

## **Chapter - 6**

### **Fire Fighting Equipment and Materials**

#### **A. Engines**

##### **1. Engine Crew Staffing**

- a. Type 6 and 7 engines will have a minimum crew of two - an engine boss (ENGB) and a firefighter Type II (FFT2).
- b. Type 3, 4 or 5 engines will have a minimum crew size of three:
  - Single resource engines will be comprised of an ENGB, and two or more FFT2s.
  - Task force engines will have an ENGB and the appropriate number of FFT2s.

##### **2. Performance Requirements for Engine Crews**

The following performance requirements are based on the daily duties of engine crew personnel and may exceed the standards listed in the National Wildland Fire Coordinating Group (NWCG), *Wildland Fire Qualification System Guide (PMS 310-1)*. These performance requirements must be evaluated during the Preparedness Review process.

- a. Policy
  - The following regulations, in conjunction with the work/rest guidelines (see Chapter 9, Driving Limitations), can help Agency Administrators/Line Officers and fire managers to provide for the safety of fire personnel who ride in or operate Bureau fire apparatus.
  - The Federal Motor Carriers Safety Regulations apply to commercial vehicles and interstate transportation. However, the federal government is exempt from 49 CFR 390. This exemption is found in Part 390.3, General Applications, which states: (f) Exceptions. Unless otherwise specifically provided, the rules in the sub-chapter do not apply to... (5) The operation of fire trucks and rescue vehicles while involved in emergency and related operations. The current Bureau manual (9210.53) defines "driving" as the operation of a fire apparatus to or from an incident on a designated highway or roadway. This language is consistent with 49 CFR 390.3.

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b. Casuals Hired as Drivers When Employed By BIA

See Chapter 10 Business Management and Administration.

c. BIA employees as drivers for wildland fire operations

See Chapter 10 Business Management and Administration.

d. Commercial Driver's License (CDL)

Although 390.3 exempts fire vehicles, BIA policy requires a CDL for all operators of vehicles 26,001 GVW and over.

e. Driving Limits

- Federal law restricts those driver's whose assignment requires a CDL, vehicles over 26,001 lbs. and buses, to no more than 10 hours driving time in a duty period with 8 hours between shifts.
- Drivers who's duty period is not limited by law may not exceed 10 hours of driving time in a within any duty day with 8 hours between shifts.
- Multiple drivers in a single vehicle may drive up to the duty-day limitation provided no driver exceeds the individual driving (behind the wheel) time limitation of 10 hours.
- A driver shall drive only if they have had at least 8 consecutive hours off duty before beginning a shift.
  - Exception: Exception to the minimum off-duty hour requirement is allowed when essential to 1) accomplish immediate and critical suppression objectives, or 2) address immediate and critical firefighter or public safety issues. A driver shall drive only if they have had at least 8 consecutive hours off duty before beginning a shift.
- Documentation of mitigation measures implemented to manage fatigue, as provided by the existing work rest guidelines, is also required for drivers who exceed 16 hour work shifts. This is required regardless of whether the driver is still compliant with the 10 hour individual (behind the wheel) driving time limitations

f. Speed Limits/State Laws

Operation of all vehicles must abide by state traffic regulations. Operations of all vehicles will be conducted within the limits specified by the manufacturer. Limitations based on tire maximum speed ratings and Gross Vehicle Weight (GVW) must be followed. It is the vehicle operator's responsibility to ensure vehicles meet these and any other limitations specified by the Bureau or state regulations.

**3. Standards for Wildland Engines**

a. Engine Typing and respective standards are identified in the *NWCG Fireline Handbook, (PMS 410-1)*.

b. Apparatus safety and operational inspections will be accomplished either on a post-fire or daily basis. Offices are required to use this document for guidelines and record keeping. Periodic maintenance (as required by the manufacturer) shall be performed at the intervals recommended and properly documented. All annual inspections should include a pump test to assure the pump/plumbing system is operating at desired specifications.

c. Lighting

It is highly recommended, but not required, that the lighting package meet National Fire Protection Association (NFPA) standards. Fire Management Officers (FMOs) may equip engines in service with overhead lighting packages. While off-road and/or during suppression activities, headlights and taillights shall remain illuminated at all times the vehicle is in operation. In addition, overhead lighting (or other appropriate emergency lights) shall be illuminated whenever visibility is reduced to less than 300 feet. Light bars, flashing lights, strobe lights, and other lighting equipment designed for emergency use, shall only be used for designated purposes during suppression operations and emergencies. Specific approval and training must be provided for these special uses.

d. Chocks

At least one chock will be carried on each engine and will be properly installed whenever the engine is parked or left unattended. This includes engine operation in a stationary mode without a driver "in place."

