Flint Canyon

September 6, 2012
Wildland Fire Investigation Report

FLINT CANYON FIRE
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Fire Investigation Report

Location:
Bureau of Land Management – Idaho Falls District
Idaho Falls, Idaho

Team Leader
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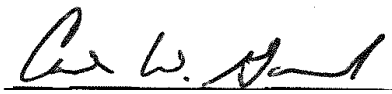

Signature Line

Team Member
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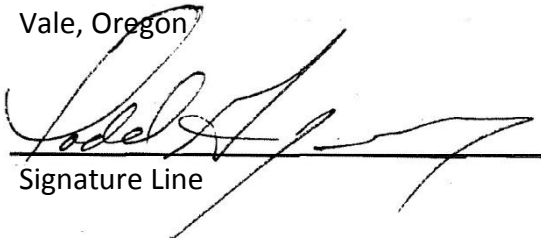

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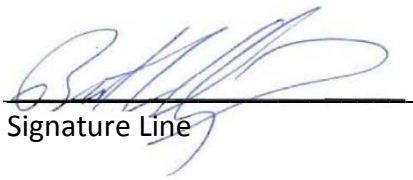

Signature Line

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Executive Summary

On September 6, 2012, at 1339, Power County reported a fire to the Eastern Idaho Interagency Fire Center (EIIFC). Engine 3462 was dispatched to the newly reported fire at 1344.

When E3462 arrived on scene, it was assigned to work the northeast side of the fire. E3462 began securing the northern perimeter of the fire, working from the anchor point heading west. When E3462 reached the northwest corner of the fire they could no longer continue with mobile attack. E3462 and chase vehicle were subsequently parked along the fire's edge at the northwest corner (heel) of the fire and utilized to support a hose lay and direct line construction into the canyon.

While the crew was engaged in fire suppression efforts, a crew member spotted smoke in the vicinity of the engine. The first crewmember to reach the engine arrived and discovered the rear of the engine engulfed in flames. The crewmember quickly assessed the situation and determined that due to the rate the fire was spreading, E3462 could not be saved and turned his attention to saving the chase vehicle, which was parked next to the engine. The crewmember was able to safely move the chase vehicle before it was impacted by the flames.

At approximately 1840 hours, E3462 from the Idaho Falls District Bureau of Land Management (BLM) was overtaken by flames and destroyed while engaged in fire operations on the Flint Canyon Fire near Rockland, Idaho. E3462 was a total loss. No injuries resulted from this incident.

September 6, 2012--

1339: Power County reports a fire to the Eastern Idaho Interagency Fire Center (EIIFC). The fire is located approximately four miles southwest of Rockland, Idaho.

1344: E3462 and E3461 are dispatched to the Flint Canyon fire.

1426: E3462 and E3461 arrive on fire. Upon arrival, engine captain for E3462 becomes the Incident commander (IC) for the Flint Canyon Fire. A crewmember, ENGB (t), from E3461, is moving to E3462 to function as the ENGB. The crew of Engine 3462 is composed of an ENGB (t), ENOP, ENOP (t), and crewmember 1.

1445: The Flint Canyon IC provides a fire size-up to dispatch.

1500: E3461 and E3462 splits from the anchor point. E3462 begins securing the north perimeter (heel) of the fire.

1515: E3462 conducts a small burnout (approximately 100 feet) in light grass to secure the line at the edge of the canyon. E3462 is now located at the northwest corner of the fire.

15:25 E3462 parks on unburned grass facing west. The chase truck parks to the north of the engine facing east. A decision is made to start constructing line south, downhill into Flint Canyon to secure the west perimeter of the fire. Fire activity near the heel is minimal, with creeping and backing occurring in heavy juniper. Assignments are as follows:

- ENGB(t), sawyer
- Crewmember(1), swamper
- ENOP, hand line construction and hose lay
- ENOP (t), assist ENOP and “monitor the pump.”

