## Appendix J. Criteria and Guidelines for Handling and Immobilizing Bears

Bears will be captured and handled only for management and research purposes. Valid causes for handling include marking potential problem bears, marking bears for identification by researchers, relocation, destruction, and acquisition of biological samples and measurements.

Fully trained staff (Appendix I) will direct all handling and immobilization operations. This is to help insure proper use of the equipment and drugs, safety for both the bear and its handlers, and provide uniformity in records and biological measurements. The Wildlife Biologist will insure that either formal or informal annual training sessions (Appendix I) are conducted to train Wildlife Branch staff in the correct use of culvert traps, drugs, and immobilization equipment. Staff will be trained to the highest standards on bear handling procedures, biological measurement and sample acquisition, and how to properly complete handling reports. This training will normally be coordinated by the Wildlife Biologist. Highly experienced staff members, specialists, or veterinarians trained and experienced in handling bears will conduct this training.

A licensed veterinarian will be retained for prescription and consultation on drugs, to review and provide advice on animal handling techniques, to provide training, and for consultation on veterinary problems. No tools or techniques that are not humane or cause unnecessary pain will be used to handle bears.

Capture/Immobilization Methods

### 1. Aerial Capture

Bear captures for research purposes occur primarily during May and September when bears are out of the den, leaves are off the shrubs to increase visibility, and temperatures are fairly cool. Bears may be captured at any time while out of the den for management purposes. Bears are located by intensive survey with a PA-18 Supercub or by locating previously radio-collared individuals. All capture efforts use a Hughes 500, Bell 206 Jet Ranger, or Robinson R-44 helicopter as a darting platform and to transport the processing crew, consisting of a gunner and 1 or 2 assistants. A PA-18 Supercub is used to direct the helicopter to the bear for capture, to monitor darted bears until drug induction, and to check on bears captured on previous days. Operations and aircraft specifications will be within OAS - ACETA guidelines (attached).

### 2. Ground Capture with Culvert Traps

In areas accessible by roads, the culvert trap is the principal device to capture bears. It will be set in the evening after visitor activity slows, and the door will be closed in the morning before 8:30 a.m. Adequate blocking will be used to insure that the trap is neither a safety hazard nor so unstable as to discourage a wary bear. Traps must be marked

"Danger" in red letters on both sides. An Emergency Closure (appendix H) will be implemented for the area around the trap.

Traps will be painted a light color to reflect heat. In hot weather, trapped bears will be moved to a cool, shaded site away from campgrounds or other public use areas; bears should be hosed down with water periodically during warm weather. In all weather, clean hay may be placed on trap floors to provide insulation from metal.

Trapped bears requiring immobilization will be drugged within the trap by jab stick or blow gun. A designated employee will be responsible for a trapped animal at all times until released. Normally, the person who sets a bear trap is responsible for the animal's safety until a certified bear handler is on scene. The handler is responsible until it is safe to transfer the responsibility to other personnel. That person is then responsible for the bear until it is released.

Bears will not be kept in traps longer than 24 hours unless extraordinary circumstances prevent proper disposition within that limit. The Wildlife Biologist will make this determination, provide instructions for sustained care of the bear, and advise the Superintendent of the bear's status.

When sows with cubs are trapped and the cubs remain outside the trap, or when cubs are trapped without mothers, every attempt will be made to reunite the mother with her cub(s) as soon as practical. If unsuccessful and the mother is not a problem bear, then she will be released where captured as soon as possible after tagging and gathering biological statistics. If the mother bear is a problem bear to be relocated and the cubs cannot be caught within 24 hours, then the Wildlife Biologist will make the decision whether: (1) the mother is released in another effort to capture the whole group; (2) the mother is held beyond 24 hours and the effort to capture the cubs is continued; or (3) the cubs are abandoned, particularly if old enough to wean.

