

These tips for folks monitoring WFU and Rx fires come from a sampling of FEMOs, FOBs, Burn Bosses, FBANs, LTANs, and FUMAs, and was initially created in 4/05. It's a living document and I would love to see any changes or thoughts you have for it: dcohen@fs.fed.us --Dana Cohen, North Kaibab Prevention, Kaibab NF

1. As a fire behavior person or fire use manager, what kind of info do you need from your FEMOs/FOBs? FOBS is different than FEMO. FOBS should be scouting, providing more intelligence to FBAN. Requires SRB quals for a reason and that is **safety**. People should not think that a FEMO on WFU is the same as FOBS on suppression.

2. What are your pet peeves related to fire behavior observations? Wind direction based on topography. i.e. prefer 'upslope wind' not just 'east wind'. Fire behavior—look at big picture and summarize, even in the hourly observation, don't just report on the 3 x 3 area you are looking at.

Bruce Fields, AFMO/Rx Fire Specialist, Bryce Canyon NP

I think my largest pet peeve is the inconsistent style of weather monitoring techniques. It would behoove some to review the weather handbook (NFES 1174) and relearn the proper use of sling psychrometers.

Tod Johnson, FMO, North Cascades NP

Start slinging Wx when you get onsite. Don't wait for the RXB2 to ask you what the Wx is when you go to do the test fire. Have it done.

Take your Wx in representative fuels.

Love for the FEMO to give trends when calling out the Wx. IE – RH is 24, down 5% from last hr.....

Love for the FEMO to be "tuned in" to operations. Don't try and call out the Wx when operations are trying to get things done on the radio. Common sense.

FEMO/FOBS to listen to NOAA on the radio. This is a goodie and I tend to forget it, but you can get Wx warnings from NOAA if you are not in contact with the NWS. Stuff approaching that you cannot see from where you are.

Mark Taylor, FMO, Great Smoky Mountains NP

I think the most important things are communication, respect and placement within the command structure.

- Communication of course needs to be two-way. For example, having a radio for each FEMO or FOBS is essential. FOBS/FEMO need to present a section of and be an essential part of the morning briefings. Which leads me to . . .
- Respect, of course also needs to be two-way. FEMO/FOBS and ICs each need respect for different reasons. They need to know what each has to offer the other, and be able to count on receiving it. FEMO/FOBS also need to be seen as a part of the team, rather than a nuisance or an accessory, which brings me to . . .
- Command structure—as a FEMO or FOBS, I have been assigned to various parts of the command structure, but it makes the most sense to work for the plans chief or the burn boss. Further out of this loop and you can be forgotten and thus put in danger.

Paul Reeberg, Fire Effects Specialist, Pacific West Region, NPS

When evaluating a FEMO trainee, the most critical qualities to consider are their Situational Awareness & Safety Ethics. FEMOs must have enough understanding of fire behavior *and* operations to perform safely on their own during Rx and WFU fires.

Taking observations and documenting effects can be refined through training. Good SA and safety ethics come from a combination of experience and basic common sense—difficult to teach.

Dana Cohen

1. As a fire behavior person or fire use manager, what kind of info do you need from your FEMOs/FOBs?

Consumption of dead fuels expressed in size class and ratio of black to white ash. Live fuels in terms of consumption. Archibold Biological Station has an excellent protocol for assessing live fuel consumption).
Verification of Behave runs-for sure!
Repeatable photography.
Ranges of ROS's from specific fuel types.

One thing I have learned is to

form trigger points

if action needs to be taken on the fire. An example is when we had a historic cabin in the potential path of a fire use. We developed a trigger point that gave us plenty of time to set up structure protection.

This may sound over the heads of new FEMOs, but FEMOs on the ground can help with management decisions.

Joel Metcalfe Smoke/Weather Technician and Assistant Lead Fire Monitor, Sequoia and Kings Canyon NP

2. What are your pet peeves related to fire behavior observations?

When there is minimal quantification. For example I have received fire behavior reports stating: "FL's 10 ft, ROS I Ch per hour." I prefer a range along with locations as well as excellent descriptions of fuel. Particularly the PRIMARY carrier of fire. They don't know their vegetation.

3. Do you have any tips or suggestions for new FEMOs/FOBs?

First and foremost is (I can't emphasize this enough) the ability to *concisely* characterize their observations. This is no easy task and takes considerable skill. Read and thoroughly understand the Intro passage in Anderson's Aid to Determining Fuel Models. Without this you don't have a clue about FM determination. Don't get caught up in extremes when it comes to fire behavior. FBAN's have lost a lot of credibility because they often calculate in "worst case scenario."
Rick Anderson, Fire Ecologist, Everglades NP

1. The report info Nate and others put together for the Fire Use Module Handbook.

2. Not meeting call-in reporting schedules, lack of professionalism in fire behavior terminology descriptions, non-representative weather and fire observations, failure to provide paper copy of observations on a daily basis with data sampling points identified on a map, too much focus on getting "cool" images vis-a-vis representative images, lack of attention to detail.

