Richfield Fire

Wildland Fire Accident Investigation Report

Bureau of Land Management

Twin Falls District



August 27, 2014

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Accident Investigation Team Richfield Fire

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Executive Summary

The Richfield Fire started on July 16, 2014 off of Highway 26 approximately five miles southwest of Richfield, Idaho. The fire was initially reported to Southern Idaho Regional Communication Center (SIRCOM)¹. At approximately 1123 a Lincoln County Deputy Sheriff responded to the scene. SIRCOM advised South Central Idaho Interagency Dispatch Center (SCC) of the fire on private land at 1127. Richfield Fire Protection District (RFD1)² was dispatched to the fire by SIRCOM at 1127. RFD1 Chief requested mutual aid assistance from Shoshone City Rural Fire Department (RFD2).

At the same time, the Bureau of Land Management (BLM) Twin Falls District Fire Management Officer (FMO) and Assistant Fire Management Officer (AFMO) were traveling north along Highway 26 in an unmarked government vehicle en route to a meeting at another fire. The FMO and AFMO arrived on scene of the Richfield Fire at 1138, one or two minutes behind the deputy sheriff. The FMO and AFMO determined that the fire was threatening lands managed by the BLM and contacted SCC to request one BLM engine. At 1149 the deputy sheriff shut down Highway 26.

BLM Engine 2405 (ENG1) responded and was first on scene at 1153. The engine captain assumed the role of incident commander (IC). RFD2 Engine 71803 (ENG2) responded and arrived on scene at 1155. A Richfield city employee and a "part-time" volunteer responded from Richfield in RFD1 Engine 75301 (ENG3). Another volunteer followed in RFD1 Water Tender 75103 (WT1). ENG3 did not notify RFD1 Chief or SIRCOM of response until three minutes prior to arriving on scene. WT1 did not communicate to RFD1 Chief or SIRCOM that they were responding to the fire.

ENG1 and ENG2 (with FMO and AFMO observing) held a face-to-face briefing with the IC near the heel of the fire. Initial suppression action was taken by ENG1 and ENG2 working in tandem performing mobile attack on the west flank moving to the north. The FMO and AFMO drove north on the highway around the bend to observe the progression of the fire.

ENG3 and WT1 arrived on scene at 1158 from the north on Highway 26. ENG3 immediately began using booster hose to suppress the fire between the highway and the fence near the head of the fire. The AFMO talked with FF1 of ENG3 while FF2 (ENG3) engaged the fire through the fence with the booster line.

¹ Southern Idaho Regional Communication Center (SIRCOM) is a regional dispatch center. SIRCOM is responsible for dispatching fire suppression, law enforcement, and medical services for Lincoln County, Idaho. SIRCOM dispatches the Lincoln County Sheriff's Office, Shoshone Police Department, Shoshone City and Rural Fire Department, Dietrich Rural Fire Department, and Richfield Fire Protection District.

² Richfield Fire Protection District (RFD1) is a rural volunteer fire department. The department is a tax based fire protection district. As such it is a governmental entity governed by Idaho State statutes, specifically Idaho Code Title 31 Chapter 14 (31-1417). The Richfield RFD chief signed the 2014 Annual Operating Plan (AOP) for Cooperative Fire Protection Agreement between Richfield Fire Protection District and the USDI, Bureau of Land Management Twin Falls District and the USDA, Forest Service Sawtooth National Forest on June 6, 2014.

The AFMO conveyed the IC name, the location of other resources, and tactical channel and asked the crew to "tie in" with the IC. Shortly thereafter, ENG3 drove north on the highway to a two-track road while WT1 remained on the highway.

ENG3 proceeded south on the two track toward the head of the fire with FF2 riding on the top of the engine. The engine left the two track road and drove off-road toward a lava blister trying to access the active fire perimeter. Near the base of the lava blister, ENG3 struck a rock cluster high centering the rear axle of the vehicle and renderingENG3immobile. FF1 utilized four-wheel drive in an attempt to dislodge the vehicle, but sandy conditions caused ENG3's side tires to sink. The rear axle of the apparatus pivoted on the rear differential, listing the vehicle to its right side. The driver's rear tire was raised off the ground by 8-12 inches.



