



Protection Branch
Ministry of Forests

Fire Review Summary for Lamb Creek (N10470) and Plumbob (N10694) Fires

(Also referred to as the Moyie Complex)

Background

Fire N10470 (Lamb Creek) started approximately 27 kilometres southwest of Cranbrook. The fire burned in a southwest to northeast direction, west of North Moyie Lake.

The Moyie Complex (an operations centre set up to deal with multiple fires) was established to administer and support fire control activities on the Lamb Creek Fire N10470 and the Plumbob Fire N10694. The close proximity of the two fires, the limited availability of key resources and the probability of two interface events supported the decision to manage the fires under the Complex.

The Lamb Creek Fire was started Aug. 7, 2003 by lightning. An aerial patrol located the fire within the hour of ignition, evaluated the risk and fire potential, and determined that other existing and new fires had higher priority. Fire action was deferred due to low risk and Initial Attack resources being fully committed elsewhere. It was monitored until increased activity on Aug. 11 necessitated fire response. Initial action by ground crews and air tankers was not successful and a 21-person crew and heavy equipment was dispatched Aug. 12. The Fire Management Team (FMT) assumed command of fire operations Aug. 14.

The Plumbob Fire, suspected to have been caused by lightning, was discovered Aug. 13. Initial attack by air tankers was unsuccessful due to extreme fire behaviour. Fire potential was recognized early. Ground forces focused on warning and safeguarding residents.

FIRE WEATHER INDICES

| Fire Weather Indices: | | | | | | | | |
|------------------------------|-----------|------|-----|-----|------|-----|------|---------|
| | Date | FFMC | DMC | DC | ISI | BUI | FWI | Dgr Cls |
| Cranbrook FS | August 6 | 90.9 | 253 | 885 | 7.3 | 295 | 32.5 | 4 |
| | August 7 | 81.3 | 132 | 892 | 2.7 | 193 | 15.3 | 3 |
| | August 8 | 86.9 | 129 | 900 | 4.1 | 190 | 20.9 | 4 |
| | August 9 | 93.8 | 134 | 908 | 12.4 | 195 | 44.5 | 4 |
| | August 10 | 96.5 | 140 | 917 | 21.1 | 202 | 62.3 | 5 |



Protection Branch Ministry of Forests

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|--------------------|-----------|------|-----|-----|------|-----|------|---|
| Negro Creek | August 6 | 85.9 | 196 | 554 | 3.8 | 208 | 20.1 | 4 |
| | August 7 | 69.7 | 104 | 550 | 1.0 | 142 | 5.9 | 3 |
| | August 8 | 86.6 | 108 | 557 | 5.1 | 145 | 23.2 | 4 |
| | August 9 | 92.5 | 112 | 565 | 11.4 | 150 | 40.1 | 4 |
| | August 10 | 95.2 | 117 | 573 | 25.2 | 155 | 66.1 | 5 |

Extreme drought conditions persisted throughout the vicinity, with warming temperatures forecasted. Southeast to southwest winds 10 to 25 km/h with gusts up to 50 km/h through mid-evening. Possible gusts up to 90 km/h near thunderstorms

Campfire and open burning restrictions had been initiated, a province-wide State of Emergency had been ordered and significant media notices for fire risk awareness had been broadcast.

A band of subtropical moisture produced scattered thunderstorms and lightning in the Lumberton/Jim Smith Lake (west of Cranbrook) area on the morning of Aug. 7. Helicopter patrol found seven new fires. Initial attack was initiated with available crews on the lower elevation, higher priority fires.

Two additional fires were found in McNeil Creek (Near Lamb Creek). Both were at a high elevation and exhibited little or no aggressive fire behaviour including the N10470 Lamb Creek Fire. Access for ground forces was limited as the fire was on a remote ridge with no reasonable helicopter landing spot. Specialty rappel or hover-exit trained Forest Service crews were required. A deactivated road within 200 metres of the fire limited access to the fire from a maintained Forest Service road in Lamb Creek. Two local initial attack crews were on mandatory rest after working continuously for three weeks, which further compounded the lack of Provincial and Fire Centre resources

A reconnaissance of the fires Aug. 9 found one of the fires had gone out and the other was exhibiting low fire behaviour, white smoke and only slight growth. Action was again deferred due to higher priorities and fully committed initial attack resources.

On Aug. 10, local residents advised that there was increased smoke activity in the area and fire response was initiated.

