

Minutes ACFIRE Fall 2006 Meeting

Edmonton, September 26, 2007

Attendees:

John Mann	FERIC	Wally Born	SRD
Marv Clark	FERIC	Frank Lepine	GNWT
Ray Ault	FERIC	Terry Kennedy	Fire-Trol
Greg Baxter	FERIC	Colin Cameron	Fire-Trol
Dave Schroeder	FERIC	Kim Chell	Fire-Trol
Sharad Karmacharya	FERIC	Chuck George	ICL
Kris Johnson	FERIC	Mark Heathcott	PC
Jim Thommason	FERIC	Rob Heslop	Thermo-Gel
Rex Hsieh	FERIC	Rick Solomon	Thermo-Gel
Rory Thompson	FERIC	Margarite Berkhout	SRD
Dave Patterson	FERIC	Keith McClain	SRD
Kelsy Gibos	FERIC	Darryl Jessop	Sask Env
Kari Matechuk	FERIC	Mark Campbell	Sask Env
Gary Dakin	Consultant	Terry Dixon	Flying Tankers Inc
		Peter de Bruijn	Astaris
Jeff Berry	BCFS	Bruce MacGregor	SRD
Revie Lieskovski	SRD	Pete Bothwell	CFS
Ruddy Mell	NIST	Axel Winter	Alpac
Alexander Maranghides	NIST	Warren Kehr	West Fraser
Mary Omodei	CSIRO	Rick Pederson	Conair
Neil McLaughlin	SRD	Mike Guterson	Wildfire Group
Brent Schleppe	SRD	Ted Szabo	Alb. Innovation and Science
Con Dermott	Vanderwell		

The Meeting began with a review of safety procedures and a round of self introduction.

Minutes from Spring meeting were accepted. Moved by Con Dermott and seconded by Wally Born.

Presentations

Saskatchewan Forest Centre – Kris Johnson (306) 765 2862

Completed work:

- Development of a wind rose utility to place firebreak (wind direction during critical fire days)
- “How big is a hectare?” A reference guide to provide initial attack crews with a better bench mark for assessing fire size.
- “Managing Community Wildfire Risk Guide” – produced for Saskatchewan.
- Cameco Corp. facilities wildfire protection plan.

- Pinehouse Community Wildfire Protection Plan (A Saskatchewan first).
- Docudrama – on wildfire and community protection / prevention, filming completed – will be sent to every community and library in Saskatchewan.

Exploratory research:

- Investigate usefulness of handheld infrared scanning on the ground
- Evaluate Surge Busters® – fluid control baffles for IA truck water tanks
- Burn board – fire simulator for education
- ATV mounted torch for prescribed burning
- New Project funded by Saskatchewan Forest Centre Re-engineering helitorch (burn mixture, GPS burn logger, in air mixing, electrical ignition, on board extinguisher)

Comment - good that you are looking at outside research.

Testing Surge Buster in October in Kamloops. Contact Kris Johnson for details.
Working with Jeff McDonnell of BCFS.

Linear Development – Greg Baxter (780) 868 6342

1. Grass mowing burns. One set of burns completed this spring at Vanderwell in Slave Lake. Ft. McMurray burns cancelled due to hazard and weather. Burned 3 plots at the same time – spring mow, fall mow and standing grass. Fall mow had least fuel load and least intensity. Plots already mowed for spring 2007 which will be the last year of burning.
2. BC Transmission Corporation – working with BCTC to determine treatments for debris loading under power lines. Remote and steep locations add to treatment concerns. Fuel load data collected this summer by BCTC. FERIC looking at how fuel load depth influences fire behaviour – models very sensitive to this. Blowdown and case studies of fire behaviour used to understand fire behaviour potential. Working on a case study with Rick Lanoville of a fire near Merritt where harvested bundles of pine were involved – the fuel arrangement is close to that found on the power lines. Found unpredictable fire behaviour even though rates of spread were slow. Case study to be completed this fall.
3. Grassfire breaching model – completed and on website in three formats. May add daily and diurnal FFMC module and an imperial unit option.