Figure 1 – Lava blister



Figure 2 – The rear differential of the engine high centered on rock

WT1 operator, FMO, and AFMO hiked west from the highway over the lava blister and observed ENG3 high centered on a rock in unburned fuel north of the active fire perimeter. The AFMO notified the IC at approximately 1215 of the immobilized engine. ENG3 crew deployed booster hose off both sides of the truck. FF2 worked from the right hose reel in front of the truck and south about 50 feet up the lava blister into sparser fuels. FF1 stayed near the front of the truck wetting a heavier pocket of unburned grass and brush.

ENG1 left the west flank and drove to the location of ENG3 to help remove ENG3 from the rock. ENG1 determined that an attempt to dislodge ENG3 would be unsuccessful. ENG1 then drove southwest and established an anchor point at the lava blister, approximately 200 yards from ENG3. ENG1 resumed mobile attack working back towards the disabled engine.

Between 1220 and 1225, wind direction changed from west to south. Fire behavior increased and the fire made a rapid run toward the disabled engine. The FMO and AFMO made verbal contact with the two individuals on ENG3. The FMO and FF1 retreated to a safety zone in the black on top of the lava blister approximately 25 yards east of the disabled engine. The AFMO urged FF2, still by ENG3, to immediately retreat toward him into the safety zone. FF2 delayed until he felt excessive heat from the fire, closed the nozzle, and retreated to the safety zone.

At 1227, ENG3 was engulfed by the fire and completely destroyed.

Narrative

(all times are approximate)

July 16, 2014

1123	SIRCOM received initial report of a brush/grass fire in the desert, moving fast, estimated size of 20 square feet.
1127	SIRCOM advised SCC as a courtesy. The fire was reported to be on private land approximately 5 miles southwest of Richfield, Idaho near mile post 176.
1127	SIRCOM dispatched RFD1. RFD1 Chief requested mutual aid from RFD2 through SIRCOM due to lack of available personnel.
1128	RFD1 Chief advised SIRCOM only one person in town.
1138	BLM FMO and BLM AFMO (originally en route to another incident) arrived on scene and requested ENG1 through SCC due to the proximity of BLM land. SCC dispatched ENG1.
1140	Lincoln County Deputy Sheriff advised SIRCOM that a BLM vehicle (FMO and AFMO) was on scene and the BLM dispatched an engine. He observed that the fire was building fast and Highway 26 may have to be shut down.
1145	SIRCOM advised RFD1 Chief that RFD3 had a brush truck available.
1149	Lincoln County Deputy Sheriff closed Highway 26 at milepost 177 and requested additional law enforcement units from SIRCOM.
1150	ENG2 advised SIRCOM they are three minutes out.
1151	ENG3 advised SIRCOM they are en route and three minutes out.
1153	ENG1 arrived on scene and ENG1 captain assumed the role of incident commander (IC). IC asked for verification from SCC if RFD1 was responding. SCC replied negative, however SIRCOM said RFD1 engine was responding.
1155	ENG2 arrived on scene and received a briefing from the IC and began fire suppression at the heel of the fire (south side of the fire).
1157	IC relayed the "fast five" to SCC. IC Name Size: 5 acres Fire behavior: Actively burning in grass and brush, holding up on the highway

