

**National Interagency Prescribed Fire Training Center and Florida
Division of Forestry Flagler County, ATV Incident on Units 26 and 32
February 21, 2005**

Review Team:

Bill Hodgas
Duty Officer Supervisor
Division of Forestry
Review Team Lead

Bruce Harvey
FMO/Prescribed Fire Specialist
U.S. Forest Service

Review Team Findings Written by
Keith Hackbarth
NIPFTC Operations Center Coordinator
Bureau of Land Management

Report Revision by
Phillip Weston
Director, NIPFTC

National Interagency Prescribed Fire Training Center and Florida Division of Forestry ATV Incident on Units 26 and 32 on February 21, 2005

It is Important to Note: that no injuries occurred.

Introduction:

On February 21, 2005 the National Interagency Prescribed Fire Training Center (NIPFTC) and the Florida Division of Forestry (DOF) were participating in a joint prescribed fire operation in Flagler County, FL. DOF was the Burn Boss and a NIPFTC student was the Burn Boss Trainee. NIPFTC students also held Ignition Specialist, Holding Boss, Ignition Crew, and Holding positions. DOF had Holding and Ignition personnel on site as well. The NIPFTC burn team was well rested, having taken a Center-required day off on February 19.

The ATV operator was a USFS employee from outside of the Southern Region. The operator was certified for use of ATV's and had received additional safety and orientation training after arriving at NIPFTC. The operator was under the guidance of NIPFTC and DOF ATV policies. The DOF allows the use of ATV's and firing from an ATV during their prescribed fire operations. NIPFTC policy allows its ATV certified students and personnel to use an ATV where the hosting unit's permit. The NIPFTC policy, further, allowed the operator to use a drip torch in firing from the ATV. The NIPFTC ATV was not intended for use as a firing platform, but rather, as a patrol vehicle for use by the burn team personnel, and so it was not equipped with accessories that are commonly used when a mounted power torch is attached. The ATV did not have a mounted power torch at the time of this incident. The Operator's home forest has no specific policy either allowing or forbidding the use of drip torches from an ATV. The Operator's home unit supervisor indicated that they utilize ATV's, but his unit doesn't have an ATV-mounted torch, and their situation just isn't well suited for use of an ATV for firing operations. He said because of that it isn't likely that they'd use an ATV with a drip torch for firing. There was discussion by the ATV Operator, the DOF Burn Boss, the Field Coordinator and others regarding the suitability of using the ATV for the task. The site of the proposed use of the ATV was walked in advance of use and a determination made to use it to assist in firing.

The ATV, a Polaris 500 Sportsman 4x4, was owned by the US Fish & Wildlife Service, and assigned to NIPFTC. The maintenance and inspection records regarding the vehicle were complete and up to date.

Accident Sequence:

The primary plan was to execute ignition and holding of Units 26 and 32 as one single burn unit of 53 acres. The primary objective for this burn was to reduce hazardous fuel loading by 75%, and enhance wildlife habitat with new growth of foliage. Fuel models 2, 3, 4, 5, 7, and 9 were present. There were approved burn plans for each individual unit. Each unit incorporated using intercoastal waterways, roads and tractor plow lines as control lines. The ATV was to be used to assist in the firing operation in areas of heavy grasses.

1230 All fire personal met on scene and briefed for the days operation and assignments.

1300 Crews moved into position at the northeast corner of unit 26 for the test fire.

1330 Test fire began and after observing fire behavior, it was determined to continue with the burn.

1345 The ATV was operated by a NIPFTC student and used to put a strip of fire using a hand-held drip torch from the east line heading west to help the fire pull away from the control line and to generate more heat in the tree line.

1405 After observing the desired fire effects from the first strip a second strip was started from the east line heading west. After going approximately 200 yards a small pond was encountered. The rider made the decision to head north around the pond and stay close to the tree line away from the waters edge.

1410 After reaching the northeast edge of the pond the operator decided to continue burning around the pond back to the west. After only going 20 yards from his ignition point the ATV became bogged down in the edge of the swamp that was hidden from the operator view by the tall and laid over grass.

The operator immediately tried to go forward and backwards to free the ATV. With no progress being made the operator got off the ATV and tried to lift, pull, and push the ATV back to harder ground 4 feet behind him. While doing this he removed his fire shelter and canteen belt and set it on the seat of the ATV.

