



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

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IN REPLY REFER TO:

9210 (026)

July 25, 1994

*QJM*

To: District Manager, Phoenix

From: District Fire Management Officer

Subject: Close Call Incident on Agua Fria Grassland Prescribed Burn

On Thursday, June 23, in the Phoenix Resource Area, a close call incident occurred that threatened the safety of two firefighters on the Agua Fria Grassland Prescribed Burn. This report identifies the incident and corrective actions that will be taken to avoid any similar incidents in the future.

This report consists of a narrative, map of the incident area, and a safety hazard analysis that identifies the contributing factors along with others. The safety hazard analysis is part of the pre burn briefing that is given to all participants.

*Glenn Joki 7-25-94*

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On Thursday, June 23, the Phoenix District BLM, Tonto and Prescott National Forest conducted a 3000 acre desert grassland prescribed burn. Of the 3000 acres, 2500 were BLM and 500 acres Tonto National Forest. Fuel types being burned were 90 percent tobosa grass with 10 percent snakeweed, mesquite, catclaw and cactus. Total resources assigned to the burn were 29 people, 5 fire engines and 1 helicopter. At approximately 1600 hours, a close call occurred on Division A of the prescribed burn. Two firefighters (1 BLM, 1 Tonto NF) who were burners were removed by helicopter because the fire threatened their safety. The decision to remove the two firefighters was made by Fritz Mueller, Helitack Foreman on his own initiative when he observed the situation developing. Fritz was in the helicopter enroute back to helibase. The situation happened when a change in wind speed and direction moved the fire towards the burners. Immediately after this incident occurred, the Firing Boss on the Division stopped all firing. He met with the burners involved and the Prescribed Burn Boss to review the incident. Only after the incident was reviewed and corrective action was taken was the burn allowed to continue. This incident was further reviewed at the Phoenix District on Monday, June 27 by Glenn Joki, Prescribed Burn Boss, Doug MacPhee, Division A Firing Boss, Bryce Botts, Division B Firing Boss and Tim Watkins, Burner #1.

Several factors contributed to this close call.

Factor (1) Communication. Communication between all participants was impaired due to a "stuck" open mike key. Radio contact between individuals was extremely limited due to this open mike. This was also a critical factor as the open mike key was on the radio of burner #1. This did not allow him to contact others or be contacted.

Factor (2) Visibility. Strip burning, which is an approved technique, was utilized in order to build adequate heat to achieve the objective. Strip burning also provides safety to burners by allowing for a buffer between them. However a topographical feature (small ridge) did not allow for visibility by all burners and the firing boss.

Factor (3) Spacing. (See attached map) Burners #1 and #2 were assigned to burn out the Perry Tank Creek drainage by stripping it. Burner #3 was assigned to burn from the road, once burner #1 and #2 were ahead of him. The plan required the down wind burner #1 to be in the lead in the drainage with #2 following him. To compensate for limited visibility burners #1 and #2 started 10 to 15 minutes before #3. This was done because of the ridge between them. However, due to variation in terrain #2 over extended his position past #1. Upon this happening both burners recognized the situation and immediately took corrective action to reposition themselves. Burner #3 who was along the road skipped a short section (50 feet) of light fuels before starting to burn.

Factor (4) Wind/Escape Route. A change in wind speed and direction from 0 to 3 MPH out of the South to 5 to 8 mph from the Southwest moved the fire towards Burners #1 and #2. This change caused burner #3's fire to burn into #1 and #2's fire quicker than anticipated. The fire then hooked around the ridge to the East and cut off #1 and #2's primary escape route back to the road. The distance back to the road was approximately 150 yards. Burners #1 and #2's alternate escape route was to the Northwest across the drainage into the black or lighter fuels. The distance to the black was approximately 350 yards. The situation was recognized by the helitack foreman, in the helicopter, when enroute to the helibase. He quickly took action on his own initiative, using the helicopter to remove burners #1 and #2, because it was faster and safer than foot travel.

## Corrective Actions

Factor (1) Communication. Communication between all participants was impaired due to a open mike key. Recommendations and corrective action for this factor are: In the pre-burn briefing identify to all participants that "open mike key" will be an automatic stop firing. This has been added to the Hazard Analysis Worksheet in the burn plan as an action item.

Factor (2) Visibility. Whenever visibility is limited either by smoke, terrain or vegetation the firing boss will reassess the situation (firing sequence, techniques, number and location of burners required, escape routes, etc). This has been added to the Hazard Analysis Worksheet in the burn plan as a action item.