	Additional resources needed: Two t Latitude/Longitude: 42 ° 59' 45.675	type 4 engines, and one water tender 5" x N 114 ° 14' 11.906" W	
1158	AFMO reported to SCC, through a telephone conversation, that ENG3 and WT1 arrived on scene near their location. ENG3 initially engaged from the highway near the head of the fire.		
	SCC reported to IC that RFD1 was on scene. IC responded that he was not in communication with RFD1 and had not seen them.		
1159 - 1209	IC was informed by the AFMO on TAC1 that ENG3 was on scene. The IC asked the AFMO to establish communication with ENG3. The AFMO made face-to-face contact with ENG3.		
1210	RFD1 Chief advised SIRCOM to se	end RFD3 resource.	
1211	IC relays the following information to SCC: Size-up summary:		
	Elevation: 4095 Aspect: South	Hazards: Terrain and traffic on highway Fire Behavior: Running and creeping	
	Size: 5 acres	Spread Potential: Moderate	
	Ownership: BLM	Slope: 0-25%	
	Estimated containment: 1600	Terrain: Flat and rolling	
	Estimated control: 2200	Winds: 3-5 mph west	
	Control problems: Big brush and access issues	Fire name: Richfield	
	SCC asked and IC confirmed that o	riginal latitude and longitude was correct.	
1212 -	AFMO informed the IC that ENG3 was high centered in the unburned area ahead of		
1214	the fire. ENG1 attempted to assist ENG3 however ENG3 was wedged on a large rock and the fire was spreading towards their location.		
1215	IC reported to SCC that ENG3 was high centered. The resources on scene were ENG1, ENG2, ENG3 and WT1.		
1216- 1222	WT1 returned to RFD1 to staff ENG4.		
1223	RFD1 requests through SIRCOM mutual aid from RFD4.		
1227	IC informs SCC that the ENG3 was immobilized in unburned fuel; they determined that an attempt to free the engine would be unsuccessful. The disabled engine became engulfed by the fire.		
1228	RFD3 checked in with SCC en route. IC was informed by SCC that RFD3 was en route. IC requested a helicopter, but later cancelled that request at 1234.		
1249	IC notified SCC that they had tied i	n to the highway on west side and the highway	

	held the fire. SCC confirmed with IC that the helicopter was cancelled and that two Type 4 engines were en route.
1250 - 1255	WT1 operator returned to the fire with ENG4 from RFD1. ENG4 was staffed with two personnel having incomplete PPE. IC released all individuals on the fire who did not have the proper PPE (All RFD1 personnel).
1256	County deputy notified SIRCOM that Highway 26 had been reopened.
1358	IC reported to SCC that all active flame had been knocked down on scene. The resources listed on scene were ENG1, ENG2, ENG5, ENG6, ENG7, ENG8, and WT2.
1500	IC notified SCC that Richfield Fire was contained at 27 acres.

Investigation Process

Following the accident, an accident investigation team was assembled by the BLM Idaho State Office. The investigation team followed protocols outlined in the *Interagency Standards for Fire and Aviation, Ch. 18* including root cause analysis of human, material, procedural, equipment, and environmental factors; as well as all the components of the investigation methodology. The process included interviews, verification of documentation (including AOPs, crew time sheets, qualifications, equipment lists, and dispatch logs), site visits, site photography, examination of ENG3, PPE inspection, timeline review, and fire behavior analysis. Additionally, the team completed the 72-hour report as required by the Delegation of Authority.

The accident investigation team members included:

- Brian Achziger, Team Lead, BLM Colorado Deputy State Fire Management Officer
- Matthew Ringer, Chief Investigator, BLM Colorado Northwest District Safety Specialist
- Jeremy Bradley, Subject Matter Expert, BLM Arizona Strip District, Fire Operations Supervisor (Acting)
- Marlinda Jacks, Writer/Editor/GIS, BLM Colorado Upper Colorado River Interagency Fire Management Unit, GIS Specialist

The accident investigation team leader received the Delegation of Authority from the BLM Idaho Associate State Director. The team received an in-briefing on July 18, 2014 at 1300 hours at the BLM Twin Falls District Fire Office. The following individuals attended the in-briefing with the team; Twin Falls District Manager, Shoshone Field Office Manager, Twin Falls District FMO, Twin Falls District AFMO, Idaho State FMO, Idaho State AFMO, Shoshone City Rural Fire Department Chief, Richfield Fire Protection District representative, and the Richfield Fire IC.

The team began conducting interviews immediately following the in-briefing. The team arrived at the accident scene with the Twin Falls District FMO and AFMO at 1630 hours the same day for data collection and continued interviews. The team continued to compile investigative data and conduct interviews through July 24, 2014.

