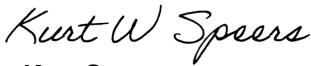


Appalachian National Scenic Trail		1. WORK PROJECT/ACTIVITY Mechanized Rock Drill	2. LOCATION Trail Wide	Includes work performed on lands of National Park Service, and various states' park and lands
JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 OSHA (Instructions on Reverse)		4. NAME(S) OF ANALYST(S) Keith Stegall	5. Work Supervisor Various	6. DATE PREPARED 02/09/2021
Required Standards and General Notes:				
Required Personal Protective Equipment	Hard hat, long pants, long sleeves, eye protection, ear protection, gloves, sturdy footwear. Confine long hair and tuck in loose clothing.			
Tools and Equipment	first aid kit, mechanized rock drill, fuel, Plugs and Feathers. Fuel (gasoline, gas-oil mix, diesel fuel)			
Available Training	Safety Data Sheets (SDS), Stonework Workshop, Manufacturer's Operators Manuals, NWCG Standards for Transporting Fuel			
7. TASKS/PROCEDURES		8. HAZARDS, POTENTIAL HAZARDS / INJURY SOURCE	9. ABATEMENT ACTIONS OR PROCEDURES Engineering Controls * Substitution * Administrative Controls * PPE	
Pre-Operation Inspection		Injury Due to Lack of Knowledge	<ul style="list-style-type: none"> ● If unfamiliar with equipment, review manufacturer's operating manual prior to operation. ● Supervisor must ensure operator's proficiency/knowledge in operation prior to being allowed to perform work with equipment. 	
		Injury from Lack of Inspection	<ul style="list-style-type: none"> ● Prior to operation, ensure all bolts are secure, fuel lines are connected, associated equipment such as bits are in proper working condition, etc. ● Tag-out and replace/repair any damaged equipment. 	
Transporting Fuel in the Field		Injury / Exposure to Fuel	<ul style="list-style-type: none"> ● Fuel may only be "field transported" and used in: <ul style="list-style-type: none"> ○ Original manufacturer's container ○ OSHA approved fuel container ○ UL-labeled plastic fuel container ○ Aluminum 1 quart smaller "Sigg" fuel bottle specifically intended to carry fuel. ○ Plastic Dolmar fuel container (Fuel-Mix / Bar Oil) ● Gas and/or Gas Mix fuel containers must be red in color and labeled for its contents and use. ● Diesel fuel containers must be yellow in color and labeled for its contents and use. ● Ensure fuel cap(s) is secured properly and tightly. ● Do not fill containers above the fill line (or leave at least 2" of space between fuel and top of bottle). ● Do not use fuel container for any other liquid containment. ● Wear eye protection. 	

Fueling / Refueling Mechanized Rock Drill	Fire Hazards	<ul style="list-style-type: none"> ● Turn off the equipment while fueling. ● Keep sparks and open flames away when refueling equipment. ● Avoid spilling gas by using a fuel funnel. ● Do not overfill. ● Allow fuel spills to dry up before operating equipment. ● Use the type of fuel recommended in the instructions or on the label on equipment.
	Exposure / Inhalation / Ingestion of Fuels / Fumes	<ul style="list-style-type: none"> ● If not familiar with related fuel SDS, review prior to fueling. ● Running equipment produces carbon monoxide (CO) poisoning from the toxic engine exhaust. ● Fuel/Re-fuel in well-ventilated area. Do not use indoors, in a garage, or within 20 ft of an occupied building. ● Wear eye protection. ● Wash hands after handling fuel/fuel container ● Remove/replace clothing if exposed to fuel. ● If exposed to fuels, follow related SDS guidance for treatment.
Training	Lack of proper training	<ul style="list-style-type: none"> ● Prior to initial operation workers must receive operator training from and be deemed competent by their leader/supervisor. ● Training will cover: <ul style="list-style-type: none"> ○ Operators manual and JHA. ○ Potential safety associated hazards (muffler, chuck, handles, dust, bits, flywheels, noise, ergonomics, etc.). ○ Routine operation (how it starts, settings, troubleshooting, etc.). ○ Required PPE. ○ Operator communication strategies. ○ Daily maintenance (fuel mix, air filter, chuck, etc.)
Transporting Mechanized Rock Drill in the Field	Injury to Feet / Ankles	<ul style="list-style-type: none"> ● Wear appropriate footwear. ● Determine and use safest path that provides the best option for firm and stable ground with least protrusions.
	Back / Muscle Strain	<ul style="list-style-type: none"> ● Use proper lifting technique when carrying tool, lift with your legs, not your back. ● Use pack frames, wheelbarrows, handcarts, etc. to transport tool when possible. ● Do not carry more weight than you can handle comfortably, seek assistance if necessary. ● Take frequent breaks, switch-off with co-workers often.
	Burn Injury	<ul style="list-style-type: none"> ● Be aware of muffler and other hot parts when carrying tool after operation. Whenever possible, let tool cool down prior to transporting. ● Wear gloves and long-sleeved shirt (recommended).