Fuel Management Effectiveness – Dave Schroeder (780) 865 6980

Project Locations:

- Jasper National Park
- Williams Lake – FireSmart and mule deer management – Advantage Report will be prepared this winter
- NWT – three plots ready to burn. Current 5-year permit expires April 30, 2007.
- Crowsnest Pass (CNP)– proposals in for debris disposal. 5 weeks fuels/stand data completed in 2006.
 - Funding to do work specifically in the CNP provided by Foothills Model Forest, SRD support including crew accommodations at the Gap fire base.

- FERIC working with SRD to develop harvesting plan
- Calling Lake – unable to work ignition testing into the schedule in 06.
- Meadowland Creek – wildfire created useable firebreak.
- Mt. Nestor – fuel management (No longer a research area for FERIC)
- Fuel Inventory – Working with SRD crews that did testing on Marty Alexander's field guide. Will work with SRD to revise the manual this winter.
- Database of fuel inventory. Working with SRD to develop.

Passive Land base – Dave Patterson (780) 422 4565

- The risk of spread of wildfire from the passive land base (un-merchantable / non-productive areas) increases with the accumulation of fuels (as a result of past suppression activities). Increasing forest fuel hazards are being addressed in the wildland/urban interface (WUI) area, and the risk of wildfire spread within the productive forest can be addressed through harvest planning. However we also need to start addressing the accumulating fuels on the passive land base which are spreading catastrophic wildfire onto adjacent areas (productive forest lands and WUI areas).
- We have initiated the development of a FireSmart Landscape Implementation Strategy with ASRD to provide direction and demonstrate a commitment to move FireSmart treatments out from the WUI onto the landscape in Alberta. Upon completion of a FireSmart Landscape Implementation Strategy we will be in a position to seek Forest Industry's needs to implement Annex 3 of the recently adopted Alberta Forest Management Planning Standards.
- The first step in developing a FireSmart Landscape Capability is to document the existing state of knowledge. The present draft of the Forest Fuels Management and Biomass Utilization Bibliography is now 290+ pages and includes over 4,100 references. It documents the treatments and silvicultural knowledge that can be used to reduce, remove or modify hazardous forest fuels. However treatment of forest fuels over the passive land base will require new sources of revenue and will need to address the biomass that remains after the fuel treatments. Therefore the bibliography has been expanded to include opportunities to utilize biomass created by fuel treatments. The advisory committee members had requested this document be kept current and include additional biomass utilization references
- We have been looking for a partner to convert the bibliography into a data base to make it easier to sort and make it more user friendly. However it is too big a project for the people we have approached so far.
- To develop a Landscape FireSmart Capability we recognize the best approach is to simultaneously facilitate the development of a Bioenergy /Biorefinery /Bioproducts industry to provide a revenue source and a capability to remove the biomass created by the FireSmart treatments. Therefore we are participating in the development of the Canada Biomass Ltd. downdraft high temperature gasifier and have initiated a potential partnership for a combined heating and power plant. There have also been discussions with a northern sawmill and a Metis colony regarding value added opportunities to utilize forest biomass. Also a company is seeking forest biomass to develop five biodiesel plants in Alberta. Also the

western provinces are in the process of developing bioenergy strategies which include the use of forest biomass.

Fuel Management Costs and Benefits – Greg Baxter (780) 868 6342

Seven treatments rated by four factors – fire risk, wildlife suitability, regeneration capability and overall costs. First two finished and interim report on website. Collecting data on costs and regeneration capability at this time. Project to be completed this fall.

Fuel Management Costs – Dave Schroeder (780) 865 6980

Jasper National Park - piling with mini-hoe. Web report will be out this winter.
Crownsnest Pass – Harvesting planned for winter 06/07. Will collect productivity data. This project is in conjunction with the Foothills Model Forest and the funding for it is outside our Groups core funding.

A complete list of projects can be seen in the Fuel Management Effectiveness project outlined above.