Findings and Recommendations

Finding #1: Jurisdiction of fire was not communicated to the BLM duty officer, SIRCOM, and incident personnel.

Discussion:

- SIRCOM did not verify jurisdiction after the ENG1, ENG2, and deputy sheriff arrived on scene.
- SCC did not communicate jurisdiction to the IC and SIRCOM.

Recommendation:

SCC Center Manager with SIRCOM should develop written SOPs to identify a procedure for verifying jurisdiction between dispatch centers, duty officer(s), and incident personnel.

Finding #2: ENG3 did not communicate with the IC and did not receive a briefing upon arrival at the fire.

Discussion:

- ENG3 had two operable mobile radios (UHF with SIRCOM frequencies and VHF with BLM frequencies) but did not utilize the VHF radio.
- The IC attempted to contact ENG3 utilizing established tactical and command frequencies upon learning that ENG3 was on scene.
- ENG3 received information about IC name, location of other resources, and the tactical channel for operations through the AFMO via face-to-face communication.

Recommendation:

RFD1 Chief should ensure its resources establish communication with the IC when they arrive on scene and receive a complete briefing prior to engagement.

Finding #3: ENG3 attempted a frontal assault.

Discussion:

• ENG3 attempted a frontal assault when they repositioned from the flank to the head of the fire with no anchor point.

Recommendation:

RFD1 Chief should provide training on wildland firefighting strategy and tactics.

Finding #4: ENG3 became high centered on a rock while driving off-road.

Discussion:

- FF1 and FF2 were unable to see the rock due to grass and sagebrush obstructing the view and the engine became high centered on a rock.
- ENG3 was not utilizing a spotter in front of the engine to identify obstacles.

Recommendation:

RFD1 Chief should provide off-road driver training to all personnel.

Finding #5: ENG3 was not properly equipped for wildland fire suppression operations.

Discussion:

- ENG3 was not equipped with American National Standards Institute (ANSI) rated booster hose. The engine had 0.5 inch PVC-reinforced reeled hose with a thermal rating to 150°F and maximum water flow of 10 gallons per minute. The hose did not provide adequate water flow to knock down the fire.
- ENG3 was not equipped with dedicated engine protection line.
- ENG3 was not equipped with firing devices.

Recommendation:

BLM Idaho State AFMO in coordination with the Idaho Department of Lands and the Idaho State Fire Marshal's Office, should develop a normal stocking unit (NUS) for use in AOPs with fire protection districts.

Finding #6:

Elements of the 2014 AOP were not adhered to by RFD1 and the BLM.

Discussion:

- Not all BLM and RFD1 personnel were familiar with the AOP.
- ENG3 did not have all the required PPE.
- ENG3 did not inform the IC of their location or tactics.
- RFD1 personnel did not follow the Incident Command System (ICS).
- The IC was familiar with the AOP, but not all of the specific components.

Recommendation:

BLM Twin Falls District FMO and RFD1 Chief should ensure their employees are aware of and adhere to standards in the AOP.

Finding #7:

Elements of the AOP are inadequate and need to be clarified.

Discussion:

• The BLM should provide clarifying language in the AOP to address the following items related to mutual aid or initial attack: minimum number of handheld radios, minimum equipment NUS, qualifications/certification standards, and minimum staffing requirements.

For example, page 14 of the AOP, Exhibit E: Equipment List "Engines must have a minimum of three qualified personnel when used on the fireline. In extreme situations vehicles may respond to the call with two people....".; and section G. Operations Num. 2 part C "Prior to the fire season, federal agencies should meet with their state, local, and tribal agency partners and **jointly determine the qualifications/certification standards** that will apply to the use of local, non-federal firefighters during initial action of fires on lands under the jurisdiction of a federal agency. Each party will advise the other of applicable cross training opportunities for personnel."

- Maps with jurisdictional boundaries are not clear in AOP.
- Communication section does not address a requirement for handheld radios.
- Equipment standards are not addressed in the AOP.
- The AOP authorizes the use of specific federal frequencies for communication, but does not address the usage of any cooperator frequencies. This contributed to a lack of communication on the incident.