Weather Note: The wind was out of the SW 4-7 gusts up to 10. Due to the proximity of the intercoastal waterway and the pond clearing, the winds were erratic.

Fire Behavior Note: With the size, continuity, and fuel loading of the grass next to the pond there were 12-15 foot flame lengths observed.

- 1415 The call came out from the ATV operator that he needed the fire engine. Then a minute later he broadcast that he was trapped and had 15 foot flame lengths heading for him. After his transmission the operator realized he had an escape route to the northeast and abandoned the ATV and his fire shelter. Moments later he called out over the radio that he lost the ATV. He headed northeast to his previous strip fire that was backing in his direction.
- 1416 With the last few radio transmission several people tried to call back to the operator and find out his location and status. The only thing that they got was a clicking sound for about a minute. With no response from the operator, several burn team members converged on the east side of the fire and were they last saw the operator.
- 1425 About the same time as people arrived on the northwest side the operator emerged from the marsh running to the road and fell to his knees. He was visibly shaken and out of breath but unharmed.
- 1450 The NIPFTC Burn Boss trainee terminated his role and the DOF officer assumed command. The NIPFTC Field Coordinator (FC) and DOF officer made sure that people were all right and able to continue operations safely. The operator was then returned to the staging area.
- 1500 Field Coordinator started the NIPFTC accident protocols and called the NIPFTC Center Coordinator, who was already in the area and en route to mentor and observe the team.
- 1500-1800 No further incident or problems.
- 1830 The After-Action Review took place at the staging area and ended at 1915.

Causal and Contributing Factors:

A. Human Factors: Knowledge and Skill

1. Unfamiliarity with the terrain, and terrain conditions. The terrain along the coastal marsh is difficult, at best, transitioning from sand that will easily support a vehicle to mud that will not support a person in only a matter of feet. The area is basically flat terrain. The operator walked the site, observed the conditions, discussed them with locals, but had an inadequate knowledge of the hazard.
2. Vegetation cover associated with terrain and water characteristics. With minimal experience in Florida fuel types the operator did not know the grass in front of him grew in standing water or wet muck. The operator failed to see and avoid the hazard.

B. Human Factors: Judgment and Risk Decision

1. The ATV was being used to traverse the burn unit. The operator could have parked the ATV in a safe location, fired the line by hand, then returned to the ATV and moved on. This alternate action could have prevented the ATV from becoming mired and at risk to the advancing flames.
2. The Operator and operational personnel walked the site of the proposed use of the ATV to determine the suitability of using the vehicle for the task. There was a discussion of concern among firing personnel that the grass was too thick for a walking firing operation. It was decided that using the ATV to assist in the firing was appropriate. This was an error in judgment and contrary to the Job Hazard Analysis.
3. The ATV was being used to assist in the firing of the interior of a prescribed burn unit. There is an inherent risk to working the interior of a burn unit. Personnel or equipment working within the unit must be safeguarded and supported. The ATV was not equipped with a water tank, fire extinguisher, fire tool or winch. The Job Hazard Analysis used by NIPFTC indicated that when a vehicle and operator are exposed to fire during operations that as a minimum a 5 lb A, B, C fire extinguisher with UL rating 3A:40B:C is required to be mounted on the ATV, and that ATV's used for firing must have a minimum 5 gallon water spray rig and a winch mounted on the vehicle. The presence of these items could have been useful in protecting the ATV from the flames after it became stuck. The ATV was used contrary to the guidance of the Job Hazard Analysis.
4. While attempting to free the ATV the Operator's fire shelter was getting in his way, so he removed it as he worked. As the intensity of this situation developed and it became apparent that he needed to leave, the operator headed out to the north to his safety zone without his fire shelter. He left an essential piece of safety equipment that was intended for use in just such an emergency situation. This was an error in operator judgment that could have had tragic consequences.

