Minutes

FPInnovations Wildland Fire Operations Research Spring Advisory Committee Meeting

Alberta Research Council, Edmonton

April 8th 2010

Attendees

FPInnovations

Ray Ault
Greg Baxter
Peter de Bruijn
Rex Hsieh
Roy Campbell
Ingrid Hedin
Jon Large
Colleen Mooney
Scott VanderMeer
Jim Thomasson
Rob Thorburn

Alberta SRD

Wally Born
Hugh Boyd
Bruce Mayer
Chris McGuinty
Steve Simser
John Brewer

Other Organisations

Kerry Anderson (Natural Resources Canada)
Dave Bokovay (CIFFC)
Doug Brown (Conair)
Revie Lieskovsky (Conair)
Tim Burton (AAMDC)
Mark Campbell (ICL Performance Products Canada Ltd.)
Con Dermott (Vanderwell Contractors 1971 Ltd.)
Rob Hyslop (Thermo-Gel Canada)
John Kraushaar (Thermo-Gel Canada)
Soung Ryu (University of Alberta)
Mark Ackerman (University of Alberta)
Gordon Sanders (West Fraser)
Don Thompson (Suncor)
Ted Szabo (Alberta Innovates)

Webex

Rob McAlpine (Ont. Ministry of Natural Resources)
Darryl Jessop (Saskatchewan Environment)
Chris Lindsay (FTSINC)

Meeting started at 0830 with introductions and acceptance of the Fall meeting minutes. The Alberta Forest Protection Advisory Committee (FPAC) meeting was to follow this Advisory Meeting in the same room.

Project Updates and 2010 Plans

Fuelbreak Effectiveness – Colleen Mooney

Objectives: literature review and documentation of best practices.

Summary of Results:

1. FireSmart standards are not applicable in all northern ecosystems because specific site issues like blow down potential.
2. Management of fuel break projects report on cost not measuring changes in fire environment

3. Data are not shared between jurisdictions so it is difficult to determine what practices are effective.
4. No cases of challenged breaks have been formally documented in Canada
5. Ongoing suppression activities along with fuelbreaks are critical often necessary for success
6. Lack of research into the effectiveness of various configurations of firebreaks limit our understanding of all the factors involved

Questions:

Q) Are best practices for fuel breaks moving away from FireSmart principles? No, not the principles but yes, the specifics are. For example, blowdown in lodgepole pine stands limits the application of thinning treatments in pine.

Q) Is there any research on firebreaks in mountain pine beetle stands? A) None that we are aware of.

The project was funded by Saskatchewan and Parks Canada

Mulching Studies – Jon Large

Objectives: Determine ignition potential, firebreak effectiveness, fire behaviour, change in vegetation over time.

The Lac la Biche project discussed last fall meeting was postponed and will not be done this spring due to caribou habitat concerns.

NWT summer 2010:

Build firebreaks using a mulcher; perform ignition tests in three species of mulched material; build survival zone; improve access routes and document line produced hourly.

Deliverables: reports on effectiveness of mulched fuels as control lines, including the application of grid patterns, pre and post fuel loading, ignition potential and vegetation growth following treatment.

Project proposed by Encana.

Survival Zones – Greg Baxter, Rob Thorburn

Objectives: Provide firefighters with information to improve survivability during a burn over event in boreal forests.

Methods: Determine heat radiation levels inside zone; collect temperature and air quality data; understand the role of PPE; and review relevant literature.

Human Survivability Report: "Burn Injuries and their relationship to Wild Land Fire Fighting" by Mark Ackerman (U of A) on website soon.

Literature Reviews: summary report prepared by Marty Alexander is underway. This report reviews literature on entrapments and identifies key characteristics of a survival zone for various fuel types.

Experimental Fires: four burns are planned: Slave Lake burns in grass fuels (5); Mt. Buller (SE slopes); Deadwood PB (Peace River) and a 50 m plot in the NWT. Data on temperature and air quality will be collected for each fire.

CO and Air Quality: Rob Thorburn is working on air quality and CO levels within the zone.