Recommendation:

The BLM Idaho State FMO in coordination with Idaho Department of Lands, and the Idaho State Fire Marshal's office, should modify the standard AOP template to be used throughout Idaho.

The maps in the AOP need to accurately depict the fire protection district boundaries.

Conclusion

The investigation team believes that the findings and recommendations from this report may be beneficial in application for many other federal and cooperating agencies engaged in wildland fire operations. The events and conditions of the incident reveal typical scenarios that could be duplicated if mitigations are not in place. Proper equipment, training, coordination, and cooperative relationships are extremely valuable in establishing efficient and safe wildland fire suppression actions for all agencies involved.

Observations

- RFD1Chief recognized the need for improvement in wildland fire suppression standards.
- BLM efforts show successful cooperative efforts with three of the four fire protection districts that responded to the incident.
- This incident reinforced the need for federal agencies to find suitable radios to communicate with cooperators who respond to wildland fires.
- The presence of an unmarked BLM command vehicle led to confusion by RFD1 volunteers who were unaccustomed to working with the BLM.
- Conducting a mutual aid wildland fire scenario with RFD1 and other local departments using "sand table" or field scenarios could be considered as a means to achieve the desired safe operations.
- There are many different training opportunities for fire protection districts, an example of a program in Idaho includes: the Fire Service Technology training available through Eastern Idaho Technical College, which offers wildland fire training classes for a nominal fee or no fee.
- ENG3 personnel that responded to the incident did not meet the standards for NWCG training and qualifications.

The investigation team reviewed the *Point Fire Accident Investigation Report* and considered findings and recommendations that are salient for the Richfield Fire. The following summarizes those as lessons learned:

Point Fire: BLM and cooperating local entities should review Incident Command System to clarify roles under combinations of jurisdictions.

Richfield Fire: Through increased frequency and availability of interagency training, the BLM and local cooperators should have improved awareness and understanding for implementing ICS during initial attack and mutual aid wildland fire suppression.

Point Fire: All mutual aid entities should foster increased interaction between agency fire management personnel and local entities (primarily rural fire departments) to generate better understanding of the duties, responsibilities, and capabilities of the cooperating entities.

Richfield Fire: BLM and local cooperators have developed AOPs for mutual aid agreements under the Idaho Cooperative Fire Protection and Stafford Act Response Agreement (ICFPA) which facilitates interaction between these entities. The BLM and the cooperators have an opportunity to improve interaction by strengthening the language of the AOP in the following areas: certification, training, communication, and equipment standards.

Point Fire: The State of Idaho is urged to establish an entity whose role would include oversight responsibility to establish, coordinate, and maintain standards for wildland firefighter qualifications, training, and equipment. Without such oversight, rural volunteer firefighters will continue to be asked to perform duties for which they may not have been adequately trained.

Richfield Fire: The ICFPA should be updated to include all departments who sign local AOPs with federal agencies. Currently IDL only provides oversight to departments who enter into agreements directly with them.

Point Fire: All agencies should reaffirm the need for engines to notify the IC when they reposition themselves, run low on water, and the route they will take to refill.

Richfield Fire: Many improvements have been made between the BLM and local cooperators since the Point Fire. On the Richfield Fire three of the four departments utilized the frequencies as outlined by the AOP to communicate with the IC.

Point Fire: Cooperating entities involved in wildland firefighting are encouraged to provide themselves with personal protective equipment that meets the National Fire Protection Association Standard # 1977. Further, it is strongly recommended that each wildland firefighter be equipped with a fire shelter.

Richfield Fire: The majority of the personnel on scene had proper PPE but this incident reinforces a continued need to work with all departments to ensure that they are equipped with and utilize proper PPE when engaged in wildland fire suppression. As an example, ENG3 personnel were not equipped with new generation fire shelters and had minimal to no PPE.

Point Fire: Engines must be equipped to distribute water around the entire vehicle for protection in emergencies. Engines must retain enough water in the tank at all times to provide protection in an emergency.