1700: Two additional engines and a dozer arrive at the bottom of Flint Canyon. The ENGB (t) halts saw-work to coordinate operational tactics with the new resources. ENGB (t) notices fire activity intensifying on the opposite side of the canyon. A decision is made for these new resources to construct dozer line along the west flank of the fire and begin burning out to secure the dozer line. ENGB (t) oversees burnout operations. ENOP is placed as a lookout for the burnout operation.

1730 (approximately): ENOP (t) checks the engine and pump and returns down the hill following the hand line.

1820: ENGB (t) notices smoke at the top of the ridge where the engine is parked. He asks the ENOP to check out the smoke.

1825: ENOP goes to the top of the ridge and notices the rear tires of the engine on fire. He attempts to contact the ENGB (t) on the radio to inform him that E3462 is compromised. The local FOS overhears the attempts to contact ENGB (t) and responds to ENOP's radio calls to clarify what is happening. ENOP tells the FOS that E3462 is on fire. The IC overhears the conversation and asks the FOS to head towards the engine and take command of the incident within the incident. ENOP informs the IC the back half of the truck is engulfed in flames and determines that he can do nothing to save E3462. As the fire progresses towards the chase vehicle, the ENOP is able to move it away from advancing flames.

1840: E3462 is fully engulfed.

Investigation Process

September 6, 2012 – The Flint Canyon fire accident is reported to the Idaho State Office. The Idaho State FMO makes the decision to mobilize a Wildland Fire Investigation Team. The team consists of a team leader and three team members with extensive fire behavior skills and engine experience.

September 8, 2012 – The Wildland Fire Investigation Team convenes in Idaho Falls, Idaho. The team receives their delegation of authority from the District Manager, Idaho Falls District; and an in-briefing from the Idaho Falls District Fire Management Officer. After the in-briefing, the investigation team begins collecting evidence and information related to the accident.

The process for information and evidence gathering consisted of:

- A visit to the accident site;
- Gathering information and photographs previously collected by Idaho Falls District personnel prior to the team arrival;
- Establishing a pattern of actions and decisions leading to the accident;
- Creating a chronology of events;
- Reviewing operational guidelines, policies and standard operating procedures;
- Interviewing personnel involved directly in the incident, those personnel engaged in the suppression effort, and personnel responsible for oversight and management of the fire program in Idaho Falls.

Areas evaluated and not carried further in the report:

The strategy and tactics employed in the suppression of the Flint Canyon Fire were examined and found to be sound.

Probable cause of ignition source:

It is the opinion of the investigation team that the fire burned to the engine, igniting the rear tires and spreading to the rest of the truck. The ignition source could not be determined by the investigation team. Burn indicators near the engine suggest a high probability that the fire was active to the rear left of E3462. The fire backed against the wind until it reached the tires of the engine. Once the fire was established in or on E3462, it quickly spread throughout the vehicle. Photographs of the engine while burning appear to support to the assumptions of the investigation team.

Fire Engine Maintenance Records/Documentation

The investigation team was not able to review engine maintenance records because those records were on the engine when the engine was consumed by fire.

Findings and Recommendations

Direct Cause

Finding 1: (Human)

Engine was parked in the green and engine protection measures were not implemented.

Discussion: While there is no specific policy outlining the required placement of vehicles while engaged in suppression efforts, there are accepted practices such as those identified in the BLM National Fire and Aviation Preparedness Review Guide and Checklists; drill 5 – stationary attack and hose lay, item 6 (engine placement) and item 10 (engine protection).

Recommendation:

1) The District should reinforce established standards/guidelines and incorporate them as the expected mode of operation while engaged in stationary engine pumping operations.
2) The Office of Fire and Aviation should provide a "Six Minutes for Safety" topic regarding engine placement and protection. The team recommends this safety topic be developed by the Idaho Falls District. The topic should address protocols/checklists for parking a vehicle on the fire line, engine protection measures, and potential hazards when dealing with vehicles on fire.

Finding 2: (Human)

Engine was left unstaffed for extended periods of time while engaged in stationary pumping operations because all personnel were primarily committed to line construction and support.