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### e. Fire Extinguishers

All engines will have at least one 5 lb. ABC-rated (minimum) fire extinguisher, either in full view or in a clearly marked compartment.

### f. On-Board Flammable Liquid Storage

Office of Safety and Health Administration (OSHA) regulations state that only approved metal containers, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designated that it will safely relieve internal pressure when subject to fire exposure, be used for storing or transporting flammable liquids (29 CFR 1910.106). To comply with OSHA requirements and bureau directives, only OSHA approved, type II metal safety cans should replace plastic containers and traditional metal "Jerry Cans." (This does not apply to the 2-in-1 polyethylene containers used to fill chain saws nor to the Jerry can used to fuel Mark III pumps.) All flammable liquids and solids carried on engines will be stored in appropriate containers clearly marked as to their contents.

### g. First Aid Equipment

Each engine shall carry, at a minimum, a properly equipped 10-person first aid kit. It is strongly recommended that an adequate number of Water Jel burn packs be included.

## 4. Operational Procedures

All engines will be equipped, operated, and maintained within guidelines established by the Department of Transportation (DOT) and state/local operating plans, (including weight). All personnel assigned to BIA fire engine modules will meet all gear weight, cube, and manifest requirements specified in the national mobilization guide.

## 5. Engine Equipment Inventory

An inventory of supplies and equipment carried on each vehicle is required to maintain accountability and to obtain replacement items lost or destroyed on incidents. Recommended stocking for Bureau engines is shown in **Appendix 6-1**.

## 6. Suppression Chemicals & Delivery Systems

### a. Foam

- Guidelines

Technical guidelines for equipment operations and general principals of foam application are discussed in *Foam vs. Fire, Class A Foam for Wildland Fires*. NWCG, PMS-446-1, NFES 2246, 2<sup>nd</sup> ed., October 1993 and *Foam vs. Fire, Aerial Applications*, NWCG, PMS 446-3, NFES 1845, October 1995.

- Policy

Standard operating procedures for fire management and suppression activities involving water as the suppression or protection agent delivered by engines and portable pumps, shall include the use of an approved Class A foam concentrate to improve the efficiency of water-except near watercourses where accidental spillage or over spray of the chemical could be harmful to the aquatic ecosystem. Foam can also be delivered by helicopters and Single Engine Airtankers (SEAT's).

- Proportioners and Nozzles

- 1) Proportions are designed to provide an appropriate mix of foam concentrate and water during pumping operations rather relying on batch mixing to prepare foam solutions. Both manual and automatic proportioner systems are available. Specific agency standards may require the used of a specific type system. Manually regulated proportioners, such as around-the-pump proportioners, in-line and by-bass educators, and suction-side regulators, are acceptable for remote portable pump and wildland fire engine operations when the operator understands the device limitations.  
These devices are available as a foam kit for use with portable pumps. Around-the-pump proportioners are common on BIA Model 52 wildland fire engines.
- 2) Automatic proportioners are required for compressed air foam systems to prevent slug flow. Automatically regulated proportioners, such as Robwen Flowmix 500 or Foam Pro 1600 are recommended.
- 3) Proportioners should be flushed after every operational period of use.
- 4) Conventional Nozzles and Backpack Pumps - Mix ratio is 0.1-0.3%. Hydraulic considerations are the same as water.

