary: VHF/AM _____
   VHF/FM _____
9. Other aircraft in area: _____
   Radio Frequency: VHF/AM_____ VHF/FM _____
10. Special information, flight hazards, etc.: _____
11. Helispot size and condition: i.e., is it completed, when will it be completed?) _____
12. Proximity of helispot to injury site: _____
13. Nearest Jet A fuel available from site: _____
14. Weather conditions at scene (wind speed and direction, local forecast visibility): _____
15. Sunrise/sunset limitations: _____

ADDITIONAL ACTION CHECKLIST

NOTE: This checklist is to be used as a reminder of additional action that may need to be taken. It may require immediate action or it may not be a priority. You have to make this decision.

1. **Provide first aid to injured and transport as soon as possible.** ***CAUTION: Do not announce over the radio the names of individuals involved in overdue or downed aircraft.***

2. **Establish communications with rescue personnel**

3. **Secure accident site:**

   a. **Use Forest law enforcement personnel or local law enforcement officials;**
   b. **Prepare a helibase. Assign qualified personnel to manage;**
   c. **Allow only authorized personnel on crash site;**
   d. **Do not disturb wreckage.**
   e. **An Incident Commander will be assigned by the State Forester.**

4. **Arrange for services of a qualified photographer.**

5. **Inform coroner there may be a need for an autopsy.**
   The coroner will give instructions for removal and transportation of bodies.

6. **Identify all witnesses:**

   a. **Name;**
   b. **Address;**
   c. **Telephone number;**
   d. **Record on tape or write down witness statements.**

7. **Notify hospital(s) capable of receiving victims via:**

   a. **Ambulance helicopter;**
   b. **Ambulance fixed-wing;**
   c. **Ground ambulance.**

   Telephone number_____Telephone number _____
   Radio frequencies_____Radio Frequencies _____

8. **Keep a record of all actions completed and give to the accident investigation team.**

• ADDITIONAL ACTION CHECKLIST •

	Commercial	FTS	Home
DNRC AREA/UNIT/DISPATCH			
DNRC FIRE PROGRAM MANAGER			
DNRC AIR OPERATIONS CHUCK BRENTON, Chief Pilot	Cell 431-0747 444-0747		
DNRC AIR OPERATIONS TAL WILLIAMS, Aviation Safety Officers RANDY YAEGER, Aviation Safety Officer ABE FANDRICH, Aviation Safety Officer	444-4766 Cell 461-5590 Cell: 459-5880 Cell 431-0045		
DNRC AIR OPERATIONS ED MARTIN, Maintenance Officer	Cell 431-0789 444-0789		
DNRC SAFETY OFFICER	542-4250		
DNRC DIRECTOR	444-2074		
FAA FLIGHT SERVICE STATION			
FAA TOWER			
CRASH/RESCUE AT AIRPORT			
AIR AMBULANCE			
FBO's			
HOSPITALS			
LOCAL SHERIFF'S OFFICE			
HIGHWAY PATROL			
ADDITIONAL PHONE NUMBERS			

• TELEPHONE NUMBERS •

ANNEX D

PILOT SUPERVISION MATRIX

PILOT SUPERVISION MATRIX MOU					
CATEGORY	TASK	LO (FMS)	AOB (CP)	JOINT	OTHER
HIRING					
	DETERMINE NEED TO FILL POSITION			X	
	ADVERTISE POSITION		X		
	WRITE SUPPLEMENTAL QUESTIONS		X		
	WRITE INTERVIEW QUESTIONS		X		
	SCREEN APPLICATIONS		X		
	INTERVIEW		X		
	MAKE SELECTION		X		
ORIENTATION					
	ORIENTATION TO DEPARTMENT		X		
	ORIENTATION TO PILOT REQUIREMENTS & TRAINING		X		
	ORIENTATION TO LO & OPERATIONS	X			
PERFORMANCE PLAN					
	DETERMINE PERFORMANCE ELEMENTS			X	
	DRAFT PERFORMANCE APPRAISAL, PLAN & DEVELOPMENT PLAN			X	
	REVIEW WITH EMPLOYEE			X	

PILOT SUPERVISION MATRIX MOU

CATEGORY	TASK	LO (FMS)	AOB (CP)	JOINT	OTHER
TRAINING & COACHING					
	GEOGRAPHIC ORIENTATION			X	
	JURISDICTIONS	X			
	HAZARDS			X	
	LOCAL DISPATCH ORGANIZATION & PROCEDURES	X			
	BUCKET USE/LONGLINE TACTICS		X		
	LICENSING, CARDING, CHECK RIDE		X		
	ORIENTATION TO ASSIGNED *AJC*		X		
	RADIOS AND COMMUNICATIONS		X		
	POLICY & PROCEDURES			X	
	ATTEND SEASONAL FIRE SCHOOL			X	
ASSIGNING DAILY DUTIES AT LO					
	PROJECT WORK		X		
	DISPATCH TO FIRE	X			
	READINESS	X			

PILOT SUPERVISION MATRIX MOU					
	ONSITE CREW TRAINING	X			
	ASSIGNING PATROL SCHEDULE/ROUTE	X			
CATEGORY	TASK	LO (FMS)	AOB (CP)	JOINT	OTHER
SCHEDULE WORK TIME					
	RELIEF PILOT SCHEDULE		X		
	SCHEDULED BASED ON MOBILIZATION LEVEUNEED	X			
TIME REPORTS & LEAVE REQUESTS			X		
	REVIEW TIME SHEETS AND LEAVE REQUESTS. VERIFY TIME AND LEAVE, SIGN TIME SHEET OR LEAVE REQUEST		X		
	APPROVE LEAVE REQUESTS		X		
EVALUATE PERFORMANCE				X	
	DAY TO DAY			X	
	PROJECT/ASSIGNMENT			X	
	INTERIM/MID-SEASON			X	
	SEASON END			X	
PROVIDE					

PILOT SUPERVISION MATRIX MOU					
PERFORMANCE EVALUATION & FEEDBACK					
	IDENTIFY DEFICIENCIES AS REQUIRED	X	X		
	INFORMAL COUNSELING	X	X		
CATEGORY	TASK	LO(FMS)	AOB (CP)	JOINT	OTHER
PROVIDE PERFORMANCE EVALUATION & FEEDBACK (con't)	DOCUMENT DEFICIENCIES	X	X		
	FOLLOW-UP COUNSELING	X	X	X	
	PUNITIVE DISCIPLINE		X		
	REWARDS	X	X	X	X
	POSITIVE FEEDBACK	X	X	X	X
	INCIDENT REPORTING & FOLLOW-UP	X	X	X	X
FORMAL APPRAISAL					
	OBSERVE PERFORMANCE			X	
	DOCUMENT PERFORMANCE		X		
	PROVIDE INPUT TO EVALUATION			X	
	COMPLETE EVALUATION			X	

ANNEX E

DNRC AIRCRAFT BILLING FORM

Invoice Number T-ll I

3149

Aircraft ""k•

U/11 (in 444.0189

Montan Department of Natural Resources & Conservation

PO Box201601
Helena, MT 59620-1601

Cltuck Brmton 444.0141

Location/Olsp•tt:h

Involc• D•te

Atrcn1n Model

Logged By:

Aircraft Billing Log

Line	Dile	RCt	Ftret	a.gin Tech	End Tech	Hourw	Altl	Colt	Code	Agency	A.tet f	Fire Name	Piiot	p9.	Cargo Lbs	Rel/ H0 1

Icertify that the above recxxd offl/ghiactivity
j3 C.OIT9C1

Name:

Date_-

Remflfb -Specify Une I ..Nffded

LAND OFFICE COPY

INVOICE DATA

Invoice #
Sequencial unique number assigned to each paper, flight use record. This number is pre-assigned on the Record of Aircraft Use.

Invoice Date
Date of flight activity for the first mission of the form: mm/dd/yy

Tail #
Aircraft Identifier

Aircraft Make
Self-explanatory: ie. Bell

Location/Dispatch
The aircraft was obtained from this fire Dispatch Center or Organization. Aircraft are ordered through the Zone Dispatch Center.

Logged By
Name of person recording and logging flight invoice and mission information.

MISSION DATA

Line #
Sequential Number for each mission recorded on an invoice record.

Date
Mission date in the form: mm/dd/yy

RC #
Statewide Budgeting and accounting number: ie 506602. This number must be obtained for billing aircraft time.

Assist #
Number consisting of tail # and sequential log number.

Fire #
The number assigned to the fire for billing purposes. Usually the same as the RC # for current billing practices.

Fire Name
Name given to the fire or incident.

Begin Hobbs
Meter reading on the aircraft at the beginning of the mission.

End Hobbs
Meter reading on the aircraft at the end of mission. End Hobbs becomes the Begin Hobbs for the next mission.

Pilot
Name of the Pilot in Command for the mission.

Hours
Hours calculated as the difference between Begin Hobbs and End Hobbs.

Rate
Billing Rate for the Aircraft.

Cost
Cost for the mission is the billing rate times the hours.

Mission Code
Code identifying type of mission. See

MISSION CODES.

Agency
Agency for whom this mission was flown. The Agency identified will be fiscally responsible for the mission.

Passengers
Number of passengers carried on this mission.

Retardant/H2O
Gallons of Water or retardant delivered on this mission. Number of trips times bucket capacity.

Cargo
Weight in pounds carried on this mission. Number of trips times average cargo weight.

LOCATION/DISPATCH LIST

FIDC Flathead Dispatch
KIDC Kootenai Dispatch
MDC Missoula Dispatch
SMICC SW Montana Interagency Coordination Center
HDC Helena Dispatch
DDC Dillon Dispatch
BZC Bozeman Dispatch
GDC Great Falls Dispatch
BDC Billings Dispatch
NRCC Northern Rockies Coordination Center
PDC Plains Dispatch
AIROPS DNRC Air Operations

MISSION CODES

A—Fire Suppression IA
B—Fed Fire Suppression IA **C**—Fire Use, Command & Control
D—Fire Detection/Surveillance
E—Fed Fire Detection/Surveillance
F—Fire Use, Helitorch/Burning
G—Fire Use, Display
H—Fire Use, Mapping **I**—Fire Use, Pilot Proficiency
J—Aircraft Maintenance
K—Fire Use, Admin **L**—False Alarm
M—Non-Fire related Emergency
N—Training **O**—Fire, Other
P—Non-Fire Aircraft Use
Q--Longline

ANNEX F

FORM 5700 -14 INITIAL REPORT OF INCIDENT OR ACCIDENT/INCIDENT REPORT

ANNEX G

MAINTENANCE FORM/DAILY LOG INSTRUCTIONS

IN

Aircraft Daily Log

Control #
3550

Date:
Ending Tach:
Startina Tach:
Hours Today:

certify that the daily airworthiness nspection was completed and that the discrepancy records have been reviewed.
Initial:

Power Check	
OAT	
ALT	
N1	
TQ	
EGT	
Results:	

Activity Report:

PRI SBAS

Starts: Takeoffs: TQ Events: Max N1: Fuec Oit

Status	Faults/Remarks:	MEL Ill or 0 Ac;tion/Status:
	Corrective Action:	
	Date: Tach: WO: By: Initials:	
Status	Faults/Remarks:	MEL M or O Action/Status:
	Corrective Action:	
	Date: Tach: WO: By: Initials:	
Status	Faults/Remarks:	MEL M or O Action/Status:
	Corrective Action:	
	Date: Tach: WO: By: Initials:	

Pilot:

Reviewed by Maintenance Personnel:

Signature:

Date: Initials:

MANTENANCE COPY

Daily Log Instructions

This fonn isto be used to record the aircraft's daily activity report.The fonn provides the means for pilots and maintenance personnel to document compliance with Federal Aviation Administration rules and the DNRC Air Operations manual.

A. The fonn isto be completed each day there is flight activity.

B. Before the first flight of the day:
   1. Review the Deferred Maintenance records.
   2. Review the previous Daily Logs. Thosewhich haven't been reviewed by maintenance. Carry forward any 0or -items.
   3. Perfonn the airworthiness inspection.
   4. Record any faults as per D below.

C. Post flight:
   1. Enter a brief narrative of the days activity and the primary charge number that the flight is to be charged to.
   2. Record the power check results ifrequired.
   3. Record the fuel, oil, start and torque event data. *(seeparagraph H. below)*
   4. Record any faults as per D below.
   5. Certify the entry with nameand signature.

1. Fault/Remarks discovered are to be recorded as follows:
   1. If the fault creates an unairworthy condition the aircraft is not to be flown. Place an X in the statUs box. Tag the control or cyclic stick in accordance with the DNRC AirOps Lockout/Tagout program and notify maintenance personnel.
   2. Faults which cause an operational restriction on the aircraft and inoperative instruments and equipment permitted by FAR 91.405, must be placarded INOP and recorded as an 0 in the status box. Example:FM radio is inop, fire activity is restricted.
      a. Faults which cause an operational restrictions must be carried forward each day until corrected.
   3. A minor Fault/Remark and inoperative instruments and equipment which do not impose an operational restriction or safety of flight concern are recorded as a /.
   4. Overdue inspections or items are listed as a -.They must be carried forward until cleared.

E. FAR 43 requires the pilot to record any preventative maintenance or test flight performed.Enter as a fault/remark and enter the appropriate corrective action, signature and certificate number.

F. Phone in status report or FAX acopy of the daily log to maintenance perso1U1el.

G. Maintenance Personnel:
   1. Pilots shall ensure that maintenance personnel review,record corrective actions or defer any maintenance items.
   2. Maintenance personnel shall review the daily log for recorded faults on a periodic basis and shall initial each entry as being reviewed.
   3. Reference information for any corrective actions shall be recorded for each fault/remarks. Example FM repaired by Avionics Shop under WO 1234 on 8AUG96 A/C tach 3309 Etc.
   4. Any allowable deferred maintenance items will be placed on the Deferred Maintenance fonns until corrected.

H. Recording Torque Event Infonnation
   1. In the STARTS block, record the total number of enginestarts for the day.Each start or attempted start counts as one START.
   2. In the TAKEOFFS block, record the total number of takeoffs for the day.Each takeoff, with it's corresponding landing, counts as one TAKEOFF.
   3. Inthe TQ EVENTS block, record the total number of TQ Events for the day. Each external load, with it's corresponding drop,counts as one event. In addition, each additional NI speed increase of 10%or more,with it's corresponding decrease, counts as an additional event
   4. In the MAX NI block, record the maximum NI speed attained duringthe day.

ANNEX H

FAA PUBLIC/CIVIL AIRCRAFT UTILIZATION DISPATCH WORKSHEET

Instruction Sheet
Public/Civil Aircraft Utilization
Dispatch Work Sheet/Documentation Record

If it is necessary to utilize a State, or County aircraft for a Federal incident or a Federal aircraft for a state incident or mission you must complete this from to remain within compliance of public law 103-411. This form must be filled out by the Agency representative (Dispatcher) every time a State aircraft is dispatched to a Federal incident, certifying that a civil operator was not available.

1. Determine if there is a need to utilize another government's aircraft for the mission or incident.
   a. If the answer is **yes** fill in the blocks stating the Date/Time of request, Incident Name, Jurisdictional Agency, Incident #, Resource Requested, and the Date Time needed.

2. Determine if a Significant or Imminent Threat Exists. This must be a **yes.**
   Next determine what that threat is, a Threat to Life, a Threat to human Health or a Threat to Property or Natural Resources.

3. Next identify whether a civil commercial aircraft operator is **unavailable** to meet the request. If the answer is **yes** continue. If the answer is **yes** then state the reasons why the civil operator was not utilized. This would include an Aircraft not available in a timely Manner an Aircraft not capable of meeting the operational needs, or an Aircraft not Available (within ordering area of influence.)

Paragraphs 2 and 3 above must be identified with a **yes response or the flight will not meet the guidelines of public law 103-411**

4. Write any significant information in the Remarks section.

5. Sign and date the form with your name, the dispatch office, and the date and time the dispatch was made.

Failure to certify can result in an $1,100.00 fine per incident, for the using agency.

Public/Civil Aircraft Utilization
Dispatch Work Sheet/Documentation Record

(To be completed by the Dispatcher that is representing the user agency.)

The intent of this work sheet is to accomplish the essential documentation required by the Public Safety act amendments pertaining to Public Aircraft 14 CFR part 1 definitions, not to delay the dispatch of initial Attack aircraft resources requested.

1. Utilization of Non – federal aircraft (State, County, etc) for a Federal incident/mission (or vice versa) where reimbursement will be required and a common treasury does not exist:
   Yes:_____No:_____

   a If yes was identified; the following elements MUST be completed. (Additional clarification and information is identified in the Public/Civil Aircraft Dispatch matrix or Agency Policy on the Definition of public Aircraft 14 CFR Part 1 Definitions.)

   Date/ time of request: _____Incident Name: _____

   Jurisdictional Agency: _____Incident #:_____

   Resource Requested: _____Date / Time needed:_____

2.* **Significant or Imminent Threat Exists**: YES_____NO_____
   a. Threat to Life _____
   b. Threat to human Health _____
   c. Threat to Property or Natural Resources _____

3.* **Commercial Civil Aircraft Operator unavailable to meet flight request**: YES___NO___
   a. Aircraft not available in a timely Manner _____
   b. Aircraft not capable of meeting needs _____
   c. Aircraft not Available (within ordering area of influence) _____

- Items 2 and 3 need to be identified with a "yes" response or the flight will not meet the guidelines of Public Law 103-411.