3. If you are not given written instructions, write out what you understand to be your instructions as given orally and provide them to your incident supervisor for review...think of it as a work contract...you may have to take the lead on this...

Make yourself available for personal contact and discussion as regularly as possible.
Art Latterell, National Fire Plan Coordinator (Ret.), FWS

1. As a fire behavior person or fire use manager, what kind of info do you need from your FEMOs/FOBs?

Accurate fire perimeter locations with good reliable fire behavior observations (see comment #2 below) associated with areas of active spread along the perimeter, distances to areas/values of concerns, spotting distances observed.

2. What are your pet peeves related to fire behavior observations?

There is a very big tendency (particularly of new employees) to report fire behavior observation of flame lengths based on the most exciting thing that they saw (a burning jackpot with 4-5 foot flame lengths), even though most of the fire has 6 inch flame lengths in areas of active spread with smolder and creeping behavior throughout most of the fire. New employees frequently report huge flame lengths for torching trees (40-60 foot flame lengths) instead of reporting occasional torching of trees with some spotting 2-3 chains ahead of the fire. Good relative observations (the fire appears more active today, with areas that had been smoldering showing more creeping today, etc.) are better than the inaccurate/exaggerated observations noted above.

3. Do you have any tips or suggestions for new FEMOs/FOBs?

To take every opportunity to be paired with an experienced FEMO/FOBs and to make an effort to ask the managers (team FBAN or LTAN or Ops person) what specifically would they like them to concentrate on.

Corky Conover, Pacific West Region Fuels Specialist, NPS

As a big dog, I enjoy snacks: data summaries rather than just raw data sheets, comments on spot accuracy, descriptions of fuels and fire behavior as they differ from what might be expected, and hand drawn maps of fuels.

Caroline Noble, SE Regional Fire Ecologist, NPS

1. As a fire behavior person or fire use manager, what kind of info do you need from your FEMOs/FOBs?

First comment is that these are two separate positions. Yes there are some similarities between the two but there are some big differences.

S-244 - FOBS - Need good detailed maps as it relates to fire suppression activities. e.g. all roads mapped, pullouts, types of roads, condition of road with different weather conditions, types of vehicles that can and can not use them, bridges, culverts - weight limitations and sizes, ingress/egress, structures - (types, condition, surrounding fuels, etc). Scouting for fire lines, safety zones, escape routes, lookout points, communications, etc.

RX-91 - FEMO - Need Weather observations to include Dew Point, FDFM, and PIG. Include in notes/records fire behavior activity (smoldering, creeping, backing, head, torching, flame length, rate of spread, smoke, by fuel type, slope, aspect, location (relative to significant things within the area; e.g. monitoring plots), time of day on a timed basis every 15 or 30 minutes (along with periodic photos) to ensure that activity is averaged through out the day and not just capturing the big moments. These should be documented as well but this should not be the focus. Also fire behavior should be noted if visible on other parts of the fire, e.g. smoke amounts, color, and direction of spread.

2. What are your pet peeves related to fire behavior observations?

As far as over the radio they need to be clear and succinct. As far as the report they need to be detailed including the items listed above in RX-91.

3. Do you have any tips or suggestions for new FEMOs/FOBs?

Work with a group of experienced individuals to learn from them. Spend time with the people you will be reporting to know of their expectations and how they like to operate / information they are interested in (this is not just the operational folks but also the resource folks).

Henry Bastian, Fire Ecologist, LANDFIRE Business Lead, DOI

Be as **specific** in your
observations as possible (i.e.

Not just "things picked up", but "flames became visible over several portions of the unit starting at 2:30 after the wind shift.")

*Linda Chappell, Central Utah Interagency
Fuels Specialist, Richfield Fire Center*

1. good observations, i.e., time, date, fire behavior, elevation, lat & long, slope, aspect, area where weather was taken (excluding parking lots & middle of dirt roads these are two of my pet peeves) and have this put on some type of form which is legible.

2. People with task books that don't have a clue of any type of basic observation skills or even minimal fire knowledge.

3. Learn how to take proper weather, be mentored by a knowledgeable FEMO or field observer. Listen, Listen, LISTEN
Lee Freeman, AFMO Beaver RD, Fishlake NF

1. As a fire behavior person or fire use manager, what kind of info do you need from your FEMOs/FOBs?

Several accurate spot weather observations in time for submitting to the weather service.