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- 5) Aspiring Nozzles - Mixture ratio is 0.2 - 1.0%, but generally 0.5%, depending on nozzle, "foaminess" of concentrate used, and type of application. Adjust the ratio to best meet needs and objectives. Foam production and delivery should occur as readily as would water delivery.
- Compressed Air Foam Systems (CAFS)
    - 1) Keep Static air and water pressure equal.
    - 2) Start with a 0.3% mix ratio; adjust if necessary
    - 3) Generally operate with 1 cfm of air for every gpm of water; adjust if necessary.
    - 4) Employ a motionless mixer or 100 feet of hose to develop foam in the hose.
    - 5) Foam production and delivery should occur as readily as water delivery.
  - Personal Safety and Protection
    - 1) Foam concentrates and solutions must be tested to meet minimum requirements with regard to mammalian toxicity, acute oral toxicity, acute dermal toxicity, primary skin irritation, and primary eye irritation (*International Specifications for Class A Foam for Wildland Fires, Aircraft or Ground Application, August 1993*).
    - 2) Personnel involved in handling, mixing, and applying foam concentrates or solutions should be trained in proper procedures to protect their health and safety as well as that of the environment.
    - 3) Personnel must follow the manufacturer's recommendations as found on the product label and product Material Safety Data Sheet (MSDS).
    - 4) Approved foam concentrates are mildly to severely irritating to the eyes. Anyone involved with or working in the vicinity of foam concentrates should use protective splash goggles
    - 5) Containers of foam concentrate or solutions, including backpack pumps and engine tanks, should be labeled to alert personnel that they do not contain plain water, and that the contents must not be used for drinking purposes.
    - 6) Slickness is a hazard at storage areas and unloading and mixing sites. Because foam concentrates and solutions contribute to slippery conditions, all spills must be cleared up immediately.
    - 7) Personnel applying foam should stand in untreated areas. A foam blanket can be dangerous to walk through because it conceals ground hazards. Also, foam readily

penetrates and corrodes leather boots, resulting in wet feet and potentially ruined leather.

- 8) All safety precautions associated with ground crews near retardant drops also apply to aerial foam drops.
- 9) Personnel assigned to operate a compressed air foam system must be trained in safety CAFS operations, including operating the nozzle, working around charged hose lays, and how to prevent slug flow.

b. Long-Term Retardant

- Principles of application and coverage levels are outlined in "NFES 2048, PMS 440-2".

- Policy

Using environmentally approved long-term retardants in wildfire suppression efforts is standard in fire management and planning. The retardants are most often delivered in fixed-or-rotor-wing aircraft. Environmentally approved retardants currently contain sulfate or phosphate salts.

- Operational Principles

- 1) Use retardant drops before an immediate need is recognized; pretreat according to expected fire behavior.
- 2) Retardant dropped in the morning will still be effective in the afternoon.
- 3) Build progressive retardant lines.
- 4) Use retardant drops to cool areas (reduce flame length), as necessary, in support of ground forces.
- 5) Be sure the line is clear of personnel prior to dropping retardant.
- 6) Be alert for gaps in retardant lines.
- 7) Expect fixed-wing vortices and rotor-wing down wash.
- 8) Wildfires can burn around, under, spot over, and with enough intensity, through retardant lines.

- Safety

- 1) Environmentally approved long-term retardants are tested to meet specific minimum requirements regarding mammalian toxicity in the following areas: acute oral toxicity, acute dermal toxicity, primary skin irritation, and primary eye irritation.
- 2) Some environmentally approved long-term retardants are mildly irritating to the eyes. Personnel that mixes or

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handles retardants, and those near retardant drops, should use protective goggles.

- 3) Retardant drops can cause slippery footing and slippery tool handles. Take care when walking through areas that have had retardant applied; tool handles should be wiped clean of retardant.
  - 4) Personnel involved in handling, mixing, and loading retardant should be trained in proper procedures to protect their health and safety.
  - 5) Personnel should not be under a retardant drop. The target or drop area must be clear of personnel prior to the drop.
  - 6) Persons downrange, but in the flight path of intended retardant drops, should also move to a location that will decrease the possibility of being hit with retardant if a drop goes long.
  - 7) Persons near retardant drops should be alert for objects (tree limbs, rocks, etc.) that the drop could dislodge.
- Environmental Guidelines
    - 1) Due to the sensitivity of aquatic habitats, the application of foam and retardant into bodies of water must be avoided. Leave at least a 300-foot buffer zone from the water.
    - 2) To reduce impacts to the environment:
      - (a) During training or briefings, inform field personnel of the potential danger of fire chemicals, especially concentrates, in streams and lakes.
      - (b) Locate foam and retardant mixing and loading areas and dip-tank sites to minimize contact with natural bodies of water.
      - (c) Exercise care to avoid spills at mixing, loading, and application areas—especially near streams.
      - (d) Notify authorities promptly of any fish kill or spill into a water body. Under the Endangered Species Act (ESA) federal agencies are required to consult with the National Marine Fisheries Service (NMFS) on any action that may affect listed species.
      - (e) Minimize or avoid dipping from rivers or lakes with a helicopter during foam and retardant operations. Set up an adjacent reload site and manage the foam and retardant in portable tanks, or terminate the use of chemicals for that application.