C. Human Factors: Supervisory and Organizational

1. The Operator, Field Coordinator, the operational supervision and safety briefing failed to recognize the absence of safety equipment required by the Job Hazard Analysis. The burn team inspected the ATV and documented its condition on a daily inspection report. Although the team did conduct a Safety Briefing, upon reviewing the Daily Tailgate Briefing Form there is no indication that the Job Hazard Analysis for ATV Use on Prescribed Burns & Wildfire was referenced on the day of the burn. The Briefing Form completed by the Burn Boss cited the Forest Service Health & Safety Code Sections

related to ATV use, but not the Job Hazard Analysis. The Job Hazard Analysis was included in information provided to the Field Coordinator by the Center. The Field Coordinator and students reviewed the Job Hazard Analysis in preparation for their field assignment. The ATV was used contrary to the Job Hazard Analysis.

2. The Center had not equipped the ATV with safety equipment required by the Job Hazard Analysis. Although the primary intended use of the vehicle was for patrol by burn team personnel the Center's policy allowing the use of a hand-held drip torch conflicted with the Job Hazard Analysis which stated that firing must not limit the operator's ability to keep both hands on the ATV controls while moving. The existing policy is inappropriate and needs to be revised and framed to incorporate the protections of the Job Hazard Analysis.

Recommendations:

1. Never remove or leave or Personal Protective Equipment (PPE)! As the intensity of this situation developed and it became apparent that he needed to leave, the operator headed out to the north to his safety zone without his fire shelter. He left an essential piece of safety equipment that was intended for use in just such an emergency situation. Nation-wide fire training emphasizes that the fire shelter is to be worn. This was an error in operator judgment that could have had tragic consequences.
2. In 2004 the US Forest Service's Regional Forester, of the Southern Region, requested a group of R8 employees to review the management of ATVs in the region and to make appropriate recommendations for future use. The Regional Forester released a new policy during a February 23, 2005 regional conference call. The new policy is being incorporated as R8 Supplement to FSH 6709.11 Health and Safety Code, and R8 Supplement to FSH 7109.19, Engineering Equipment Handbook. The policy would provide for the maximum degree of employee safety by prohibiting the use of ATVs on wildfires and prescribed fires, and limiting the use of Utility Vehicles (UTVs) for any Forest Service employee working on wildfires or prescribed fires within the Southern Region. Given the Forest Service policy, the Steering Committee needs to provide guidance regarding the use of ATVs and/or UTVs by NIPFTC participants. The Committee can assist in resolving the differences between agency ATV policies. Effective use of ATVs and/or UTVs by NIPFTC teams is in question. NIPFTC ATV's are owned by the US Fish & Wildlife Service, however, about 55% of NIPFTC participants are Forest Service employees. NIPFTC policy will need to be revised to frame appropriate use.
3. NIPFTC Policy needs to be revised to incorporate the Job Hazard Analysis protections. Future safety briefings should address the specific Job Hazard Analysis.

Review Team:

Bill Hodgas
Duty Officer Supervisor
Division of Forestry
Review Team Lead

Bruce Harvey
FMO/Prescribed Fire Specialist
U.S. Forest Service

Review Team Findings Written by
Keith Hackbarth
NIPFTC Operations Center Coordinator
Bureau of Land Management

**National Interagency Prescribed Fire Training Center and Florida
Division of Forestry Flagler County, ATV Incident on Units 26 and 32
February 21, 2005**



Site of ATV accident in which an ATV was destroyed by a prescribed fire. Flagler County, FL 2/21/2005. Photo by: Keith Hackbarth, BLM, Boise, ID.



Firm ground condition in Pine/Grass, Fuel Model 2, adjacent to the site where the ATV became mired. Photo by: Keith Hackbarth, BLM, Boise, ID.



Pine/Grass Fuel Model 2 at the site of where ATV became mired. These wet boggy areas are scattered throughout the more extensive Pine/Palmetto/Gallberry, Fuel Model 7, type. Photos by: Keith Hackbarth, BLM, Boise, ID.



Remains of ATV operator's fire shelter which had been removed and set upon the ATV while attempting to dislodge the mired vehicle. The operator moved to safety ahead of the advancing flames. Photo by: Keith Hackbarth, BLM, Boise, ID.



Burned out carcass of ATV at the site of the accident, Flagler County, FL 2/21/2005. Photo by: Keith Hackbarth, BLM, Boise, ID.



Vegetative conditions within Pine/Palmetto/Gallberry, Fuel Model 7, Flagler County, FL
2/21/2005. Photo by: Keith Hackbarth, BLM, Boise, ID.