FIRE ZONE SITUATION:

On August 7, 2003, the zone had the following resources committed to Initial Attack targets, or active on large fires:

- 32 FS Staff,
- 27 Time Certificate Staff,
- 65 Contract Fireline Staff, and
- 15 pieces of heavy equipment.



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Ministry of Forests

The zone had actioned 13 fires on the day that Fire N10470 was discovered. There had been 11 additional fires discovered within the previous two days.

FIRE CENTRE SITUATION:

The Fire Centre was in its highest level of preparedness and fire control resources were positioned according to the requirements of the Fire Centre preparedness plan.

OTHER FIRE ACTIVITY:

August 6: 93 fires, 2 nuisance fires, 6 smoke chases.

9 fires > 4 hectares (6, 10, 14, 50, 250, 261, 625, 650, 1982)

August 7: 68 fires, 1 nuisance fire, 3 smoke chases.

11 fires > 4 hectares (15, 39, 40, 200, 206, 386, 488, 530, 629, 686, 1081)

August 8: 33 fires, 2 nuisance fires, 3 smoke chases.

5 fires > 4 hectares (8, 101, 155, 495, 1400)

August 9: 32 fires, 0 nuisance fires, 0 smoke chases

8 fires > 4 hectares (10, 461, 670, 700, 700, 702, 1472, 6447)

August 10: 50 fires, 1 nuisance fire, 2 smoke chases.

7 fires > 4 hectares (18, 22, 26, 30, 31, 96, 6700)

5-day total: 276 fires, 40 > 4 hectares.

PROVINCIAL SITUATION:

Ten major fires in British Columbia and three large fires in the United States threatening to enter the province were active when the Lamb Creek fire started. As well 217 new fires started in B.C. on Aug. 7.

Fire Start and Response

LAMB CREEK FIRE

Fire control tactics on the Lamb Creek fire were challenged by continuous and erratic strong winds, terrain and forest fuel types that would not support line ignition required to remove the



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Ministry of Forests

fuels from between guards and the fire. As well, concentrations of very dry, heavy fuels were very prone to torching into the forest canopy resulting in the start of spot fires ahead of the main fire. The Fire Management Team (FMT) faced 6 days of continuous strong winds that challenged key pressure points and guards established to steer the fire away from Munro Lake and other residences in the North Moyie Lake vicinity. The primary goals of safety of fire line personnel and local residents; and steering the fire around residences and recreational homes were met.

PLUMBOB FIRE

The Plumbob fire was a wind-driven event during a period of extreme fire potential. Containment with the initial forces was unlikely due to fire behavior. Early recognition of the fire potential focused ground forces on warning and safeguarding residents.

Fire control strategy was to flank the fire and pinch it off using indirect tactics – establish guards then burn off unburned fuels. There were ranches and residences in the initial path of the fire, recreational areas to the northeast and a pipeline and compressor station to the west and northwest. The fire control objective to keep the fire from the residents, pipeline and recreational values as well as a safe operation was met.

SYNOPSIS

The FMT was reassigned from another fire to the Lamb Creek Fire on Aug. 13. The Plumbob fire started and took its initial major run on the same day. The close proximity of the two fires, the limited availability of key resources and the probability of two interface events supported the decision to manage the fires under a complex.

Both fires involved chart areas of Tembec Industries, giving them a vested interest in fire tactics and operations. It would have been preferable to use tight-line techniques (building fireguard close to the fire perimeter). However this was not feasible as a defendable guard could not be established with the resources available prior to the fire challenging and/or overrunning them.

On the Plumbob Fire, tight lining was attempted Aug. 14 but the fire behavior did not allow for the guard to be completed and secured prior to it being overrun.

On the Lamb Creek Fire, indirect fire fighting tactics were necessary as the fuel type and wind led to continuous spotting of new fires ahead of the main fire. Under severe wind conditions spotting up to 2.5 kilometres was recorded. Compounding the efforts to contain the fire was the difficulty to completely burn all fuels between the fire and established guards. There was considerable green vegetation under the canopy that would not support line ignition, with patches of very dry large material that would torch into the canopy with the resultant spotting.

Logging techniques were used to remove the standing timber from the guards to reduce the fuel loading adjacent to the guards and lessen the environmental damage. On the Plumbob Fire, Tembec was allowed to harvest some of the standing timber within the active fire area. This also removed fuel and provided some patrol and detection capability.



Protection Branch

Ministry of Forests

The FMT encountered a number of challenges on both fires. However with the exception of wind and fuel type these challenges did not have a significant impact on the outcome of the fires.