Impact of FireSmart on AAC – Rory Thompson (780) 914 7353

Dropped two communities from initial list of 12 selected for Alberta study. Found reductions in AAC for each community are less than 1% of AAC in a 10 km radius zone around the community. Report to be completed this winter.

Harvest Debris Management – request for advisory members to provide a location to further current research - Dave Schroeder/Greg Baxter (780) 865 6980 / (780) 868 6342

FERIC is often asked what constitutes suitable debris levels from a wildfire aspect. Debris management is often viewed as an added cost and the treatment effects cost. Although some opportunity to use harvest debris as a biofuel does exist, debris conversion will depend on transportation and other issues and is not a solution for all current debris locations.

In studying debris disposal and fire the biggest question is ‘how much fuel could be left on site?’ The amount and arrangement of debris remaining on site after treatment / harvest must allow for probable fire control. Work has taken place to determine this, but more is required. FERIC needs a site to conduct a series of debris burns in various debris treatments to record fire behaviour and test suppression techniques. FERIC needs a member to volunteer and let the fire group burn debris on a company site to determine acceptable fuel loads for harvest debris and community protection.

FERIC is requesting the development of a site for experimental debris burning. We require a location, some harvest equipment, and a ‘Champion’ to help coordinate the

project. The appropriate site would accommodate 12 plots (30 x 30 m) for a total area of 20 hectares.

FERIC will deliver – documented fire behaviour based on fuel loading and arrangement, suppression requirements, as well as, risk reduction by cost. FERIC will report results.

Comments:

- Contact Chris Duffy BCFS for a site in BC
- Brent Schleppe – had a fire in a block that was well documented – could go get pre-fuels and post-fire fuel loads as an example.
- Site set following harvest.
- Ontario does a lot of prescribed burning – could data be collected there?
- John Mann – should change word to be ‘how much *should* be left (not could)’. A more holistic approach – wildlife, nutrients, etc. Expand vision. Invite offers to help – still need site.
- Con Dermott – fuel management, Ground Rules to be followed. Base on stand structure – look at broad scope – extend to biologists. Include SFMN.

Smoke Detection – Sharad Karmacharya (780) 865 6979

Productive season. Went through what the cameras observed this season. Added 2 towers and are up to 10 cameras. Many fires and other smokes (such as flares) detected. Sharad also presented the background to this project.

Currently working on a five-year Business Case.

8 smokes reported to Edson

23 Maintenance visits – trying new configurations.

Camera uptime – 70%

False alarms – cloud shadow most common. Parameter setting needs adjustment.

Data communication – used Supernet, Firenet, microwave. At stage when operation of communications could be contracted out.

Comments:

- Warren Kehr – used camera images supplied by FERIC to document Hinton mill fire and for investigation.
- Jeff Berry – have you used tower people to ‘teach’ cameras. Have one at a lookout where if a fire was missed by camera, tower person could zoom in and teach cameras to find smoke.
- Morad Communications of Hinton are interested in providing the services of their communications system on a contract basis.
- Reivie Lieskovsky – suggested SRD can transmit data cheaper than Morad – will talk about this later.
- Can you use a 3rd party to get access to Supernet? No, only government can use SuperNet under current agreement.
- Has anyone looked at sensitivity thresholds for the use of the camera? Not yet.

- John Mann – FERIC’s role is ‘proof of concept’ not to run program.

Remote Communications – Dave Schroeder (780) 865 6980

FERIC was to summarise new technology for use on fires to reduce the load on radio systems.

- Repeater tied to existing system
- Cell phone booster and high gain antenna
- Improving cell phone range and capacity.
- Voice over internet (VOIP)

Found the Provinces have radio / communications programs that are close to technology advances and we wonder where FERIC’s role is going forward.

Comments:

Next steps – identify radio communications bottle-necks (overload) and identify what information is critical voice and what information could migrate to text.

Jeff Berry – tactical and strategic – analyse workload productivity. Priority communication – remove unneeded voice traffic. Look at other agency concerns.

What can be texted? Need to study effectiveness of ‘decision making’.

What should be done now?

