Wildfire Operations Research

Advisory Committee Meeting Minutes
October 1, 2012

LOCATION

Delta Kananaskis, Kananaskis Village, Alberta

ATTENDEES

FPINNOVATIONS:

Mark Ryans	Steve Hvenegaard	Roy Campbell
Ray Ault	Colleen Mooney	Greg Baxter
Rex Hsieh	Jim Thomasson	

GOVERNMENT:

Dave Schroeder, Quentin Spila, Rob Galon, Kevin Quintilio, Tanya Letcher	AESRD
Larry Nixon	GNWT
Kerry Anderson, Dan Thompson	CFS
Matt Plucinski	CSIRO -Australia

ACADEMIC:

Brett Moore, Jacquie Dewer	University of Alberta
Tom Schicks	University of Toronto

INDUSTRY:

Denis Hulbert, Jerry Geissler, Dennis Campbel, Mike Schnarr	Eco-Fire Solutions
Revie Lieskovski, Cliff Henderson, Rick Pedersen	ConAir Aviation
Rick Solomon	FireFox Thermo Tech
Gord Ramsay	Mercedes Textiles:
Chuck George	ICL
Shawn Bethel	SEI
Mark Insley	Latitude Tech Systems
Mike Guterson, Carline Gord, Frederic LeFrancois	Wildfire
Rob Hyslop	RGH Pacific
Wayne Wald, Brent Greer	FireFox Solutions
Justin Simpson	Themo-gel Technologies
David Cant	BlazeTamer

ON-LINE PARTICIPANTS:

Mike Benson	BCFS
Rob Cruze	SASK

WELCOME

Mark Ryans

INTRODUCTIONS

Mark welcomed everyone for attending. All attendees introduced themselves.

Ray Ault

APPROVAL OF MINUTES

Minutes from 2012 Spring Advisory Meeting were approved. Minutes not yet posted to the website.

UPDATES

Ray Ault

WEBSITE UPDATE

Ray provided a quick overview of our website and indicated where recent updates can be found.

YOUTUBE CHANNEL

Ray provided a quick overview of our new YouTube channel.

WILDFIRE WIKI

Ray provided a quick overview of the Wildfire Wiki site.

PROJECTS – 2012 RESULTS

Greg Baxter

PROJECT: SURVIVAL ZONES FOR WILDLAND FIREFIGHTERS

ISSUE	When entrapped, what size of opening is required to increase probability of survival in a boreal environment?
RESULTS	Burned one 50m plot in the NT this summer. This was our first fire in standing timber. Fire was an intermittent crown fire (Class 5) with an estimated intensity of 8000 kW/m. Results from this fire show the back part of the survival zone was survivable. Case study will be completed over the winter. Two grass fire survival zone plots were also burned this spring. We have 3 more plots in standing timber in the NT to burn.
QUESTIONS	Can you put together a short review showing the difference between kW/m and kW/m^2?
	Can a chart be put together showing heat flux versus distance from a fire edge?

Colleen Mooney

PROJECT: EFFECTIVENESS OF LIGHT STAND THINNING AS A FUEL TREATMENT

ISSUE Can lighter stand thinning be used to mitigate crown fire behaviour?

RESULTS Burned a thinned plot in the NT. Winds shifted a number of times during burn so a direct hit on plot did not occur. In-fire cameras did show that aggressive fire behaviour did change where it did move into the plot. We have another plot ready to bur in the NT for next summer.

QUESTIONS When was the treatment done? (A) Previous year

Was there a difference in duff moisture? (A) We did not measure duff moisture.

Steve Hvenegaard & Tom Schicks

PROJECT: IGNITION PROBABILITY & FIRE BEHAVIOUR IN MULCHED FOREST FUELS

ISSUE How do mulched forest fuels influence fire behaviour?

RESULTS Looked at resistance to spread, ignition probability, sustained burning and moisture dynamics of the fuel bed. Performed point source fires and documented fire growth and compared this to closed-forest fire growth. Also have sites at Horse Creek, Cardale and performed lab tests at the CFS. Tom collected enough data for his M.Sc., but much work remains in this fuel type. We also did a tour with BC Hydro who mulch along powerlines. We found they have different problems due to the range in fuel types in which they work from open Ponderosa pine to interior rainforests.

QUESTIONS In Australia, many gardens have mulch and are receptive to embers. Did you look at this mulch? (A) No, but do understand it is a problem.

Greg Baxter

PROJECT: HARVEST DEBRIS MANAGEMENT

ISSUE How much debris in a harvested block is too much in terms of fire control?

RESULTS Six plots were established south of Bragg Creek with three loadings: light, moderate and heavy. Plots were ignited and fire behaviour documented. An additional plot was established to test a 4-man crew in an A-Star. Data still been analysed and a case study report will be completed over the winter. Fires were burned under very high hazards. Winter talks with ESRD and industry will determine the next steps in the project.

COMMENTS The video collected during the IA test can be used for crew leader training.

Many different scenarios could be tested. A complicated fuel type.

QUESTIONS How expensive was the project? (A) Crews were on man-up due to fire hazard. Aircraft required practice.

