LESSONS LEARNED
UTV Torch

Incident Type: Prescribed Fire

Topic: UTV Torch

Location: Illinois

Incident Narrative:

On April 3, 2023, at approximately 1400 hours, a U.S. Forest Service UTV torch malfunctioned while conducting prescribed burning operations. The UTV torch igniter arm snapped completely off at a weld joint and fell into the bed of the moving UTV, rapidly igniting the bed of the UTV on fire. (See red circle in photo below that indicates where the torch igniter arm was sheared off.)

Upon noticing the problem, the operators stopped the UTV, shut off the torch fuel line, removed the sheared UTV igniter arm from the UTV bed, and jettisoned gear from the back. Within minutes, the entire UTV was engulfed in flames. There were no injuries to the occupants of the UTV.

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Damage Sustained: The UTV and the UTV torch were a total loss.

Commendations:

1. Rx burn personnel, including the UTV operators, were Red Carded at or above the operational requirement.
2. PPE, including DOT-approved full-face helmets, appeared to have been fully utilized.
3. The unit has an inhouse Recreation Off-Highway Vehicle Association (ROHVA) certified UTV instructor who may be utilized in the future to emphasize Forest Service requirements specific to firing operations that utilize a UTV. This instructor is also Firing Boss qualified.
4. Maintenance and rehab on Rx burn equipment appears to be performed regularly by knowledgeable resources.

Contributing Factors:

1. A local weld shop had fabricated and installed an aftermarket 12-inch aluminum extension to the UTV torch igniter arm. The original solid 24-inch aluminum igniter arm was cut (bisected) and a 12-inch extension was welded in between the bisected parts, resulting in two new weld joints and a new igniter arm length of 36 inches.
2. During the shift, the UTV operators noted the igniter arm had struck brush during ignition operations. Strikes or impacts to the igniter arm may have contributed to a clean break to the aftermarket weld joint.
3. The plastic bed of the UTV may have become primed for ignition with leaking torch fuels prior to the clean break on the weld joint of the aftermarket igniter arm. This may have resulted in an accelerated rate of spread.
4. Fire extinguishers were missing on the UTV and the UTV torch mounting bracket, potentially delaying quick knock down of the rapidly spreading fire in the bed of the UTV.

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Lessons Learned:

1. Always check for fire extinguishers on UTVs and torch-mounted equipment.
2. Aftermarket modifications to the manufacture's original design may compromise the safety of the equipment.
3. Even though an Incident Within an Incident was not declared when this UTV fire occurred, continued operational requirements were not compromised.

Recommended Actions:

1. Alterations to an original manufacturer's design should only be completed by the manufacturer or a manufacturer's certified representative.
2. Never operate firing devices mounted to motorized equipment without the required fire extinguisher accessible on the equipment.
3. Frequently check motorized equipment equipped with firing devices during operations. Be alert for signs of malfunctions, fuel leaks, etc.
4. Incorporate specific UTV firing operation considerations into the operational or project briefing.
5. Review Incident Within an Incident protocols during briefings.
6. Consider increased training for UTV operators engaged in UTV firing operations.
7. Consider using a Risk Assessment to determine if the use of a UTV mounted firing device is a necessity or a convenience.
8. Review Critical Incident Situational Awareness and "Life First" concepts relative to motorized equipment fires. Review explosive hazards, inhalation hazards, and radiant heat hazards.
9. Review the requirements found in NWCG Standards for Ground Ignition Equipment-PMS 443.