

Meeting of FEWT – Fire Equipment Working Team & Federal Lab Consortium
San Dimas Technology & Development Center
April 21, 2004 (3 hours)
By Ann Kerksieck, FLC Support
(DRAFT)

Notes were captured emphasizing FS comments.

Partial list of attendees.

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|--|---|
| 1) Tory Henderson,
NIFC, Boise, ID
(FEWT) | 13) Pat Ward, FS,
Region 4 |
| 2) Dennis Davis,
Blaster Program -
FS Missoula
Technology &
Development
Center | 14) Jim Baker, Indian
Head, Naval
Surface Warfare
Center |
| 3) Dan Lang, CDF,
Sacramento, CA
(FEWT) | 15) Steve Hallett,
Pantex Plant |
| 4) JP Greene, FS,
Atlanta, GA
(FEWT) | 16) Scott Deiter, Indian
Head, Naval
Surface Warfare
Center |
| 5) Robert Stroud,
BLM, NIFC, Boise,
ID (FEWT) | 17) Andrew Drucker,
Naval Facility
Engineering Service
Center, Port
Hueneme |
| 6) Gary Morehead, FS,
Central Oregon | 18) Ralph Taylor, FS,
San Dimas
Technology and
Development
Center – host |
| 7) Bill Hicks, GSA,
Fort Worth, TX
(FEWT) | 19) Kirk Bradley, State
of Michigan,
Department of
Natural Resources
(FEWT) |
| 8) Susan Sprake,
LANL | 20) Roger Spaulding,
USFWS, NIFC,
Boise, ID (FEWT) |
| 9) Ken Lydy, BIA,
Warm Springs, OR
(FEWT) | 21) Ricky Miller, FS,
(FEWT) |
| 10) George Jackson, FS,
Fire Aviation,
Missoula
Technology &
Development
Center | 22) Ann Kerksieck,
FLC |
| 11) Jay Miller, FS,
Region 2 | |
| 12) Brandon Cichowski,
FS, Payette NF | |

Dennis Davis of the Forest Service began:

- Dennis Davis – Missoula Technology & Development Center (FS) (Runs Blaster Program)
406-329-3929, ddavis02@fs.fed.us

The Forest Service's (FS) San Dimas and Missoula Technology & Development Centers take existing technology and test and develop it as applied to Forest Service needs. The centers do not focus on just fighting fire, but on all aspects of the Forest Services mission, as well as the mission of all wildland agencies. Fire fighting is of significant interest to both centers, not just on-the-ground-tools but also technologies supporting the fire fighter such as personal protective equipment, food service at fire camps, etc.

FS has a blasting and explosives program. It uses this application for clearing trees for trail building and road building. On the fire side, it consists of primarily the fire line explosive program. Existing program and resources can lay out miles of fire line explosives; clearing ground cover to miner soil quickly creating a "fire line". The Forest Service has a program to approve the use of specific explosives, as well as to train the blasting crews.

Explosives that are approved for the FS:

- Firebreak II
- Fireline E

Fireline E is manufactured by SEC in Tulsa, OK; Firebreak II was manufactured by ETI in Canada but may be out of production now. The approved fireline explosives are water gel based linear explosive with a slightly higher salt content to reduce the flame produced in the blast. It is contained in a plastic sleeve, pinched off every 18 inches, and comes packaged in unbroken lengths of 80 to 100 feet in a box weighing 55 pounds. It is transported by any approved/available means - helicopters and etc. (Note: helicopters if they are available – usually they have many missions during a fire crisis.)

The primary focus of all blasting operations, especially fireline use, is safety. No more can be detonated at once that can be safely guarded before detonation. Large logistical problems exist with transporting them safely which has limited the use of them.

Other uses are to remove hazard trees and "fuzz" stump, to give sawn firelines a less man-made appearance.

Other factors limiting use are the availability of the material itself and the availability of blaster crew – usually the teams have been called for other duties and are unavailable.

Explosive's Availability Issues:

Explosives have a short shelf life of 2 to 5 years, and there is not a lot of interest in stockpiling more than 60,000 ft. Available Forest Service storage for that quantity is limited, and few units have funds available to buy and stockpile these quantities prior to

the fires. If the volume you'd like to have on hand are stored, then very serious magazines are required. 9/11 has caused new strictures on magazines. FS was audited about a year ago on security issues resulting in reducing magazine numbers and permanent units:

- Class I magazines.
- Mobile storage units have been considered – mobile security systems
- Funding is always an issue.
- Electronic surveillance systems for back country use are being developed.