## 2. National Model 52 Wildland Engine Program

The Model 52 Wildland Engine program was embraced by the BIA in 1996. The objective of the program is to provide replacement parts (charged to a respective account), refurbishing, training and fabrication of Model 52 pumping systems through a centralized process. Detailed information on the program can be found in the BIA *National Model 52 Wildland Engine Program Operations Guide*.

### a. Mission/Policy

- Provide a standardized Model 52 for the participating Agency or Tribe.
- Provide an opportunity to supply trucks for Model 52 pumping systems.
- Provide refurbishments and repair services for Fire Management Planning Analysis (FMPA) approved number of engines.
- Provide training in the use and maintenance of the Model 52 pumping system.
- Evaluate new equipment and Model 52 improvements to meet the wildland fire program needs.
- Provide emergency repair services or replacements for Model 52s.

### b. Organization

The program is organized into three geographical areas.

- Northern Center (Missoula, MT) covers the Northwest, Rocky Mountain, and Pacific Regions.
- Northern Center (Eagle Butte, SD) covers the Great Plains, Midwest and Eastern Regions.
- Southwest Center (Dulce, NM) covers the Southwest, Western, Navajo, Eastern Oklahoma and Southern Plains Regions.

### c. Administration

- The program is administered through the National Wildland Fire Management Office at the National Interagency Fire Center, Boise, Idaho.
- A Board has been established to plan, develop and budget for the annual operations of the program. The board is comprised of the Model 52 Program Leads at each center and the Assistant Director, Fire Operations.

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- Trucks and fabrication supplies for the Model 52 is procured through the BIA-National Interagency Fire Center office.

### **B. Dozers**

#### **1. Policy**

Personnel assigned as Agency/Tribal dozer operators will meet the training standards for a FFT2. This includes all safety and refresher training, including annual review of the 10 Standard Fire Orders, 18 Watch Out Situations, and principles of LCES, and fire shelter use and deployment. While on fire assignment, all operators and support crew will meet PPE requirements including the use of aramid fiber clothing, hard hats, fire shelters, etc.

#### **2. Operational Procedures**

- a. Since dozers operate independently, communication is essential between operators, support crew, and supervisors. BIA dozers will be equipped with programmable two-way radios, configured to allow the operator to monitor radio traffic. If not addressed in the contract, contract dozers or offer-for-hire dozers must also be provided with radio communications, either through a qualified dozer boss or an agency-supplied radio.
- b. Operators of dozers and transport equipment will meet the DOT certifications and requirements regarding the use and movement of heavy equipment-including driving limitations, CDL requirements, and pilot car use.
- c. Physical Fitness Standards
  - Physical Fitness Standards will be defined locally.

### **C. All-Terrain Vehicles**

The operation of an All-Terrain Vehicle (ATV) is considered high risk and should be utilized only when essential to accomplishment of the mission and not as a matter of convenience. Because of the high risk nature of ATV operations, BIA wildland fire personnel will follow the specific operational policy as highlighted below:

#### **1. ATV Requirements**

- a. Four to six wheels.

- b. Cargo capacity adequate to carry load required for task being accomplished (see manufacturer's specifications).
- c. Rack capacity adequate (see manufacturer's specifications).
- d. Heavy duty or puncture resistant tires.
- e. Liquid engine cooling system or auxiliary fan if engine is air-cooled.