Factor (3) Spacing. Burners are to be reminded that spacing is critical and needs to be adjusted to terrain, vegetation and changes in wind. All burners should be able to see the burners on either side of them. A "watchout" situation is when burners lose visual contact with each other. This will be addressed in the pre-burn briefing and has been added to the Hazard Analysis Worksheet in the burn plan as a action item.

Factor (4) Wind/Escape Route. A change in wind speed and/or direction needs to be immediately communicated with all participants. It is the responsibility of each person to identify any change in wind speed or direction. All escape routes need to be clearly identified to all burners and constantly reevaluated. This needs to be emphasized at the pre-burn briefing.

## Non Contributing Factors.

#1. All three burners were experienced with a minimum of 3 years of fireline and prescribed fire experience.

#2. Firing Boss has 13 years of prescribed burn experience and qualifications of Prescribed Fire Planning Specialist, Burn Boss and Firing Boss.

#3. A pre-burn briefing was conducted by the Burn Boss with all participants. The briefing emphasized safety as well as strategies and conditions.

#4. Each Firing Boss conducted a separate briefing prior to ignition of their divisions.

#5. Each Firing Boss, throughout the day, made adjustments for changing conditions and briefed participants accordingly.

#6. Weather observations were taken, documented and communicated to each division every half hour.

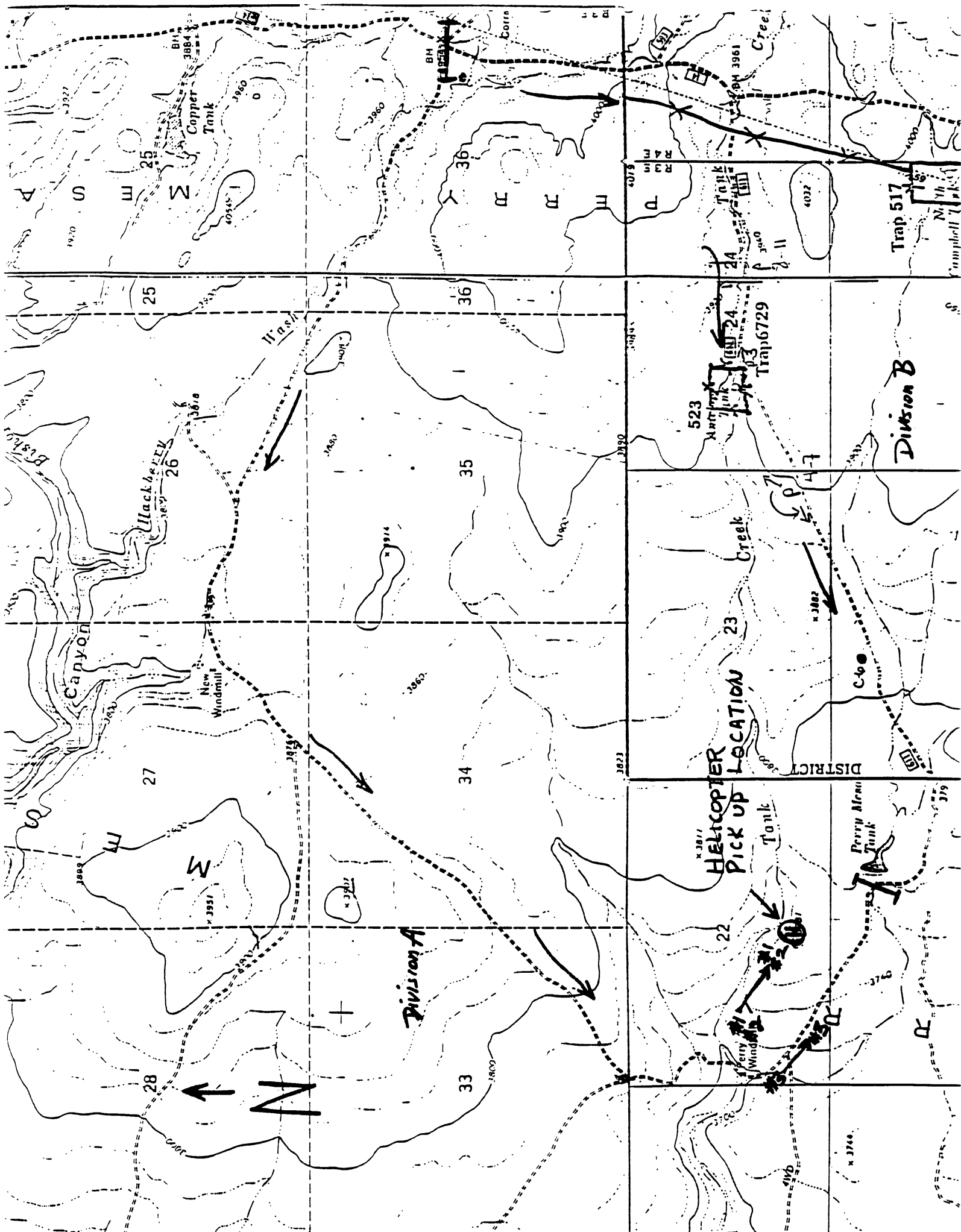
#7. Personal Protective Equipment (PPE) was worn by all participants.