**3. Capturing a free ranging bear with a dart gun from the ground.**

Drugs, administered by use of a drug-injecting dart fired by ground based personnel, is a very rarely used alternative. It is not considered safe for the staff involved or the bear and must be approved on a case by case basis by the Assistant Superintendent for Resources, Science, and Learning.

**Use of Immobilizing Drugs**

All bears are captured using Telazol (tiletamine and zolazepam; 250 mg/ml) delivered in projectile syringes fired from a syringe rifle. We attempt dosages of 7-10 mg/kg of grizzly bear body mass and 5-8 mg/kg of black bear body mass. Three to seven ml darts (dependent on species and sex of bear) with 1.9 cm (3/4 in) barbed needles fired with "Low" propellent charges ("brown wads") are used for spring captures. During spring captures the rump is the muscle mass of choice for injection. Longer, 3.8 cm (1.5 in) needles with 4-7 ml darts are used in fall for subadults of both sexes and adult females, respectively. Adult grizzly males

are not routinely captured during fall, but when necessary receive 2 consecutive injections totaling 12 ml of Telazol. Extensive fat deposits during fall require injection into a shoulder.

Once bears are immobilized, body temperatures are determined as soon as practical with a rectal thermometer and monitored continually. Bears with body temperatures higher than 40.6 ºC (105 ºF) are cooled with water and/or with snow packed in the groin, along the animal's belly, and on foot pads. Cooling continues until rectal temperatures are below the 40.6 °C threshold. Drugged bear will be monitored for respiratory difficulties, convulsions, eye reflex, cyanosis, evidence of premature recovery from the drug, and any other potential problems which, if undetected, could be hazardous for either the bear or its workers.

In the event an animal must be euthanized due to a capture related injury or for management purposes, the guideline established by the American Veterinary Medical Association (2000) will be followed.

Bears that are incompletely immobilized or that recover during handling are given additional 125 to 250 mg doses of Telazol to maintain appropriate anesthesia.

Immobilized bears are left in a safe location (e.g. away from open water or steep slopes) and allowed to recover from anesthesia undisturbed. All captured bears are located within 1 or 2 days of capture to determine that they have recovered from the immobilization and family groups are reunited.

**Handling Immobilizing Agents**

Scheduled and prescription drugs are obtained and may only be dispensed by the Park's Drug Practitioner. Drugs are stored in a safe. Drugs may be signed out to personnel with potential need for immobilizing bears and who have either attended the Parks' course in immobilization or received equivalent training and/or experience and are deemed competent by the Parks' Drug Practitioner. The Drug Practitioner will ensure that records are kept of drug inventory, use, and distribution to field areas. Each recipient of drugs will be responsible to see that records of drug use are sent to the Park's Drug Practitioner monthly. Unused (mixed but disposed of) and drugs with lost darts will be documented by the Drug Practitioner after each capture session. Drug accountability is the responsibility of the Park's Drug Practitioner who will maintain records on all drug use and distribution.

**Tagging/Gathering Biological Statistics**

Bears are radio-collared and fitted with plastic eartags. The small tissue sample removed from the ear during tagging will be retained for future genetic analysis. Radio-collars consist of hermetically sealed radio-transmitters attached to collars made of 5- (for VHF collars) or 6-cm-wide (for GPS collars) reinforced machine belting, and weigh 500-1,000 g (VHF) or 1,700 g (GPS). Transmitters are motion-sensitive, transmitting at 75-100

bpm when active and 45-60 bpm if motionless for 4 hours, to indicate mortality. Expected transmitting life of this configuration is 3 years at the active pulse rate.

Each bear is weighed and physical measurements are taken. Percent body fat is estimated using bioelectrical impedance analysis. Bears are examined to determine overall body condition and the presence of injuries. Their teeth are examined to determine the extent of wear and breakage and to estimate their age. A first premolar is extracted during a bear's first capture and sectioned for age determination. Breeding status is evaluated by teat and vulva condition and the presence of cubs. A 60 ml blood sample is drawn from the femoral artery using a 20-ga needle 2.54 cm in length for dietary, disease, and genetics analyses. Whenever possible, biological and drug reaction data will be collected on all bears handled using a standardized bear field data form, see Appendix G. Minimum biological data are sex, weight (estimated or measured), girth, total length, reproductive condition, presence of external parasites, pelage color, injuries, and estimated age.