Understand description of the problem. Are we focussing on tactical or strategical concerns?

This project requires a problem analysis and BC/Sask offered to contribute to this.

Smoke Management Vancouver Island – Greg Baxter (780) 868 6342

Smoke a big concern along East Vancouver Island – more debris to be burned in close proximity to population. Need better burning practices and validation of AES Venting Index (industry believes more burning days exist than the venting index predicts). This is exploratory work at this time – but will be put forward as a project later today. Debris generally burned in the fall when the rains arrive.

FERIC, the BCFS, and industry will work together to develop better burn practices by first documenting the moisture cycle of harvest debris (in piles and on the surface) and by validating the Venting index. Work will commence this fall with the monitoring of debris moisture content and the comparison of localized venting data with AES venting indices. It is hoped that data will reveal the best time to burn based on fuel moisture of the debris. The venting validation may also show other times of the year when a greater number of good venting days occur.

Comment – Dave Patterson – they currently cover debris in Europe to protect debris for biomass use. Dave Patterson will be contacted to find the contact person for the work in Europe.

Guidelines for Aircrane – Ray Ault (780) 865 6977

Project initially to find when S64 is cost effective alternative in Alberta.

Used a BC model where assumptions were embedded – could not change these so outputs were unreliable. Re-thought approach – maybe just litres delivered. Originally presented as \$/L, but costs have changed.

Goal is to determine if cost effective to pre-position S64 in Alberta.

Comments:

- Wally Born – heavy lift is changing – not just water is moved, but equipment and manpower. Could broaden the scope of the project to include lighter than air vehicles.
- Jeff Berry – agrees. Can't compare RW to FW at all.
- Con Dermott – cost not everything – may be effective, but not efficient – if you save a town you don't worry about cost.
- Darryl Jessop – agree that cost not everything and project should look at heavy lift for other uses beyond delivery of water.

Rate of Spread Sensor -Neal McLouglin (SRD) (780) 415 6671

U of A Engineering developing a 'drop from the helicopters' rate of spread sensor. Product is in testing mode and costs \$160 to produce. This work is exploratory and is being done in conjunction with SRD (Cordy Tymstra) and FERIC. The big test will be dropping the units from the helicopter and evaluating their effectiveness.

Fire Aviation Update – Wally McCulloch (250) 320 3511

Projects:

- 3-D Grid Literature search - little information available. The information found was for older aircraft tank configurations. There is little information on 'constant flow' type gate systems. This document is currently under FERIC technical checked and will be on the web in the near future. Literature and FERIC investigation indicate the cost and complexities of developing a 3-D grid are significant and beyond the resources of the FERIC.
- Rocky Mountain Agriculture F/W tests – ran a grid with cups. AT502. Completed 4 drops. Results in literature show 45-60% canopy interception. This project found 60%+ interception rates.
- Retardant Mix Ratios – tested in beetle killed pine debris. More fire encroachment into the treated slash as ratio increased (from low to high concentrations).
- Gel Evaluation – with BCMOF. Evaluate helicopters and Martin Mars. This project is a contract for BCMOF and results will be forwarded to the Province. Two sites, Vanderhoof and Harrison Lake were observed during 2006.

Comments

Rick Pederson -how do you define effective? Answer: Our approach has been to talk with ground crews, walk the drops in the field and personal knowledge. Field response suggests gel provided the ground crews 2-3 hours. You could colour the gel to make it more visible on the ground.

Are all tests under the same parameters? Yes – as close as they can be in the forest environment.

- AT 802 Drop tests – wheels vs. floats produce different drop patterns. Tested thickened and unthickened product. Established a sampling grid under the forest canopy. 502 cups were placed under the canopy and 80 cups were placed in the open. A lot of labour was needed to construct the grid and it could only be used once.

Comments – As gel is slightly heavier than water, it produces different drop patterns than water. The hardness of water will influence the gel mix ratio as well.

Strategic cooperation of air resources – Ray Ault (780) 865 6977

Plotted BC and Alberta cross boarder fires from 2002 to 2005 and found an average of 10 fires a year cross the border.