Focus – most researchers agree that the CO concentration is the important gas that affects humans. CO can also be used as a surrogate to estimate other gases. It is important to know what levels of CO a firefighter is subjected to in a survival zone during burn over conditions, and the effects of various levels (over time). CO levels will be measured using the Drager X-am 5000 gas monitor in fire proof boxes at four locations within a survival zone. The data will input into a US Army model designed to determine CO and the effects of smoke exposure.

Funded by core research program.

Aviation – IR Scanning – Ray Ault.

Objectives: sensitivity, accuracy, delivery and mapping.

Alberta/BC have a grid and standards of performance. Ontario has recently built its own grid. CIFFC looking at developing a national standard for helicopter scan operations. The group discussed the flight path of aircraft when conducting scanning operations.

Funded by core research program

Aviation – drop pattern grid – Ray Ault

What is the future need for a drop test grid – is there a need for a permanent grid in Canada? Should FPInovations develop a business case for a drop grid?

Questions:

Q) What is involved in setting up a grid? A) The area is surveyed to establish the grid points and cup holders are placed at each intersection. We should design systems to reduce the high labor component required using higher tech opportunities.

Comment – this could be a design project for U of A Engineering class? Yes.

Q) Would a portable grid meet the need?

Why is there a need? A) US won't accept new tank designs without testing. Conair A) there will be significant changes over the next 10 years and these will need to be certified over a grid. The Electra 188 airplane tank will require a grid for next year.

Decision: FPInnovations will prepare a business case for fall advisory meeting.

Detection – Jim Thomasson

2009 Results: The portable tower was a success. Three fires were spotted by the lookout operator; these were confirmed as permits.

2010 Plans: The tower will be set up again at Chisholm. We will test ists self-cross shot ability, real-time image transfer to Fire Centre, and smoke generator tests at 40+ km distance.

A second portable tower is being built and will include a digital upgrade to improve its effectiveness.

Questions:

Q) How effective is the camera? A) the tower located in a blind spot increased visible area by 14%.

Q) Cost of portable tower? A) $100,000 for the Chisholm set up; $130,000 for second tower because of the upgrade.

Q) How long was required to erect the tower? A) 2 people for one day. The tower is transported on a trailer pulled by a one-ton pick-up truck.

Project funded in partnership with CN Rail and ASRD.

2010 Fire Detection Workshop – Peter De Bruijn

Objectives: foster communications amongst organizations; introduce latest technologies; seek innovations and find solutions.

This will be the third workshop hosted by FPInnovations (held also in 2003 and 2006). Workshop will be held at the Hinton Training Centre on November 2-4, 2010. A steering committee made up of members is selecting topics and speakers this month. It will be available as a web-based event for those unable to attend in person.

Project funded by core research program

Helicopter transport of Mechanical Line Building Equipment – Jon Large

Investigating the Sutter 480 Trail Dozer as a low cost, light weight machine

Objectives: determine if the Sutter 480 is appropriate for fire fighting in Canada.

Jon attended four day course on the use of the machine in California.

Comments: had discussed with Risley Equipment and Finning at earlier meeting – this could be something they could help with. To move the project forward a platform for feedback on what is needed. The Sutter 480 could be used to foster discussion as part of a needs analysis.

The geophysical industry works with fly-in equipment on the east slope. The contact at SRD Lands is Loris Balk from the Geophysical group. Mike Doyle from Canadian Association of Geophysical Contractors would also be a useful contact for examples of existing machines.

From group: The line building capability of this machine needs to be validated. Skidders should also be looked at as they can build line and could be transported in two loads – body, and tires.

Funded by core research program

NWT Work Plan – Ray Ault

Projects planned for 2010 are:

1. Gel evaporation on vertical surfaces
2. Gel coverage level over time
3. Bridge timber protection for CN
4. Fire in regenerated stands – from early CFS burns
5. Handheld IR scanners for Ontario
6. Survival zones
7. Linear corridors – fuel management
8. Mulching trials
9. Community protection plots (4)
10. Simulated mountain pine beetle

Funded by core program and support from NWT.