**Release/Relocation**

Immobilized bears are left in a safe location (e.g. away from open water or steep slopes) and allowed to recover from anesthesia undisturbed. All bears captured are located within 1 or 2 days of capture to determine that they have recovered from the immobilization and family groups are reunited.

Trapped and drugged bears will be attended or held in culvert traps until they appear fully capable of defending themselves from other bears and otherwise functioning normally in the natural environment.

Non-problem bears will be released within 0.5 kilometer of where they were captured. Every effort will be made to avoid releasing bears in view of the general public, unless the release is part of an interpretive function approved by the Superintendent. Problem bear may on occasion also be released on site and aversively conditioned as part of an experimental aversive conditioning program.

Bear relocation will not be used as a long-term solution to human/bear problems. This is not considered effective or an ecologically sound bear management strategy.

References:

AVMA 2000, 2000 Report of the AVMA panel on euthanasia. Journal of the American Veterinary Medical Association, Vol. 218, No. 5.

Updated 9/2000

## Bear Capture Kit Inventory

_ 8 dart tails
_ 8 plungers
_ 8 needles (short, medium, long)
_ 16 dart tubes (4/3cc, 4/4cc, 4/5cc, 4/7cc)
_ 1 bottle plunger lube
_ 1 film canister Vaseline
_ 1 film canister 4-10 cc internal charges
_ 1 film canister 1-3 cc internal charges
_ 1 film canister green charges (Low)
_ 1 film canister yellow charges (Medium)
_ 1 film canister brown charges (Very Low)
_ 1 Positioner
_ 3 Gas exchangers
_ 1 Dart cover or Cork
_ 2 Blood kits (Vacutainer, needles, heparinized & nonadditive tubes)
_ 4 tooth envelopes
_ 4 5 cc syringes
_ 4 10 cc syringes
_ 6 20 gauge needles
_ 6 10 gauge needles
_ 1 book of matches
_ 1 sharps container
_ 1 thermometer with extra battery
_ 1 tube eye ointment
_ 1 roll electrical tape
_ 1 pair needle nose pliers
_ 1 tooth elevator
_ 2 bottles distilled/sterile water
_ 1 film canister nitrofurizone or antibiotic ointment
_ 1 measuring tape
_ 4 pairs latex gloves
_ 1 tube of dessicant
_ Pens and Pencils
_ Permanent marker
_ Alcohol Swabs
_ 4 pairs of Ear Tags
_ Hole Punch
_ Tagging pliers
_ Break-away collar leather
_ Collar brackets and extra nuts
_ Nut driver
_ Knife
_ Small crescent wrench
_ 1 Mouth expander
_ 1 pair large calipers
_ Ziplocks and Trash Bags
_ Park Map
_ 1 Telazol dosage and safety card
_ 1 Measurement standards card
_ 4 Capture data forms

**Other Equipment to Supplement Kit:**

_ 1 Radio Collar and extra magnet
_ 1 Large Tarp
_ 1 Scale
_ 1 Dart Gun
_ 1 Pole syringe
_ 1 Gun cleaning rod

