FS-6700-7 (2/98)

U.S. Department of Agriculture Forest Service	1. WORK PROJECT/ACTIVITY	2. LOCATION	3. UNIT
	Chainsaw Operations	**Boise National Forest**	**Forest wide**
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST	5. JOB TITLE	6. DATE PREPARED
References-FSH 6709.11 and -12 (Instructions on Reverse)	**Tom Shepard** **George Solverson**	**Forest Lead Chainsaw Instructor** **Forest Safety Officer**	**11/18/02**

7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE
I. GENERAL CHAINSAW OPERATIONS: **1. Obtaining Certification and Training**	**Serious potential injury attempting to operate saw outside of skill and training level.**	**Maintain Required Qualifications:** **1. Current first aid/CPR, Blood borne Pathogens, and Hazcom – (employee right to know) training** **2. Successfully complete an approved chain saw program (classroom and field training encompassing in part or in total a national training program (Wildfire Power Saws S-212, or MTDC Chain saw course)** **Chain saw program training/certification elements include:** **1. Demonstration of sawing ability according to Boise N.F. chain saw policy. (Refer to BNF Supp. 6700.2002-1 for detailed certification direction)** **2. Employees certified for the first time should be supervised by a certified instructor, or certified operator when operating a chain saw during project work** **3. First line supervisors should monitor proficiency of sawyers to recognize additional recertification/ training needs** **4. Recertification training required a minimum every 3 years for nonfire personnel** **5. Follow risk management procedures**
2. Tailgate safety meeting	**Site specific hazards not identified**	**Hold tailgate safety meetings at start of project, once weekly, and if conditions or crew personnel change**

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3. Fueling	Fire from gas spilled on muffler or other ingnition source	1. Let saw cool before refueling 2. Fuel up on bare ground, prevent spillage during fueling 3. NO SMOKING DURING REFUELING 4. Move at least 10 feet away from fueling area before starting saw 5. Stay 20 feet away from ingnition sources when fueling 6. Replace excessively gas/oil soaked gloves 7. Read, and be familiar with MSDS 8. Mix fuel in well ventilated area 9. Clean up spills promptly 10. Use labeled containers
	Chemical burn from gas spilled on clothes, skin, eyes.	1. Wear gloves and safety eye wear 2. Remove contaminated clothing and gloves, immediately wash exposed area with soap and water
4. Saw Maintenance	Improperly operating saw may lead to fatigue, injury	1. Keep saw in good working order 2. Ensure spark arrester is in good condition 3. Keep idle adjusted properly 4. Inspect bar for wear, and proper chain tension 5. Do not use a saw not properly maintained
5. Sharpening Chain	Cuts to hands	1. Wear gloves when sharpening chain 2. When sharpening chain use a vise if available 3. Never file chain while saw is running 4. Keep guard over chain when saw is not in use 5. Understand proper angle, raker height, and filing 6. Adjust raker height as needed but avoid taking too much off
6. Transporting Saw by: * Hand	Cuts from chain or dogs due to tripping while carrying the saw	1. Point bar forward when going downhill with saw at side 2. Keep bar to rear if going uphill with saw at side 3. Use shoulder pad and chain and/or dog guard when carrying saw on shoulder
	Burns from muffler	1. Always keep muffler away from body

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6. Transporting Saw by: (cont.)		
* Vehicles	Damage to vehicle and vehicle occupants	1. Driver and passengers shall not ride in the enclosed cargo portion of vehicle hauling flammable/combustible liquids, and chain saws 2. Ensure that fuel will not leak during transport, download fuel if necessary to prevent leak 3. Bars should be covered with commercial covering, chaps, etc. 4. Chain saws should be secured
* Fixed wing aircraft	Damage to the carriers, aircraft, and flammable fumes	1. Purge saw prior to air tranport 2. Wrap or place saw in leak resistant container 3. Cover bar and dogs 4. Check in with representative for commercial airlines
* Helicopter	Aphyxiation, damage to helicopter, and flammable fumes	1. Keep bar/dogs covered 2. When approaching helicopter, carry saw below waist with bar pointing down, and to the rear 3. Follow helitack crew member instructions on loading saw 4. If helitack is not available, load saw into cargo hold, then check with pilot 5. Do not place saw in passenger area 6. When off-loading permit helitack to remove saws 7. Move to secure area until it is safe to retrieve unloaded saw 8. Long-lined saw must be secured and prevented from leaking
II. GENERAL CUTTING	Cuts to body	Wear required PPE: 1. Sturdy leather gloves 2. Long-sleeve (non-synthetic) shirt 3. FS approved chainsaw chaps (min. 2 inches boot overlap)
	Struck on head by falling material	▪ Wear FS approved hard hat
	Struck in eye by flying objects	▪ Wear approved (ANSI Z-87 marked) safety eye glasses
	Hearing loss	1. Wear ear protection 2. Follow direction outlined in Forest Hearing Conservation Program – Annual hearing test
	Slips, trips, and falls	▪ Wear 8 inch-high, heavy-duty, nonskid sole, laced, cut-resistant leather boots

