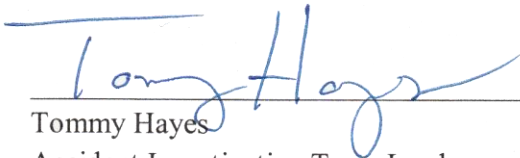


**MM 71 I84 Fire-Burn Injury
Accident Investigation Report
Bureau of Land Management, Boise District**



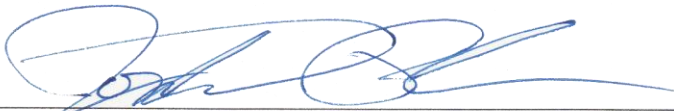
August 23, 2012

Accident Investigative Team MM-71-I84 Fire



Tommy Hayes
Accident Investigation Team Leader
BLM FA-Fire Operations-Equipment Specialist
Boise, Idaho

9/9/12
Date



Jonathan Palma
Accident Investigation Team Member
BLM Elko District Office, Fire Operations Supervisor
Elko, Nevada

9/9/12
Date

Executive Summary

At approximately 13:40 on August 23, 2012 a wildland fire started at mile marker 71 parallel to Interstate 84 southeast of Boise, Idaho. The fire was reported to Boise Interagency Dispatch Center (BIDC) by Ada County Dispatch and identified as the MM71 I84 fire per local fire naming convention. The jurisdiction of the fire was a mix of federal, state, and private lands.

At approximately 14:15, a Boise District firefighter received 1st and 2nd degree burns to both wrists and elbows while performing mobile attack from the black, behind the main flame front of the fire. The burns were caused by residual radiant heat encountered while holding the hardline (hose attached to engine hose reel) above his shoulder. This action caused the firefighter's shirt sleeve length to shorten, exposing unprotected skin on his wrists and tightening the fabric against his elbows. Initially, the firefighter was unaware of the severity of his burns and did not report the incident. Approximately 30 minutes later when the fire was in mop-up status, he notified his immediate supervisor of the injury and emergency medical procedures were initiated.

The firefighter was transported to St. Luke's Regional Medical Center in Boise Idaho, where he was treated and released on August 23, 2012.

Narrative (All times approximate)

August 23, 2012

1341 – Fire reported near the Stage Stop and Orchard on I-84 between Boise and Mountain Home. Initial report states the fire is six acres and winds are W/SW.

1352– Air Attack over fire and states that the fire is pushing into the highway.

1402 – First initial attack resources arrive on scene consisting of the IC, DIVA and DIVZ. Fire is estimated to be approximately ten acres at this time.

1408 – ENG1 (burn victim's engine) and ENG2 arrive on scene and are assigned to Division A. ENG1 and ENG2 are directed by the DIVA to anchor into the Interstate and start mobile attack on the left flank, working clockwise. ENG1 anchors in between the Interstate and right of way fence, and DIVA cuts the fence to allow ENG2 access to the other side of the fence. DIVZ is assigned to the right flank.

1410 – ENG1 cuts the right-of-way fence, trying to hook the head of the fire. The fire advances quickly, and outflanks the engine, forcing them to advance farther along the flank to attempt another cut in the fence.

1415 – ENG3 and ENG4 arrive on scene, brief with DIVZ, and are assigned the right flank of the fire, working counter clockwise. ENG1 radios DIVA and states, “We are getting our butt’s kicked”. ENG2 radios DIVA just after ENG1 and states “tactics are not working”. This is approximately when the victim realized they may be burned.

1416 – DIVA tells ENG1 and ENG2 to pull out to the right flank. ENG2 turns around and starts working towards the right flank. ENG1 progresses forward towards the Interstate.

1418 – DOZ1 arrives on scene and begins working on DIVZ with ENG3 and ENG4.

1420 – ENG1 ties in with the IC on the Interstate and is told to try anchoring off of the road again. ENG1 makes a second cut to the right-of-way fence and again are outflanked by the fire. ENG2 and DIVA are requested by the IC to tie in with ENG1 and an Unassigned Division Supervisor (UDIV) that just arrived, and move ahead of the fire along the Interstate.

1425 – The IC and UDIV tie in with the engines ahead of the fire, and formulate a plan to have UDIV anchor into the Interstate and conduct a burnout just ahead of the fire to pinch off the head and continue working counter clockwise until they tie in with DIVZ resources.

1442 – Forward progress of the fire is knocked down, final fire size is 52 acres. DIVA resources tie in with DOZ1 just North of where the retardant would be dropped.

1450 – Retardant dropped on Southwest corner of the fire. While ENG1 is in the green waiting for the Single Engine Air Tanker (SEAT) to make its drop, the injured crewmember notifies his supervisor that he is burned.