## Measurement Standards

-Collar should be 1-1.5 cm larger than widest head circumference

**Skull Length**: tip of nose to superior nuchal line
**Skull Width:** Most distant points of zygomatic arch
**Girth:** Immediately behind the forelimbs, averaging max and min from inhale to exhale
**Total Length**: tip of nose to end of last tail vertebrae
**Height at Shoulder**: Articulation of wrist to distal end of scapula
**Female Pectoral Nipples**: width and height of both pectoral nipples (mm)
**Head:** Girth of widest point
**Neck:** Girth of neck directly behind skull
**Fore foot width: w**idth of pad
**Fore foot length:** from base of pad to top of toe pad
**Total fore foot length:** from base of pad to end of claw
**Hind foot width:** width of pad
**Hind foot length:** from base of pad to top of toe pad
**Total hind foot length:** from base of pad to end of claw
**Tag Scars**: N = no, L = left ear, R = right ear, B = both
**Tooth**: R = right upper first premolar, L = left u.f.p.
**Lactating**: Yes or No
**Cub Age**: C = Spring, Y = yearling, 2 = 2yrs, 3 = 3yrs
**Body Condition**: F = Fat, G = Good, I = Intermediate, P = Poor, E = Emaciated
**Blood:** Red or Purple

## Telazol Specifics

-Mix 5ml sterile water with 3 500mg (1,500mg) bottles Telazol
-Results in 6 ml final drug: lasts at room temp for 4 days
-Concentration is 250 mg/ml

**Dart Gun Set-up**:
-external charge placed at 6:00
-Brown = very low range
-Green = low range
-Yellow = moderate range

**Standard doses for bears**:
Small 150-300 lbs. = 3 ml
Adult Female 200-300 lbs. = 5ml
Adult Male 400 lbs + = 7 ml
Spring cubs/small yearlings = ½ ml spring to 2 ml fall

**Injection site**:
Intramuscular = 6-8 minutes
Subcutaneous = 15-30 minutes
Fat = not good & decreases dosage

**Telazol is a Central Nervous System immobilant**:
-Cover eyes and use eye ointment
-Keep from facing the sun
-Position head downhill in case of vomiting
-Body Temp avg. 101°F
    106°-107°F is Dangerous!
    Add water to groin to lower temp
-Prevent Cubs from nursing on drugged mother, sternal recumbent placement
-Additional doses should be less than original dose
-Total drugs given should not double recommended dose

**OAS-12 (3/02)**

**DEPARTMENT OF THE INTERIOR - OFFICE OF AIRCRAFT SERVICES**

**AIRCRAFT RENTAL AGREEMENT PROVISIONS: SUPPLEMENT NO. 4**

**SPECIAL USE – HELICOPTER**

# AERIAL CAPTURE, ERADICATION AND TAGGING OF ANIMALS

Definitions

**ACETA** (Aerial Capture, Eradication and Tagging of Animals) As used in this supplement, ACETA is defined as operations conducted from a helicopter, i.e.: Eradication (elimination by use of a firearm), marking (use of paint ball gun or similar device), Tagging (Hand held net gun, Airframe mounted net gun, or darting).

## B8.4.1 Certification.

The aircraft and the pilot must be carded for the appropriate operations under the Department of Interior ACETA Aerial Capture, Eradication, and Tagging of Animals) Handbook (351 DM 2 - 351 DM 3).

## B8.4.2 Flight Operations.

B8.4.2.1 A restriction while carrying weapons. While conducting ACETA operations, the designated gunner may carry aboard the aircraft and operate appropriate weapon(s) for the accomplishment of the mission. The weapon shall not be loaded (in the chamber) or cocked unless the muzzle is outside and pointed away from the aircraft.

B8.4.2.2 VFR Minimum Altitudes. While conducting ACETA operations over sparsely populated areas, the aircraft may be operated below 500 feet above the surface in compliance with FAR 91.119.

## B8.4.3 Personnel Requirements.

B8.4.3.1 Pilot Requirements. Pilots shall have logged the following hours as PIC in addition to the general requirements of the ARA.

B8.4.3.1.1 Helicopter.

B8.4.3.1.1.1 100 hours in class size (small, medium, and large as applicable).