## **2. Auxiliary Equipment**

- a. Fire extinguisher
  - Minimum 2.5 lbs., Type B-C
  - Mounted to be easily accessible

## **3. PPE Requirements**

- a. Nomex shirt and pants
- b. 8" leather boots
- c. Leather gloves
- d. Eye protection (goggles, face shield or safety glasses)
- e. Fire shelter
- f. Helmet (DOT, ANSI-90, or SNELL M-95 approved)

## **4. Communications Equipment**

- a. Working radios
- b. Extra batteries

## **5. Operations**

- a. The standard wildland hardhat is not acceptable protection for ATV use, and will not be worn as a substitute for an approved helmet while operating an ATV.
- b. No passengers will be carried except in emergency situations or if the vehicle was originally designed for more than one rider.
- c. Operating speed will be appropriate for the conditions and terrain.

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- d. Loads shall be mounted and secured so as to not affect the vehicle's center of gravity.
- e. Load weights shall not exceed manufacturer's recommendations.
- f. A risk assessment must be completed and approved by the supervisor prior to vehicle operation. (ATV JHA in **Appendix 6.2** may be used as an example)
- g. Earbuds are recommended so the driver can hear the radio while operating the ATV.

### **6. Training**

ATV operators are required to attend a basic agency or industry-provided ATV Operator Safety Course before being awarded the competency of ATVO in IQCS.

## APPENDIX 6-1 Engine Equipment Inventory

Category	Item Description	NFES #	Type		
			3,4&5	6	
Fire Tools & Equipment	McLeod	0296	1	1	
	Combination Tool	0346	1	1	
	Shovel	0171	3	2	
	Pulaski	0146	3	2	
	Backpack Pump	1149	3	2	
	Fusees (case)	0105	1	½	
	Foam, concentrate, Class A (5-gallon)	1145	1	1	
	Chain Saw (and Chaps)		1	1	
	Chain saw Tool Kit	0342	1	1	
	Drip Torch	0241	2	1	
	Portable Pump		*	*	
	Medical	First Aid Kit, 10-Person	0068	1	1
		Burn Kit		1	1
Body Fluid Barrier Kit		0640	1	1	
General Supplies	Flashlight, general service	0069	1	1	
	Chock blocks		1	1	
	Tow Chain or Cable	1856	1	1	
	Jack, hydraulic (comply w/GVV)		1	1	
	Lug Wrench		1	1	
	Pliers, fence		1	1	
	Food (48 hour supply)	1842	1	1	
	Rags	3309	*	*	
	Rope/Cord (feet)		50	50	
	Sheeting, plastic, 10' x 20'	1287	1	1	
	Tape, Duct	0071	1	1	
	Tape, filament (roll)	0222	2	2	
	Water (gallon/person) minimum		2	2	
	Bolt Cutters		1	1	
	Toilet Paper (roll)	0142	*	*	
	Cooler or Ice Chest	0557	*	*	
	Hand Primer, Mark III	0145	*	*	
	Hose Clamp	0046	2	2	
	Gaskets (set)		1	1	
	Pail, collapsible	0141	1	1	
Hose Reel Crank		*	*		

**Engine Equipment Inventory, cont.**

<b>Safety</b>	Fire Extinguisher	2143	1	1
	Flagging, lime green (roll)	0258	*	*
	Flagging, yellow w/black stripes (roll)	0267	*	*
	Fuel Safety Can (OSHA, metal 5 gallon)	1291	*	*
	Reflector Set		*	*
<b>Vehicle &amp; Pump Support</b>	General Tool Kit (5180-00-177-7033/GSA)		1	1
	Oil, automotive, quart		4	2
	Oil, penetrating can		1	1
	Oil, automatic transmission, quart		1	1
	Brake Fluid, pint		1	1
	Filter, gas		1	1
	Fan belts		1	1
	Spark plugs		1	1
	Hose, air compressor w/adapters		1	0
	Fuses (set)		1	1
	Tire Pressure Gauge		1	1
	Jumper Cables		1	1
	Battery Terminal Cleaner		*	*
	Tape, electrical, plastic	0619	1	1
	Tape, Teflon		1	1
<b>Radio</b>	Portable		1	1
	Mobile		1	1
	Batteries (for portable radio)		2	2
<b>Personal Gear (Extra Supply)</b>	File, mill bastard	0060	*	*
	Head Lamp	0713	1	1
	Hard Hat	0109	1	1
	Goggles	1024	2	2
	Gloves		*	*
	First Aid Kit, individual	0067	1	1
	Fire Shirt		*	*
	Fire Shelter w/case & liner	0169	2	1
	Packsack	0744	2	1
	Batteries, headlamp (pkg)	0030	6	4
	Ear Plugs (pair)	1027	3	3
Dust Mask	0131	6	4	