		<ul style="list-style-type: none"> Tools should be purged of fuel whenever being transported or not in use.
	Injury to Others	<ul style="list-style-type: none"> Be aware of and communicate with others around you. Do not swing tools around carelessly. Tools should never be leaned against anything (e.g. a tree) where they can slip, slide, or fall. When necessary, use a spotter to ensure others do not access your workspace and are not injured.
	Injury to Hands/Fingers	<ul style="list-style-type: none"> Take care not to pinch or crush your hands/fingers when picking up and setting down tools.
	Exposure to Fuel	<ul style="list-style-type: none"> If not familiar with related fuel SDS, review prior to transport. If transporting long distances, empty fuel tank before transport. If transporting short distances, ensure fuel caps are tightly secured. If exposed to fuels, follow related SDS guidance for treatment.
Operating Mechanized Rock Drill and Related Equipment	Injury from Starting Tool	<ul style="list-style-type: none"> Never attempt to prime the fuel line by blowing into the fuel tank. Drill may begin to bounce as soon as started. Ensure tool is in a stable position and on a solid flat surface. Ensure that no feet or hands are near the bit tip or the chuck end. Use proper bending/pulling procedure when pulling start cord.
	Injury from Dust or Fuel Fumes	<ul style="list-style-type: none"> Operate only in outside, well-ventilated areas.
	Injury to Feet / Legs	<ul style="list-style-type: none"> Always be aware of your foot placement Keep fixed grip and maintain control of tool while operating
	Injury from Vibration	<ul style="list-style-type: none"> Wear gloves. Operators should maintain a relaxed grip on the handles, reducing the conduction of vibrations and impacts to hands, wrists, arms, and elbows. Allow the weight of the drill to drive the bit, while guiding the shank in the middle of the hole, with minimal pressure from the driller. Drill operators should take frequent breaks of appropriate length, and stretch often.
	Injury to Hearing	<ul style="list-style-type: none"> Wear appropriately rated hearing protection. Let others around you know when you are about to operate tool, make sure they have hearing protection on as well.
	Injury to Eyes (Flyrock)	<ul style="list-style-type: none"> Wear eye protection that fully wraps around your eyes.. If others are working nearby, make sure they are wearing eye protection before operating.

	Injury Due to Underground Utility Lines	<ul style="list-style-type: none"> Inspect area to be worked beforehand. If any underground utility systems exist, or you are unsure, consult supervisor before operating.
	Injury to Hands/Fingers	<ul style="list-style-type: none"> Do not put hands near the drill during operation. Do not use for extended periods of time Do not grip hammer too tightly, too tight a grip may induce injuries to hands and arms Do not allow anyone to put their hands near the drill during operation. Keep hands away from the flywheel. Keep hands away from chuck and bits when in operation. Take care not to pinch or crush your hands/fingers when picking up and setting down tools.
	Injury Due to Sudden Stops and Pulls	<ul style="list-style-type: none"> Keep focused on task at hand; Be prepared for sudden pulls and stops when operating. Drillers need to be attentive to the behavior of the drill and conscious of the type of rock they are drilling. Micro-fractures and unforeseen seeps can jamb a bit, causing a sudden reaction with the drill. Drillers should monitor the following: <i>Changing tones</i>-often signal a bit is about to break completely through a rock. <i>Fast and slow drilling</i>-often indicates different layers and hardness of rock. <i>Color of the drill fines</i>-a good indicator of the type of rock below.
	Injury to Others	<ul style="list-style-type: none"> Turn off tool and let others pass through job site area; Communicate with others around you before operating drill
	Burn Injury	<ul style="list-style-type: none"> Be aware of casings or components that may build up heat, move, or attract loose articles of hair or clothing (mufflers, shanks, flywheels.). Wear gloves and long-sleeved shirt.
	Injury Due to Awkward Positioning and/or Poor Footing	<ul style="list-style-type: none"> Operators need to find the safest, most effective position for themselves and the machine. When necessary, a spotter, or an additional operator can help support the machine or guide the bit.
10. LINE OFFICER SIGNATURE  Kurt Speers		
11. TITLE Acting Chief Ranger CDSO		
12. DATE 04/01/2021		

Previous edition is obsolete

(over)

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) 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.

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, and 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 worksite.

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 worksite (road name/number), identifiable ground/air landmarks.
- d. Radio frequencies.
- e. Contact person.
- f. Local hazards to ground vehicles or aviation.
- g. Weather conditions (wind speed & direction, visibility, temperature).
- h. Topography.
- i. Number of individuals to be transported.
- j. Estimated weight of individuals for air/water evacuation.

The items listed above serve only as guidelines for the development of emergency evacuation procedures.

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
