

Escaped Fire Burn Review

**St Joe Ranger District
Idaho Panhandle National Forests**

**Final Report
January 9, 2009**

**Quarling Eagles Fire
October 2008**

**Headache Fire
June-August 2008**

Escaped Fire Review Team

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Introduction

The St Joe Ranger District of the Idaho Panhandle National Forests converted two Prescribed Fires to wildfire status during 2008. A review team was requested by the Forest to review the burns and make recommendations to the district and Forest regarding lessons learned and to highlight any potential changes in prescribed fire operations.

A review team consisting of Pat Garbutt, Region 1 Fuels Specialist out of Missoula, Mt, Nikia Hernandez, AFMO on the Libby RD of the Kootenai National Forest in Libby, Mt, and Matt Butler FMO on the Priest Lake RD of the Idaho Panhandle National. The review team met with Forest FMO and AFMO in Coeur d'Alene and then traveled to the St Joe Ranger District on November 18, 2008. The review was conducted via interviews with the district personnel involved with the escaped prescribed fires. Findings were shared with the district via a phone conference on November 19, 2008. The highlights and findings are discussed below.

The first of the two fires reviewed was the Quarling Eagles prescribed fire which involved a timber sale where the purchaser was required to conduct the pile burning. Questions and issues with this fire relate to the requirements of the timber sale contract language and of Forest Service fire management policy. This fire escaped a burning pile and grew to 15 acres in size.

The second fire reviewed was the NF5 prescribed burn which was converted to the Headache Fire during the summer of 2008. The main issues with this fire are that the fire was converted to a wildfire 54 days after ignition and this decision was primarily driven by discussions related to whether or not the burn was still in prescription and the availability of resources due to ongoing wildfires. This burn was a 98 acre unit which included several smaller slash units as well as natural fuels.

Quarling Eagles Prescribed Fire

Background

The Quarling Eagles is an active timber sale on the St Joe Ranger District. The timber sale required purchaser burning of piles as an effort to reduce the brush disposal costs. On October 16, 2008 the sale administrator was given a plan of operations for hazard reduction from the timber sale purchaser for the Quarling Eagles timber sale. On October 21, 2008 the purchaser notified the district that they planned on burning some of the piles from the timber sale. The district gave the purchaser approval to burn since a state issued burn permit was not required after October 20. At 1700 on October 28, 2008 the purchaser contacted Coeur d'Alene Dispatch to notify them that piles in sale unit 22B had spread beyond the piles to an estimated size of 10 acres. This unit was not scheduled for underburning. District personnel were contacted and arrived on scene at 1928. They estimated the size of the area burned at roughly 2 acres. Due to confusion on who was responsible for stopping the fire spread the crews did not take action and returned to the district office by 2130.

An analysis of seasonal severity, weather events, and on-site conditions leading up to the wildfire declaration.

The pile burning occurred at an elevation of 5200 feet. At the time of ignition the area had about 4 inches of snow on the ground. It is common practice in the area to do pile burning with the ground snow covered to limit creeping from the piles. After the ignitions occurred the area started to see a warming trend and temperatures were 10-15 degrees above seasonal norms when the prescribed fire was converted to a wildfire.

An analysis of the actions taken leading up to the wildfire declaration for consistency with the Prescribed Fire Plan.

One of the key findings of the review was that no Prescribed Fire Plan was prepared for the purchaser burning of piles. The lack of a Prescribed Fire Plan was attributed to confusion regarding Forest Service Policy and its applicability to purchaser burning.

An analysis of the Prescribed Fire Plan for consistency with policy.

FSM 5142.1 states "Prepare a site-specific Prescribed Fire Plan for each prescribed fire in advance of the ignition. Where complexity is low and conditions are consistent, a programmatic burn plan may be developed and used."

There was some confusion regarding contractual sale language and its intent of what a burn plan consisted of. Section C 6.7 (b) 5 of the Quarling Eagles Timber Sale (Contract #754486) states, "Purchaser shall burn all landing piles in all units. Purchaser will obtain the necessary burn permit and burn plans from the district Fire Management officer or Fuels Specialist who will determine when prescriptions can be met. Pile burning usually takes place in the late fall when the threat of escape fire is reduced."