4. REMARKS: _____

_____
_____
_____
_____

5. Certifying Dispatcher:

Name:_____Date:_____
Dispatching Office:_____Time:_____

01/26/2004

ANNEX I

FOREST SERVICE APPROVAL LETTER

NOTE

As of 23 February 2015 there is NOT an Approval
Letter For More information contact Chuck Brenton
At
406-444-0747

No Letter Available

ANNEX J

DNRC GUARD OPERATIONS GUIDE

2004

MONTANA ARMY AVIATION NG OPERATIONS PLAN

COOPERATING AGENCIES:

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
MONTANA NATIONAL GUARD
USDA FOREST SERVICE REGION: 1

MONTANA INTERAGENCY NATIONAL GUARD HELICOPTER FIREFIGHTING PROGRAM

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OBJECTIVES 1
POLICY 1
SAFETY 2
RESPONSIBILITIES 3
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AIRCRAFT 7
AGENCY STAFFING 11
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RELEASE AND DEACTIVATION 18
TRAINING AND QUALIFICATIONS 18

APPENDICES:

Appendix A Interagency Cooperative Agreement
Appendix B USFS/DNRC Pilot authorization letter
Appendix C Checklists
Appendix D Helicopter Dimensions and Paint Schemes
Appendix E Daily Operations Debriefing Form
Appendix F MTNG Helicopter Radio Frequency List
Appendix G Technosonic TFM-1`38 Radio Reference
Appendix H Glossary
Appendix I Envelope Annual Letters

MONTANA INTERAGENCY MILITARY HELICOPTER FIRE FIGHTING PROGRAM

2002 OPERATING PLAN

I. INTRODUCTION

This operating plan (OPLAN) implements the agreements documented in the "Cooperative Agreement" (Appendix A), among the Montana Department of Emergency Services (DES); the Montana Department of Natural Resources and Conservation (DNRC); US Department of Agriculture Forest Service (USFS); and the Montana National Guard (MTNG). Nothing in this OPLAN conflicts with the cooperative agreement, the Department of Defense policy, or National Guard service related regulations, directives or instructions.

II. OBJECTIVES

The DNRC, USFS routinely employ helicopters for fire suppression when fighting wild fires. MTNG helicopters are tasked to support these agencies in fire suppression operations during emergency support conditions as authorized per National Guard Regulation, 500-Afl 10-8101, Military Support to Civil Authorities.

This OPLAN is a single source document that identifies the mutual duties, responsibilities, and expectations of the various firefighting agencies, and the units of MTNG, when tasked to support wild fire operations. This OPLAN standardizes MTNG helicopter firefighting equipment and aircrew training, evaluations, and currency requirements. It specifies the process to activate MTNG units and provides firefighting managers with detailed information about aircraft, and staffing capabilities. It also outlines the responsibilities and training requirements of the firefighting agency personnel.

III. POLICY

MTNG aircraft and resources will normally be activated after all state agency, federal and contract call when needed (CWN) helicopters, by type, have been employed. The MTNG helicopter firefighting capability is a supplemental emergency resource employed when suitable civilian contract helicopters are not available

IV. SAFETY

Historically during critical emergency activity, agencies within the state of Montana look to the MTNG. This military organization has vital rotor wing aircraft that provide a wide range of services. During activation of the MTNG, safety shall be the utmost priority. All agencies have their own standard operating plans integrating safety and risk management. Caution will be exercised to ensure that the most restrictive policies are adhered to. Activation team members have the responsibility to identify the agency specific policies to be followed. If conflicts are evident, flight activity will cease until a clear resolution is attained. The intent of all agencies involved shall be to provide safe and effective resource utilization during activation of MTNG assets. The final authority for the safe operation of the aircraft is always the responsibility of the pilot in command (PC).

A. Incident and Accident Reporting

Should an aviation incident or accident occur, the MTNG and the Agency controlling the incident must follow their respective reporting procedures. All aviation incidents and accidents will be reported immediately to the state and or federal officials as applicable.

Upon arriving at a fire incident it shall be the responsibility of the Agency Aviation Military Liaison (AAML) or the Military Helicopter Manager (MHEM) to ensure that the crash /rescue plan, medivac procedures and notification procedures are in place prior to allowing any MTNG aircraft to operate on the incident. In the case of dispatch to an initial attack (IA) incident the AAAML/MHEM must be aware and plan for safety, advising MTNG crews when unsafe situations or activities are occurring. The AAML/MHEM may, at any time, cease MTNG operations when they feel that it is unsafe. It is the responsibility of the AAML/MHEM to initiate all firefighting agency incident reports and to ensure that all incident and accident reports are accurate.

B. Safety Equipment

1. MTNG crews shall adhere to applicable military regulations governing the wearing, use, and maintenance of aviation life support equipment (ALSE).

2. AAML/MHEM shall wear the following clothing and equipment during flight.

    a. Authorized flight helmets.
    b. Authorized Nomex flight suit or wild land firefighting Nomex.
    c. Leather or Nomex gloves.
    d. Leather boots.
    e. Crew tether harness when appropriate.
    f. ID Tags.
    g. Cotton underwear.

3. In addition to the above equipment, all crewmembers shall be required to wear approved personal flotation devises (PFD) during over water operations.

V. RESPONSIBILITIES

A. Command and Control

All assigned MTNG crewmembers and attached firefighting agency personnel will comply with all operating procedures established in this OPLAN.

All MTNG aircraft flying on an Agency wildland incident shall have a copy of the most recent authorization letters (Appendix I).

Only trained and qualified firefighting personnel will fly on MTNG military aircraft to, from, and on operational flights. The IC can authorize Aerial Observation missions for the Adjutant General and his staff to ensure interagency cooperation and information sharing.

All agencies that are part of the Cooperative agreement will maintain aircrews and equipment capable of responding to an emergency activation during the fire season in accordance with this OPLAN.

B. MTNG Support Facility

The MTNG will supply helicopters from the following facility:

Helena; Army Aviation Support Facility (AASF) -
UH-60A UH-1/H CH-47D

C. Support Facility Working Group

The DNRC and the USFS will maintain a Support Facility Working Group in conjunction with the MTNG flight facility.

Prior to the start of the season, this working group will be responsible to insure that:

1. The firefighting equipment at the facility is inventoried, tagged, inspected and ready for deployment.
2. MTNG aircrew and agency personnel are trained to OPLAN standards and that it is properly validated and documented.
3. Coordination between the MTNG facility personnel, aircrews and agency personnel is maintained.

D. MTNG Maintenance and Support

Additional MTNG maintenance and support elements can be expected to be deployed in conjunction with aircraft and crews. The exact number of personnel is dependent on agreements separate of this OPLAN but generally the types of support are as follows:

1. Each Incident Site

Maintenance personnel can be expected to vary depending on the number of aircraft and type assigned. Maintenance requirements for MTNG aircraft in the field are generally parallel to the civilian equivalent with 1-3 additional mechanics needed to conduct daily and periodic maintenance. Aircrews should not be expected to perform maintenance on aircraft in violation of crew rest requirements. The ordering agency should plan for the support of additional maintenance support personnel.

When more than one aircraft is deployed to an incident the MTNG will normally activate a Military Liaison Officer (LNO) and when necessary additional administrative support staff. This staff will work with the agency AAML on the incident.

2. Support Facility

When the MTNG activates aircraft, the Aviation Battalion will also activate additional operations staff to provide a communications link and coordinator for aircraft and flight crew records. These MTNG personnel may remain at the facility and may or may not deploy to the incident.

E. Rules and Regulations

MTNG aircraft operate under procedures contained in Department of Defense Flight Information Publications and flight rules contained in Army and Air National Guard and State regulations. Specific paragraphs in Federal Aviation Regulations Part 91, that do not exempt military aircraft or flight crewmembers, apply to flights in the National Airspace System. Other applicable regulations or procedures may be more restrictive but under no circumstances may they be less restrictive.

This OPLAN establishes operating procedures that MTNG aircrews, USFS and DNRC personnel will operate under when activated to support this plan. Nothing in this plan, or communicated by other means, authorizes MTNG aircrews to violate existing Army or Air Force rules, regulations, instructions, or guidance.

F. Crew Endurance

1. National Guard flight crews will operate shifts of 14 hours on duty and 10 hours off duty. Flight crews are limited to eight hours of flight time in one duty day.

2. Pilots and crewmembers accumulating 36 hours in any six consecutive days shall be off duty the following day, with a 42-hour maximum in any 6-day period.

3. Pilots or crewmembers shall not work more than 12 consecutive days without 2 days off. (Note: these two days off are with pay.)

4. Duty time includes flight time, ground time of any kind, and standby or alert status at any location.

5. A day off must not be less than 24 hours and the pilot or crewmember shall not be subjected to call-up for duty during this period.

G. Military Staffing

The Officer in Charge (OIC) is the individual designated by the MTNG as the overall commander of the aviation assets regardless of the number of aircraft. The OIC will normally be an aviator with flying duties but will have at a minimum the following responsibilities while assigned to an incident:

Has overall responsibility for all operations of MTNG aviation assets on an incident.

1. Supervises aircraft and aircrew scheduling.

2. Supervises maintenance operations/logistical support.

3. Enforces crew endurance policies Coordinates with the agency AAML.

4. Manages Personnel Assignments.

5. Coordinates with MTNG higher headquarters.

An Air Mission Commander (AMC) is designated when two or more aircraft are tasked to perform a single mission on an incident. The AMC has overall responsibility for planning and completion of the assigned mission from the initial air mission brief to the back brief or debrief upon mission completion. The AMC makes the determination whether or not the mission can be completed as briefed and briefs the aircrews on the assigned mission. There may be times when the AMC and OIC may be the same individual.

A MTNG Military Liaison Officer (LNO) will be dispatched when two or more aircraft are sent to the same incident. The LNO will be responsible for the coordination between MTNG and agencies on all issues. The LNO answers to the OIC.

H. Aircrew Staffing

UH-60 Cell

1st Aircraft	2nd Aircraft	3rd Aircraft
PC	PC	PC
PI	PI	PI
CE	CE	CE
CE	CE	CE
15T		67T
TI		
97F		
97F		
15P		15P
9 Personnel	4 Personnel	6 Personnel

UH-1H Cell

1st Aircraft	2nd Aircraft	3rd Aircraft
PC	PC	PC
PI	PI	PI
CE	CE	CE
67N		67N
TI		
77F		
77F		
93P		93P
8 Personnel	3 Personnel	5 Personnel

CH-47 Cell

1st Aircraft	2nd Aircraft	3rd Aircraft
PC	PC	PC
PI	PI	PI
FE	FE	FE
CE	CE	CE
15U		15U
TI		
92F		
92F		
15P		15P
9 Personnel	4 Personnel	6 Personnel

I. Time schedule for Deployment

To complete all the necessary preparations to configure the aircraft and notify the flight crews, 48 hours notice will normally be required prior to deploying for wildfire fighting operations. Deployment prior to 48 hours will depend on pre-warning time. The AAML or MHEM will, in conjunction with the OIC, use the Incident Mobilization Checklist (Appendix D). The following is the normal sequence of events that occur prior to MTNG unit deployment to an incident.

1. **Army National Guard**

   a. Flight crews identified, called in briefed and flight planning completed.
   b. Fire fighting agency AAML/MHEM identified and linkup established.
   c. Radios installed, frequencies assigned and checks completed.
   d. Water buckets checked and loaded.
   e. Maintenance support kit loaded.
   f. Identification number painted on aircraft.
   g. Hoist installed (if required).
   h. Aircraft preflight by flight crew.

VI. ORDERING

A. Montana Department of Natural Resources (DNRC) request for Montana National Guard (MTNG) assistance are placed through the Department of Emergency Services (DES) per the provisions specified in the cooperative agreement.

B. The USFS, Northern Region (USFS/Region 1) and the United States Department of Interior, Shall make all requests for MTNG assistance through the DNRC, who then places the request with DES and then DES assigns.

C. Payment

MTNG aircraft are paid on an hourly basis. The most current rates are published in the Interagency Incident Management Handbook in Chapter 50, Cooperative Relations, NRCG Supplement. Payment will be recorded on the USDA Forest Service, Flight Use Report, FS-6500-122. The white copy will go to DNRC FMB via the AAML, pink copy will stay with the fire and the yellow copy will go to the AAML. The 6500-122's will be turned into the Finance Unit, who in turn will forward the copies to the Department of Military Affairs. Military Affairs will bill to DNRC. The Department of Natural Resources and Conservation will then bill the Federal partners for applicable charges.

VII. AIRCRAFT

A. MTNG Aircraft numbering and Painting

All MTNG aircraft will be painted in accordance with the numbering sequence and high visibility schemes (Appendix E) as depicted in this operations plan prior to deployment to an incident. If for some reason an aircraft is deployed without being painted it will not be allowed to engage in flight operations on the incident until it is properly marked. The number painted on the aircraft will be the aircraft tail number with the type aircraft prior. (UH-1H will use U, UH-60 will use B, and CH-47 will use C.) (Example, UH-60 Aircraft 26136 will be B136)

Aircraft will retain the same number until released from all fire activity. When an aircraft is released from an incident and is no longer available for assignment, the paint shall be removed as quickly as possible. It will be the joint responsibility of the requesting agency and MTNG facility to ensure the aircraft are cleaned. If necessary this may entail hiring of contractor services to remove the painted markings. Cleaning of aircraft is chargeable to the incident.

The facility shall be responsible to number aircraft prior to deployment and shall keep on hand the necessary materials. The approved paint is **CRAYOLA FLORESCENT TEMPURA**, item #21-00188(a) through (f). Paint should be applied in full concentration, do not dilute. Any paint used other than the approved tempera will damage the infrared paint on the aircraft.

B. UH-60A Blackhawk

1. General Description

The Army National Guard UH-60A Blackhawk is a twin turbine engine, single rotor helicopter. The primary mission for fire suppression activities are the transport of firefighters, supplies and equipment, and water bucket operations. The aircraft has an external hook for sling load operations. the aircraft has a maximum seating capacity for 17 personnel but normally come configured with three seats for the crew, one for the helicopter manager and

11 seats for passengers. The aircraft may be configured for search and rescue operations with a rescue and /or medical transport kit capable of carrying six litters with the passenger seats removed. During personnel transport one crewmember may remain on the ground, providing one additional passenger seat. Aircraft is deployed with a 660-gallon collapsible Bambi bucket.

2. **Performance Data**

The following data is based on a fuel load of 1300 pounds, Aircraft Torque Factor (ATF) of 1.0 The power available and was computed using the UH-60/A Operators manual.

The Aircraft will be configured and performance calculated with the following:

3 crewmembers (600 lb.)
Fuel burn rate (950 lb./hr)
1300 lbs. of fuel on board = 1 hr of flight time + 20 minutes of reserve
Average take off gross weight of 13,650 pounds
OGE hover
10 seats available
A firefighter is calculated at 200 lb., with equipment

Pressure altitude/temp	Cargo load	Passengers
5000/25C	4793	10
5000/30C	4593	10
5000/35C	3801	10
6000/25C	4168	10
6000/30C	3893	10
6000/35C	3191	10
7000/25C	3523	10
7000/30C	3054	10
7000/35C	2555	10

C. CH-47D Chinook

The Chinook is a twin turbine engine, tandem rotor helicopter. The primary mission is the transport of firefighters, supplies, equipment and bucket operations. The aircraft has three external hooks for sling load operations. The aircraft has a maximum seating capacity for 36 personnel. Normal configuration is four seats for the crew, one for the helicopter manager, two seats removed for equipment storage, leaving 29 seats for the passengers. The aircraft is deployed with either 2000 or 1300 gallon collapsible buckets.

4 crewmembers (800 lb.)
Fuel burn rate (2000 lb./hr)
6500 lbs. of fuel on board = 2.5 hrs + 20 minutes of reserve
Average take off gross weight of 31,000 pounds
OGE hover
34 seats available
A firefighter is calculated at 200 lb., with equipment

1. **Performance data**

The following planning data is based on a full load of fuel (6600 lbs), a maximum passenger capacity of 32 seats available and Out of ground Effect (OGE) hover power. A firefighter is calculated at 200 lbs.

Pressure Altitude/Temp	Cargo load	Passengers
5000 ft/25C	18,000 OGE / 18,000 IGE	32
5000 ft/30C	17,000 OGE / 18,000 IGE	32
5000 ft/35C	15,800 OGE / 18,000 IGE	32
6000 ft/25C	16,200 OGE / 18,000 IGE	32
6000 ft/30C	15,000 OGE / 18,000 IGE	32
6000 ft/35C	13,800 OGE / 18,000 IGE	32
7000 ft/25C	14,200 OGE / 18,000 IGE	32
7000 ft/30C	13,000 OGE / 17,800 IGE	32
7000 ft/35C	11,800 OGE / 16,400 IGE	32

D. UH-1/H HUEY

The UH-1/H is a single engine, single rotor system helicopter. The maximum gross weight is 9500 pounds The primary mission for fire suppression activities are the transport of fire fighters, supplies and equipment, and bucket operations. The aircraft has an external hook for sling load operations. The aircraft has a maximum seating capacity for 13 personnel but normally come configured with three seats for the crew, one for the helicopter manager and 9 seats for passengers. During personnel transport one crewmember may remain on the ground, providing one additional passenger seat. Aircraft is deployed with a 180-gallon collapsible Bambi bucket.