B8.4.3.1.1.2 200 hours, including 10 hours in the last 6 months, low-level flying over hazardous/mountainous terrain and operating from unimproved heli-spots at high-density altitudes. B8.4.3.1.1.3 50 hours experience as pilot for predator control hunting operations, or 200 hours experience in agriculture application type flying.

B8.4.3.1.1.4 Pilot Endorsements. The pilot will be endorsed for the specific mission requested i.e.: Handheld Net Gun, Airframe mounted Net Gun, Eradication (shotgun, rifle, etc:), Darting/tagging (dart gun, paint ball).

B8.4.3.2 All ACETA pilots must demonstrate the following:

B8.4.3.2.1 Positive flying safety attitudes and habits.

B8.4.3.2.2 Positive attitude regarding requirements and procedures for aerial hunting of predator animals.

B8.4.3.2.3 Emotional stability under the stress of low-level aircraft operations required for aerial hunting.

B8.4.3.2.4 Positive personality characteristics required to work and communicate effectively with field personnel and cooperating agencies.

B8.4.3.2.5 Knowledge of and/or willingness to learn predator habits and how to effectively and efficiently hunt them.

B8.4.3.2.6 Ability to identify and safely maintain effective airborne contact with the target animal.

B8.4.3.2.7 Willingness to work unusual hours and lodge at remote field locations.

**B8.4.4 Personnel Protective Equipment (PPE).**

B8.4.4.1 This is a special use activity and PPE is required. Aviator's flight helmet, consisting of a one-piece hard shell made of polycarbonate, Kevlar, carbon fiber, or fiberglass, must cover the top, sides (including the temple area and to below the ears), and the rear of the head. The helmet shall be equipped with a chinstrap and shall be appropriately adjusted for proper fit. Flight helmets for helicopter usage must conform to a national certifying agency standard, such as DOT, Snell-95, SFI, or an appropriate military standard, and be compatible with required avionics (see section B8.4.6.7). "Shorty" (David Clark style) helmets are not approved. Flight helmets currently meeting this requirement are the SPH-3, SPH-4, SPH-5, SPH- 4B, SPH-8, HGU-56 and HGU-84. Helmets designed for use in fixed wing aircraft do not provide adequate protection for helicopter occupants and are not approved for helicopter use.

B8.4.4.2 Pilots shall wear long-sleeved shirt and trousers (or long-sleeved flight suit) made of fire-resistant polyamide or aramid material or equal. Pilots shall wear boots made of all-leather uppers that come above the ankles and leather, polyamide or aramid gloves. The shirt, trousers, boots, and gloves shall overlap to prevent exposure to flash burns.

**B8.4.5 Aircraft Requirements.**

B8.4.5.1 A first aid kit containing items specified in Attachment 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.4.5.2 A survival kit containing items specified in Attachment 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.4.5.3 Shoulder harness/lap belts.

B8.4.5.3.1 Front seat occupants. Helicopters will have double-strap shoulder harness with self-locking inertia or locking reel and lap belt for pilot and gunner. Shoulder straps and lap belts will fasten with metal-to-metal, single point, quick-release mechanism. A rotary-type buckle, similar to Pacific Scientific "Saf-T-Matic", will be required on helicopters not equipped with an approved shooting door or window.

B8.4.5.3.2 Rear seat occupants with door on. Lap belts will fasten with metal-to-metal mechanism.

B8.4.5.3.3 Rear seat occupants without door. The gunner shall wear an OAS approved adjustable full-body harness equipped with a quick release system. A safety strap will be attached to the harness and the aircraft, at a location and in a manner approved by OAS. The OAS Division of Technical Services will establish requirements for specific aircraft types.

B8.4.5.3.4 If a shooting door is not installed, the aircraft shall be capable of flight with door(s) removed for shooting. (Not applicable for net guns attached to the aircraft exterior.)

B8.4.5.4 Tundra Boards or Snow Pads. (Mandatory in Alaska when the helicopter is not equipped with standard or emergency flotation gear or as noted in the aircraft order.)