The purchaser had submitted a plan of operations for hazard reduction dated October 16, 2008. The purchaser also had been in contact with the district fire personnel regarding approval to burn.

There was confusion over the lines of authority with regards to the timber sale contract and meeting Forest Service Manual direction. The district timber sale administration stated that they have to follow the timber sale contract even if fire management policy as stated in the Forest Service Manual was different. After the burn had been declared escaped, fire management on the district recognized that a burn plan and qualified personnel on-site were required during the implementation of the burn. However there were questions on how to mesh the timber sale contract with the FSM.

According to FSM 5144 under Smoke Management it states, "Include air quality considerations as an integral part of the fire use program. 1. Coordinate fire use applications with appropriate air quality specialists and Federal, State, Tribal, air pollution control district or county regulatory authorities to ensure compliance with their regulations." The Idaho Panhandle National Forests

is a member of the Montana/Idaho Airshed Monitoring Group and the District should have requested approval for air quality through its established procedures for this burn even though contractor personnel were conducting the burn.

An analysis of the Prescribed Fire Prescription and Associated Environmental Parameters

There was no Prescribed Fire Plan for this burn so an analysis of the prescription can not be completed. However the weather conditions at the time of the ignition included 4 inches of snow on the ground at an elevation of 5200 feet. When asked if the district would have ignited this burn on October 21st, the FMO responded that if the USFS would have ignited it they would have waited until later due to other work priorities. The panel then asked the district if they had prepared a burn plan for this burn would they have still allowed the purchaser to ignite this burn when they did. The FMO and AFMO responded that they would have still allowed the ignition to occur.

A question then arose if a burn plan had been prepared and the unit was in prescription could the district fire management prevent the purchaser from igniting the burn based on professional judgment (i.e. gut feeling) that the time was not right. The timber sale administration felt that under the timber sale contract the fire management personnel would have had no line of authority to prevent the burn from occurring.

A review of the approving line officer's qualifications, experience, and involvement.

There was no burn plan prepared and therefore no line officer approved the burn plan. However the district mentioned it is protocol for fire management to notify the line officer of planned ignitions. The determination to convert the burn to a wildfire did not involve the Acting District Ranger and there was no line officer involvement in the decision.

The Interagency Prescribed Fire Planning and Procedures Guide states that the Agency Administrator, Burn Boss, FMO/Fire Program Manager, or Prescribed Fire Manager can declare a prescribed fire a wildfire if responsibility is assigned in the plan meaning the authority rests with who is identified in the individual burn plan. Based on other district burn plans, the district typically assigns this responsibility to the Burn Boss and mentions that Coeur d'Alene Dispatch and the line officer would be notified of the conversion.

A review of the qualifications and experience of key personnel involved

FSM 5145 references the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide for the Fire Use Organization required. On page 9 of the Implementation Guide under Implementation Organization and Qualifications it states that "State, local cooperators and contractors working on federal agency prescribed fires must meet the NWCG PMS 310-1 standards." In table 1 on page 9 it also demonstrates that the minimum supervisory qualifications for a low complexity prescribed fire requires a RXB3.

It appears from the documentation that there were no qualified personnel on-site provided by the purchaser. The timber sale contract did not make any mention of purchaser qualification requirements.

A summary of causal agents contributing to the wildfire declaration

There were several issues that led to the determination of the burn being converted to a wildfire. The primary issue was jurisdictional control since the purchaser had lit the piles and was contractually responsible for the burning operations. The Forest Service responded on October 28th with Forest Service personnel at 1928, and they determined the burn to be about 2 acres (as opposed to the contractors estimate of 10 acres). No action was taken by the USFS crews as they believed that the USFS was not responsible for taking action on the burn.

Questions on the district arose regarding lines of authority (timber sale administration and fire management), who is responsible for the response, and how to pay for the response. Since the unit was not covered by NEPA for underburning there were questions about the prescription regarding slash disposal and the effects of the piles creeping and how to document the acres for fire history. A decision was made by the AFMO and one of the sale administrators that by converting the burn to a wildfire they could report the acres in FACTS. This decision to convert the prescribed fire to a wildfire was not discussed with the line officer. The district felt that if they had ignited the burn and been responsible for patrolling and any needed mop-up they might not have declared it a wildfire.