Richfield Fire: ENG3 had a full tank of water but was not properly equipped for engine protection. The staff on ENG3was not familiar with the apparatus and had minimal training in engine operations.

Point Fire: Federal agencies, in cooperation with state and local officials, should consider basic wildland firefighting training, using the NWCG wildland firefighter training program as guidelines for rural fire departments and other cooperators involved in wildland fire suppression.

Richfield Fire: The AOP directs federal agencies with local agency partners to jointly determine the qualifications and certification standards for local non-federal firefighters during initial attack. The language in the ICFPA needs to be strengthened to include a qualification and certification standard for mutual aid and initial attack.

Point Fire: All cooperating entities should inventory their capabilities to ensure that they are able to communicate on common radio channels. BLM and rural fire departments should consider exchanging radios during multi-agency wildfires.

Richfield Fire: The BLM and cooperators have addressed this by providing the VHF frequencies in the AOP. Improvements in this area can still be made such as, handheld UHF radios for all initial attack BLM resources and inclusion of the UHF frequencies in the AOP.

Appendix A

Maps/Photos/Illustrations







Map 2







Figure 3 – Looking South at the accident scene from two track road

Appendix B

Fuel Description

Fuels conditions on the Richfield Fire were dominated by 2-3 foot tall sagebrush and continuous fine fuels, 1-2 foot tall crested wheat grass and 1 foot tall cheat grass. Fuels on the lava blister were sparse and generally only one foot in height. Fuels adjacent to the disabled engine consisted of a pocket of 4-5 foot tall sagebrush with continuous fine fuels.

Fire Behavior

SIRCOM received the initial fire report with fire behavior described to be 3 feet-per-minute which calculates to 2.73 chains-per-hour. Firefighters taking initial suppression action (ENG1 and ENG2) described the fire behavior as "unexciting", "not real active", and "chunking along"; however the incident size-up reported fire behavior as running and creeping and active in grass and brush.

Flame lengths were estimated to be two feet when the fire reached the lava blister.

After the wind shift, 6-10 foot flame lengths were reported with rapid rate of spread through a pocket of heavy brush toward the disabled engine.

Weather

Weather conditions near the fire area are taken from observations recorded by the Rock Lake RAWS (ID: 103403) nine miles east of the incident and are consistent with firefighter accounts of weather conditions during initial action on the fire and at the time of the engine burn over. Firefighters reported a wind shift from west to south causing the fire to burn more actively immediately prior to the engine burn over.

Time (24	Temperature	Relative	Wind	Wind Speed
hour)	(F)	Humidity	Direction	(MPH)
		(RH)	(degrees)	
1044	83	26	283 (West)	6
1144	84	25	274 (West)	5
1244	87	22	178 (South)	6
1344	89	19	351 (North)	6
1444	91	16	258 (West)	9

Appendix C

Position Reference List

Incident Commander	IC
Fire Management Officer	FMO
Assistant Fire Management Officer	AFMO
BLM engine 2405	ENG1
Shoshone Engine 71803	ENG2
Richfield Rural Fire Department Engine 75301	ENG3
Richfield Rural Fire Department Engine	ENG4
BLM Engine 2421	ENG5
BLM Engine 2428	ENG6
Shoshone Rural Fire Department Engine 73802	ENG7
Shoshone Rural Fire Department Engine 71801	ENG8
Richfield Rural Fire Department Water Tender 1	WT1
Dietrich Rural Fire Department Water Tender 2	WT2
Richfield Fire Protection District	RFD1
Shoshone City Rural Fire Department	RFD2
Gooding Fire Department	RFD3
Dietrich Rural Fire Department	RFD4
ENG3 Driver	FF1
ENG3 Passenger	FF2

Acronym List

American National Standards Institute	ANSI
Annual Operating Plan	AOP
Bureau of Land Management	BLM
Idaho Department of Lands	IDL
National Fire Protection Association	NFPA
Personal Protective Equipment	PPE
South Central Idaho Interagency Dispatch Center	SCC
Southern Idaho Regional Communications Center	SIRCOM
Normal Unit Stocking	NUS