Trip Reports

Mars Gel Drops and Technology – California – Jim Thomasson

During the drops,visual observations were made and data on drop pattern were collected using cups and cards.

Collision avoidance, synthetic vision, Garmin flat panel screen and radar altimeter technologies were used by the aircraft. Load monitoring was also part of the system.

The Firewatch 76 Air Attack system provides real time evaluation of drop effectiveness, locates the target through smoke, and links the drop to the map.

The Fire Intelligence system provides real time IR monitoring, spot fire location under smoke conditions, improved crew safety through location of firefighters, and mapping tools.

Load cell technology may provide a cup replacement device to enable less labour intensive and more automated collection of load spread data.

USFS Missoula trip summary – Ray Ault

Items discussed:

802 Air Tracker – future on 'collection of data' agreement between US and FPInnovations. Where should we go with drop testing? New tools to collect data and cut costs.

No burn tests for gels/foams as they are 'wet' and can't be used in wind tunnel. Need to look at viscosity.

Comment: need to see that the MOU works both ways.

AirView IR scanning in Australia – Roy Campbell Feb 5-12, 2010

Company provides live high definition and thermal video technology to the fireline. Range is ~ 150 km.

Objective: provide an assessment of technology; determine operational applications; assess Canadian potential.

Technology used for: detecting holdovers, provide live information, firefighter safety and fire scanning and mapping.

Comment: Roy C would add a third 'agency' person to the aircraft for tactics.

System provides political and media updates.

Alberta Voucher Program – Jim Thomasson

FPInnovations is a Service Provider with Alberta Innovates. Have been approached by 3 vendors:

1. 'sprinkler system' – market study/prototype ($10,000)
2. automated hot spot detector – market study ($10,000)
3. low level hot spot detection – system test ($50,000)

Treat these as directed research.

Project Proposals from fall 2009

1. Handheld scanner – cautious approach – won't replace cold trailing. Directed research from Ontario. Scott Vandermeer will be collecting data in Ontario this summer.
2. Telemetry – a high volume of data leads to a data management problem. Need commercial sector to solve as many platforms such as FireWatch 76. Proven concept.
3. Canopy penetration of drops from aircraft– 3 year project in US started this spring. US methods will focus on the need to concentrate on a small spot in a drop rather than evaluating the entire drop.

New Project Proposals

1. Documentation of fire breaks effectiveness at the fire site
2. Business case for aircraft product drop permanent grid
3. 3. K. Anderson (NRC) – would like a quick and dirty fire mapping technique to use for fire prediction models. Speed is important, with a lesser importance on accuracy. Comment – D. Jessop – a technique is used in far north on moving fires and collect some information. Comment – K. Johnson – get Jim T to work with Geomatics community – tablet work, fins resolution. Comment - Kerry Anderson – step down from the Modis system. Comment - Tim Ball – The Fireball Technologies 2006 Detection Workshop would be a place to start to get some ideas on a suitable technique.

Wildland Fire Canada 2010 Conference

Ray Ault proposed to hold the Fall Advisory Committee meeting in conjunction with the above conference in Kitchener, Ontario during the week of October 5, 2010.

- GNWT approves the idea.
- ASRD supports attendance at the conference and approves the idea of holding FPInnovations fall advisory meeting as an addition to the conference. However, the challenge will be obtaining authorization for out of province travel.
- Ontario MNR supports holding the meeting in Kitchener.
- The conference organizers encourage FPInnovations holding a meeting in conjunction with the conference.

CIFFC Aviation working group will be meeting at a different location at that time and this may be a conflict for some of the members.

Follow-up regarding the fall advisory meeting. The conference organizers have agreed to provide meeting space for the FPInnovations Wildland Fire Operations Research Group meeting on Thursday October 7.

The fall meeting will be held at the Kitchener Delta on October 7, 2010 from 12:30 to 16:30. WestJet flies directly from Kitchener to Calgary WS485.

Recognition of Vanderwell Contractors

Ray, Jim and Greg Baxter then presented Con Dermott a photo gift for Vanderwell Contractors (1971) Ltd. for assistance and cooperation on the many burns FPInnovations have had on their land.