Key Findings and Recommendations

- No Prescribed Fire Plan was completed for the burn. FSM 5142.1 makes it clear that this burn required a Prescribed Fire Plan regardless of who implements the burn. A programmatic burn plan would be appropriate for pile burning.
- As a reminder to the Forest, all burn plans must be reviewed and updated if necessary to comply with new policy or procedures, and re-authorized if more than one year has elapsed since initial approval based on the updated FSM 5140 policy and the letter from the Fire and Aviation Director dated October 27, 2008.
- The Acting District Ranger was not notified and part of the decision to declare the prescribed burn an escape. Future determinations of an escape should include the line officer in the decision making process.
- No burn boss was assigned to the burn. At the very least a RXB3 should have been assigned to the burn. This is a requirement in the current 5140 manual and should be reflected in the timber sale contract.
- Qualifications of the purchaser's personnel needed to meet NWCG PMS 310-1. There is no documentation and the district believes the purchaser's personnel did not meet the 310-1 requirements.
- Since the burn occurred on USFS land the burn should have been approved through the Montana/Idaho Airshed Group for air quality clearance. Procedures are that all burns on IPNF lands should be approved via this process.
- There was confusion regarding the lines of authority in the timber sale contract and the FSM 5140 requirements. Documentation of 5140 fire management requirements for purchaser prescribed burning under timber sale contract is needed. The Forest has asked for clarification from the Regional Office Fuels Specialist regarding this issue.

Headache Fire (NF5 Prescribed Fire)

Background

The NF5 Prescribed Fire was a 98 acre prescribed burn. Within the 98 acres there were 77 acres of timber harvest. The areas between the timber harvests were natural fuels consisting mostly of brush fields and off-site ponderosa pine. On June 18, 2008 the district ignited multiple burns with the NF5 unit being the last burn of the day. The NF5 burn was an aerial ignition utilizing a helitorch. The burn was rated as complex and was implemented by the District FMO as the RXB1 and the District AFMO as the RXB1 trainee. Ignition began at approximately 1430 and was completed by 1800 the same day. The NF5 burn was converted to a wildfire 54 days later on August 11, 2008.

An analysis of seasonal severity, weather events, and on-site conditions leading up to the wildfire declaration.

The spring of 2008 was considered a wet spring due to a high winter snow pack and spring rains. June 18th was considered the first burn window of the season for the NF5 burn unit. There was discussion on the burn day that the unit was further into green-up than the district would prefer but the burn boss and the trainee decided to still implement the burn due to a need to get the site prep done in the timber harvest areas for planting. The burn area was still exhibiting high duff moistures on the day of the burn. All environmental and fire behavior prescription parameters were met on the day of the burn. The only exception to this was a portion of the burn lower on the slope was not meeting the desired fire effects due to its distance from any of the timber harvest slash, high duff moistures, and the stage of green-up. The burn boss and the trainee decided to halt ignitions on the bottom portion of the unit since it was not meeting the desired fire effects (i.e. not burning hot enough). The burn was considered a success and no issues occurred on the day of the burn.

On June 22, 2008 the Fishhook RAWS, a representative weather station, received 0.3" of rain. After this rain event the district thought one more rain event would allow them to call the burn out. The next measurable rain did not occur until July 23 with 0.13" of rain falling at Fishhook RAWS. The rain events still did not bring enough moisture to declare the burn out due to the thick duff layer. As the season progressed the duff layer in the burn unit was finally drying out enough to carry fire via creeping and smoldering. The district started sending a mix of resources to the burn unit throughout the summer to keep the fire in check. The burn was never completely extinguished during this timeframe and continued to creep and smolder throughout the summer in the thick duff layer.

An analysis of the actions taken leading up to the wildfire declaration for consistency with the Prescribed Fire Plan.

On August 11, 2008 the district silviculture crew reported several acres of heat within the boundaries of the planted areas of the NF5 burn unit. A district engine crew responded and arrived on scene at 1547. The engine crew reported numerous creeping and smoldering spots within a ½ acre perimeter. The engine crew made a resource order for a minimum of 6 people to report to the burn for the following shift.