1. **Performance Data**

The following data is based on a fuel load of 1000 pounds. The power available and was computed using the UH-1/H Operators manual.

The Aircraft will be configured and performance calculated with the following:

2 crewmembers (400 lb.).
Fuel burn rate (600 lb./hr).
800 lbs of fuel on board = 1 hr of flight time + 20 minutes of reserve
6000 LBS empty weight
Average take off gross weight of 7200 pounds
OGE hover
10 seats available
A firefighter is calculated at 200 lb., with equipment

Pressure Altitude/Temp	Cargo Load	Passengers
4000/25C	1000	5
4000/30C	600	3
5000/25C	600	3
5000/30C	300	1
6000/25C	400	2

VIII. AGENCY STAFFING

The cooperating fire fighting agencies have established two positions for the purposes of this program: the Agency Aviation Military Liaison (AAML) and the Military Helicopter Manager (MHEM). These positions are based on agency management personnel recommended in the National Interagency Fire Center's, Military use Handbook dated April 1996.

The AAML/MHEM will use the Montana Department of Natural Resources and Conservation 1500 Aviation manual, or the Interagency Helicopter Operations Guide (IHOG) as a directive and be knowledgeable of this OPLAN pertinent to the assigned mission. They will also ensure that the MTNG helicopters, personnel, and equipment assigned will be utilized in the safest, most effective and suitable manner. The AAML/MHEM shall be assigned as appropriate by the MAC group in order to manage the mission. A CWN qualified Helicopter Manager or Helicopter Boss (type IV, IC or arduous physical fitness level not required) can be assigned to perform the AAML/MHEM duties and responsibilities when directed to do so.

A. Agency Aviation Military Liaison (AAML) role and responsibilities:

1. The AAML is directly responsible for supervising the agency aviation personnel assigned to the military aircraft.

2. Lead person to make contact with the assigned Guard facility to obtain the aircraft tail numbers and ensure that the aircraft, paint scheme, and crews are equipped and ready to respond to the incident.

3. Insures that MHEMs are assigned to helicopters prior to arriving at an incident.

4. Obtains and provides fire order information relative to the incident to the assigned MHEM, National guard crews and support personnel.

5. Insures that the necessary fuel, transportation, communication, lodging, and all other logistical support required to perform the mission is ordered using the proper incident logistical support chain of command.

6. Establishes the communications link between the Helibase Manager, and MTNG aircrews.

7. Facilitates and coordinates with the MTNG liaison, and monitors any support requirements necessary to maintain MTNG personnel and/or aircraft mission readiness.

8. Facilitates the scheduling, of maintenance personnel requirements with MTNG Liaison, and Helibase Manager for the maintenance of the MTNG helicopters as necessary.

9. Attends all meetings and briefings regarding the operation of the MTNG helicopters as necessary.

10. Coordinates with appropriate agency safety officer to investigate and complete the paper work regarding an accident or incident on helicopters, equipment, and personnel.

11. When necessary, conducts briefings, debriefings relative to operations and activity of the MTNG helicopters, personnel, and required equipment.

12. Upon release of the MTNG assets, completes evaluations of assigned MTNG Military Helicopter(s), MTNG crew(s), and assigned agency staff. Maintains a suitable file of all documentation associated to assignment to include the ICS 214 form.

13. Insure that the initial inventory checklist is completed and all equipment is brought up to initial attack standards prior to responding to the incident.

14. Insures the Daily Operation Debriefing (Appendix documents are completed by the AAML and submits to the appropriate agency.

15. In the absence of the MHEM, performs the MHEM duties.

16. The AAML will remain at the AASF and act as a direct liaison with the Military. The Chief Pilot DNRC and or the Region 1 Aviation Officer can assign the AAML to an alternate location if it will benefit the incident.

17. The AAML will assist the MTNG and make arrangements for transportation at the fire I.E. rental vehicles etc. The vehicles will be charged to the incident. The MTNG will provide the driver. The guard will attempt to obtain GSA vehicles first.

B. Military Helicopter Manager (MHEM) role and responsibilities:

1. The MHEM reports to the AAML and is an active member of the MTNG flight crew.

2. The MHEM will insure that the MTNG personnel, aircraft, and equipment assigned are configured in accordance with this OPLAN and suitable for the assigned mission.

3. Obtains and provides information pertaining to the incident to their assigned MTNG personnel.

4. Insure that the assigned AAML is informed of any issues or changes in MTNG personnel, aircraft or equipment.

5. Maintains records of daily flight hours, crew duty hours, and accumulated totals and route copies to the Helibase Manager and AAML.

6. Coordinates with the AAML on support requirements for MTNG flight crews and aircraft.

7. When the AAML assigned to the incident is unavailable, the MHEM will insure MTNG personnel, aircraft and equipment needs are addressed through the Helibase Manager.

8. Insures that an inventory checklist is completed and damaged equipment is repaired or replaced prior to leaving the incident and charged to the incident.

9. Flies as part of the helicopter crew for the purposes of coordination and wild land fire expertise.

10. Completes the daily Operations Debriefing document and submits to AAML.

IX. MISSION SUPPORT REQUIREMENTS

A. Personnel

MTNG aircraft assigned to an initial attack incident will be accompanied by either an AAML or MHEM prior to conducting any operation in support of an incident. Typically, agency personnel deployed with multiple aircraft will be deployed as a team headed by a Agency Aviation Military Liaison (AAML), who may, but more will likely not, fly as a member of an aircrew.

MTNG helicopters will be allowed to operate on wildland fire incidents without an assigned civilian Helicopter Manager, using the Military Crew Chief as the Pilot in command's representative as the Chief of Party, for the following mission profiles:

1. Montana National Guard helicopters transporting personnel.

2. Montana National Guard helicopters moving supplies in support of personnel.(excluding longline remote hook use)

3. If pre-designated and trained, Montana National Guard helicopters dropping retardant or water using buckets or fixed tanks. *

   * TRAINING WILL BE DETERMINED BY THE MONTANA INTERAGENCY NATIONAL GUARD HELICOPTER FIREFIGHTING PROGRAM OPERATIONS PLAN.

The following conditions must be met:

1. The helicopter must be moving troops from one established/ managed Helibase/ helispot, to another established/managed Helibase/helispot.

2. The helicopter must be assigned to an incident, managed by a Type I or II Incident Management Team with aerial supervision on scene, i.e. an assigned Air Tactical Group Supervisor.

3. A Helibase Manager must be assigned.

4. Necessary communication equipment (radios) must be installed in all helicopters to allow for adequate communication with all other resources on the assigned incident.

5. Montana National Guard helicopters and pilots will carry a letter of approval issued by the Region One Helicopter Inspector Pilot and the Mt. Department of Natural Resources, Check Airman.

6. Assign a Military Liaison to accompany the assigned Montana National Guard Unit for the duration of the assignment. (See section V paragraph G responsibilities).

7. Compliance with all aspects of the Montana Interagency National Guard Helicopter Firefighting Program.

When MTNG helicopters are working directly with a DNRC agency helicopter that has a qualified helicopter manager the above criteria will have been met. The HEMG will provide management and oversight over both the Guard and Military helicopters.

1. **Helicopter Firefighting Program Operations Plan.**

   The following overview and condensed fire-training curriculum will be provided by a compliment of Regional/State Helicopter Inspector Pilots, Aviation Technical Specialists, Helicopter Operations Specialists, Incident Air Operations personnel, and experienced fire suppression specialists from the Natural Resource Agencies involved (approximate training time 1-2 days).

   a. Firefighter Training (condensed)
   b. Intro Fire Behavior (condensed)
   c. ICS
   d. Agency Aviation Policy/Chief of Party Training
   e. Incident Air Operations Organization and Requirements
   f. Communications within the Fire Environment
   g. Airspace Integrity and Coordination
   h. Mountain Flying Techniques.

B. Aircraft Utilization

Safe, efficient and economical utilization of MTNG aircraft will establish the priorities for deciding aircraft missions. Once MTNG aviation assets have been assigned to the incident, and the mission designation identified, there will be no delineation in the use of military or civilian aircraft. The most suitable aircraft shall be used for each mission.

MTNG helicopters assigned to an incident should be used to their fullest potential. Heli-mopping is not approved as it exposes ground and aircrews to unnecessary risks without corresponding benefit.

MTNG helicopters are considered standard category aircraft and can be used for the transportation of passengers and external loads including water bucket operations. UH-60 and CH-47 helicopters are classified as type l; UH-1/H are type ll.

C. Communications

1. Receiving Incident Orders

Prior to departure from the flight facility the AAML/MHEM shall contact the Helena fire desk (449 5475) and obtain or relay the following information:

a. Incident Order Number
b. DES Mission Number
c. Incident Name
d. Incident Location (Legal, Lat, Long., Geographic)
e. Reporting location and contact.
f. Estimated time of departure
g. Estimated time of arrival
h. Assigned helicopter call sign/identification
i. Names of flight crew ; AAML/MHEM and MTNG personnel.

2. Flight Following

Flight following in route to the incident shall be done with the Forest or State Dispatch center in that geographic location, in compliance with agency flight following procedures. The MTNG shall also open and close flight plans with the appropriate MTNG or FAA facility as per their unit standard operating procedures until such time as the aircraft is on an incident. Aircraft call signs shall be used for FAA flight following.

3. Communications Equipment

MTNG helicopters come with an array of avionics that provide for communications on VHF, UHF and FM frequencies.

Army National Guard

Technosonic VHF-FM	138.000-174.000 Mhz
UHF-AM	225.000-399.975 Mhz
VHF-FM	030.000-087.975 Mhz
VHF-AM	116.000-151.975 Mhz

As a means of improving MTNG communications with fire fighting ground and air assets, each helicopter must have an operational Technosonic VHF - FM radio in each operational aircraft assigned to an incident. The flight crews and agency personnel must also be proficient in its use. Interagency frequencies are normally pre-loaded in each radio. Appendix (7).

Use of the Technosonic with State and Federal frequencies is only authorized for fire fighting, search and rescue or other emergency operations missions.

D. Fueling

1. Credit card or Identiplate

Each MTNG helicopter has a commercial fuel credit card that can be used at general aviation airports that carry jet fuel. Because of the higher cost per gallon than contract fuel, this method of payment for fuel should only be used when deploying or when contract fuel is not available.

The Identiplate is a military type credit card that can be used at a military base or DOD contractor for fuel.

Both of these options can be used and are coded the same as if it was a state card to the incident. It is forwarded along with the billing package from the MTNG to the DNRC. The MTNG will bill the state and/or the USFS a wet rate including the cost for fuel when computing the hourly cost of the aircraft.

2. Fueling from MTNG fuel trucks.

MTNG fueling trucks (HEMTTS) should be ordered as soon as possible. If the need is mobile in nature i.e., various incidents, then a HEMTT must be ordered. This unit will come with 2000 gallons of fuel and two operators who will conduct and manage the fueling. The HEMMTT will be refilled with at the most cost effective fuel vendor available. The state can assist in finding the most economical, local vendor, it will be topped off with fuel and billed to the incident. This HEMMTT will normally come with a fire-extinguishing unit that will be placed at the fueling site. Personnel assigned to this unit will be treated as any other personnel assigned to the incident.

3. Commercial Vender Fuel

It is the responsibility of the MTNG to supply fuel, fueling utilities and fueling personnel in support of its operation.

4. Fuel Requirements

a. UH-60/A burn rate is approximately 140 gallons (950 lb.) per hour. Burn rate will vary depending on power requirements.

   Fuel Types: Jet A-1 (JP-8); Jet A (JP-5) (with Prist)

   Total Capacity-360 gallons

b. UH-1/H BURN RATE IS APPROXIMATEELY 88 gallons (600 lbs per hour. Burn rate will vary depending on power requirements.

   Fuel Types: Jet A (JP-5)

Total Capacity-206 gallons

c. CH-47 BURN RATE IS APPROXIMATELY 384 gallons (2500 lbs. per hour)

Burn rate will vary depending on power requirements.

Fuel Types: Jet A-1 (JP-8); Jet A (JP-5) (JP-4)(with Prist)

Total Capacity: 1028 gallons

E. Water Bucket Operations

MTNG Type 1 helicopter, CH-47/D;, UH-60/A Type 1 helicopters; and Type 2 UH-1/H come equipped with variable fill buckets and rigging with a capacity commensurate with the maximum lifting capabilities of the aircraft. Prior to deployment the bucket and aircraft need to have functional checks completed and maintenance conducted if necessary. (See Appendix D for Bambi Bucket maintenance and operational checklist).

X. RELEASE AND DEACTIVIZATION

A. MTNG aircraft will be released from an incident as soon as sufficient commercial CWN or other aircraft become available and are assigned to the incident.

B. Aircraft released from an incident shall not be re-deployed to another incident unless a DES mission number has been assigned and the supporting military facility has assigned that specific aircraft and crew.

C. AAML/MHEM are not authorized to release or deactivate any MTNG aircraft. Prior to being released from any incident MTNG aircraft and personnel must obtain approval from the incident commander.

XI. TRAINING AND QUALIFICATIONS (See Also Appendix C)

A. Military Flight Crews

1. Montana National Guard personnel are trained with the joint DNRC/USFS approved training program. The training program is comprised of classroom training, practical exercises, and applicable flight training.

a. Classroom training address the following subject matter:

Fire behavior
Tactics and bucket operations
Preparation and pre-flight of bucket
Incident Command System (ICS)
Communications within the fire theater area of operations.
Aircraft performance considerations and planning.
Aircraft preparation and high visibility identification paint scheme application.
Aircrew communications and coordination.
Aircrew training and currency requirements.
Fire shelter deployment.
Standards for Survival

b. Practical exercises include preparation, helicopter connection, operational checks and preflight of bucket.

c. Flight training and evaluation will focus on water drops in mountainous terrain; up/down slope and cross slope conditions as well as water bucket pickup maneuvers over running streams, irrigation canals, ponds and lakes when ever possible.

B. Fire fighting Personnel

Listings of qualified fire agency personnel will be maintained by the MTNG and DNRC. AAMLs will provide appropriate agency training staff with verification of attendance of MHEMs at annual MHEM training.

1. Minimum Qualifications for Agency Aviation Military Liaison (AAML)

   a. All Qualifications for MHEM.
   b. Two years as a MHEM.

2. Minimum Qualifications for Military Helicopter Manager (MHEM)

   a. One year as Helitack Foreman, Helicopter Coordinator, or Fire Helicopter Manager as defined by IHOG or Helicopter boss as defined in the 1500 manual or 310-1.

   b. Strong knowledge of helicopter operations, tactics, basic, maintenance concepts, record keeping, and air program.

   c. Previous verifiable experience as a CWN Helicopter Manager or Helicopter Boss.

   d. Has a working knowledge of 1500 Aviation manual and IHOG.

e. Helispot manager qualified.

f. Currently listed in agency resource Directory or current Red card Certified or any qualifying position.

APPENDIX A	**Interagency Cooperative Agreement**
APPENDIX B	**USFS /DNRC Pilot Authorization Letter**
APPENDIX C	**Checklists**
APPENDIX D	**Helicopter Dimensions and Paint Schemes**
APPENDIX E	**Daily Operations Debriefing Form**
APPENDIX F	**MTNG Radio Frequency List**
APPENDIX G	**Technosonic TFM-138 Radio Reference**
APPENDIX H	**Glossary**
APPENDIX I	**Letters Envelope**

APPENDIX A

Interagency Cooperative Agreement

2014 WILDLAND FIRE FIGHTING
MEMORANDUM OF AGREEMENT BETWEEN THE MONTANA DEPARTMENT OF MILITARY AFFAIRS, MONTANA NATIONAL GUARD AND
THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, FORESTRY DIVISION

1. References:

a. Sections 76-13-104/116/202 Montana Code Annotated.
b. DODD 3025.18 dated 29 Sep 10 with Change 1 (1 Sep 12)
c. CNGB Notice 1401 dated 24 February 2012.
e. There are a number of Title 32 U.S.C. authorities that might bear on Wildfire Fighting (WFF) including 502(a), 502(f)(1), and 901-908

2. Purpose: The purpose of this Memorandum of Agreement (MOA) is to facilitate assistance in prevention, pre-suppression and control of wildfire and ensure that firefighter safety, support personnel safety and public safety is the first priority in all actions taken under this agreement. This MOA establishes the responsibilities for the Montana Department of Military Affairs (MT OMA), Montana National Guard (MTNG), to provide support to the Montana Department of Natural Resources and Conservation (MT DNRC), Montana Forestry Division (MT FD), during Montana's 2014 wildland fire season.