Chronology of Initial Attack (Lamb Creek)

Aug. 7:

- 11:30+/- Fire was ignited by lightning strike
- 12:25 Discovered by FS helicopter patrol

Aug. 9: Fire reconnaissance – no significant growth–white smoke–no fire behaviour

Aug. 10: Reports of increased activity in fire area

- 08:51 Helicopter with SE Delta dispatched to fire
- 09:23 First request for air tankers is made
- 10:10 SE Delta left fire with no action due to fire behaviour, lack of access and crew safety
- 11:08 BD aircraft over fire
- 11:31 Commenced air tanker action
- 12:52 Air tanker action completed having created a three-sided box to guard fire from moving into timber to the West
- 14:00 Helicopter reconnaissance – no evidence of retardant – fire at 15 hectares – rolling at Rank 4
- 18:00 Crew is off the fire

Aug. 11: New IC – 21 people – 5 Industry, 6 UC, 10 FS Contract members

Aug. 13:

Equipment available to build guard to burn off on the northwest flank. The winds were from the west 30 to 40 km/h.

Fire started to move towards Cats (bulldozers) and equipment. Pulled Cats back to lake and then pulled crews off fire.

Fire starting to take off. Jumped from 300 to 1,500 hectares in 4-5 hours and spotting.

Two heavy and a medium helicopter bucketed ahead of fire on spots.



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Once wind took it, pulled everything off. Crews unable to establish defensible guard prior to fire overrunning it.

LEARNINGS FROM THE LAMB CREEK INITIAL ATTACK

Initial fire potential was correctly assessed. Observed fire behaviour did not indicate explosive conditions. The return of indices to exceptional values could have been recognized more quickly.

Although communication between Fire Zone and the Air Attack Officer was very good, a process to ensure that the AAO is provided with necessary local knowledge, particularly that of prevailing winds, would be helpful.

Chronology of Initial Attack (Plumbob)

AUG. 13:

13:41 Casey Lookout (L/O) reported fire – blue haze coming up

13:57 Air tanker dispatched

14:06 Air tankers depart Cranbrook airport

14:35 IA crew was sent from Cranbrook via helicopter

14:58 Fire Officer dispatched – requests additional resources (two crawlers and medium helicopters)

15:00 Fire is 20 hectares +/- Rank 5 – spotting 300 metres ahead

15:18 70 hectares

15:54 100 hectares

16:00 began notifying residents

16:29 150 hectares (spotting 300-500 metres ahead)

- Roughly six hours later – 1,000 hectares

AUG. 14: Evacuation order placed.

Lightning which occurred sometime prior to Aug. 13 is suspected to be the cause of the Plumbob fire.

Casey L/O detected the fire on Aug. 13 at 13:41. The initial fire report from the Lookout recommended that air tankers be dispatched immediately.

The fire behaviour in the initial stages indicated a “Home Run” fire (a home run fire is a fire that could not be stopped, even with all available resources). There were residents to the south and west of the fire, ranches off the head of the fire, a Lookout to the northeast, and campers along the west side of Lake Koochanusa.



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Ministry of Forests

The request for air tanker and initial ground attack was processed promptly. Requests for air tankers and other Initial Attack resources must be processed as expediently as possible when faced with the conditions that existed in the vicinity on Aug. 13.

LEARNINGS FROM THE PLUMBOB INITIAL ATTACK

The assigning of specific radio frequencies for specific aerial fire control activities to ensure operational efficiencies and safety are maximized. Options such as linked frequencies should be considered.

Investigate the most appropriate foam / retardant mix ratios to be used under extreme burning conditions as traditional air attack and retardant applications techniques had unexpected influence on fire behaviour.

Lack of current maps with updating capability impacted control successes. Land status maps need to be accurate and current to ensure public safety especially during evacuations.

Insufficient numbers of Danger Tree Assessors slowed down activity on the fireline, creating excessive amounts of hazardous fuel. More Danger Tree Assessors need to be acquired.

Expanded Attack

The following describes the fire action and active during the critical periods after the Fire Management Team was established to over see the Moyie Complex:

AUG. 13

Lamb Creek Fire had grown to 1,500 hectares.

The FMT assigned to fire (took command on the 14th). First goal was to catch the heel (base of the fire) and flank it using existing road system. Estimated that there was a 50/50 chance of catching it at Little Lamb Creek. Directing the fire into the old Selmin burn was the fallback objective.

Plumbob fire starts and takes initial run.

AUG. 14

Plumbob guard construction (tight line) commences on south flank, subsequently lost.