#8. All participants were Red Card qualified for the position they were assigned.

### Summary.

The incident was a close call which threatened the safety of two firefighters. This close call did not progress into a entrapment situation because of the quick actions of Fritz Mueller, Helitack Foreman and other options that were available. The options were: an alternate escape route to the black Northwest of the drainage, and the option to burn out the light grass immediately North of the drainage creating a safety zone to enter. To avoid any similar incidents on future prescribed burns the following will be emphasized in the pre burn briefing and throughout the burn day: all items on the Safety Hazard Analysis, coordination between the firing boss and burners, and weather especially any changes in wind speed or direction.

CC: Phoenix Resource Area Manager  
CC: Phoenix District Safety Officer  
CC: Verde and Cave Creek Ranger Districts  
CC: BLM Arizona State Fire Management Officer



# SAFETY HAZARD ANALYSIS

<u>SAFETY HAZARDS</u>	<u>ACTIONS TO ELIMINATE HAZARDS</u>
<u>Firing Operations:</u> Fire, Smoke and Ash. Use of firing devices such as drip torches, propane burners, and fusses's. Unexpected fire behavior and wind shifts.	All personnel should wear all PPE including NOMEX clothing, leather gloves, hard hats, leather lace boots, and fire shelters. Brief on safe use of drip torches, propane burners, and fusses's. Check torches for leaks.
<u>Suppression of spot fires:</u> Attack of spot fires, footing, fatigue, snake or insect bites, night work, fire behavior, steep terrain.	Follow 10 standard fire fighting orders, 18 situations that shout WATCH OUT, provide for personnel safety first. Brief on local hazards and maintain proper shifts. Brief personnel on proper equipment and communications.
<u>Mop-up:</u> Dust and smoke, hot ashes, falls, eye injuries, pulling hose and steam, cuts from tools and chain saws.	Wear personal protective equipment, eye protection, watch footing, spacing of personnel. Brief on proper use of hand tools and hazards with chain saws.
<u>Travel:</u> Foot travel in steep terrain with loose rocks and stobs in hand lines and trails. vehicle use on steep narrow roads and damage from fire and rough roads.	Brief on footing in rough terrain, rolling rocks, spacing, and good foot wear. Brief on safe driving procedures and proper parking, safety on vehicles, and general hazards on narrow roads.
<u>Communications:</u> When communications are impaired due to a "stuck" open radio mike key immediate actions are necessary.	Everyone stops all firing actions. Check all radios for open mike. Only after the situation has been corrected may firing proceed.
<u>Visibility:</u> Visibility limited by smoke, terrain or vegetation.	Firing Boss will reassess the firing operation when visibility is limited by smoke, terrain or vegetation. The firing sequence, techniques, number and location of burners required and escape routes will be determined. This will be discussed with all participants.
<u>Spacing of burners:</u>	Spacing of burners is critical and needs to be adjusted to terrain, vegetation and change in wind. All burners should be able to see the burners on either side of them. A "WATCHOUT SITUATION" is when burners lose visual contact with each other.
<u>Change in wind speed/direction:</u>	Any change in wind speed/direction needs to be immediately communicated with all participants. It is the responsibility of each person to identify this change.
<u>Escape Routes:</u>	Identify escape routes to all burners. Constantly reevaluate all escape routes.
<u>Helicopter Firing:</u> Aircraft accidents, using aerial firing, injuries from working around helicopters.	Develop and follow air ops plan, have qualified personnel and use PPE.
Approved By:	Date