B8.4.5.5 Dual controls are required for pilot performance evaluations. Dual controls shall be removed prior to use under this agreement.

B8.4.5.6 The following optional equipment and accessories are recommended for helicopters:

B8.4.5.6.1 High-skid landing gear.

B8.4.5.6.2 Personnel access step. Helicopters equipped with extended gear shall have a personnel access step to assure safe entrance and exit from each door of the helicopter. A section of external cargo rack may be utilized as a step by providing a clear space covered with nonskid material.

B8.4.5.6.3 Shooting door or window.

B8.4.5.6.4 Cabin heater and defogger.

**B8.4.6 Avionics Requirements.**

B8.4.6.1 General. The following systems shall be furnished, installed and maintained by the Vendor in accordance with the manufacturer's specifications and the installation and maintenance standards of Section B8.4.6.10.

B8.4.6.2 Communications systems.

B8.4.6.2.1 One automatic portable emergency locator (ELT/AP) or an automatic fixed/portable emergency locator (ELT AF/AP) meeting TSO-C91 or TSO-C91A shall be installed in the helicopter cabin in a conspicuously marked location that is easily accessible, and readily removable in the event of an accident. B8.4.6.2.2 An uni-directional ELT shall be installed with the "arrow" aimed 45 degrees downward from the normal forward "direction-of-flight" of the helicopter. If the primary antenna is a fixed type, a portable antenna shall be attached to the ELT unit.

B8.4.6.2.3 In lieu of the ELT requirement above, an automatic fixed emergency locator transmitter (ELT AF) meeting TSO-C91A or an ELT that requires tools to remove from the aircraft may be acceptable when a handheld portable ELT/EPIRB is furnished. The ELT/EPIRB shall be compact and easily carried by the PIC. A handheld ELT/EPIRB such as Emergency Beacon Corporation's model EBC-102 with telescoping antenna or Emergency Locator Products Corporation's model ELP-1000 meets this requirement.

B8.4.6.3 One VHF-AM aeronautical transceiver, operating in the 118.000 to 135.975 MHz band, with a minimum of 720 channels, in no greater than 25 KHz increments, and a minimum of 5 watts carrier output power, shall be installed in the aircraft.
B8.4.6.4 Provisions for Auxiliary VHF-FM (AUX-FM) Portable Radio.

B8.4.6.4.1 The vendor shall provide the necessary interface for installing and properly operating an Auxiliary VHF-FM Portable Radio through the aircraft's Audio Control Systems. The interface shall consist of the appropriate wiring from the Audio Control Systems which is terminated in a MS 3112E-12-10S type connector, mounted in a location convenient to the observer, and utilizing the following contact assignments:

| Contact Designation | Interface Functions |
|---|---|
| A | Airframe Ground |
| B | Push-to-talk (isolated contact closure) |
| C | Push-to-talk (isolated contact closure) |
| D | Receiver audio low |
| E | Receiver audio high (Variable from 10 mW to 500mW, 8 ohms to 75 ohms) |
| F | Transmitter Microphone Low |
| G | Transmitter Microphone High |
| H | +14 VDC from aircraft avionics buss, 5 amp Type A circuit breaker. For 14V aircraft only! |
| J | +24 VDC from aircraft avionics buss, 5 amp Type A circuit breaker. For 28V aircraft only! |
| K | Spare contact |

B8.4.6.4.2 One weatherproof external broadband antenna covering the 150-174 MHz band, with associated RG-58A/U coaxial cable and connector, terminated in a bulkhead mounted female BNC connector convenient to the observer.

B8.4.6.4.3 Radio mounting facilities that comply with AC 43.13-2A, Chapters 1 and 2, shall be provided for the auxiliary radio for installation in the cockpit, with controls convenient to the pilot and observer. The auxiliary radio connector and antenna connector shall be so located that an 18-inch interconnecting cable may be utilized by the radio.