**Engine Equipment Inventory, cont.**

<b>Hose</b>	Booster (feet/reel)	1220	100	100
	Suction (length, 8' or 10')		2	2
	1" NPSH (feet)	0966	300	300
	1½" NH (feet)	0967	300	300
	¾" NH, garden (feet)	1016	300	300
	1½" NH, engine protection (feet)		20	20
	1½" NH, refill (feet)		15	15
<b>Nozzle</b>	Forester, 1" NPSH	0024	3	2
	Adjustable, 1" NPSH	0138	4	2
	Adjustable, 1½" NH	0137	5	3
	Adjustable, ¾" NH	0136	4	2
	Foam, ¾" NH	0627	1	1
	Foam, 1½" NH	0628	1	1
	Mopup Wand	0720	2	1
	Tip, Mopup Wand	0735	4	2
	Tip, forester nozzle, fog	0903	*	*
	Tip, forester nozzle, straight stream	0638	*	*
<b>Wye</b>	1" NPSH, Two-Way Gated	0259	2	1
	1½" NH, Two-Way Gated	0231	4	2
	¾" NH w/Ball Valve, Gated	0739	6	4
<b>Adapters</b>	1" NPSH-F to 1" NH-M	0003	*	*
	1" NH-F to 1" NPSH-M	0004	1	1
	1½" NPSH-F to 1½" NH-M	0007	1	1
	1½" NH-F to NH-F to 1½" NPSH-M	0006	*	*
<b>Increasesers</b>	¾" NH-F to 1" NPSH-M	2235	1	1
	1" NPSH-F to 1½" NH-M	0416	2	1
<b>Coupling</b>	1" NPSH, Double Female	0710	1	1
	1" NPSH, Double Male	0916	1	1
	1½" NH, Double Female	0857	2	2
	1½" NH, Double Male	0856	1	1
<b>Reducer/ Adapters</b>	1" NPSH-F to ¾" NH-M	0733	3	3
	1½" NH-F to 1" NPSH-M	0010	6	4
	2" NPSH-F to 1½" NH-M	0417	*	*
	2½" NPSH-F to 1½" NH-M	2229	*	*
<b>Reducer</b>	1½" NH-F to 1" NH-M	0009	1	1
	2.5" NH-F to 1½" NH-M	2230	1	1
<b>Tee</b>	1" NPSH-F x 1" NPSH-M x 1" NPSH-M w/cap	2240	2	2
	1½" NH-F x 1½" NH-M x 1" NPSH-M w/cap	0731	2	2
	1½" NH-F x 1½" NH-M x 1" NPSH-M w/valve	0230	2	2

**Engine Equipment Inventory, cont.**

<b>Valve</b>	1½" NH-F, Automatic Check and Bleeder	0228	1	1
	¾" NH, Shut Off	0738	5	5
	1" Shut Off	1201	1	1
	1½" Shut Off	1207	1	1
	Foot w/strainer		1	1
<b>Ejector</b>	1" NPSH x 1½" NH x 1½" NH, Jet Refill	7429	*	*
<b>Wrench</b>	Hydrant, adjustable, 8"	0688	1	1
	Spanner, 5", 1" to 1½" hose size	0234	4	1
	Spanner, 11", 1½" to 2½" hose size	0235	2	2
	Pipe, 14"	0934	1	1
	Pipe, 20"		1	1
<b>Engine</b>	Fireline Handbook	0065	1	1
	Belt Weather Kit	1050	1	1
	Binoculars		1	1
	Map Case w/map		1	1
	Inventory List		1	1
	<i>Standards for Fire and Aviation Operations</i>		1	1

\* No minimums - carried by engine as an option, within weight limitations.