Jim Thomasson

PROJECT: EXPLORING THE CAPABILITIES OF HELICOPTER TRACKING SYSTEMS

ISSUE Drop location and drop volume accuracy.

RESULTS Tests were performed June 11-13th at Salmon Arm. We tested (1) Latitude Technologies, IONode100-004 with a Blackcomb Aviation, Bell 205++ and a Bambi-Max bucket and (2) Absolute Tracking Solutions FASTTrac with a Bell 212 helitank from Wildcat Helicopters and a Bambi-Max bucket. We used a differential survey grade GPS for ground points, a digital flow meter for water volume. Tracking system outputs for airborne points include volume dropped, drop start, drop end (Latitude only). We did 18 drops. Results can be found on our website. Should we continue work on this project? How can the information be used? How do we use this tool? (A) BCFS – Yes, continue. Use this tool and refine it. Jim asked for a show of hands to determine the importance of continuing: H 3 M2 L 0.

COMMENTS [Australia] Compare to agricultural sprayers for outputs. They know the drop lines and effectiveness.

[Latitude] The higher the channel the GPS, the more accurate.

[Alberta] Need improvement in accuracy to continue project.

[Dennis H] They could use this data for their larger aircraft use study. Real-time use and then a look back. Can be used on a longer use cycle to assess R/W contracts, especially for letting aircraft go when fire under control.

[SEI] Load cells can be improved.

QUESTIONS [CFS] What is the purpose? (A) [SEI] To show where work is from to where and it goes and eventually the effectiveness.

Colleen Mooney

DROP PATTERNS FOR THE BAMBI-MAX BUCKET AND THE BELL 212 HELITANK

ISSUE None. It was an opportunistic study while tracking systems were tested.

RESULTS Speed influenced coverage level patterns more than height. Our results are not exact – only a rough approximation of coverage pattern. It was a valuable experience for HLCOs and crew leaders to witness the results of helicopter drops. Next steps involve accurately teasing out the height and speed relationship to coverage pattern. This will require systematic testing over a grid and exact measurements of height and speed. We could consider drops in standing timber once the grid patterns are established. Should we keep going with this project? Yes.

QUESTIONS [Australia] Why drop slow? (A) [Ray] Speeds for drop were just selected. We could look at coverage over a broader range of speeds.

Are coverage levels for suppressants only? (A)[BCFS] Not only for suppressing, also used for gap coverage and they change based on fuel type.

COMMENTS BCFS wants HLCO's to think 'coverage levels'.

BCFS wants project to continue looking at different variables, such as bucket/tanks.

[Australia] Different wind speeds can also be looked at. What is the effectiveness at higher wind speeds?

Ray Ault

EFFECTIVENESS OF WATER ENHANCING GEL AS A FIRE CONTROL AGENT

ISSUE	Qualified Products List (QPL) does not include a performance test as part of the approval process.
RESULTS	Our objectives were to determine how effective gel was to stop or slow the advance of a wildfire; reduce fire intensity to enable firefighters to get in close and extinguish the fire; and prevent hotspot development or re-ignition. We used a case study approach. We ignited a fire within a wildfire and dropped gel. We then documented on-ground effectiveness. Gel was effective in stopping forward spread of the wildfire; fire intensity was reduced to enable direct attack by firefighters in the drop zone. The gel persisted overnight preventing re-ignition of hot spots in the drop zone. Where to from here? This was a case-study…could use cups.
QUESTIONS	Did you study water vs. gel? (A) No. What was product? Colour was different. (A) Gel. [Australia] Did you try and line up drops? Anchor them? Fire could move around them.
COMMENTS	[Con Air] Could compare mop-up time between water and gel. Need other studies, such as in debris.

PROJECT PROPOSALS

1. FIRESMART LONG-TERM PROTOCOL

   Edson tracks all projects on GIS. Could we set up a database for monitoring?
   [NT] We need one protocol for the database so all can use and contribute.

2. TRACKING SYSTEMS AND APPS

   We will come back in the spring with a more detailed proposal.

3. INDUSTRY FIRESMART STANDARDS (OIL CAMPS)

   We will come back in spring with a more detailed proposal.

4. HELI-TORCH RETRO-FIT FOR FLASH 21

   We will demonstrate the ground-torch on Wednesday.
   We will come back in the spring with a more detailed proposal.

5. BUCKET HELITANK DROP PATTERNS

   We will come back in the spring with a more detailed proposal.

6. BUCKET TRACKING

   We will come back in the spring with a more detailed proposal.

7. THERMAL CUBE

   We will come back in the spring with a more detailed proposal.

8. FROM THE FLOOR:
   - [CFS] What is the status of the Wilcox Fuel Moisture Meter? (A) Provinces are following up.
   - [CFS] Flaming/non-flaming threshold. Implications for peat, holdover fires.
   - [SASK]Prescribed burning in blowdown. Will talk about this this winter.
   - In-line mixing.
   - Retardant/gel effectiveness.

NEXT MEETING

March 5, 2013
Alberta Innovates Technology Futures
Edmonton, AB