3. General Provisions.

a. Right to Know. Any information furnished under this instrument is subject to Montana's right to know provision found at Article 2, Section 9 of the 1972 Montana Constitution, and this provision's implementing legislation found in Title 2, Chapter 6 of the Montana Code Annotated.

b. Modification. Modifications within the scope of the instrument shall be made by mutual consent of the parties, by the issuance of a written modification, signed and dated by all parties, prior to any changes becoming effective.

c. Participation in Similar Activities. This agreement in no way restricts MT DNRC from participating in similar activities with other public or private agencies, organizations, and individuals.
d. This MOA will become effective May 1st 2014 and will expire on April 30th 2015. Either party may terminate this agreement after giving fifteen (15) days notice, in writing, to the other party.

e. Upon final signing and dating of this MOA by the Adjutant General and the Director of DNRC, this MOA will replace the 2013 MOA.

f. Usual and Customary Procedures. MT FD is obligated to provide wildfire suppression throughout Montana. When WFF requirements exceed the capabilities of the MT FD, the Governor of Montana is able to activate MTNG personnel and mobilize federal equipment assigned to the MTNG to assist the MT FD with a wide-range of tasks associated with suppressing or mitigating the effects of wildfire. Assistance is normally provided by activating MTNG personnel on State Active Duty (SAD) orders. Requests for assistance will normally flow from the MT FD, through the Northern Rockies Coordination Center (NRCC) to Montana Department of Emergency Services (MT DES), which will validate the request and secure a Declaration of Emergency or Disaster from the Governor of Montana. The Adjutant General for the State of Montana, or his designated representatives also have Immediate Response Authority (IRA). IRA provides for short-duration responses required to save lives, prevent human suffering, and mitigate great property damage.

4. Agreements:

a. The MTNG:

(1) With approval of the Governor of the State of Montana, per a Declaration of Emergency or Disaster, will be ordered to SAD to assist the MT FD during an emergency wildland fire situation anywhere in the State of Montana.

(2) Within the limits of available resources, will support MT FD Resource Orders by providing equipment, personnel, supplies and facilities to aid inthe suppression of wildland fires within the State of Montana.

(3) Personnel will operate all equipment provided by the MTNG, unless the MTNG provides MT FD equipment or facilities that do not require military operators.

(4) Will appoint an Officer in Charge {OIC) or Non-Commissioned Officer in Charge {NCOIC) to act as the Emergency Response Commander {ERC) for each event, or for different functions in the same event. The ERC will operate under the Incident Command System {ICS) while retaining responsibility for all MTNG personnel within the military chain of command.

(5) Will have the ERC report to the on-site Incident Commander {IC) to establish the necessary relationships, and to receive a briefing on the MTNG's role and mission {task and purpose).

(6) Will provide an ERC, with a military supervisor and support personnel, in accordance with the MTNG Emergency Response Cell Handbook, to accomplish the mission {see Annex A).

(7) Will prepare an Operations Plan, which will include aviation support (see Annex A).

(8) Will coordinate all activities and communications associated with this agreement with the MT FD, Fire and Aviation Management Deputy Bureau Chief or his/her designated representative.

(9) Will not activate MTNG members currently employe by MT DNRC to perform wildland fire suppression activities without the concurrence of the MT FD.

(10) Will complete Emergency Firefighter Time Reports {SF 261) for all personnel and emergency Equipment Shift Ticket {Form 297) for all equipment use. The MTNG will submit copies of each to the MT FD, Fire and Aviation Management Deputy Bureau Chief, Fire Operations within 5 working days of being released from an incident.

(11) Will complete and maintain DNRC aircraft usage reports for documentation of all assigned aviation missions.and submit them to the MT FD, Fire and Aviation Management Deputy Bureau Chief.

(12) Will follow Work/Rest standards in accordance with the MT DNRC Wildland Fire Suppression Manual 1500 for aircrews and Manual 900 for ground crews.

(13) Will require that all MTNG personnel follow the Standards of Conduct, as set forth in Montana Code Annotated, Title 2, Chapter 2.

(14) Will establish the Director of Military Support {DOMS) and Joint Operations Center (JOC) staff as the primary points of contact for coordination, planning and requests.

(15) Each MTNG resource {e.g.; security element, aviation element, etc.) will carry a signed copy of the Memorandum of Agreement between the Montana Department of Military Affairs, Montana National

Guard and the Montana Department of Natural Resources and Conservation, Forestry Division on each assignment they are mobilized to.

(16) It is agreed that MTNG fuel trucks can be used to fuel non-military aircraft providing a qualified MTNG representative and qualified pilot or crew member is present for the fueling. All dispensed fuel must be recorded on a DA Form 3643 by vehicle or aircraft and turned-in with all reimbursement documentation at the conclusion of the event.

b. The MT FD:

(1) Is responsible for wildland fire fighting within the State of Montana.

(2) All orders for Montana National Guard resources for use on wildland fires shall go through Montana DNRC via the Northern Rockies Coordination Center (NRCC). NRCC shall place orders to the Montana Department of Military Affairs, Division of Disaster and Emergency Services.

(3) Will ensure that each resource order specifies the requested task, purpose, expected duration, report time and location(s), and the MT FD Incident Site point of contact and telephone number. Direct coordination between the MTDES, MT FD and MTNG will be conducted to finalize the type and amount of MTNG resources to be provided.

(4) Will pay the established National Guard Operational Tempo (OPTEMPO) rates for all MTNG equipment used during the period of SAD. Most common OPTEMPO rates are subject to change based on periodic updates (see Annex C).

(5) Will fund MTNG personnel pay, allowances and travel in accordance with Montana Code Annotated § 10-1-502 (2011) (see Annex D).

(6) Will replace in-kind or reimburse the MTNG for any supplies, fuel, parts, and equipment (to include vehicles and aircraft) provided by the MTNG that is consumed, lost, damaged, or destroyed while supporting the WFF mission (see Annex B).

(7) Will provide housing and subsistence for MTNG personnel during the period of duty at the incident site. When housing and subsistence are not provided, members of the MTNG on SAD will be reimbursed at the established State of Montana lodging and per diem rates in accordance with Annex E. Authorization for reimbursable lodging and per diem must be coordinated between and authorized by the MTNG Director of Military Support and the Department of Military Affairs Centralized Services Division.

(8) Will provide all special tools, supplies, special safety equipment and clothing required to perform assigned tasks.

(9) Will provide adequate communication equipment to meet safety requirements of the mission.

(10) Will provide a medical plan for evacuation, treatment, and hospitalization of injured MTNG personnel. Hospitals treating injured MTNG personnel will bill the State of Montana directly.

c. The State of Montana will pay medical and hospital costs under the Worker's Compensation Program for MTNG personnel injured during the performance of SAD.

d. Billing Procedures. The !VIT OMA - Centralized Services Division (CSD) will bill for reimbursible costs at the completion of a mission, or monthly during extended SAD operations. All billings will include the ordering agency's resource order number and request number if applicable, and shall be itemized by incident and in accordance with Annex B of this memorandum of agreement. CSD will submit invoices through MT DES to:

Department of Natural Resources and Conservation
Division of Forestry
Fire and Aviation Management Bureau
Attention: Fire Finance Officer
2705 Spurgin Road
Missoula, Montana 59804

Montana Department of Military Affairs,
Montana National Guard
1956 Mt Maje Street
P.O. Box 4789
Fort Harrison, MT 59636-4789

By
The Adjutant General
Date f4,c/:/

Montana Department of Natural Resources and Conservation
Forestry Division
1627 11th Avenue
Helena, MT 59620-1603

By
Director, MT DNRC
Date r-fh7bq

Annex A - Pre-scripted Mission Assignments
Annex B - Logistical and Support Purchasing Procedures
Annex C - Financial Reimbursement
Annex D - Service Member Pay and Allowances
Annex E - Service Member Meals, Lodging, and Travel Expenses

Annex A to 2013 WFF MOA (Pre-scripted Mission Assignments)

1. Pre-scripted Mission Assignments

a. Leadership and Staff. All elements responding in support of a request from the MT FD will include an OIC, and/or an NCOIC. Additional leadership, planning staff, and operations staff may be required based on the size of element, the task and purpose of the element, expected duration of deployment, civil considerations, terrain, weather, and complexity of operations. Large scale responses, such as the deployment of a battalion will require leadership and staff.

b. Administrative Staff and Liaison Officer (LNO) Positions. Depending on the size and scope of the operation, additional MTNG personnel may need activated to directly support the administrative burden of supporting the MT FD. Additionally, MTNG personnel may need activated to serve as LNO's at key nodes, such as the Northern Rockies Coordination Center, or other sites.

c. Ground Force Packages.

GENERAL PURPOSE FORCE PACKAGES			
Personnel	Leadership	Support and Staff	Equipment
250-500	BN CDR, BN CSM, BN XO, CO CDR X 3, CO 1SG X 3	Sustainment Staff X 2 , Operations Staff X 2, Radio Tele Operators X 2, Incident LNO to ICS X 2	Mission Dependent
100-250	OIC, NCOIC	Sustainment Staff X 2, Operations Staff X 2	Three command, control, support vehicles, one DSCA Kit and mission-required equipment
30-100	OIC, NCOIC	Sustainment Staff X 1, Operations Staff X 1	Two command, control, support vehicles, one DSCA Kit* and mission-required equipment
< 30	OIC, NCOIC	None	One command and control vehicle, one DSCA Kit*, and mission-required equipment

SECURITY FORCE PACKAGES			
Checkpoints	Personnel	Leadership	Equipment
3	12 Security Personnel	1NCOIC	4 X HMMWV with Radios and BFT, 1X LMTV, 3 X Checkpoint Kits
6	24 Security Personnel, 1 Mechanic	1OIC, 1NCOIC	7 X HMMWV, 1X LMTV, 6 Che·ckpoint Kits
9	36 Security Personnel, 1 Mechanic	1OIC, 1NCOIC, 1 Supply/Admin	10 X HMMWV, 2 X LMTV, 1X WKR, 9 Checkpoint Kits

d. Aviation Force Packages. The manning for each package is based upon operation and support of one aircraft to conduct initial attack operations in conjunction with the MT DNRC aviation resources. The make-up of each aviation support force package may be adjusted depending on the location of the staging site, mission requirements, environmental conditions and the Army Aviation Support Facility (AASF) maintenance plan. Resource Orders increasing the number of aircraft co-located at a remote site and requests for support other than Initial Attack Operations may require adjustments to package manning. The packages depicted below represent the manning required to support a typical Resource Order requesting one aircraft to conduct initial attack operations.

AVIATION FORCE PACKAGES	
Airframe	Personnel
UH-60	Pilot in Command (PC) Pilot (PI) Crew (CE X 2) Aviation Mechanic (IST) Technical Inspector (TI) Fueler (92F) X 2 Aviation Operations (ISP)
TOTAL PERSONNEL: 9	
CH-47	Pilot in Command (PC) Pilot (PI) Flight Engineer (FE) Crew (CE) Aviation Mechanic (ISU) Technical Inspector (TI) Fueler (92F) X 2 Aviation Operations (ISP)
TOTAL PERSONNEL: 9	

AVIATION SUPPORT PACKAGE*
OIC
NCOIC
Aviation Operations
Supply NCO (92Y)
Fueler (92F) X 2
Admin (42A
TOTAL PERSONNEL: 7
•one ASP supports up to 3 AFP's

(1) Aviation support personnel will perform duties at a remote site located with the aircraft or may be tasked to work at the AASF. Location of duty will be coordinated between AASF Commander, Aviation Battalion Commander, MTNG DOMS and MT DNRC and will be based on location of module, mission requirements and maintenance plan.

(2) Aviation Support Package. When aviation assets are on State Active Duty (SAD}, an aviation emergency operations center (EOC} will be established at the AASF. The support package requires seven personnel to support deployment, employment and sustainment of up to 3 separate aircraft modules.

Annex B to 2013 WFF MOA (Logistical and Support Purchasing Procedures)

1. The ERC OIC / NCOIC will track and report daily costs associated with personnel, maintenance, fuel, food, and medical. The MTNG JDOMS must approve all requests / requirements for equipment and costs not provided by the supported Incident Site. The ERC cannot commit MTNG funds without approval of the MTNG JOC and a methodology to recoup those costs.

2. Logistical Support. While at an Incident Site, the ERC OIC / NCOIC and their unit are under the operational control of the Incident Management Team. The Incident Management Team is the first source of logistical support with regard to fuel, personal protective equipment, subsistence, lodging, etc.

3. Logistical Operations Pre / Post Deployment. Prior to arrival at the Incident Site and after leaving the Incident Site, the MTNG will provide support in accordance with the Memorandum of Agreement (MOA) between the MTNG and the MT FD. Food and lodging will be provided or reimbursed in accordance with Annex E. At the Staging Area (normally Fort Harrison or a designated facility), all vehicles will be inspected in accordance with the ERC Handbook (State Active Duty (SAD) Ground Equipment Operator Standard Operating Procedures), and all faults documented. Prior to leaving the Staging Area for the Incident Site, all equipment will be Fully Mission Capable. At the Incident Site, the Incident Management Team's (IMT) logistical support personnel, assisted by the MTNG ERC Logistics Officer/Sergeant, will inspect all equipment upon arrival (all faults recorded), and will again inspect all equipment prior to being released from the Incident Site (all new faults recorded). Once the equipment has returned to the Staging Area from the Incident Site, the equipment will be inspected again and any new faults documented. Prior to leaving the Staging Area for home station, all equipment should be Fully Mission Capable. Repairs will be coordinated with the supporting MTNG Field Maintenance Shop (FMS). Mileage or hours of use for equipment will be captured for all the time the equipment is on SAD. A beginning reading is taken prior to SAD and an ending reading taken upon release from SAD for purposes of calculating reimbursement OPTEMPO rates in accordance with Annex C.

4. Operations at the Incident Site. While at the Incident Site, all requests for logistical support, outside of maintenance, should first be addressed to the IMT logistical support personnel. In order to ensure continuous operations of equipment and personnel, the IMT is the most responsive source of support. IMT logistical support personnel, in coordination with the IMT finance section, will make a determination on whether the request is incident-related as per the MOA. Any questions on reimbursement, including other than fair wear and tear or unusual damage, should be directed to the MTNG JOC OIC / NCOIC for resolution.

a. If a request is for normal repair parts for surface equipment or vehicles, the ERC will use on-hand repair parts (i.e. Bench Stock, etc.), the closest MTNG FMS, or send the request to the JOC OIC / NCOIC. Normal repair parts are part of ground equipment costs, and are reimbursed as part of the OPTEMPO rates (see Annex C). OPTEMPO rates are a per hour or per mile cost that in addition to normal repair parts, also include oil and lubricants, but not fuel. Fuel is supplied by the Incident Site, through State Credit Card, or by reimbursement.

b. If it is determined that the required item, other than repair parts, is available locally, the MTNG will present the request (to include the item #'s, local vender and phone numbers) to the IMT logistics support personnel for purchase by the Incident Site.

c. If the item is military unique and not available commercially, the MTNG personnel will determine if the item is available from unit supply, from a MTNG FMS, or the MTNG Warehouse. If the item is available, the MTNG will capture the stock number, replenishment document number and cost on the On-Site Requisition Form for billing back to the supported Incident Site, and will also provide a copy of the form to the JOC OIC / NCOIC. If the item is not available, the MTNG will use the On-Site Requisition form to request a Purchase Order for the item and submit to MTNG JOC. The JOC OIC / NCOIC will determine the best method to acquire the item and bill the cost back to the supported Incident Site.

d. Any other requests for support to the Incident Site involving commitment of the Site's funds, i.e. continuation of missions, expansion of mission resources, crew changes, helicopter exchanges, transportation costs, etc, requires the use of the On-site Requisition Form signed by an Incident Site representative authorized to commit funds for the Incident Site or Agency being supported.

5. Instructions to complete On-site Requisition Form.

a. Clearly provide information outlined above - show who, what, when, where, why.

b. Line 9 must be signed by the supported Incident Site official who is responsible at the fire or incident location for approving fiscal expenditures for the Project Code shown on line 2, not a member of the MTNG Emergency Response Cell (ERC) staff.

c. Upon completing, give a copy of the completed form to the official identified on line 9.

d. Send the completed form for processing or coordination to the Joint Operations Center (JOC) or the Joint Director of Military Support (JDOMS). The JOC will communicate results back to requestor. JOC can be reached at (406) 324-3000 or email; NGMT.JOC@ng.army.mil.

e. The On-site Requisition Form is attached as Appendix 1 to this Annex.