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II. GENERAL CUTTING Cont.	Cuts to body from thrown chain	1. To reduce risk of throwing chain, check chain tension each time saw is refueled 2. Do not operate saw above shoulder height
	Fatigue	1. Take frequent rest breaks as needed 2. Alternate cutting tasks, and ask for additional sawyers if needed 3. Stop cutting when tired
	Back injury and pulled muscles, torn ligaments	1. Do not attempt to carry heavy logs 2. Cut materials to sizes which can be safely carried or ask for help
	Heat exhaustion and hypothermia	1. Wear proper clothing for time of year and weather conditions 2. Wear layers that can be removed or added to, as conditions dictate 3. Take breaks, drink fluids
	Lack of communications with employees in cutting area	1. Radio contact from cutting operations will be maintained with dispatch or ICP 2. Verbal and visual communications will be established and maintained with crewmembers
	Serious cuts to body from KICKBACK	1. Keep bar tip extended through the cut, keep bar tip clear of all other objects, wear protective equipment 2. Ensure saw has a chain break 3. Keep thumb and fingers wrapped around handlebar at all times
	Cuts to co-workers in area	1. Maintain a minium 10 feet spacing 2. Be alert, and do not permit co-workers to work immediately behind sawyer 3. Shut off saw, and/or engage chain break if co-worker needs to access the area near the saw
	Slips/trips/fall	1. Step over logs, not on them 2. Clear work area around material being cut
1. CUTING WITH A BIND OR SIDE WINDERS	Serious body injury – struck, cut, crushed	1. Properly assess binds/pressure before making cuts 2. Use wedges to avoid getting bar pinched 3. Watch for spring poles and rolling logs before making release cuts 4. Cut on the uphill side of the log

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2. LIMBING/BUCKING	Spring poles, unstable log and rocks, widow makers, steep terrain,	1. Walk out the material prior to limbing/bucking -- look for hazards 2. Limb one side of tree first, then the other 3. Limb from top of large logs 4. When bucking stay on uphill side 5. Use wedges and/or pie cut, know when to insert your wedge 6. Determine all binds before attempting to cut 7. Block material before bucking if there is a potential for it to roll out of control 8. Those not operating a saw must stay away from sawyer a sufficient distance to avoid injury by saw, material being cut, and flying debris 9. Do not cross over with saw, limb on the same side as saw 10. Know where tip of bar is at all times
Situational Awareness and Risk Management 3. FELLING * Size up	 Struck by weak snags, down trees, widow makers Rot on the stump affecting holding wood/wedging Wind gust, and misread lean adversely affecting felling – sit back, loss of control Tripping/struck due to poor escape route	▪ Refer to Situational Awareness/Individual Complexity Form 1. LOOK UP in the tree for widow makers, conk, slipping bark, and other indicators/hazards 2. Walk out intended lay 1. Check for soundness with felling axe, listen for solid or sponge sound 2. If needed and possible, bore tree with bar and examine sawdust color/texture for rot 1. Determine predominant lean – check head/side lean, wind direction/speed, and slope 2. Use plumb bob – check at least two locations, at right angles 3. Have correct type/size wedges available 1. Establish primary and secondary escape routes at 45 degrees away from tree stump 2. Walk out both the escape routes, and where the tree is to be felled looking for such hazards as snags, down logs, jill pokes, rocks, stumps, hang ups and low hanging limbs

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3. FELLING CONT. * Securing Felling Area	Potential fatal injury to crewmembers and others within the felling area	1. The faller has the responsibility and authority to identify, secure, and manage the felling area 2. A MINIMUM OF 2-1/2 TIMES THE HEIGHT OF MATERIAL BEING FELLED IN ALL DIRECTIONS MUST BE SECURED 3. No one shall be allowed in the secured felling area without the authorization of the faller 4. In addition, the entire downhill side will be included in the secure area on hillsides with steep slopes where material can roll for long, unpredictable distances 5. A safe zone will be identified outside the secured area and everyone must remain there until felling is completed, and the "all clear" has been given by the faller 6. One person shall be appointed and responsible to maintain reliable communications with the faller and the crew members in the safety zone to ensure nobody enters the secured falling area 7. A lookout will be established on all roads and trails entering and leaving the secured felling area 8. Effective communications must exist between the lookout and the faller 9. Before leaving the second felling area, the faller needs to ensure that no hazards remain such as hang ups, unstable logs, or other dangers 10. To protect the lives of employees, contractors, and the public, the faller has the responsibility and authority to see that these standards are firmly adhered to 11. It is the responsibility of the supervisors and all employees to understand and follow these established standards