Comment - trend is up for cross border fires – good potential for sharing. Agencies can take this info to Management to show cost reduction. Focus on response times, these can be lowered.

Railroad Work Plan – Jim Thommason (780) 817 1809

Jim began with an introduction of himself to the group – he comes to FERIC with many years as a spotter in Alberta's fire program and over 15 years experience in the design and support of equipment development in avionics and advanced technology. Jim has spent 8 months in Afghanistan. He will work on the CN Rail directed projects.

Work Plan includes:

- Historical review literature search – not much out there.
- FireSmart Principles – apply these to railway infrastructures.
- Identify organisations/universities that are doing similar work.
- Review the CN Fire Plan.
- Compile CN/SRD fire data.
- Observe CN operations.

Prevention - Investigate diesel fuel additives for locomotives that reduce carbon particulate emissions. Fuel processing technologies (mixing to reduce carbon). Mowing operations. Fuel loading and species selection (work with linear project).

Detection – tower camera system – look at system design. Carbon exhaust detection using infrared.

Protection - bridge timber/infrastructure. (recently completed an exploratory test with gels on treated ties in Wabasca.)

Infrared Scanning – Ray Ault (780) 865 6977

FERIC hosted a half day workshop in conjunction with the detection workshop in June. A lot of good discussion at this workshop with follow up. Meeting notes posted on website. Tasks – R/W IR scanning document.

Log Deck Protection – Dave Schroeder (780) 865 6980

- Performed ignition tests with burning cones on decks in the NWT. Tested water and gel on these decks. No ignitions with gel.
- Exposed log deck to radiant heat – using gel, foam and water as protection. Results will be in a web report posted this winter.

Comment – next step will be a manual for remote deck protection – a best practices guide.

Sprinkler Update – Ray Ault (780) 865 6977

Many attempts this year at chasing fires to deploy sprinklers, but little came from this. Plan to tie in all work on sprinklers and report on findings for the spring advisory meeting.

Drinking Water Options – Rory Thompson (780) 914 7353

Looking at options for delivering drinking water to the fireline. Bottles or bulk? What is best option for moving water, the environment and fire fighter health? Indications are:

- Firefighters surveyed do not like ‘camel packs’ on their backs.
- Firefighters require 4-8 l/day on the fireline depending on workload.
- Currently costs \$0.50/L to deliver water to fire camp.
- Draft report will be out this fall.

Fly-in Equipment – Ray Ault (780) 865 6977

Looked at what is required to move a RC 60 tracked Mulcher into a fire to build fireline. Will document production rate and what a resulting firebreak would look like and how effective it is.

Comments – mulchers are building a lot of line right now (seismic) – these lines could be viewed and rates could be collected. Slope should also be taken into consideration in this work.

Saskatchewan request to have community fire protection research included on agenda

Darryl Jessop voiced support for continued research in the NWT and remarked that this is important to Saskatchewan. Other agencies included their continued support of FERIC’s work at Ft Providence. Saskatchewan also expressed a willingness to help out in the support where practical.

Project Proposals

Marv explained the process and the scoring for the new project votes. A low score indicates high support. Five new projects were reviewed and prioritized. The ranking is as follows:

PROJECT	HIGH	MEDIUM	LOW	SCORE
1. Fire Weather Workshop	0	14	0	2.0
2. Helicopter Fuel Storage	0	4	11	2.73
3. Vancouver Island Smoke Management	7	7	2	1.69
4. Aircraft Collision Avoidance	9	5	0	1.36
5. Feasibility of Canadian Based QPL	12	3	1	1.31

Comments:

4. Aircraft Collision Avoidance

- Rick Pederson - may become mandatory very soon. This will be costly for small aircraft. Canada is following rules from the USA. Program is in final stages of public consultation. A challenge to these types of regulations generally needs to focus on the science of the decision.
- What products are available for different aircraft?

5. Feasibility of Canadian based QPL

- What do agencies want?? Fast results. Partnerships.

Spring ACFIRE meeting proposed for March 27, 2007.