B8.4.6.4.4 The selector panel shall supply positive polarity microphone excitation voltage, from the aircraft DC power system through a suitable resistor network, to the aircraft microphone. A blocking capacitor shall be provided in the selector panel to prevent the portable microphone excitation voltage from entering the system.

> NOTE: Vendor-furnished FM radios capable of communicating with the Government portables will meet this requirement.

B8.4.6.5 Navigational systems. No requirements.

B8.4.6.6 Audio Control System.

B8.4.6.6.1 One audio control system shall be installed for the pilot and spotter/gunner, which provides control, selection and operation of multiple radio transceivers. Separate audio system controls shall be provided for the pilot to select specific receiver audio outputs and transmitter microphone/PTT inputs of multiple radios. An intercom system shall also be provided for the pilot and spotter/gunner position. Audio level controls shall be provided for the pilot and observer to adjust audio outputs to their respective earphones.

B8.4.6.6.2 Transmitter selection and operation. Whenever a transmitter (or PA system, when installed) is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the user as well as at the other position for cross monitoring.

B8.4.6.6.3 Receiver Audio Selection and Operation. Selector switches shall be provided for the pilot earphone to permit selecting receiver audio from any one or combination of all receivers. The adjustable audio output shall be capable of 100 mW (600 ohms) with less than 10 percent distortion.

B8.4.6.6.4 Location and Marking. The respective controls of each audio control system shall be located conveniently for the pilot. Labeling and marking of controls must be clear, understandable, and permanent.

B8.4.6.7 Earphones and Microphones.

B8.4.6.7.1 (Helicopter) The system shall be designed for operation with 600 ohm earphones and 150 ohm carbonequivalent, noise-canceling boom type microphones (Gentex electret type Model 5060-2, military dynamic type M-87/AIC with CE-100 TR preamplifier, or equivalent) with U-75/U type connector plug. The only exception to this is the pilot's position, which may be a low impedance (dynamic) configuration.

B8.4.6.7.2 All earphone/microphone jacks in the aircraft (except the pilot’s) shall be U-92A/U (single/female) type, which will accept U-174/U type plugs.

B8.4.6.8 Push-to-Talk (PTT) Operation. Separate PTT switches shall be provided for radio transmitter operation and intercom operation at the pilot's position. The pilot's switches shall be located on the stick or cyclic control, as applicable. The spotter/gunner's interphone switch shall be located on the cord to the earphone/microphone connector.

B8.4.6.9 Intercom System. An intercom system shall be provided to serve the pilot and spotter/gunner. Intercom audio shall mix with, but not mute, selected receiver audio (Override Type). The intercom shall provide switchable "hot mike" and "push-to-talk" capability for the pilot and the spotter/gunner. An intercom audio level control shall be provided for adjusting the individual earphone audio to a comfortable listening level. Microphone operation on the intercom system shall be via PTT switches.

B8.4.6.9.1 Sidetone audio shall be provided to the earphone connector associated with the microphone in operation.

B8.4.6.9.2 The audio output shall be capable of 100 mW (600 ohms) with less than 10 percent distortion.

B8.4.6.10 Avionics Installation and Maintenance Standards.

B8.4.6.10.1 All avionics systems used in or on the aircraft for this contract and their installation and maintenance shall comply with all manufacturers' specifications and applicable Federal Aviation Regulations contained within 14 CFR regardless of any exclusion for public aircraft allowed in 14 CFR.

B8.4.6.10.2 Strict adherence to the recommendations in FAA AC 43.13-1A Chapter 11, "Electrical Systems", and Chapter 15, "Radio and Electronic Systems," as well as AC 43.13-2A Chapter 1, "Structural Data", Chapter 2, "Radio Installation," and Chapter 3,"Antenna Installation," is required. All avionics systems requiring an antenna shall be installed with a properly matched aircraft-certified, broadband antenna unless otherwise specified.