1455 – DIVA meets with ENG1 and transports the injured crewmember to the IC’s location at the north end of the fire.

1510 – The IC makes the decision to have UDIV transport the injured crewmember to Boise for medical treatment. The IC notifies the Boise District FMO of the injury via cell phone, while UDIV notifies the Boise District Duty Officer via cell phone.

1515 – The Boise District FMO notifies Boise Dispatch Center (BDC) that there has been a burn injury and the individual is being transported to Boise by the UDIV.

1528 – The IC phones BDC to confirm notification of the injury and that UDIV has already left to take the individual into Boise.

1535 – UDIV arrives at the Boise District Office to tie in with the administrative assistant.

1540 – The administrative assistant leaves the Boise District Office with the injured firefighter, en route to hospital.

1600 – The injured firefighter arrives at St. Luke’s Hospital Emergency Room to have burn injury evaluated.

1800 – The injured firefighter is released from hospital, and is given a referral to University of Utah Burn Center or the local ELKS clinic for follow up. Firefighter chooses to go to ELKS clinic. Appointment is scheduled for August 24, 2012.

Investigation Process

Following the burn injury, an investigation team was assembled by the BLM Idaho Assistant State Fire Management Officer and consisted of:

- Tommy Hayes, Team Lead, BLM FA, Fire Operations, Equipment Specialist
- Jonathan Palma, Team Member, BLM Elko District Office, Fire Operations Supervisor

The team in-briefed with the Boise District Manager and Boise District FMO on August 23, 2012 at 1500 hours at the Boise District Office where Tommy Hayes received a Delegation of Authority for the investigation.

The investigation team followed protocols outlined in the *Interagency Standards for Fire and Fire Aviation, Ch. 18* including analysis of human, material and environmental factors. The process included interviews, verification of documentation, site visits, personal protective equipment inspection, and fire behavior analysis. Additionally, the team completed the 72-hour report as required by the Delegation of Authority.

Findings and Recommendations

Finding 1: Initial strategies and tactics used on the fire resulted in unnecessary exposure to the engine crew.

Discussion: Division A resources did not effectively and safely engage the flame front due to rapid fire growth, changing terrain, topographic barriers, residual heat, and low visibility. The engines were attempting to suppress the fire from the back, behind the flame front without an adequate anchor point. This tactic had a marginal probability of success, increasing exposure to heat and smoke.

Recommendation 1: Incident Commanders, operations personnel, and crew leadership should continually assess fire conditions and ensure that strategies and tactics are adjusted to reflect current fire behavior, and do not result in unnecessary exposure to firefighters.

Finding 2: Personal Protective Equipment (PPE) was utilized but was the incorrect size and did not adequately protect the firefighter.

Discussion: The firefighter was wearing all required PPE but the arm length on his shirt did not provide adequate protection once his arms were bent. The shirt sleeve slipped up his arm exposing bare skin.

Recommendation 2: Boise District firefighters should ensure that PPE is the correct size and is worn properly.

Finding 3: The injured firefighter did not notify his supervisor of the injury until 30 minutes after it occurred.

Recommendation 3: The Boise District Fire Management Officer should reinforce that all firefighters need to immediately notify their supervisor of any injuries.

Finding 4: Incident and District personnel responded quickly to provide advanced medical attention to the injured firefighter.

Recommendation 4: None

Finding 5: All personnel were in compliance with work/rest and fire incident qualification standards.