Two approved initiation systems for FS:

- Oprey 500E by Safety Devices Inc.
- FS-9 with EBW detonators by Reynolds Ind., Inc.
 - EBW is favored system as it is the safest, but each detonator costs \$25-35.

Last year, the forest fire fighters shot 200,000 ft of fireline – would have done more if more people were available - great technique if you have people and supplies.

Unofficial Wish List of Forest Service:

Explosives:

Missoula is looking at a method to evaluate explosives for fire situation. Fire line explosive is the focus. Testing involves comparison: flash, shock wave is looked at with digital at 30,000 frames per second. Information gathering is going on now.

- Would like to see things faster
- Would like to measure flame diameter, ex. at a certain diameter fires are started vs. not started
- Evaluate explosives with “Imposed Environmental Concerns.”

Clothing And Air Breathing Devices

- Everything that a wildland firefighter does, and is supplied with, must be dealt with considering safety and environmental issues - from clothing that the firemen need to all of tools used.
- Clothing – National Fire Protection Association Standard 1977 covers the protection of wildland firefighters, and the Forest Service has design specifications that meet these standards.
- GPS, communication issues – war fighter program with Navy is involved with this.
- There are continuing studies in progress regarding wildland firefighter breathing protection. Generally, the kind of firefighting being done does not require respiratory protection.

Fire Behavior, Fire Prediction, Explosives, & Fuel Issues (Thinning trees & brush/reducing carbon)

Both centers (San Dimas and Missoula) are very interested in measuring techniques for fire behavior as well as explosives and fuel issues.

Jim Baker Indian Head – FLC Tech Presentation’s captured comments

- *Fire break clearing – good way to control fires but are time consuming and resource intensive.*
- *“There is no problem that cannot be solved by the proper use of explosives”*
- *Emulsion Explosives used in commercial blasting and mining. 20 million pounds used annually*
- *Emulsion explosive consists of two liquid components and glass microballoons carried by a truck that are mixed to create the explosive – the ingredients are fairly stable until mixed: components are usually something like fertilizer and diesel fuel – very short flash – detonates and will not create another fire.*
- *These type of explosives are permissible – can be exploded in coal mines in and atmosphere of the methane gas, mixed with coal dust floating in air in the explosive concentration does not set off explosive environment. Flash from emulsion is so fast there is not enough duration to set anything on fire. Pumping this type of explosive similar to Vaseline was difficult – used a water ring to lubricate.*
- *Tread Corporation makes emulsion plants and delivery trucks.*

Restraints from (FS):

- Fire line explosives are used where people can’t go – vehicles are also difficult to get there.
- Helicopters could deliver this type of explosives, but helicopters have demanding and multiple roles in fire. Could National Guard helicopters be used if the pilots are trained to do this?
- Conditions that are generally present in fire also make it difficult to get it to the area.
- Key to producing fire lines: land must be cleared to soil or ground level.
- Safety issue is a concern – would want to make sure that people were safe.
- Spray applications – if you drop this from the air then accuracy is an issue and getting people out of the area.
- Environmental concerns from National Environmental Program.
- Fertilizer residue will increase the growth of noxious weeds that grow rampantly after a fire as well as burn vigorously. There should be no residue if the explosive detonates—only if it doesn’t.

Positive: May be good first line of defense

All Terrain Vehicles:

Regarding the question: Is FS working with the Army regarding all terrain vehicle design?

CDF (Dan Lang) believes their designs are more advanced than what the Army is using. CDF get their extreme vehicles from American Truck Corporation; uses a Czechoslovakian design, more advanced than what the Army has.

- 6x6 carries 2400 gal of water

- C13 caterpillar, largest engine in arsenal
- BLM leads extreme terrain vehicle effort.
- fire fighting mobility is key
- mobility equipment used on Mars is too slow

Fire Modeling

Fire Modeling is a potential collaboration with the super computer from FLC – have fairly sophisticated fire prediction/weather software to maneuver resources and etc.

Prediction and Detection: Very Important Issues to FS

Detection is not a problem in all areas – especially the urban interface. In the Northwest, it is a problem and in other areas such as northern New Mexico – communication is a very big problem

- **Mapping fuels is important as it plays into prediction. USGS has a program called “Land Fire” that utilizes a satellite.**

Flow Sensor Technology

FS - Australian or New Zealand technology is used now –require a percentage based on injection rate.

“Setting fire is just as important issue as putting them out. “

Forest Service: How are these resources going to be shared?

Sprake FLC: Some of these that are available can be shared through partnerships. Funding can be found – Los Alamos is quite good at this. Sometimes their situations are free, but money and partnerships can be found – federal labs will do this. We acknowledge that money is a big issue. We know that even providing food to fire fighters have costs associated with them that are tremendous.

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