Discussion: The strategy to construct line into Flint Canyon was sound. However, utilizing all crewmembers in the implementation of that operational strategy over extended available personnel and resulted in inadequate engine oversight. Checking the engine was identified as a task, but as line construction progressed further away from the engine it became a lower priority. No one individual maintained situational awareness of the entire operation.

Focus on operations (situational awareness) is a characteristic of a highly reliable organization. As line construction progressed into the canyon, situational awareness focused more on the line and less on the engine at the top of the canyon. Responsibility to monitor pump operations and engine security while performing pump operations must be clearly assigned and understood.

Recommendation: The District should reinforce the importance that while performing stationary pumping operations; clear direction should be given to one individual to monitor the engine.

Other Findings Not Contributing

Finding 1: (Human)

Supervision of E3462 was provided by an ENGB (t) while the engine was engaging in fire suppression efforts.

Discussion: When the ENGB of E3462 became the Incident Commander of the Flint Canyon Fire he assigned, what he assumed to be, a fully qualified ENGB to replace him on his engine. The ENGB task book for this individual was completed and had recently been submitted to the District Qualification Committee with a recommendation that the individual be qualified as an ENGB however it had not been reviewed or certified. The individual's fire qualification card indicates the ENGB(t) qualification. This finding addresses the process of mid-season red card updates, which did not directly contribute to the outcome of the accident.

Recommendation:

1) The District should ensure that all personnel adhere to the process for mid-season updates for qualifications.
2) Fire leaders on the ground need to ensure individuals are operating in their qualified capacity as indicated by their red cards.
3) The District and State need to clarify the roles and responsibilities during suppression operations between the Engine Boss, Engine Operator and firefighters when the Engine Boss is assigned as the Incident Commander.

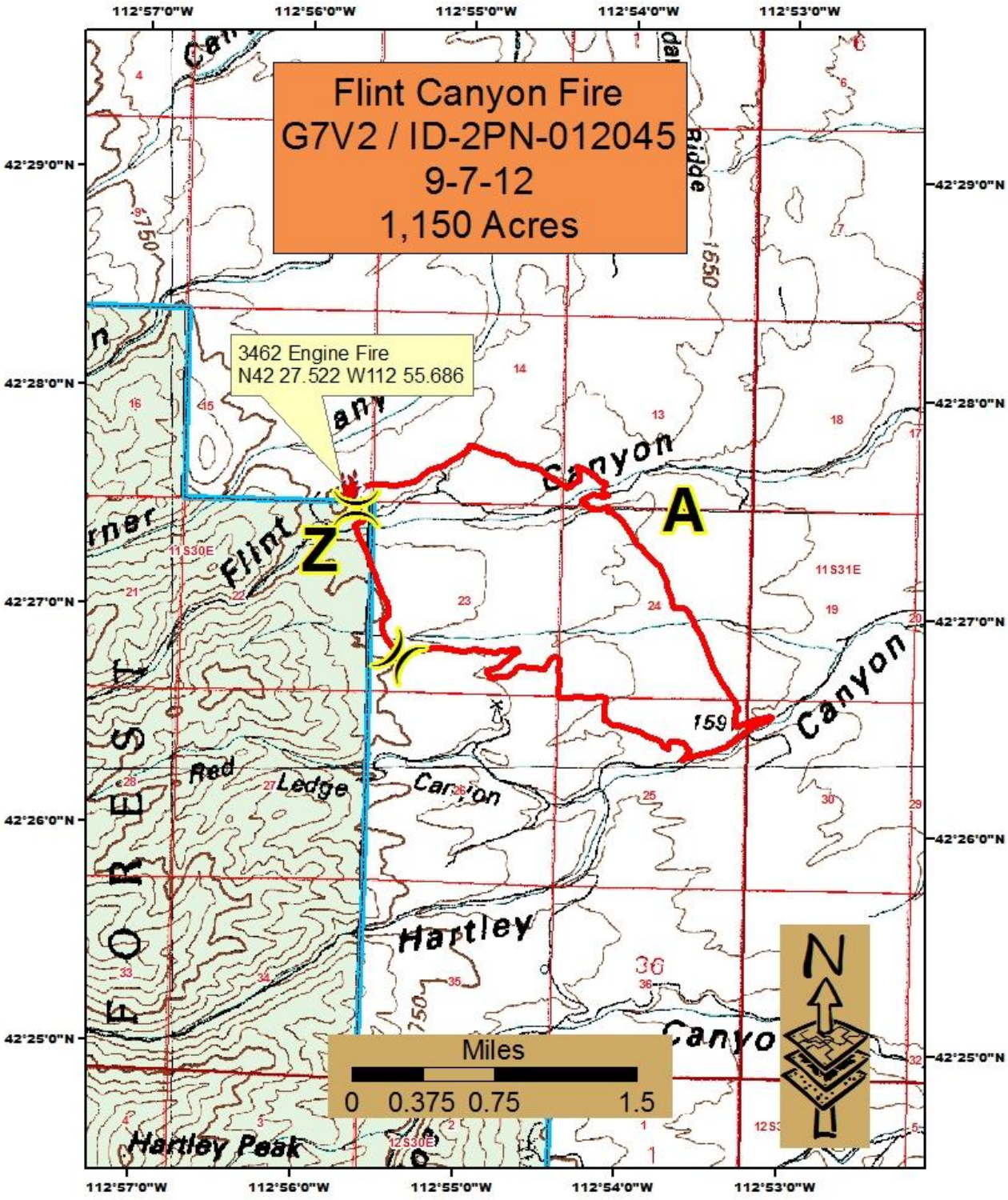
Finding 2: (Human)