AUG. 15

Lamb Creek continued guard construction in accordance with original plan. Fire Analysis Plan for both fires submitted and approved by Fire Centre and Land Manager.

Plumbob fire size approximately 1,500 hectares.

FMT assume command of **Plumbob** fire.



Protection Branch

Ministry of Forests

AUG. 17

Lamb Creek fire size now estimated to be 3,000 hectares.

Overnight the fire overran the guard on the south flank (wasn't quite completed) and burned timber in areas adjacent to the main fire. Guard in Little Lamb Creek held with the exception of a few spots, which were attacked immediately.

Plumbob fire size 2,233 hectares.

Guard construction, strengthening and burn off continues.

AUG. 18

Lamb Creek - Tried to burn off some key critical guards with no success. Embers from burning Balsam trees spotted over the guard.

AUG. 20

Lamb Creek continued to support guards and burn off. No appreciative increase in size.

Plumbob Routine guard construction to this point - excursions of fire over the main fire guards have been held by secondary guards (on the east).

AUG. 21

Lamb Creek Fire size 5,000 hectares.

Consideration of evacuation plans. Jumped the guard on the west side and challenged guards throughout. The guards were leading to the 1994 Semlin burn.

AUG. 22

Lamb Creek Containment of excursions and focused on holding lines in the Little Lamb Creek to stop progression into Munro Lake.

Plumbob Fire challenged guards on the west; tactics were to keep the fire as high on the hill as possible.

Residences were allowed back into Plumbob using permit system. Some resources reassigned to the Plumbob to assist with containment.

AUG. 23

18:30 **Lamb Creek** Major spotting moved the fire significantly closer to north and east guards – spotted 1.5 kilometres.



Protection Branch

Ministry of Forests

A little rain less than 0.1 millimetres. Strong wind pulled resources due to safety concern.

Plumbob North guards completed several spot escapes attacked.

AUG. 24

Lamb Creek Fire across primary guards being held with heavy helicopters and crew support and burn off to hold from further spread. Fire alert and notice developed to be readily available if needed. Good burning in northeast corner spotting on Lamb Creek and running upslope. The fuels were too green for full and proper burn off.

Plumbob Fire approximately 2,700 hectares.

No significant growth after this point

Hot spot escapes attacked.

AUG. 25

Lamb Creek Fire size now 7,100 hectares.

Fire is now into the old 1994 burn (Semlin Fire) and pushing to flank on the east towards Munro Lake. Lower Lamb Creek challenged .

Burn off in the Little Lamb Creek.

16:20 Evacuation order is in place.

Good burning in the Lamb Creek – shared burning crew with PAB (Zone).

AUG. 26

Lamb Creek Smoked in all A/C. Tried to box in any further movement towards Munro Lake. Lamb Creek flank pushing to the west.

16:00 Moyie River flank pushing down slope - moved equipment off the line and crews followed for safety considerations

17:15–18:00 Winds 80 km/h.

Equipment moved out of the area.

Organized structure forces for Lumberton area as well initial attack capability to take on spots.

Evacuation alerts were in place.

Spot fire in old Moyie Burn – too windy for heavy helicopter bucketing.

Evacuation order ready for additional residents in the Lumberton vicinity.



Protection Branch

Ministry of Forests

AUG. 27

Lamb Creek Fire size now 9,700 hectares.

Evacuation order placed for Lumberton side of highway.

Planning a secondary and contingency lines.

13:00 Burning toward Lamb Creek.

16:00 Fire running from a finger towards Munroe Lake, Put helicopter up - "eyes in the sky" - to watch for spots across Munroe Lake.

16:45 Helicopter reports everything is okay for now.

17:15 28 to 35 km/h wind at ground level.

17:25 Spot over Munro Lake.

Medium and heavy helicopter dispatched – spot pulling back into main fire.

17:45 Spot north of RCMP staging area across highway – structure engines engaged.

Light rain.

AUG. 28

Lamb Creek Lots of smoke – Moyie River flank getting rain – lightning over the top of the fire; spots across the Moyie River – all bombed with retardant.

AUG. 29

Lamb Creek Fire size 10,637 hectares.

Fire had wrapped around Munro Lake – some spotting across Lamb Creek.

Permit system is in place to allow Munro Lake residents access to take care of homes.

Burning off in Lamb Creek to tighten up guards – burning in the Moyie.

Still considering contingency plans – organizing crews with maps and signage if the fire threatened to run across the highway.

AUG. 30

Lamb Creek No significant growth after this point.