Recommendation 5: None

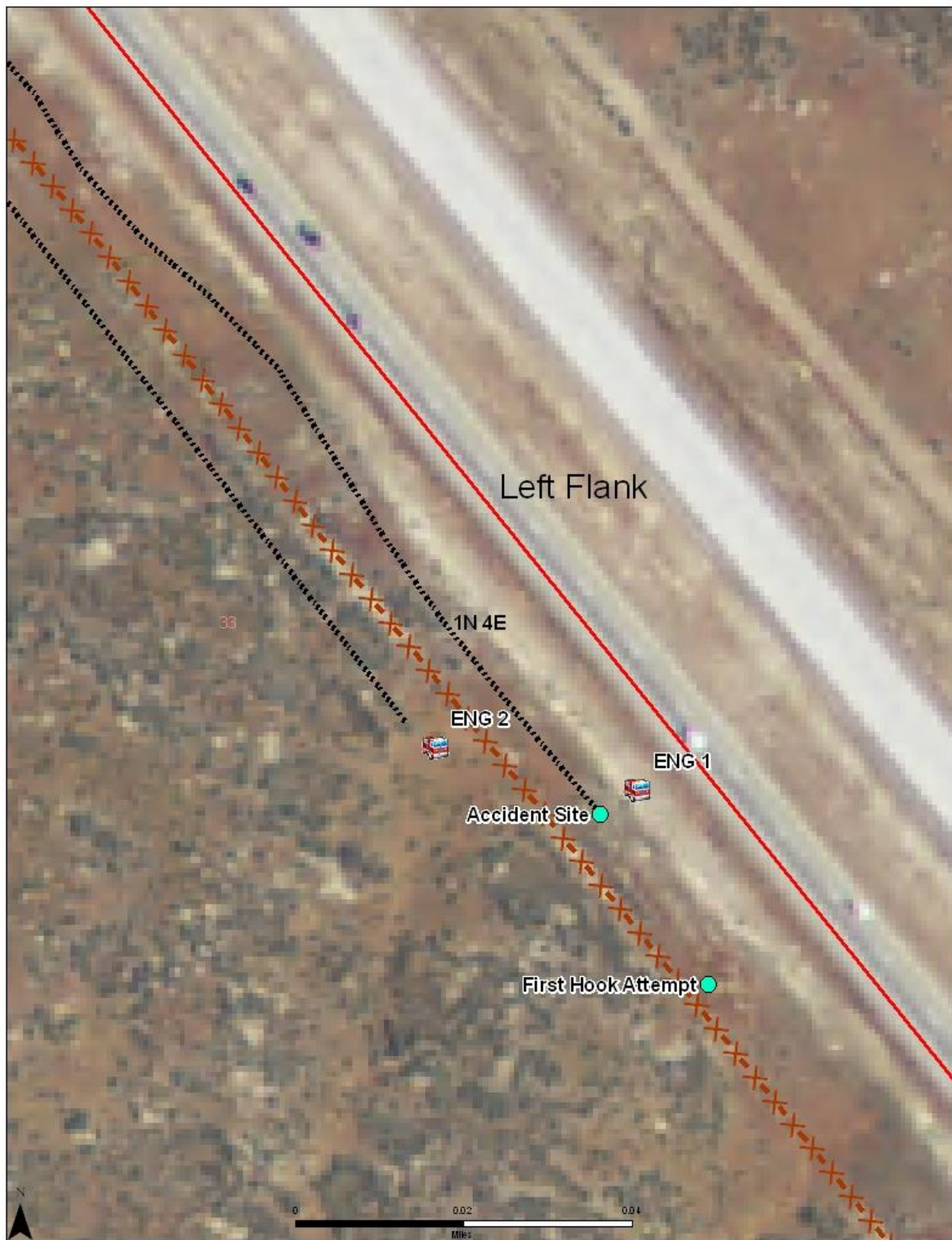
Conclusions and Observations

While performing direct mobile attack a Boise District firefighter received 1st and 2nd degree burns on both elbows and wrists. Firefighter safety is a joint responsibility of firefighters, crew supervisors, and overhead. Personal commitment to clear communication up and down the command chain is the responsibility of every firefighter, and is critical to effective and safe fire operations.

Maps/Photos
Area Overview 1



Area Overview 2



Appendix A

Fire Behavior Summary

Fuel loading conditions at the time of the injury were above average. Fine fuel loading at the Orchard site, 10 miles east of Boise, is 4897 lbs./acre. The 10 year fine fuel loading average for this site is 3705 lbs./acre. Fine fuels are thick and uniform across these lower elevations in this area. Fuels were not compacted due to below average winter snow fall. Dry summer conditions and gusty winds left live fuel moistures at critically low levels. Fuel moistures were taken August 13th and 14th in sage brush, live fuel moistures at the Kuna site were 81.8%. The fuel situation has set the stage for critical fire behavior conditions that allow extreme potential for large fire growth.

Weather conditions near the fire area at 1400 when resources arrived on scene were: Temperature 86°F, 14-16% relative humidity (RH), and winds variable northwest to west 7-12 mph with gusts to 16 mph.

The fire was burning in grass and brush moving east along Interstate 84 due to the direction of the winds. Flame lengths were reported to be approximately 3-4 feet in grass and 4-10 in the brush. Rates of spread were characterized as low to moderate. Firefighters reported due to the changing winds the fire would parallel the Interstate and then push directly into the Interstate.

Appendix B

Position Reference Listing

<u>Incident Position Title</u>	<u>Report Reference</u>
Incident Commander	IC
Division A	DIVA
Division Z	DIVZ
Engine 1	ENG1
Engine 2	ENG2
Engine 3	ENG3
Engine 4	ENG4
Dozer 1	DOZ1
Unassigned Division	UDIV