BLM fire operation standards for engine protection are not clearly established and communicated.

Discussion: Engine protection standards exist in various documents such as BLM engine driver orientation training (BL-300), BLM Engine Operator training (PMS 419), and BLM National Fire and Aviation Preparedness Review Guide and Checklists (Drill 5, items 6 and 10). The NWCG fireline handbook (PMS 410-1) contains brief equipment placement direction in the WUI section. Although training courses and established operational practices largely ensure that engine protection is adequate, the number of BLM engines experiencing these issues is not acceptable. Developing a more robust standard that is fully integrated into our system would provide clearer direction to field units.

Recommendation: The Idaho BLM Fire Operations Group representative should work with the National Fire Operations Group to address this issue through established BLM operation standards development processes. When BLM standards are adequately developed and implemented, the FOG can work through established interagency processes to share these standards with the interagency wildland fire community.

Maps


Flint Canyon Fire
G7V2 / ID-2PN-012045
9-7-12
1,150 Acres
3462 Engine Fire
N42 27.522 W112 55.686
Z
A
Flint
Canyon
Red Ledge
Hartley
Hartley Peak
Miles
0 0.375 0.75 1.5
N
112°57'0"W
112°56'0"W
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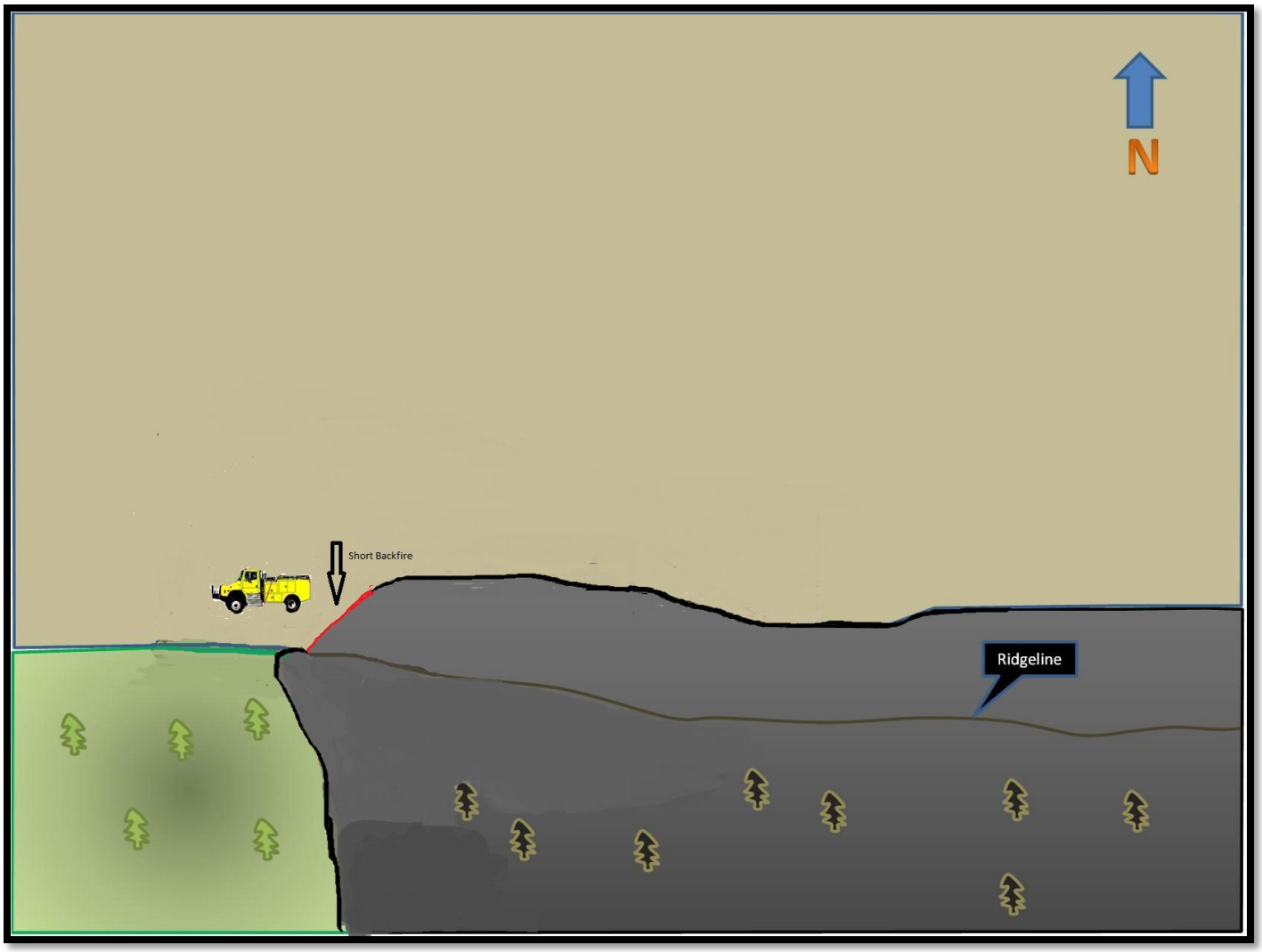
Illustrations



Training and qualifications report

Incident Commander (IC)

Current Red Card issued 3/28/12
Qualified Positions – ENGB, ENOP, FALA, FFT1, HEQB, ICT5, RXB3
Trainee Positions – ICT4

Official IQCS training records show the IC is fully qualified as an ICT4, certified as of June 30, 2012; however, an updated red card had not been issued to the IC at the time of the investigation. All other pertinent mandatory and recurrent training required to serve as an Engine Captain for the BLM are current and contained within the employee's official master file.

Engine Boss Trainee (ENGB-t)

Current Red Card issued 3/28/12
Qualified Positions – CRWB, ENOP, FALB, FFT1, FIRB, ICT5, RXB3.
Trainee Positions – ENGB, HEQB, ICT4

Official IQCS training records support the qualifications listed on the issued red card; however, a completed ENGB PTB had been submitted to the AFMO but not yet reviewed by the unit red card committee at the time of the incident. All pertinent mandatory and reoccurring training to serve as an Engine Operator for the BLM are current and contained within the employee's official master file.