Between 1550 and 1628 the District Duty Officer, the Forest AFMO, and the District Ranger had phone conversations and a conference call to determine the course of action. The decision was made to declare the burn a wildfire. All parties were aware that the burn had not escaped unit boundaries. Financial considerations regarding the availability of project dollars to cover the actions needed on the burn were discussed. According to the District this was not a determining factor in deciding to declare the burn a wildfire. The two main reasons given by the district to declare the burn a wildfire was that the District Ranger felt the burn was out of prescription and most of the district resources were committed to wildfires from a lightning bust on August 11, 2008 and some resources committed to off-forest fire assignments.

The Prescribed Fire Plan for the NF5 burn states that the burn boss will decide when to declare the burn a wildfire and the District Ranger as well as Coeur d'Alene Dispatch will be notified. At the time of the wildfire declaration the initial RXB1 and RXB1(t) were on fire assignments. The Duty Officer (AFMO) was the de facto burn boss and the discussion to declare the burn a wildfire included the District Ranger and the Forest AFMO. This appears to be consistent with Prescribed Fire Plan requirements under a wildfire declaration.

An analysis of the Prescribed Fire Plan for consistency with policy.

Two parts of the plan were not consistent with current policy as required in the Interagency Prescribed Fire Planning and Implementation Procedures Guide. The Complexity Analysis for the NF5 burn was rated as High. Under Responsibilities on page 11 of the guide, it states that "The Technical Reviewer and Prescribed Fire Plan Preparer must be qualified or have been previously qualified as a Prescribed Fire Burn Boss at an experience level equal to or higher than the complexity being reviewed." In the case of the NF5 burn the Reviewer and the Preparer should have been qualified or previously qualified as a RXB1. The signature on the Preparer line of the NF5 burn plan was an RXB2. The district stated that they do let trainees prepare moderate and complex burn plans with the assistance of a qualified burn boss. The district recognized that they should have also included the signature of the qualified RXB1 on the Preparer signature line.

The other element of the burn plan not consistent with current policy was under Element 17-Contingency Plan. The Interagency Prescribed Fire Planning and Procedures Guide states that contingency resources should be identified throughout each phase of the burn. The Guide also states that separate contingency plans (i.e. different resources and numbers) may be appropriate to address seasonal differences, types of ignitions or phases of the burn implementation. The district documented the contingency resources on the day of the burn but failed to show documentation of contingency resources beyond the day of ignition. The NF5 Prescribed Fire plan stated they would be identified for each day following the burn until it is declared out.

The rest of the Prescribed Fire Plan for the NF5 burn unit was consistent with current policy.

An analysis of the Prescribed Fire Prescription and Associated Environmental Parameters

The Prescribed Fire Plan for the NF5 burn utilized prescribed fire prescription and environmental parameters that were appropriate for the burn area and common for the St Joe District based on fire modeling and years of empirical evidence and experience. During the ignition all elements including fire behavior parameters were within the desired prescription and effects.

Throughout the life of the burn it did not exceed the environmental parameters until about a week before the burn was declared a wildfire. The week prior to this declaration the maximum daily temperatures and minimum relative humidity exceeded parameters on a few days. Even with these environmental parameters exceeded the fire behavior and acceptable results were still within prescription.

A review of the approving line officer's qualifications, experience, and involvement.

The approving line officer was the District Ranger. The District Ranger is a qualified RXB1, FBAN, and Fire Use Manager, and is qualified as a line officer to sign burn plans.

A review of the qualifications and experience of key personnel involved

The NF5 burn was rated as a complex burn, mostly due to the aerial ignition. The prescribed fire burn boss is a fully qualified RXB1 with many years of experience. The RXB1(t) is also qualified to act as a trainee for complex burns. No holding resources were needed on the day of the burn and no issues occurred on the day of the burn. Once the ignition phase was complete there was no documentation of a "hand-off" to another burn boss, so it is assumed that the original RXB1 and RXB1(t) were still the burn boss of record. When the burn was converted to a wildfire both the RXB1 and RXB1(t) were gone. The duty officer (2nd AFMO who is also a RXB1(t)) was presumed to be acting as the "defacto" burn boss at this time.