Appendix 1to Annex B to 2013 WFF MOA (On-site Requisition Form)

On-site Requisition Form

1. REQUESTOR POINT OF CONTACT (POC):

_____

(POC) (Phone)

2. RESPONSIBILITY CENTER (project code number / fire name):

_____

_____

3. TIME ORDERED (date/time group): _____

(DD HHHHT MMM YY) (ex: 151710TJUL11)

4. TIME REQUIRED (date/time group): _____

(DD HHHH MMM YY)

5. LOCATION REQUIRED: _____

(e.g. E-Number/USA # for a repair part to be installed)

6. REASON FOR NEEDING THE RESOURCE:

_____

_____

_____

7. ASSETS REQUESTED (equipment / supplies):

_____

_____

_____

8. DURATION OF USE:

_____

9. _____ _____

Signature
Official Authorizing Expenditure
(Fire Manager, Incident Commander, Logistical Rep, etc)

Printed Name & Phone #

10. _____ _____

Signature
(JDOMS Official)

Printed Name

Annex C to 2013 WFF MOA (Financial Reimbursement)

1. Equipment Reimbursement.

a. Ground equipment and aircraft reimbursement rates do not include the cost of personnel required to operate and sustain the equipment (see personnel pay, allowances, travel and per diem).

b. Ground equipment rates are "dry" rates, which mean that the cost of fuel is not included in the reimbursement rate and is either provided by the State, or reimbursed by the State.

c. Aircraft reimbursement rates are "wer rates, which mean that the cost of fuel is included in the reimbursement rate.

Reimbursement Rates for Select Ground Equipment				
Equipment	Cost Metric	Rate	On-Hand	Notes
HMMWV	Mileage	$ 2.23	106	66 X 2 Door, 98 X 4 Door
Armored HMMWV	Mileage	$ 2.30	131	38 X 2 Door, 97 X 4 Door
LMTV	Mileage	$ 2.01	65	10K LB Cargo Cap
LMTV with winch	Mileage	$ 2.01	6	
HEMTT Cargo	Mileage	$ 4.90	2	
HEMTT Fueler	Mileage	$ 4.63	25	2,500 Gal Cap
5 Ton Cargo	Mileage	$ 1.58	58	
Backhoe	Day	$ 152.28	2	
Grader	Day	$ 155.07	7	
Dozer (07, OS)	Day	$ 204.56	5	
Scoop Loader 2 yd	Day	$ 148.69	6	
HMEE Backhoe	Day	$ 108.88	6	Front-end loader & Backhoe. Travels 60MPH
Tactical Fire Fighting Trk (TFFT)	Mileage	$ 5.26	3	1,000 gallons
HEMTT Water Tender (HEWATT)	Mileage	$ 5.14	3	2,500 gallons

Annx C to 2013 WFF MOA (Financial Reimbursement)

Reimbursement Rates for Aircraft		
Equipment	Emergency SAD Rate	On-Hand
OH-SSA	$ 2,168.7	2
CH-470	$ 8,736.03	6
UH-GOA	$ 4,845.33	8
UH-GOL	$ 3,855.49	6
C-12	$ 1,407.5	1

Annex D to 2013 WFF MOA (Service Member Pay and Allowances)

1. Pay and allowances.

a. Montana Code Annotated, Title 10, Chapter 1, Section 502, "Pay and Allowances" provides for the following: "An officer ordered into active duty as provided for in Article VI, section 13, of the constitution of this state shall receive pay and allowances as prescribed for an officer of corresponding grade and length of service when on active duty in federal service. An enlisted member ordered into active duty as provided for in Article VI, section 13, of the constitution of this state shall receive pay at rates equivalent to twice those allowed for an enlisted member of corresponding grade and length of time when on active duty in federal service. The schedule of pay for enlisted members applies only to the first 15 days of service. After 15 days, an enlisted member shall receive the pay and allowances as prescribed for an enlisted member of corresponding grade when on active duty in federal service."

b. Provided below are examples of computation for pay and allowances on SAD status:

c. A Captain, with 14 years' service, with dependents and living in Helena would receive the following daily:

Base Pay:	*$210.08 per day*
Basic Allowance for Subsistence (BAS):	*$ 8.21 per day*
Basic Allowance for Housing (BAH) - Type II:	*$ 53.30 per day with dependents*
TOTAL:	*$271.59 per day*

d. A Chief Warrant Officer - 4, with 26 years' service, with dependents, in a flying status and living in Helena would receive the following daily:

Base Pay:	*$243.70 per day*
Basic Allowance for Subsistence (BAS):	*$ 8.21 per day*
Basic Allowance for Housing (BAH) - Type II:	*$ 54.70 per day with dependents*
Flight Pay:	*$ 28.00 per day*
TOTAL:	*$334.61 per day*

e. All enlisted soldiers receive two times base pay from day 1 through day 15, then beginning on day 16 they receive one day's base pay plus allowances. An E4, with 6 years of service, without dependents and living in Helena, would receive the following daily:

Day 1 - 15:

Base Pay:	*$161.32 per day without allowances*

Day 16 until taken off SAD status: .

Base Pay:	*$ 80.91 per day*
Basic Allowance for Subsistence:	*$ 11.32 per day*
Basic Allowance for Housing - Type II:	*$ 24.80 per day without dependents*
TOTAL:	*$117.63 per day*

Annex E to 2013 WFF MOA (Service Member Meals, Lodging, and Travel Expenses)

1. Montana Code Annotated, Title 2, Chapter 18, Sections 501, 502, 503, 504 and 511 are the primary authorities for Meals, Lodging and Travel expenses.

2. MTNG Service Members are not authorized reimbursable expenses unless they were authorized prior to incurrence from the JFHQ-MT J3-DOMS.

3. Meals.

a. To the greatest extent possible, meals will be provided at no cost to the MTNG member. When authorized and necessary, the Service Member will be reimbursed in accordance with the State of Montana reimbursement rates.

b. To receive reimbursement when meals are not provided, MTNG members must submit a TRAVEL EXPENSE VOUCHER, FORM DA-101 (Available from Centralized Services Division http://www.mt.gov/dma) to the MTNG JDOMS or the JOC located in the Helena Armed Forces Reserve Center (HAFRC).

c. A member on SAD is authorized a meal allowance while traveling on SAD when BOTH of the following conditions are met:

(1) The member is at least 60 miles from their home of record; AND

(2) The member has been in a travel status for at least three continuous hours within one of the following time ranges:

(3) As established in Section 2-18-502(1) of the MCA, the following time ranges apply for meal reimbursement:

Morning Meal:	0001	to	1000	$5.00
Midday Meal:	1001	to	1800	$6.00
Evening Meal:	1801	to	2400	$12.00
				$23.00 (Total per day)

(4) The Army Aviation Support Facility (AASF), located at 3333 Skyway Drive, Helena, MT, and Fort Harrison, located at 1900 Williams Street, Fort Harrison, MT, will be classified as incident site when Montana National Guard resources are placed on State Active Duty (SAD), and an Aviation Support Package is activated to work at the AASF or Fort Harrison.

4. Lodging.

a. To the greatest extent possible, lodging will be provided at no cost to the MTNG member, or when authorized, the MTNG member will be reimbursed in accordance with the State of Montana reimbursement rates.

b. Lodging Reimbursement. A member on SAD is authorized to be reimbursed for lodging on the economy when authorized and necessary. Lodging receipts must accompany the member's travel voucher to receive reimbursement.

c. Reimbursement is made in accordance with the Federal Lodging Rate Guidelines. Reimbursement rates can be found at www.gsa.gov/perdiem then clicking on "per diem rates".

d. Members who fail to obtain a receipt, or who stay in a facility where it's impossible to obtain a receipt shall be reimbursed for lodging expenses at the rate of $12 per night (IAW Section 2-18-501(5) of the MCA).

e. Members are not authorized reimbursement for lodging when it was provided at no charge to the member.

5. Transportation.

a. MTNG General Services Administration (GSA) vehicles can NOT be used for SAD.

b. To the greatest extent possible, transportation will be provided at no cost to the MTNG member, or when authorized, the MTNG member will be reimbursed in accordance with the State of Montana reimbursement rates.

c. To receive reimbursement when transportation is not provided, the MTNG member must submit a TRAVEL EXPENSE VOUCHER, FORM DA-101 (Available from Centralized Services Division http://www.mt.gov/dma) to MTNG JDOMS or the JOC located in the HAFRC.

d. The 2013 State of Montana mileage reimbursement rate is $.56 per mile. An eligible employee who drives in excess of 1000 miles in a month will be reimbursed at $.53 per mile for the remainder of that month. The mileage reimbursement rate is subject to periodic change.

e. In accordance with Montana State Employee Travel Policy Chap 0300, if the MTNG member's home of record is less than 15 miles from their duty station, the MTNG member is not authorized Personally Owned Vehicle (POV) mileage reimbursement.

f. When POV mileage is authorized, the MTNG member will receive reimbursement for one round trip (in accordance with the Federal Mileage Chart from the service member's home of record to their duty station and back to their home of record) for the period of duty.

g. After receiving prior authorization from the MTNG JDOMS (written authorization on Situation Report or JOC Log), mileage can be reimbursed when the MTNG member is required to use their POV for in and around travel. Example: you are working at the AASF and are required to attend a meeting at the HAFRC and no state vehicle is available.

h. Air transportation: if the service member elects to drive their POV versus fly, they are only authorized expenses for one travel day, and POV mileage reimbursement will not exceed the cost of the common carrier. Example: Airline ticket cost $400.00 and POV mileage reimbursement was $450.00, the MTNG member would be reimbursed $400.00. However, if the airline ticket cost $400.00 and the POV mileage reimbursement was $350.00, the service member would be reimbursed $350.00.

i. A member on official SAD travel is authorized to be reimbursed for allowable miscellaneous expenses just as they would on similar official federal travel. Examples of these expenses are working supplies purchased on an emergency basis, taxi/bus fares, and business-related phone calls. Meal tips and meal taxes are not an allowable expense. Each expense must be supported by a valid receipt, and shall be reported in the "Other Expense" column of form DA-101 (the Department of Administration Travel Expense Voucher) and explained in the space provided at the bottom of the form.

j. The Travel Expense Voucher should be submitted at the end of each member's pay period, or *upon completion* of SAD. Members who have NOT filed for reimbursement of travel costs within one month after completing SAD waive their right for reimbursement unless approved by an authorized agency staff member.

APPENDIX B
USFS/DNRC Pilot Authorization Letter

Military aircraft may be non-carded and/or Pilots may be non-carded but a copy of the approving document must be available.

APPENDIX C

Checklists

1. Guard Pilot Mission Pack Checklist
2. MHEM Incident Mobilization Checklist
3. Bambi Bucket Checklist
4. Equipment Inventory Checklist
5. Flight Operations Checklist
6. Maintenance Operations Pre Execution Checklist
7. Call Up Procedures Checklist

NOTE: Helicopter Managers and Flight Crews should obtain sufficient copies of these checklists prior to departing for the incident.

INTERAGENCY MILITARY HELICOPTER FIRE FIGHTING PROGRAM
MISSION PACK

MISSION NUMBER_____INCIDENT NUMBER_____
PC_____PI_____CE_____
DESTINATION_____
FREQUENCY AND CALL SIGN____
_____ ETA_____
_____OTHER AIRCRAFT_____

BEFORE DEPARTING ENSURE THE FOLLOWING

[ ] 1. SAD form 14 complete.

[ ] 2. You have a Helicopter Manager and or a Military equivalent assigned to your aircraft.

MHM:_____

[ ] 3. Your aircraft is equipped with the following kits:

[ ] Support kit

[ ] Fly-Away Kit

[ ] Communications

[ ] Paint Kit

[ ] Water Dropping Kit

[ ] SEI Bucket Repair Kit

[ ] 4. Your aircraft is with the appropriate number and paint scheme.

[ ] 5. Your aircraft has a current letter of approval from the USFS.

[ ] 6. Cellular telephone assigned and activated.

[ ] 7. Agency Debriefing forms.

USFS/DNRC/MTNG INCIDENT MOBILIZATION CHECK LIST

The following checklist must be used when mobilizing Montana National Guard Helicopter Units in support of Incidents on Federal, State, County and private lands in Montana.

The following items must be ordered during the initial mobilization through the dispatch office:

1. Fuel (HEMMET) is ordered with for each incident the aircraft will be assigned to.

2. Helicopter Manager/Helicopter Boss or Military equivalent and Liaison Officer are ordered immediately.

3. Ground transportation is ordered.

Other items to be considered when initializing Mobilization:

1. Order for helicopter has been properly initiated through zone dispatch office. National Guard is informed of fire number and management code for the incident.

2. Number of helicopters ordered are sufficient considering maintenance and crew changes.

3. Regional Aviation group has been notified of the activation.

4. Crew endurance tables (pilot flight hours) and aircraft maintenance schedules should be discussed including daily maintenance times and requirements.

5. Copy of operations guide for USFS/DNRC/MTNG available including flight hour costs and crew pay rates.

6. If available, dedicated telephone/cell phone for National Guard and Liaison use.

7. Identify types of missions and special equipment necessary such as buckets, special sling equipment.

The following items are mandatory prior to the aircraft leaving the base:

1. A Helicopter Manager/Helicopter Boss or Military equivalent is assigned to each helicopter.

2. A Military Liaison Officer and Agency Aviation Military Liaison assigned for the duration of the activation.

3. Helicopter is equipped with VHF-FM Radio packages.

4. Helicopter is painted with Visibility water paint and numbered.

5. Helicopter has current letter of approval in aircraft.

Information needed prior to flying on an incident:

1. Military flight crews have been briefed.

2. Frequencies, contacts and shift plans for the incident.

3. Helibase parking is adequate for number and types of ships ordered.

4. Maps and hazard maps available.

5. Medical evacuation procedures and capabilities discussed.

6. Military/fire chain of commands established. (Organizational Chart).

7. Performance cards/ load calculations completed. Manifests completed for all flights.

Upon arrival at the incident confirm:

1. Fuel is ordered.

2. Ground transportation is ordered.

3. Sleeping and eating facilities have been arranged. Air crews, the AMC/ OIC and Operations personnel will stay in motel rooms others will bring tents and sleeping bags. The Military crews will either eat meals at camp or if more advantageous for a proper work schedule, supply own meals and fill out a per diem sheet for reimbursement, and bill the incident.

4. Daily logs are kept, incident reports and aircraft pay documents completed.

5. In the event that the MTNG Crews are asked to provide initial attack services and are not at a type 1 or 2 incident and motels are available the AAML will make every attempt to arrange motel rooms for all of the personnel attached with the aircraft. I.E. (Pilots, Crew Chiefs, Refuelers, Operations, Mechanics….. this will help to ensure Command and Control by the OIC, and maintain crew integrity.

BAMBI BUCKET

Maintenance and Operational Checklist

1. Pre-flight Operations- POWER OFF.

    a. Inspect possible fraying of the support lines from the bucket to the hanger support and reel assembly.

    b. Check the bucket for fraying of seams or holes that may be torn in the bucket.

    c. Check the bucket support, attachment points, and hardware.

    d. Check all electrical cables and connections on bucket and aircraft.

    e. Conduct a full cargo preflight and function check.

2. Pre-flight- POWER ON

    a. Connect power to the bucket.

    b. While pulling on the release cable, check all water release switches by each crew position. Ensure the solenoid releases, resets, reels in, and locks into place after releasing water release buttons. Pilots check that the wiring modification does not interfere with flight controls.

    c. Route the electrical power lines on the cabin ceiling, or on the floor to the cargo hook hole. Secure the wiring so it will not interfere with flying operations.

    d. Tape the power connection on the bucket so wind or personnel moving around in the cabin will not cause a disconnect.

3. Connecting the bucket to the aircraft

    a. When attaching the bucket, (load hooked) attach the support and reel assembly so the smooth (front) side is facing forward.

    b. Extend the bucket support bracket out and ensure the Instant Deployment System (IDS) support is locked in position. The IDS should normally open on its own when it takes on water.

    c. Set the bucket up under the rotors facing the cargo hook with the chain supports and sand bag facing the ground. This will keep the bucket from rolling/flying around when making your initial takeoff to a hover.

4. Bucket Deployment

   There are two ways to deploy the bucket.

   a. Attach the bucket to the aircraft at initial takeoff and sling the bucket to the designated area of operations. This configuration puts a lot of drag on the aircraft and limits your forward airspeed. The bucket is stable when empty in forward flight but will put wear and tear on the support lines and sidewalls. Filling the bucket halfway will stabilize it during your transition to and from the area of operations.

   b. Establish an LZ within your area of operation and connect the bucket. Remember to recheck your connections and check the release assembly.

5. Storing Buckets.

   Prepare bucket for storing by ensuring it is thoroughly dry prior to placing it in the storage bag. Check for fraying cables torn or fraying canvas and ensure maintenance personnel are aware of any deficiencies.