B8.4.6.10.3 All avionics systems requiring an antenna shall be installed with a properly matched, aircraft-certified antenna unless otherwise specified. Antennas shall be polarized as required by the avionics system, and have a VSWR less than 2.5 to 1.

B8.4.6.10.4 Avionics equipment mounting location and installation shall not interfere with passenger safety, space, and comfort. Avionics equipment will not be mounted under seats designed for deformation during energy attenuation. In all instances, the designated are as for collapse shall be protected.

B8.4.6.10.5 Although the aircraft to be provided may not be certified for IFR flight, the aircraft's static pressure system, altimeter instrument system, and automatic pressure altitude reporting system shall be maintained in accordance with the IFR requirements of 14 CFR 91.411 and inspected and tested every 24 calendar months as specified by 14 CFR Part 43, appendices E and F.

**B8.4.7 Maintenance Requirements.**

B8.4.7.1 Airworthiness Directives (ADs) & Manufacturer's Mandatory Service Bulletins (MMSBs). All applicable FAA ADs and required MMSBs shall be complied with prior to the performance of this contract. A list of FAA ADs and required MMSBs on the make and model of aircraft offered shall be made available. The list will be similar to that in Advisory Circular AC 43-9B. Signature of persons verifying accuracy of the list is required. All ADs and required MMSBs published during the contract shall be complied with.

B8.4.7.2 Time Between Overhaul (TBO) And Life Limited Parts.

B8.4.7.2.1 All components, including engines, shall be replaced upon reaching the factory recommended TBO or FAA-approved extension. Life limited parts shall be replaced at the specified time in service hours or cycles.

B8.4.7.2.2 Aircraft operated with components or accessories on approved TBO extension programs are acceptable provided, (1) the Vendor is the holder of the approved extension

authorization (not the owner if the aircraft is leased), and (2) the Vendor operates in accordance with the extension authorization.

B8.4.7.2.3 The Vendor shall supply, at the time of the initial agency inspection, a list of all items installed on the aircraft that are required to be overhauled or replaced on a specified time basis. This list shall include the components name, part number, serial number, total time, service life (or inspection/overhaul time interval), and time and date when component was overhauled, replaced, or inspected.

**ATTACHMENT 4**
**FIRST AID & SURVIVAL KITS**

These are minimum required items for Special Use Activities in the United States and U.S. Possessions. Additional survival kit items are required for flight activities conducted in Canada and Alaska.

**Minimum First Aid Kit Items**

Each kit must be in a dust-proof and moisture-proof metal or heavy plastic container. The kit must be readily accessible to the pilot and passengers.
Passenger Seats Passenger Seats
Item 0-9 10-50
Adhesive bandage strips, (3"long) 8 16
Antiseptic or alcohol wipes (pkts) 10 20
Bandage compresses, 4" 2 4
Triangular bandage, 40" (sling) 2 4
Roller bandage, 4"x 5 yds (gauze) 2 4
Adhesive tape, 1"x 5 yds (std roll) 1 2
Bandage scissors 1 1
Body Fluids Barrier kit: 1 1
2 - pair latex gloves
1 - face shield
1 - mouth-to-mouth barrier
1 – protective gown
2 – antiseptic towelettes
1 – biohazard disposable bag
**NOTE**: Splints are recommended if space permits.

**Minimum Aircraft Survival Kit Items**
Knife
Signal mirror
Signal flares (six each)
Matches (two small boxes in waterproof containers)
Space blanket (one per occupant)
Sleeping bag

Water (one quart per occupant [not required when operating over areas with adequate drinking water])
Food (two days emergency rations per occupant)
Candles
Water purification tablets
Collapsible water bag
Whistle
Magnesium fire starter
Nylon rope or parachute cord (50 feet)

**For travel over rain forest areas, the following additional requirements:**
Heavy plastic sheeting or waterproof tarps (2 each – 8' X 10")
Machete (2 each)
Flares carried shall be capable of penetrating above a forest canopy of 60'