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* Felling – Making the final cuts	Potential fatal injuries, or serious cuts.	1. Make the horizontal cut of the face 1/3 the diameter of the stump 2. Use gunning site to line up direction of fall 3. Always match the sloping cut and horizontal cut together – do not cross and create a "dutchman" 4. Clean out the undercut 5. Maintain a minimum 2 inch stump shot (this means make the back cut 2 inches higher than the horizontal cut 6. Look up as you make all cuts to tree 7. Use a wedges on all back cuts unless the tree has a heavy lean, or the tree is to small to insert 8. Use adequate felling axe for driving wedges 9. Always look up after each time wedge is driven into the tree with ax 10. Be aware of wind direction and speed 11. Always leave a minimum of 2 inches of holding wood across the stump (depending on the size of tree being felled and/or condition of tree being felled) 12. Do not cut corner wood 13. Always give a warning shout before you start the back cut 14. At first sign that tree is committed to the face exit using the approprate escape route 15. Proceed to safe area, lay down saw clear of stump area, then keeping moving away from the hazard 16. Get behind large sound tree if possible 17. After all material has hit the ground, look up for potential hazards created (broken limbs/tops) that may still fall to the ground 18. Cautiously move back to the stump after movement has stopped 19. When the faller determines it is safe, give the all clear sign 20. Take opportunty to evaluate/discuss the stump for lessons learned
**Saw certification and working within felling area	Other crewmembers observing felling procedures	1. Make sure all trainees are aware of which tree is to be felled and what direction it is planned to fall 2. Point out identified hazards from size up 3. It is the faller's discretion to allow trainees within the 2 ½ tree lengths to observe felling, but in any case, maintain a reasonable safe distance within the established escape route 4. ALL OBSERVERS WILL REMAIN QUIET DURING FELLING

TASKS/PROCEDURES	HAZARDS	ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE
Medical Emergencies	Insect stings, bites & allergic reactions, personal injury	1. Watch for bee nests or swarms while walking, cutting and after tree has been felled 2. People who know they are allergic to bees should have a sting kit and know how to use it 3. They need to make it known they are allergic and inform other crewmembers on how to use the sting kit 4. All sawyers will maintain current first aid/CPR training 5. Communications must be established and maintained at all times so that advanced emergency medical treatment can be requested, and promptly obtained, if necessary

10. LINE OFFICER SIGNATURE	11. TITLE	12. DATE
/s/ Suzanne C. Rainville	Forest Supervisor	11/18/02

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JHA Instructions (References-FSH 6709.11 and .12)

The JHA shall identify the location of the work project or activity, the name of employee(s) writing the JHA, the date(s) of development ,and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.

Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.

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).

Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:

a. Research past accidents/incidents

b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature.

c. Discuss the work project/activity with participants

d. Observe the work project/activity

e. A combination of the above

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:

a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture.

b. Substitution. For example, switching to high flash point, non-toxic solvents.

c. Administrative Controls. For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices.

d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills portable water pumps)

e. A combination of the above.

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.

Blocks 11 and 12: Self-explanatory.

Emergency Evacuation Instructions (Reference FSH 6709.11)

Work supervisors and crew members 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 work site.

Be prepared to provide the following information:

a. Nature of the accident or injury (avoid using victim's name).
b. Type of assistance needed, if any (ground, air, or water evacuation)
c. Location of accident or injury, best access route into the work site (road name/number), identifiable ground/air landmarks.
d. Radio frequency(s).
e. Contact person.
f. Local hazards to ground vehicles or aviation.
g. Weather conditions (wind speed & direction, visibility, temp).
h. Topography.
i. Number of person(s) to be transported
j. Estimated weight of passengers for air/water evacuation.

The items listed above serve only as guidelines for the development of emergency evacuation procedures.
Refer to Malheur NF amd Unit Emergency Action Plans and Forest Check in/out Policy

JHA and Emergency Evacuation Procedures Acknowledgment

We, the undersigned work leader and crew members, 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:

SIGNATURE DATE	SIGNATURE DATE