Flight Operations Pre-Execution Checklist

1. Aircrews will be thoroughly briefed and understand the operation and reporting requirements while deployed to a fire.

2. Prior to departing on mission the aircrew and support team will be briefed on the following:

   a. Resource Order Number
   b. Helicopter MGR – name, location, and phone #
   c. Location going to. General description & LAT / LONG
   d. POC on site
   e. Phone # on site / FAX # on site.
   f. Procedures and Routes in and out.
   g. Frequencies enroute and on site.
   h. Lodging-Arranged at Site
   i. Meals- Arranged at Site
   j. Fuel
   k. Ground transportation ie (1008 w / RDO's) BII
   l. Personnel Accountability
   m. Pay, Travel, Perdiem
   n. Personal Equipment
   o. WX
   p. Mission
   q. Situation at the fire
   r. Required reports
   s. Maps
   t. AASF / BN Armory phone list

3. The AASF flight operations will provide a folder to the NCOIC of the support team with required reports. At a minimum the folder will include:

   a. Aircrew Nightly Report
   b. Risk Assessment Sheets
   c. Mission schedule / Briefs
   d. SITREP paged 1-4
   e. Staff Duty Log

4. Mandatory Reports – to AASF FLT OPNS

   a. Departure AASF
   b. Arrival at field location
   c. Departure from field location
   d. Arrival to AASF

5. FAX or phone in aircrew nightly reports at close of business each night or first thing the following morning.

   AASF phone # (406)841-3055 / 3056
   AASF Fax # (406)841-3073

6. Flight operations person will dispatch a 1008 or CUTV with radio and BII installed from the motor pool.

MAINTENANCE OPERATIONS PRE-EXECUTION CHECKLIST

1. Maintenance support personnel will be thoroughly briefed and understand the operation and reporting requirements while deployed to a fire.

2. Prior to departing on mission the maintenance support team will ensure the following equipment and procedures are in place.

Equipment Required

a. mechanics tool box
b. engine wash pump & electrical pig tail (UH-60)
c. engine wash kit w / air regulator (UH-1H)
d. water hose / containers for engine wash
e. torque wrenches
f. flight box – package POL (oil), rags, window cleaner, tubes, etc.
g. maintenance manuals/publications
h. Makita
i. Containers hazmat (waist oil, fuel)
j. Cargo hook squib
k. Water jugs – full 2 each 5 gall drinking water
l. Blank forms for log book
m. Computer / printer / paper
n. Head sets
o. Water wings
p. Vehicle (1008 pick-up with comer & RDO)
q. Orange paint for touch up with brush
r. Aircraft tie down kit
s. Water bucket (fully serviceable)
t. Common hardware as required
u. T.I. PID in LAH before leaving with laptop
v. TI orders in place
w. Aviation foot locker if available
x. Special tools for inspections, (voltmeter dial indicator, etc)
y. Tentage if required
z. Cammo netting as required

ALL ITEMS HAND RECEIPTED BEFORE LEAVING AASF!

Call Up Procedures:

The Montana Army National Guard will be called upon to assist with wild fire control once governmental and civilian firefighting resources have been utilized and/or by the order of the Governor.

Ordering Channel:

Incident (Fire, Forest Service Team, Local Community on Scene)
Places orders for resources.

Notification Procedures:

(Internal use for Montana Army National Guard Aviation)

1. Battalion Headquarters or AASF staff receive warning orders for fire duty.

   a. Step 1 Notify BN Commander / SAAO / AASF COR.
   b. Step 2 BN staff /Company Commander and 1SG ordered to duty. AASF Operations and Maintenance officer. Notified.
   c. Step 3 BN staff /Company Commander and 1SG develop plan, initiate call-up of first up team.
   d. Step 4 AASF prepare Aircraft. (paint, water bucket, radios, etc).
   e. Step 5 Aircrews and support team arrive and receive mission brief. Coordinate with Helicopter Manager.
   f. Step 6 Aircrews and support team prepare equipment for deployment to Helibase or staging area.
   g. Step 7 Final brief and backbrief.

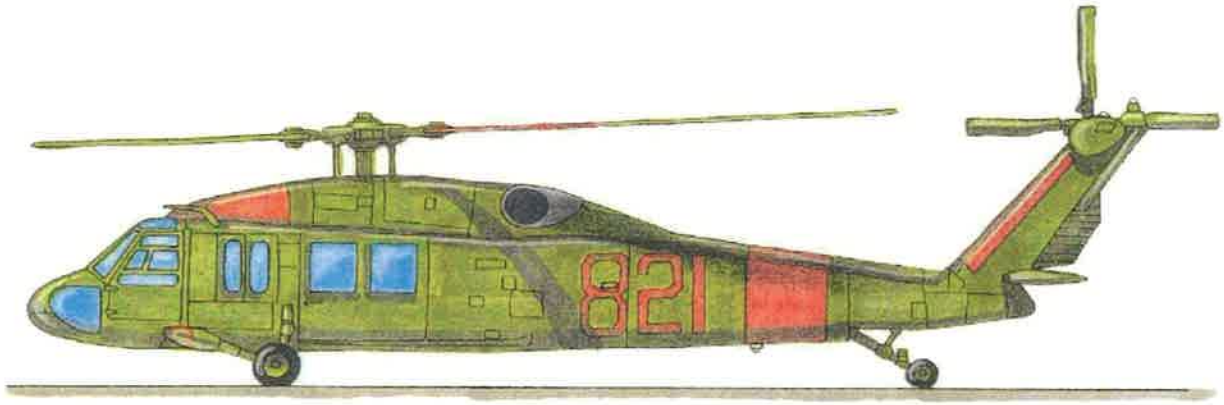
TARGET: 48 hours or less to have National Guard assets enroute or on site to support fire fighting effort.

APPENDIX D

HELICOPTER DIMENTIONS AND PAINT SCHEMES

PROFILE

-PAINTED NUMBERS ARE APPROXIMATLY 3 FEET HIGH.
-NUMBERS ARE STILL VISIBLE WHEN AIRCRAFT CABIN DOOR IS OPEN.
-COLOR SWASHES ON FORE AND AFT PORTIONS OF AIRFRAME.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS

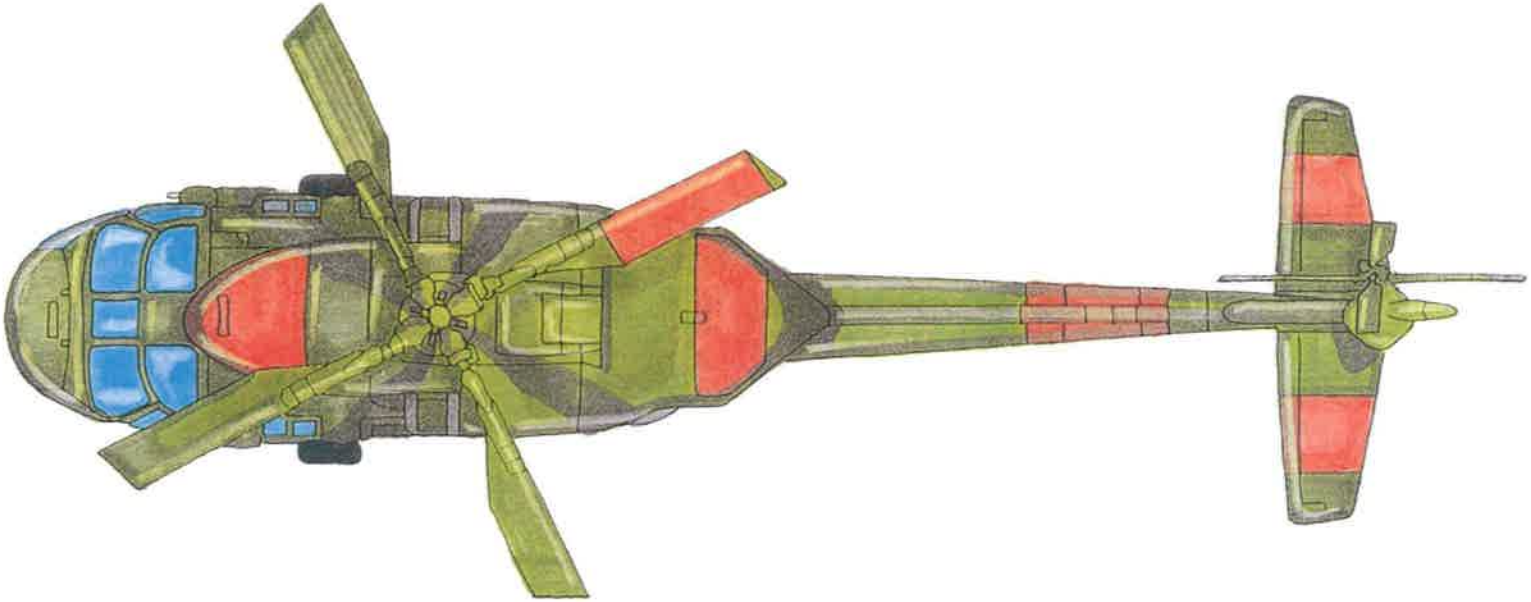


HEAD-ON

-APPLICATION OF PAINT TO COWLINGS IS ACCOMPLISHED BY USING AIR LADDERS.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VISIBILITY COLORS TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS.

OVERHEAD

-COLOR SWASHES ON HORIZONTAL STABILIZER.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS.
-AIRCRAFT PAINTED USING HI-VISIBILITY WASHABLE TEMPERA.



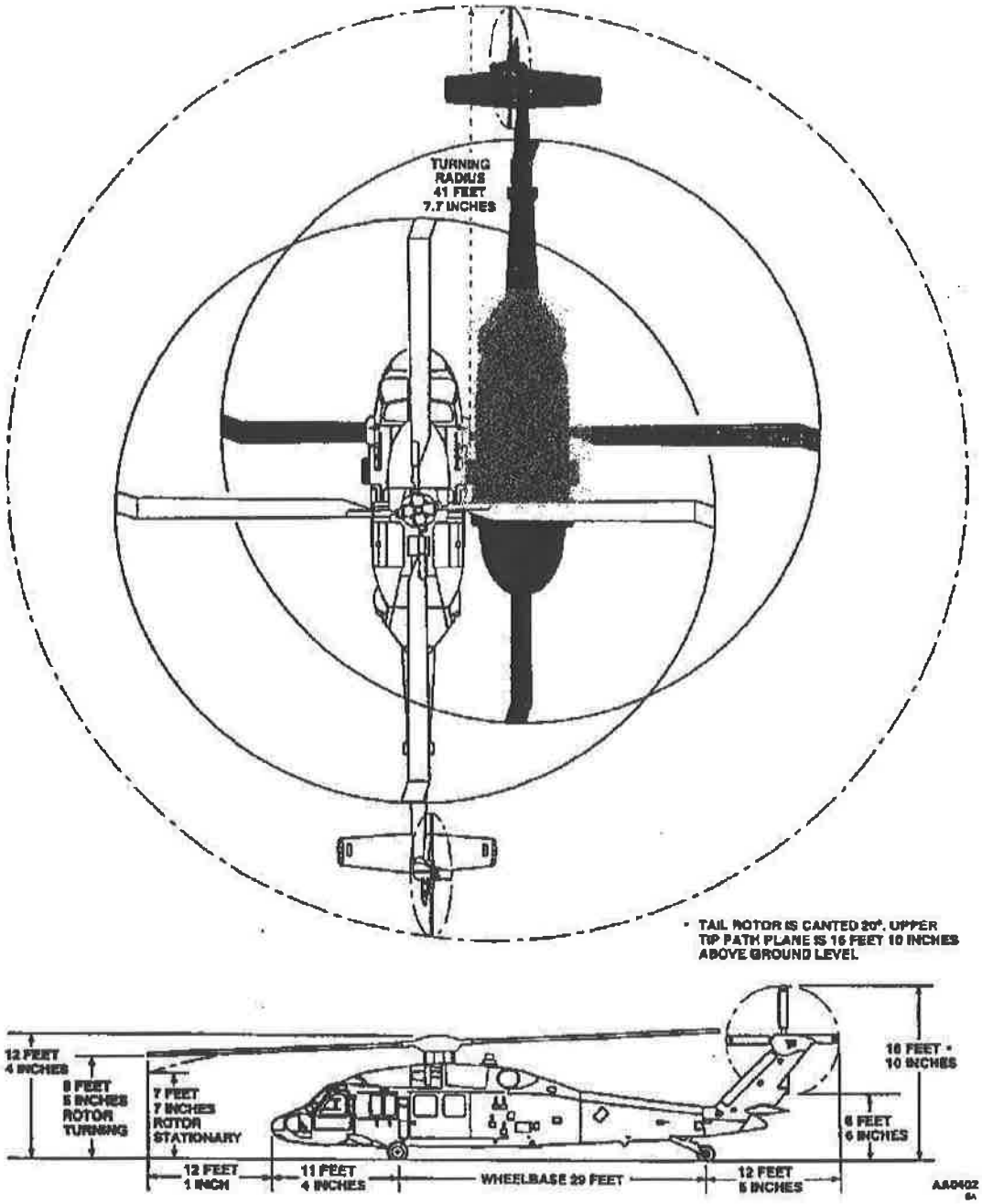
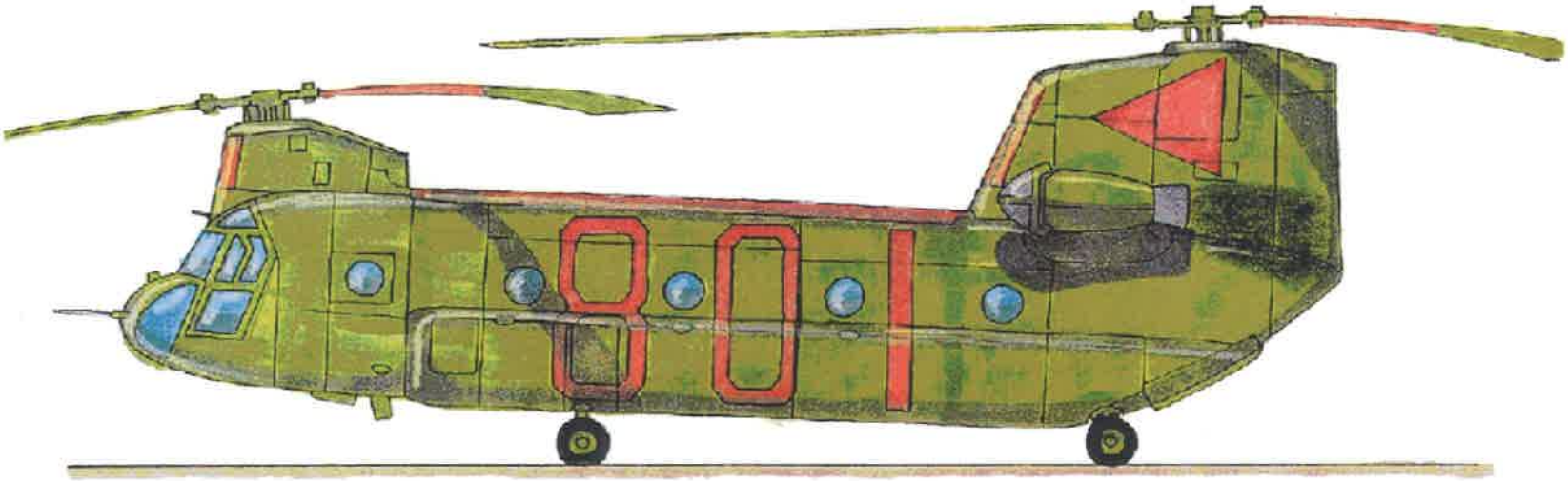


Figure 2-3. Turning Radius and Clearance

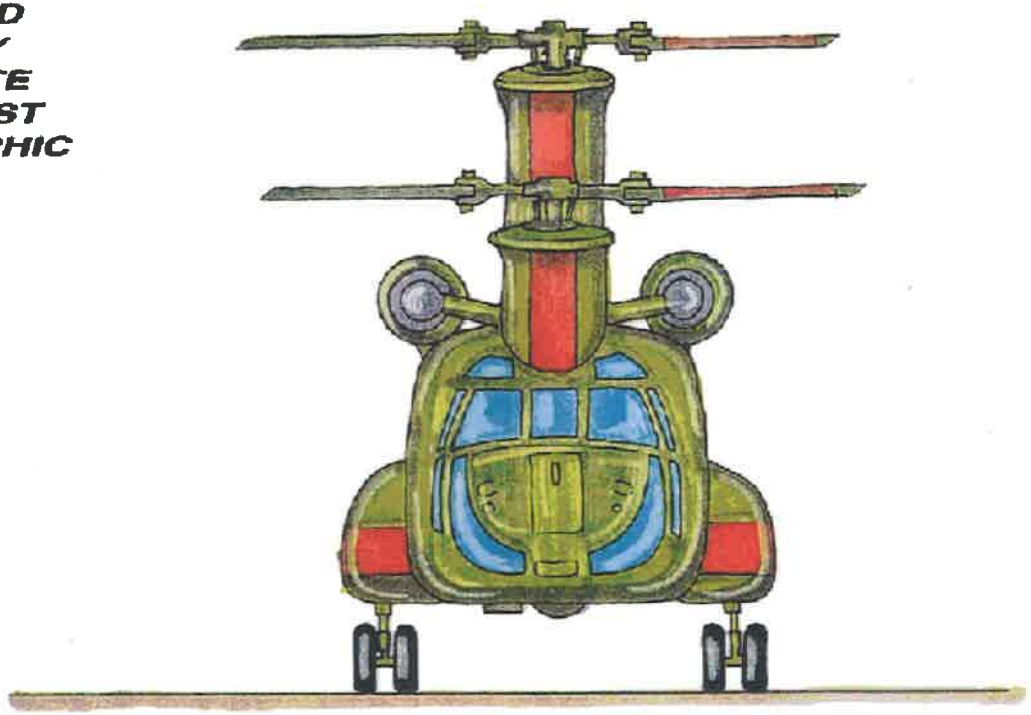
PROFILE

-PAINTED NUMBERS ARE APPROXIMATLY 6 FEET HIGH.
-TRIANGULAR SWASH ON REAR ROTOR MAST COWLING SERVES BOTH VISIBILITY AND DIRECTIONAL INDICATION.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS



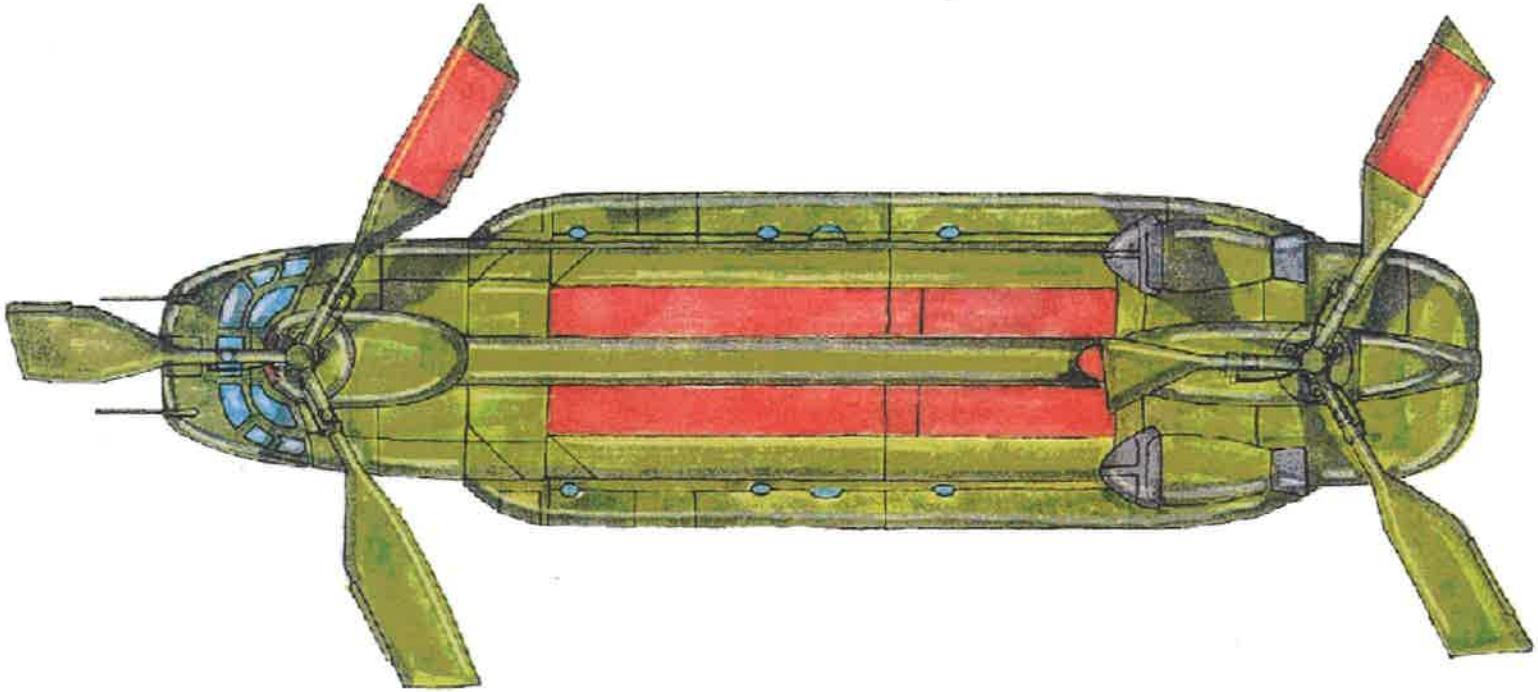
HEAD-ON

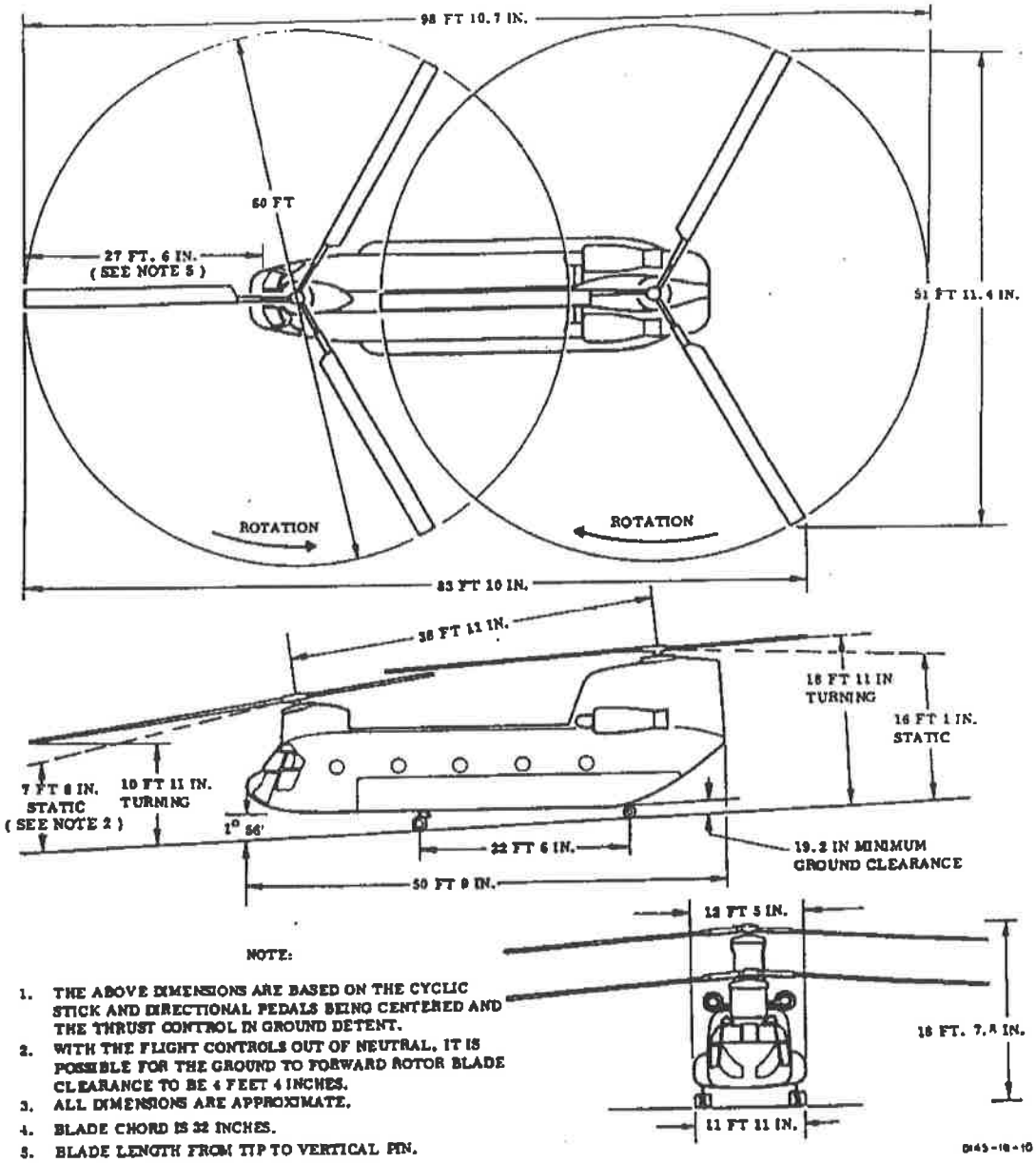
-APPLICATION OF PAINT TO COWLINGS IS ACCOMPLISHED BY USING AIR LADDERS.
-COLOR SWASHES ON BOTH COWLINGS ARE VISIBLE IN HEAD-ON VIEW.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VISIBILITY COLORS TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS.



OVERHEAD

-DIRECTIONAL ARROW AT FRONT OF STRIPES TO ASSIST THE AIR ATTACK OFFICER WITH THE TRAVEL DIRECTION OF THE AIRCRAFT.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS





NOTE:

1. THE ABOVE DIMENSIONS ARE BASED ON THE CYCLIC STICK AND DIRECTIONAL PEDALS BEING CENTERED AND THE THRUST CONTROL IN GROUND DETENT.
2. WITH THE FLIGHT CONTROLS OUT OF NEUTRAL, IT IS POSSIBLE FOR THE GROUND TO FORWARD ROTOR BLADE CLEARANCE TO BE 4 FEET 4 INCHES.
3. ALL DIMENSIONS ARE APPROXIMATE.
4. BLADE CHORD IS 32 INCHES.
5. BLADE LENGTH FROM TIP TO VERTICAL PIN.

Note: The UH-1/H will be painted with the same basic scheme as the UH-60 Blackhawk

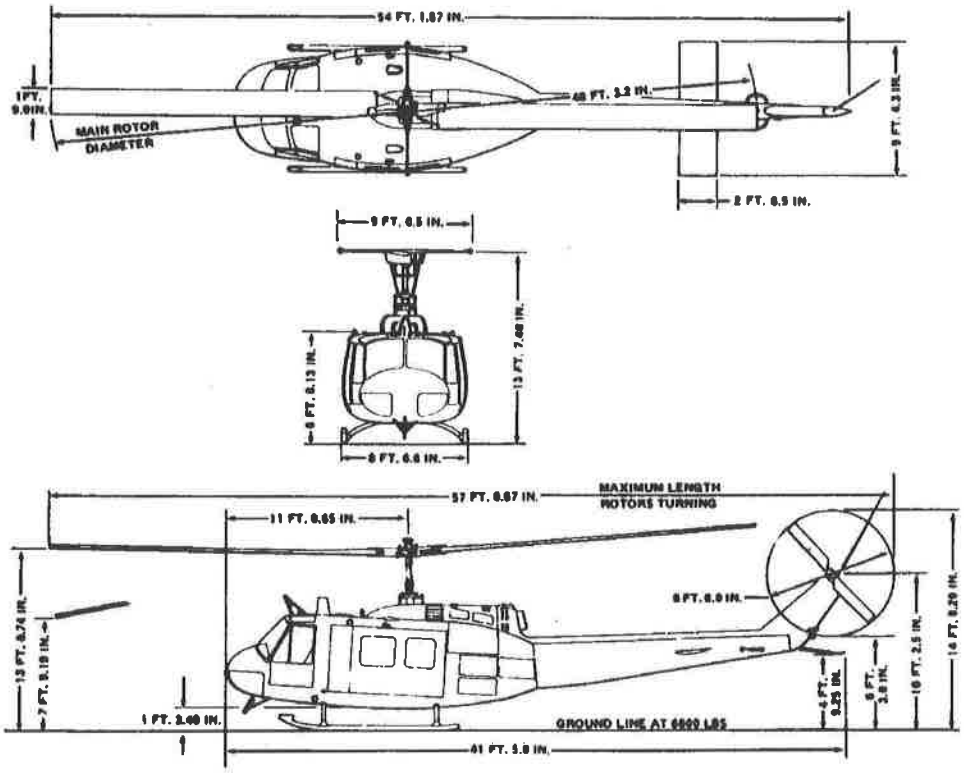


Figure 2-2. Principal Dimensions Diagram—Typical

APPENDIX E

Daily Operations Debriefing Form

MONTANA INTERAGENCY MILITARY HELICOPTER FIRE FIGHTING PROGRAM

Daily Operations Debriefing

INCIDENT NAME_____DATE_____

ORDER NO._____REQ NO._____AAML:_____

PILOT IN COMMAND_____MHEM:_____

MILITARY FACILITY:_____Aircraft Type: UH-60/A [ ] UH-1/H[ ]

Flight Crew: (comments) Aircraft assigned:_____

Mission task: Buckets [ ] Pax Haul [ ] Cargo sling Load [ ] Medivac [ ]
Ferry Flight [ ] Mapping/Recon [ ] Other [ ]

Helibase Support: (Briefings, flight routes, communications, etc.)

_____

Helispots: (Approach/Departure routes, condition, numbering , etc.)

_____

Communications: (Coordination/Effectiveness)

_____

Logistical Support: (Supply/Ordering)

_____

Risk Analysis: (Safety Considerations)

_____

Problems:

_____

_____

_____

Solutions:_____

_____

_____

Flight Hours:_____Gals:_____Pax:_____

MONTANA INTERAGENCY MILITARY HELICOPTER FIRE FIGHTING PROGRAM

Fire fighting mission narrative

MANAGER (MHEM)_____ LIAISON (AAML)_____

ACTIVATION DATE_____ RELEASE DATE_____

UNIT_____ INCIDENT NAME_____

CHRONOLOGY OF EVENTS (List all major activities in paragraph form):

PROBLEM ENCOUNTERED:

POST INCIDENT DEBRIEFING ITEMS (Identify any items discussed with pilot, crew, Incident Staff);

RECOMMENDATIONS:

APPENDIX F

MTNG Helicopter Radio Frequency List

MTNG HEICOPTER RADIO FREQUENCY LIST

DNRC FIRE BUREAU STANDARD FREQUENCIES *and* REPEATER ASSIGNMENTS

Repeater	Tone	Frequency Pairs
NWLO		
Blacktail	2	F 1 - 2
Meadow Pk.	3	F 1 –2
Napa Pt. :		
nwlo/fidc	5	F 5 – 6
Swan Unit	2	F 5 – 6
Calx Mtn.	3	F 3 – 4
Pat's Knob	1	F 5 – 6
Richard's Pk	3	F 5 – 6
SWLO		
Union Pk.	1	F 1 – 2
"C" Hill *	1	F 5 – 6
Rocky Ridge	3	F 5 – 6
MT. Morrell	1	F3 tx; F13 rx
Stonewall Mtn.	3	F3 tx; F13 rx
Rumsey Mtn.*		
CLO		
Roger's Mtn.	2	F 3 – 4
Bridger Ridge	4	F3 tx ;F2 rx
Sourdough Pk.	3	F 1 – 2
NELO		
Judith Pk.	3	F 1 – 2
Coffin Butte	2	F 1 – 2
Antionne Butte	4	F 5 – 6
SLO		
Bull Mtn.	1	F 1 – 2
ELO		
Home Ck. Butte	2	F 1 – 2
Conger Hill	1	F 1 – 2
Plevna	4	F 1 – 2
Big Sheep Mtn.	3	F 1 – 2

Fire& Aviation Management Standard Frequencies

Name	F#/Ch	Transmit	Receive
Repeater	F1	151.475	151.175
Direct	F2	151.175	151.175
Repeater	F3	159.405	151.265
Direct	F4	151.265	151.265
Repeater	F5	151.460	151.190
Direct	F6	151.190	151.190
Red	F7	154.070	154.070
Gold	F8	153.905	153.905
Green	F9	171.475	171.475
Yellow	F10	151.220	151.220
Orange	F11	151.400	151.400
Maroon	F12	154.280	154.280
Direct	F13	151.250	151.250
Logistics	F14	159.375	151.370
Log. Rpt	F15	151.370	151.370
Silver	F16	155.790	155.790

TONES	
1 - 141.3	6 - 146.2
2 - 192.8	7 - 123.0
3 - 114.8	8 - 162.2
4 - 127.3	9 - 167.9
5 - 203.5	

3/8/99

Note: * Proposed for summer/fall of 1999: "C" Hill repeater will become a remote base for Anaconda Unit. Rumsey Mtn. will be installed as a repeater for Anaconda Unit.