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Learnings and/or Challenges Identified During Expanded Attack

RESOURCE AVAILABILITY

The complex handling two fires led to effective use of limited resources.

Difficulties in the resources request process and uncertainty of resource suitability off-loaded this workload to the FMT

Assignment of BC Liaison Officer to out-of-province FMTs is essential, particularly if an entire FMT is assigned to support another team. Furthermore, such assignment must ensure roles are clearly understood and accepted.

A process that identifies critical fire-line positions and staffs them in advance under specific thresholds may be appropriate.

Rotating off-days among FMT members to meet required days of rest is a viable alternate to replacing the whole team.

MAPPING

The availability of suitable mapping system with readily available update capability is critical to fire control operations.

Ensure that the supplied Infrared Systems are appropriate to the need and that the support infrastructure is in place to provide timely information. Strong coordination is required to ensure that the appropriate service is provided to the fires.

COMMUNICATION

The aged radio communication system needs to be revamped. Until such time that it is updated, staff must be trained and familiarized with the various systems in use.

INFORMATION

The media was cooperative, providing the public with timely information. Even when faced with tight deadlines, accurate and consistent information from all sources is essential.

There is need to have all the emergency response agencies committed to an appropriate information dissemination process.

SAFETY

A Danger Tree Assessment task group to provide danger tree assessment and falling scheduling relieved the FMT of a significant workload.

Firefighter safety issues (such as the removal of propane tanks) must be included in interagency briefing agendas.



Protection Branch

Ministry of Forests

TRAINING

The training and capability of the Category One sustained action crews was clearly evident. Training/availability of additional Cat 1 crews should be considered.

Identify required skills and provide training for IC of FMT to ensure they are equipped to meet the demands of the most complex fires.

Incident Command System training should be priority among other emergency response agencies, industry and partnership personnel.

A more committed program of mentoring suitable personnel for key fire line position should be initiated.

EQUIPMENT

Agency and public education of the value and use of sprinklers as a residential protection system is required.

Efforts at Fire Centre must be focused on providing FMT with required equipment and supplies without transferring any of the processing (screening for suitability/briefing) efforts to the FMT.

Specially equipped logging equipment offset some of the delays from hand logging of danger trees in the area.

AVIATION

It is beneficial to have the Fire Centre monitor the use of limited resources to determine the appropriate allocations based on priorities.

The request process for air tanker support action should be reviewed and streamlined where possible.

OTHER AGENCIES

The emergency response agencies should ensure that all staff are trained in ICS and understand the principle of Unified Command.

Rehabilitation

When action was commenced, it was felt that rehab should be considered during tactics planning and conducted in concert with operations. This approach was communicated with the District Manager, but there was a reluctance to approve any of the plans until the fire was over. Need to establish a process so that relevant issues are considered during control action and necessary works can be completed with available equipment immediately.

All natural drainages were put back in place. BC Timber Sales were very cooperative in assisting with removal of the timber. Turned rehab over to Fire Centre during the fire debriefing.



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LEARNINGS AND/OR CHALLENGES IDENTIFIED DURING REHABILITATION

A process to have all agencies agree that rehab should be conducted in concert with fire operations and all stakeholder concerns should be pursued.

Blue book rates not released until mid season.

Standard approach needs to be developed for paying for ancillary equipment on heavy equipment.

Procedural changes mid-season are a significant burden.

An integrated filing system consistently used on all fires that is maintained as a complete file.

Gathering of resource utilization information with right tools at these key source points improved daily cost records.

Improve our estimating process, simplify it and stabilize the variations in the estimates.

A fireline inventory management system is needed. It must be seamless with the programs records, adaptable to all fire-line conditions and low maintenance.

Summary

The cooperation with the Fire Zone was very good. Sharing of key resources, providing key personnel, and locating necessary resources and information contributed to the success of the FMT. Pre-organization of heavy equipment could be better, particularly low-beds. This is critical in the southeast as they are reliant on using heavy equipment.

The Fire Centre showed a considerable confidence in the FMT and didn't question or influence any operational activities. When resource needs escalate to the urgent level, the Fire Centre responded to their best ability to FMT I/C requests.

Difficulty in processing of resource request and suitability screening/briefing of supplied resources offloaded significant workload to the FMT. Changes in procedural instruction also caused some additional workload at the fire.

Provincial resources were provided when available, and the support was better than could be expected for the level of fire activity throughout the southern portion of the province. The Protection Program should continue to look early and further for the necessary equipment/personnel/resources when activity level picks up.