Engine Operator (ENOP)

Current Red Card issued 7/17/12
Qualified Positions – ENOP, FFT1, FFT2, ICT5
Trainee Positions - FALB

Official IQCS training records support the qualifications listed on the red card; however, copies of the ENOP and FFT1 position task books were not present in the employee's official master file. PMS-419 (Engine Academy) is listed as taken in IQCS, but not present in employee's official master file. All other pertinent mandatory and recurrent training to serve as an ENOP for the BLM are current and contained within the employee's official master file.

Engine Operator Trainee (ENOP-t)

Current Red Card issued 6/21/12
Qualified Positions – FALA, FFT1, ICT5
Trainee Positions – ENOP, FALB

Official IQCS training records support the qualifications listed on the issued red card. All pertinent training to serve as an ENOP for the BLM are current and contained within the employee's official master file.

Crewmember 1

Current Red Card issued 6/21/12
Qualified Positions – FFT2
Trainee Positions – FALA

No employee master file could be produced at the time of the investigation for the employee to support the qualifications listed on the red card. IQCS records did indicate that all required training for a FFT2 were completed.

Photographs

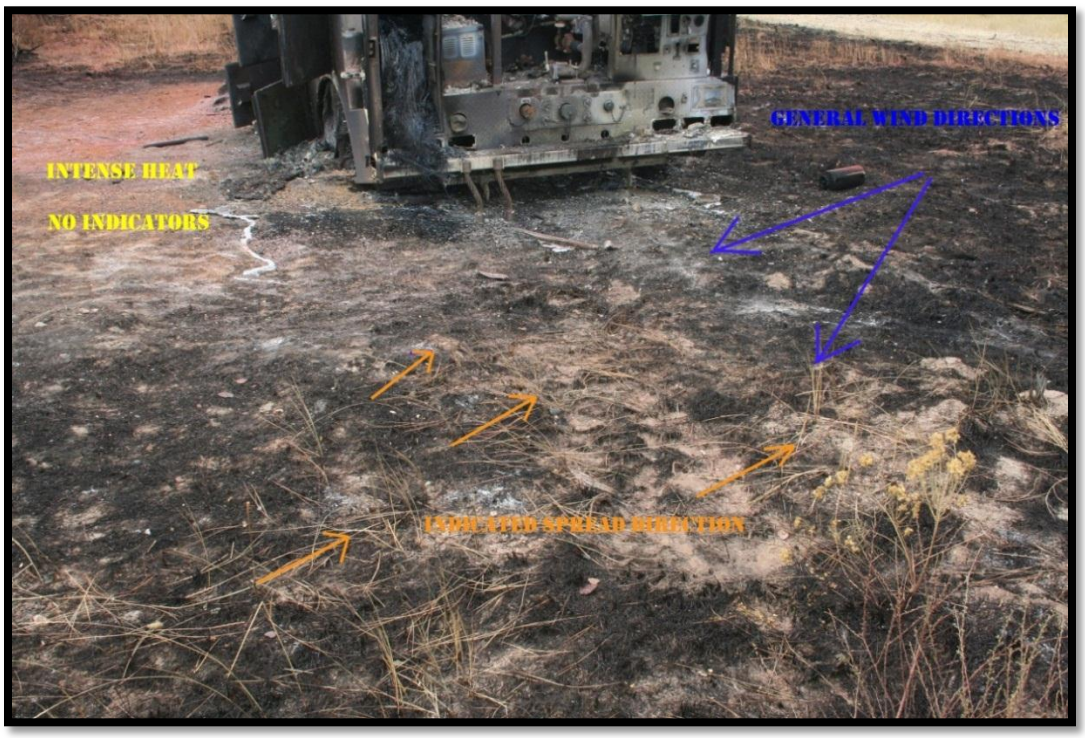


Figure 1: Burn pattern indicators suggests the fire backs towards the rear left of the engine before igniting it in flames

Figure 2: Burn pattern indicators suggests fire backs away from E3462 into the wind after engine is engulfed in flames