A summary of causal agents contributing to the wildfire declaration

The determination by the district that the burn was out of prescription led to a wildfire declaration. As stated above all parameters and fire effects were within prescription on the day of the burn and well into the summer. Evidence from the Fishhook RAWS suggests some of the environmental parameters were exceeded during the week of the wildfire declaration. Despite an exceedance of the environmental parameters the burn was still meeting the fire behavior parameters and desired fire effects.

Another causal agent contributing to the wildfire declaration was the perception by the district that resources would not be available to work on the NF5 burn. Between August 9th and August 11th the district had a lightning bust causing 13 fires. Four of these new starts were being managed as WFU events and the remaining nine were under suppression. District personnel were stretched thin even with assistance from off-forest resources. Contingency resources were not immediately available for the NF5 burn.

Contingency resources were documented for the day of ignition. District personnel had been repeatedly going up to the burn to check and secure it throughout the summer. On August 11th

the district did not feel it could provide the necessary contingency resources to extinguish the fire or keep it in check. The District Duty Officer at the time of the wildfire declaration felt that a wildfire declaration would allow the district to assign an Incident Commander and the resources needed to fully extinguish the burn. After the decision to convert the burn to a wildfire was made the district assigned a Type 1 crew to the escaped burn.

The District FMO, who has many years of experience burning on the St Joe District, felt there was one unique aspect of the NF5 burn unit. He noticed the brush fields in the burn unit had a thick duff layer that he had never seen in this fuel type. In past experiences the duff layers in brush fuel models on the district usually have a thin or nonexistent duff layer. When ignition of the burn unit occurred the duff layer was still moist from a high snow pack year and a wet spring. The burn only consumed the top layer of the duff on ignition day. As the summer progressed the duff continued to dry and be available to burn. Smoldering and creeping in the duff layer allowed the burn to stay alive after moisture was received on the burn.

Key Findings and Recommendations

- A major reason for declaring the NF5 burn a wildfire was the perception that it was out of prescription. This appears to be true of some of the environmental parameters but the burn was still within the fire behavior prescription, the range of acceptable results (i.e. fire effects), and it was still within the burn area boundary. Current policy does not state that a prescribed fire exceeding environmental prescription parameters must be declared a wildfire. It may be appropriate to build some flexibility into future burn plans in regard to prescription parameters. Changes to a Prescribed Fire Plan (i.e. prescription parameters) are allowed under current policy. Necessary changes must be signed by the Line Officer, the plan must be amended to identify the affected sections, and the reason for the change(s) must be clearly identified.
- Due to initial attack activity the district did not feel they could provide the necessary contingency resources in order to deal with the NF5 burn. The district decided they needed to convert the NF5 burn to a wildfire to secure the necessary resources. Once it was converted to a wildfire the district assigned a Type I crew to suppress the fire. It is strongly recommended that the district and/or forest coordinate with Regional Office before the declaration of a wildfire. The RO may be able to secure resources in order to prevent the conversion of a prescribed fire to a wildfire. This would also apply if funding is an issue in regards to a wildfire declaration.
- Contingency resources were not identified for the life of the NF5 burn. Documentation of contingency resources needs to be provided for the life of the burn. It is acceptable for the number of contingency resources to change based on current and expected fire behavior, seasonal severity, weather events, and on-site conditions as long as a rationale is documented. If the necessary contingency resources can not be provided then coordination with the Forest and/or RO may be needed.
- The deep duff layer in the brush fuel model of the NF5 burn appears to have been unique. It is recommended that this information be shared with other burn bosses throughout the IPNF to make them aware of its uniqueness and the issues it can cause.
- The Technical Reviewer and Prescribed Fire Plan Preparer must be qualified or have been previously qualified as a Prescribed Fire Burn Boss at an experience level equal to or higher than the complexity being reviewed. Either the Prescribed Fire Plan Preparer or Technical Reviewer must be currently qualified. If a District wants to allow a trainee to assist in the preparation of a prescribed fire burn plan they will need to ensure that a qualified burn boss at the appropriate experience level also signs the Prescribed Fire Burn Plan on the Prepared By line.
- When preparing the complexity analysis for a burn plan it may be appropriate to document that the ignition phase of a burn rates as Complex, but also include that follow-up patrol activities may rate as Intermediate.