CLO GROUP 1 HELENA

CHAN	TFM	CHAN	KFM	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
1	CLO DIR	1		Y	151.265	0.0~	151.265	192.8
2	CLO RPT	2		Y	151-265	0.0	159.405	192.
3	YELLOW	3		Y	151.220	0.0	151.220	131.8
4	RED	4		Y	154.070	0.0	154.070	110.9
5	MAROON	5		Y	154-280	0.0	154.280	156.7
6	CORAL	6		Y	154.265	0.0	154.265	146.2
7	SCARLET	7		Y	154.295	0.0	154.295	167.9
8	HNF DIR	8		Y	166.225	0.0	166.225	123.0
9	HNF RPT	9		Y	166.225	0.0	164.150	103.5
10	GOLD	10		Y	153.905	0.0	153.905	0.0
11	CASCADE	11		Y	154.770-	0.0	155.580	141.3
12	JEF FIRE	12		Y	155.145	0.0	154.115	107.2
13	LC SHERF	13		Y	155.520	0.0	156.090	210.7
14	LC RURAL	14		Y	154.160	0.0	158.805	203.5

SWLO GROUP 2 MISSOULA

CHAN	TFM	CHAN	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
15	U.P. RPT	1	Y	151.175	0.0	151.475	141.3
16	SWLO DIR	2	Y	151.175	0.0	151.175	141.3
16	YELLOW	3	Y	151.220		151.220	141.3
17	MSO UNIT	4	Y	151.265	0.0	151.265	i41.3
18	ANA RPT	5	Y	151.190	0.0	151.460	141.3
19	GAR RPT	6	Y	151.190	0.0	151.460	114.8
20	ANA/GAR	7	Y	151.190	0.0	151,190	141.3
21	GREEN	8	Y	171.475	0.0	171.475	0.0
22	CLW RPT	9	Y	151.250	0.0	159.405	141.3
23	LCN RPT	10	Y	151.250	0.0	159.405	114.8

NWLO GROUP 3 KALISPELL

		CHAN	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
25	FNF DIR	1	N	164.375	0.0	164.375	0.0
26	FNF RPT	2	N	164.375	0.0	165.2625	162.2
27	NWLO DIR	3	Y	151.175	0.0	151.175	
28	BLCKTAIL	4	Y	151.175	0.0	151.475	192.8
29	MEADOW P	5	Y	151.175	0.0	151.475	114.8
30	NAPASWAN	6	Y	151.190	0.0	151.460	192.8

SLO GROUP 4 BILLINGS

CHAN	TFM	CHAN 985	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
31	BIDC DIR	1	Y	168.650	0.0	168.650	0.0
32	BIDC DIR	2	Y	169.175	0.0	169.175	0.0
33	BIDC RPT	3	Y	168.425	0.0	167.900	123.0
34	SLODIR	4	Y	151.175	.0.0	151.175	141.3
35	SLORPT	5	Y	151.175	.0.0	151.475	.141.3

NELO GROUP 5 LEWISTOWN

CHAN	TFM	CHAN 985	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
36	NELO DIR	1	Y	151.175	0.0	151.175	0.0
37	JUDITH P	2	Y	151.175	0.0	151.475	114.8
38	ANTONNE	3	Y	151.190	0.0	151.460	114.8
39	COFFIN B	4	Y	151.190	0.0	151.460	**192.8**
40	GGW UNIT	5	Y	151.190	0.0	151.190	
41	GGW RPT	6	Y	151.190	0.0	151.475	**127.3**
42	LWT/BLMR	7	Y	168.225	0.0	167.825	**123.0**

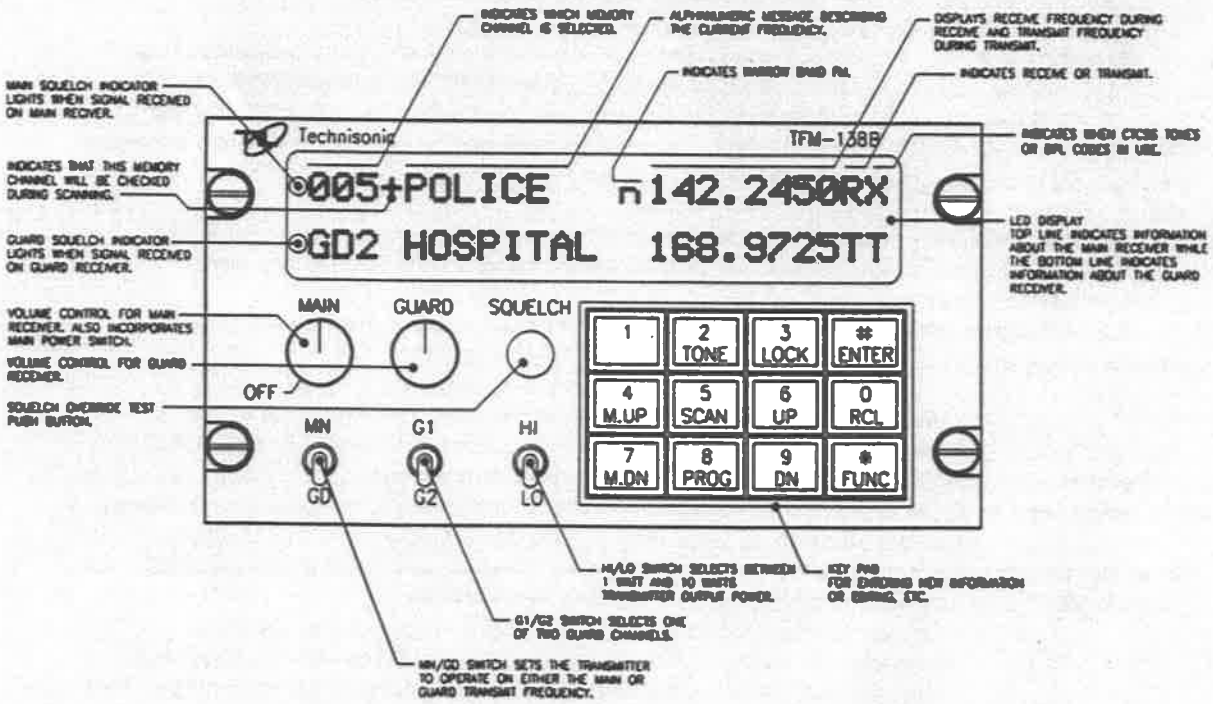
ELO GROUP 6 MILES CITY

CH	TFM	CHAN	SCAN	RX.FREQ	RX CG	TX FREQ	TX CG
43	ELO RPT	1	Y	151.175	0.0	151.475	141.3
44	ELO DIR	2	Y	151.175	0.0	151.175	**192.8**
45	DNRC RPT	3	Y	151.265	0.0	159.405	**114.8**
46	DNRC.DIR	4	Y	151.265	0.0	151.265	**127.3**
47	RED-MA	5	Y	154.070	0~0	154.070	123.0
48	GOLD-MA	6	Y	153.905	0.0	153.905	**131.8**
49	MAROON	7	Y	154.280	0.0	154.280	**167.9**
50	YELLOW	8	Y	151.220	0.0	151.220	**103.5**
51	MCFD	9	Y	154.445	0.0	151.445	0.0
52	BLM DIR	10	Y	168.425	0 0	168.425	0.0
53	BLMRPT	11	Y	168.425	0.0	167.900	167.9
54	FS DIR	12	Y	169.175	0.0	169.175	0.0
55	FD RPT	13	y	169.175	0.0	169.975	0.0
56	CSTR-RDS	14	Y	159.120	0.0	159.120	0.0

APPENDIX G

Technosonic Model Tfm-138 Series
Airborne Vhf-Fm Transceivers

Figure 1 **Operator's Switches and Controls - TFM-138B**



TECHNOSONIC TFM-138B RADIO OPERATING INSTUCTIONS
AND
MTNG FIRE FIGHTING RADIO FREQUENCIES CHECKLIST

1. Description.

   a. The TFM-138B provides two-way VHF/FM voice communications within the frequency range of 138 to 174 MHz. Data entry and function control are input through the front panel 12 button keypad. 120 preset memory channel positions are available. Information stored in the memory can be recalled by keypad entry or by pressing M-UP OR M-DN buttons to scroll through all preset channels. To recall a specific preset channel frequency, press RCL and the channel number on the numeric keypads.
   b. The radio operates in the simplex mode (transmits and receives on different frequencies). The second frequency of a duplex pair activates a repeater radio that retransmits the message on the first frequency.
   c. Repeater radios are usually "tone" frequency protected. This allows several repeaters to utilize the same frequency pair with different access tones, acting like an on/off switch for the repeater. There are 32 standard tone frequencies, which are used universally, not just for government use. Trust only tone frequencies, not tone numbers, as tone number assignments are not universal. The TFM-138B has the 32 standard tones entered in memory and they can be assigned to each memory channel position. To program a tone to a memory channel position, refer to the PROGRAMMING TONES section.
   d. Front panel controls are:

      1) MAIN — Power switch and main channel volume.
      2) GUARD — Guard channel volume
      3) SQUELCH — Squelch override test push button
      4) MN/GD — Switch for selecting main or guard transmitter
      5) G1/G2 — Switch for selecting guard channels 1 or 2 Rx/Tx
      6) HI/LO — transmitter power output control switch, 10 watts on HI, 1 watt on LO

      LED display brightness is controlled by pressing the UP OR DN keypads.

2. Operating procedures- TFM-138B

   a. Starting

3. TFM-138B MAIN switch -- rotate past OFF detent, adjust volume mid-range.

   a. UH-60/A:

      1) Receiver 4 switch – ON
      2) Selector switch --4

   b. Transmit-receive mode:

      1) MN/GD switch -- MN (for main transmitter selection) or GD (for guard for ground transmitter selection).

2) Volume control -- MAIN knob adjust as required for main frequency; GUARD knob, adjust as required for guard frequency,

4. G1/G2 switch -- Select G1 or G2 as required for correct frequency.

5. HI/LO switch -- HI Position

   a. Stopping. MAIN switch -- OFF.

6. Selecting frequencies.

   a. Direct Frequency Entry Mode. This mode facilitates quick frequency selection by direct entry.

      1) Press * FUNC key then enter desired operating frequency with numeric keypads.

   b. Receive Frequency Simplex Function. This function allows you to quickly change the transmit frequency, while operating on a split pair (Duplex mode), to the receive frequency to allow direct communications.

      1) Press * FUNC then UP to transmit on the receive frequency.
      2) To cancel the simplex function and return to the duplex mode, recall the memory channel position by pressing the M.UP key once, then the M.DN key once.

   c. Variable Frequency mode function. This permits changes to the displayed frequency

      1) Press RCL 000 then # ENTER. Manually adjust the frequency with the M.UP, M.DN, UP OR DN keys. The UP AND DN keys will make the frequency count up or down in steps of 2.5 KHz. The M.UP and M.DN keys will make the frequency count up or down in steps of 1 MHz.
      2) To exit this mode, recall one of the 120 memory channels by pressing the RCL key and three number keys for the appropriate channel number, i.e. RCL, (0,8,6).

   d. Keyboard lockout function. The keyboard may be locked out so that accidental pressing of keys does not change frequency unknowingly to the operator.

      1) To lock the keyboard:

         a) Press * FUNC then LOCK

      2) To unlock the keyboard:

         a) Press and hold the LOCK for two seconds.

e. Programming Tones

1) To program a tone to a memory channel position:

a) Press the M.UP or M.DN to select the desired memory channel.
b) Press the FUNC then the TONE key. The display will show "RX TONE" and the current tone number.
c) Use the M.UP or M.DN keys to select the tone number needed from the list below.
d) Press # ENTER KEY. "TX TONE" appears in the display.
e) Repeat steps (c) and (d) as required.

f. Standard Tone Memory Numbers:

Number	Tone (Hz)	Number	Tone (Hz)	Number	Tone (Hz)	Number	Tone (Hz)
01	67	09	91.5	17	118.8	25	156.7
02	71.9	10	94.8	18	123.0	26	162.2
03	74.4	11	97.4	19	127.3	27	167.9
04	77.0	12	100.0	20	131.8	28	173.9
05	79.7	13	103.5	21	136.5	29	179.9
06	82.5	14	107.2	22	141.3	30	186.2
07	85.4	15	110.9	23	146.2	31	192.8
08	88.5	16	114.8	24	151.4	32	203.5
Note: Tone numbers 33 through 63 are non-standard tone frequencies. For no tone, enter number64.							

g. Memory Channel Programming Instructions.

1) Press the FUNC key. Display shows the function prompt.
2) Press the PROG key. Display shows current Rx frequency with a flashing cursor on the second digit (first digit is always a number"1".
3) Type in Rx frequency. Cursor returns to second digit; if an error is made, retype the frequency now or press Enter Key to continue.
4) Tx frequency is now displayed. Repeat step (c) to enter the frequency.
5) Channel spacing increment of 12.5 or 25.0 KHz now displayed. Use M.UP or M.DN to select the desired channel spacing for the memory position, then press Enter.

6) Alphanumeric title now displayed. Use the M.UP or M.DN keys to scroll through the alphabet, numbers, and symbols. When the desired character is displayed press ENTER.
7) Repeat step (f) until last character is set. Display will show SCAN or Lockout to enable this memory position as part of set of scanned frequencies or lock it out of the scan function. Press the M.UP or M.DN to select, then press ENTER. The display will show a "+" beside the memory channel if the scan feature is enabled.
8) To program the GUARD frequency, press FUNC and repeat step (c). The Guard frequency is 168.625. If you do not want to program the Guard frequency and want to return to the normal; mode, press ENTER. The alphanumeric labels for GUARD 1 and GUARD 2 is the same as step (f). When the last character is entered the radio returns to normal operating mode.

APPENDIX H

GOSSARY

AC	Aircraft Commander
ADF	Automatic Direction Finder
AFB	Air Force Base
AFMB	Air Force Mission Commander
ALSE	Aviation Life Support Equipment
AM	Amplitude Modulation
AMC	Air Mission Commander
AMU	Aviation ,Management Contract
AR	Air Refueling
AASF	Army Aviation Support Facility
BLM	U.S. Department of Interior, Bureau of Land Management
CAC	Crisis Action Center
CC	Commander
CP	Copilot
CWN	Call when Needed
DES	Montana Department of Emergency Services
DME	Distance Measuring Equipment
DNRC	Montana Department of Natural Resources and Conservation
DO	Director of Operations
DOD	Department of Defense
DSB	Double Side Band. A side band in the high frequency (hf) range
ETA	Estimated Time of Arrival
ETD	Estimated Time of Arrival
FAA	Federal Aviation Administration
FAF	Federal Air Field
FE	Flight Engineer
FM	Frequency modulation
FMC	Fully Mission Capable
FS	U.S. forest Service
GPS	Global Positioning System
HEMTT	Heavy Expandable Mobile Tactical Truck
HIRRS	Hover Infrared Suppression System
HF	High Frequency
IA	Initial Attack
IAW	In Accordance With
IC	Incident Commander
ICS	Incident Command System
IFR	Instrument Flight Rules
IGE	In Ground Effect This when a helicopter is hovering at a height above the ground that is lower than the equivalent of one rotor diameter and is gaining the benefit of the ground cushion of air under the helicopter. The lower the hover height, the lower the power required to hover.

IHOG	Interagency Helicopter Operating Guide
IP	Instructor
KIAS	Knots Indicated Airspeed
LNO	Military Liaison Officer
LZ	Landing Zone
MHL	Military Helicopter Liaison
MHEM	Military Helicopter Manager can be a CWN or Helicopter Boss
MMC	Military Mission Commander
MO	Aircrew Medic
NCO	Non Commissioned Officer
NPS	US Department of Interior, National Park System
NVG	Night Vision Goggles
OAT	Outside Air Temperature
OGE	Out of Ground Effect. This when a helicopter is hovering at a height above the ground that is higher than the equivalent of one rotor diameter and is not gaining the benefit of the ground cushion of air under the helicopter. The higher the hover height, the higher the power required to hover.
OIC	Officer In Charge
OTAG	Office of the Adjutant General
OPLAN	Operation of Plan of Agreement
PC	Pilot in Command
PFD	Personal Flotation Device
PI	Pilot
SAR	Search and Rescue
SOP	Standard Operating Procedure
TAG	The Adjutant General
USFS	US Department of Agriculture
VFR	Visual Flight Rules
VOR	VHF Omni Directional Range. A radio navigation system for flying IFR Navigation

APPENDIX I

Envelope Letters Annual Changes

TELEPHONE CARD:

DNRC MAIN OFFICE	444-2074	
HELENA INTERAGENCY DISPATCH	449-5475	
CHUCK BRENTON DNRC-Air	444-0747	431-0747
ED MARTIN DNRC-Air	444-0789	431-0789
USFS AFD	329-4900	

ANNEX K

DNRC OFFICER AVIATION TRANSITION CHECKLIST

LINE OFFICER TRANSITION CHECKLIST

As a Line Officer for DNRC, you have a responsibility to ensure a smooth transition as a Type I or II team takes over a fire. One of the more complex aspects of the transition is the Aviation component. This checklist was prepared to assist you in dealing with the complexities. Remember, the DNRC aviation assets you commit to the team for extended attack during this transition might be the only initial attack assets you have for other incidents. Initial attack trained and qualified aviation resources are a valuable commodity. That said, these might be the only assets available until the team can secure extended attack aviation assets.

All DNRC, Guard and DNRC contract aircraft have the primary mission of initial attack. Ensuring this initial attack capability is your priority during the transition. Several issues must be considered regarding how the initial attack priority is maintained, these include:

A. **Aircraft Location—The aircraft will most likely be located away from the helibase established for the incident. Doing so allows for a more timely and effective response to an initial attack call. The geographic area assigned for initial attack must be considered. The DNRC Helicopter Manager(s) must be consulted before assets are committed to a helibase. Managers will be responsible for ensuring adequate information is passed between whatever location is selected and the incident helibase to allow safe integration of DNRC assets into the incident.**

B. **Reports—The Helicopter Daily Use and Summary Report will not be provided to the helibase. Interagency agreements allow for the direct billing of flight time. The number of aircraft, hours flown and the amount of water delivered from the previous day will be given at the daily brief.**

C. **Longline—The use of the longline is per pilots discretion based on the incident and mission. The longline will not be employed unless needed.**

D. **Fuel Truck/Support Personnel—The fuel truck, driver and support personnel will be held in the same fashion as the aircraft, to provide a rapid response to an initial attack call. This will probably mean these assets will be located away from the incident helibase.**

E. **Aircraft Scheduling—The Helicopter Manager will be pro-active in the scheduling of aircraft during the transition. Until team aviation resources arrive, the aircraft should be actively involved in fire suppression activities for the incident, unless an initial attack need arises. Holding the assets at the incident without effective utilization serves no purpose.**