## Appendix 6-2 ATV Job Hazard Analysis, Page 1

U.S. Department of Interior Bureau of Indian Affairs  JOB HAZARD ANALYSIS (JHA)	<b>1. WORK PROJECT/ACTIVITY</b> ATV use for Fire Operations  <b>4. NAME OF ANALYST</b>	<b>2. LOCATION</b> Nationally  <b>5. JOB TITLE</b>	<b>3. UNIT</b>   <b>6. DATE PREPARED</b>
<b>7. TASKS/PROCEDURES</b>  Riding ATV's on road and trails	<b>8. HAZARDS</b>  Falls  Head Injuries  Ankles and Knee injuries  Hand and wrist injuries  Dehydration  Hypothermia  Weigh Distribution  Secure Load  Avoid Sight Restrictions	<b>9. ABATEMENT ACTIONS</b> Engineering Controls - Substitution - Administrative Controls - PPE  Ride only on trails within the technical capacity and at a safe speed. Use approved Personal Protective Gear (PPE): goggles, sturdy boots, and gloves. If a rapid stop is required, apply front and rear brakes evenly. Always wear a helmet and watch the trail ahead for low hanging limbs and shrubs.  Keep your feet on the foot pegs when the machine is in motion. If the ATV falls over be sure to keep your legs and feet away from getting under the machine. Install and use the hand protectors on the handlebars and operate the ATV wearing gloves. Carry plenty of drinking water with use and drink water frequently during hot weather. Wear clothing in layers to adjust to changing weather and temperatures. Carry additional clothing if necessary. Distribute the weigh as follows: 2/3rds of weigh should be placed on the back rack and 1/3 of the weight on the front rack. When using ATV trailers, minimize the load ATV racks. The load must be secured with tie downs, bungee cord or straps in an even manner. Do not load the front rack on such a way that it impedes safe vision. Keep the load low enough not to block your sight.	
<b>10. LINE OFFICER SIGNATURE</b>  Previous edition is obsolete	<b>11. TITLE</b>	<b>12. DATE</b>	

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## ATV Job Hazard Analysis, Page 2

JHA Instructions	Emergency Evacuation Instructions																												
<p>The JHA shall identify the location of the work project or activity, the name of employee(s) involved in the process, the date(s) of acknowledgment, and the name of the appropriate line officer approving the JHA. The line officer acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.</p> <p>Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.</p> <p>Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).</p> <p>Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:</p> <ol style="list-style-type: none"> <li>a. Research past accidents/incidents.</li> <li>b. Research the Health and Safety Code, or other appropriate literature.</li> <li>c. Discuss the work project/activity with participants.</li> <li>d. Observe the work project/activity.</li> <li>e. A combination of the above.</li> </ol> <p>Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:</p> <ol style="list-style-type: none"> <li>a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture.</li> <li>b. Substitution. For example, switching to high flash point, non-toxic solvents.</li> <li>c. Administrative Controls. For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices.</li> <li>d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills, and portable water pumps).</li> <li>e. A combination of the above.</li> </ol> <p>Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.</p> <p>Blocks 11 and 12: Self-explanatory.</p>	<p>Work supervisors and crewmembers are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the worksite.</p> <p>Be prepared to provide the following information:</p> <ol style="list-style-type: none"> <li>a. Nature of the accident or injury (avoid using victim's name).</li> <li>b. Type of assistance needed, if any (ground, air, or water evacuation).</li> <li>c. Location of accident or injury, best access route into the worksite (road name/number), and any ground/air landmarks.</li> <li>d. Radio frequencies.</li> <li>e. Contact person.</li> <li>f. Local hazards to ground vehicles or aviation.</li> <li>g. Weather conditions (wind speed &amp; direction, visibility, temperature).</li> <li>h. Topography.</li> <li>i. Number of individuals to be transported.</li> <li>j. Estimated weight of individuals for air/water evacuation.</li> </ol> <p>The items listed above serve only as guidelines for the development of emergency evacuation procedures.</p> <p style="text-align: center;"><b>JHA and Emergency Evacuation Procedures Acknowledgment</b></p> <p>We, the undersigned work leader and crewmembers, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%; text-align: center;">SIGNATURE</th> <th style="width: 15%; text-align: center;">DATE</th> <th style="width: 30%; text-align: center;">SIGNATURE</th> <th style="width: 15%; text-align: center;">DATE</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>	SIGNATURE	DATE	SIGNATURE	DATE	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
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