Excellent radio communication skills.

The obvious weather and fire obs but also your ideas of 'why' it is happening.

Nighttime recoveries...good monitors know to grab their sling psychrometer on the way to the porta potty at 3:00 am!

Live and dead fuel moisture's for various size classes several times a day - 10 hour sticks, protimeters, calculated moisture's, Computrac/drying oven etc.

From FEMOs - the field information that I cannot see on the map. Scout what you're asked to but think of alternate and fallback plans and creative solutions that operations may not have even considered or did not have the awareness of. Some folks are more receptive than others to new input (and it takes some interpersonal skills, tact, humility and an ability to not step on toes) but a good FEMO can really have an impact on strategies, tactics, suppression costs, resource impacts and firefighter safety. It can be hard to speak up but there is nothing worse than a 'Yes FEMO' who will scout and flag a proposed line but fail to report that there is an intermittent streambed 10 chains away that doesn't show on the map.

Daily Summaries: Not everyone will agree with me here but I think a good FEMO or FOBS will include plenty of text, conjecture, written comments, predictions etc. in their daily summaries. Be accurate, terse and concise with your data and forms but have fun with written summaries. Some LTANs and FBANs get territorial and don't like to see a lowly FOBS or FEMO make predictions but they are in the field all day and they often have some of the best hunches and insights into what is going on. If nothing else, most of the stuff that is archived after a fire is downright boring and virtually useless for the historical record. FEMOs and FOBS are in a position and frequently have the time to write several paragraphs about the days events. Even if it's not used or appreciated in the heat of the moment, these fire and weather observation journals are often the best

information for the historical record and add a very human element to the stacks of bureaucratic paperwork. The basic data sheets are the most important if your in a hurry but if there's time at the end of the day I love to get nice, clean, organized package (digital, hardcopy or both) of labeled and dated digital photos, GPS locations with information on datums, fuel moisture spreadsheets, well made maps...all of the beta on the fire compiled into a complete organized summary. I frequently see monitors get frustrated because they think their data isn't getting used but if well written summaries are included they will at least be utilized by historians and fire behavior researchers. To a large extent I think that monitors are the historians of the fire and should put some effort into quality daily packages.

2. What are your pet peeves related to fire behavior observations?

Poor RH readings...not waiting for the wet bulb to rise. I can catch it every time by looking at the dew point and seeing it swing wildly.

Forgetting to put dates and times on the forms.

Not differentiating between calculated and measured fuel moisture's.

CD's of poorly labeled and unorganized photos and documents. The new technology is great but pretty worthless if everything is just thrown together...there just isn't time to sort through it during fires and afterwards it can't be pieced together.

A good picture is worth a thousand words. One thousand unlabeled pictures are worthless.

'Crying Wolf' - faulty forecasting. At it's funniest I have heard monitors report over and over in error that they 'think' something is going to happen and it never does; at it's scariest I have seen monitors removed from fires for making multiple panic calls on the radio that resulted in crews pulling off the line based on the bad information.

Despite all of the things that I said about speaking up, making predictions and recording lots of information, there is a time and a place for everything. Know when to bite your tongue and know you're position in the pecking order. If it's not a safety issue and the ball is rolling towards a tactic that in hindsight may not have been the best choice but is workable you may want to just go along with it. Similarly, there are times to wax poetic and make predictions and times to simply report the low RH and slink on over to the food line.

3. Do you have any tips or suggestions for new FEMOs/FOBs?

Be curious. Use the downtime for pondering, speculation, practicing your skills and discovering new ones. It was on monitoring assignments that I found out I could estimate cloud heights by using the dew point and the adiabatic lapse rate or that I could time cloud shadows as they moved across terrain to estimate and monitor the upper level winds.

The new technology is awesome. Learn it and use it but don't get mesmerized by it. Take the time away from the laptop, PDA, GPS screen, digital camera and monitor the real world with the computer behind your eyeballs.

Learn about the Haines index and how to read balloon soundings (T-charts)...it's cool stuff that you usually have to self teach but it will pull a lot of nebulous thing together.

Correlate fire behavior observations to weather

observations whenever you can...if the RH dropping below 15% usually means the overstory will start torching out then write that down. It can help with fixing fire models to better show what is going on.

Cyndi Sidles, Fuels Specialist, Dixie NF

The forecasting business is sticky and mostly the job of LTANS/FBANS. Make mental fire and weather predictions and see how they come out. Play a game with yourself to get more accurate at them. Chat informally with crewmembers and overhead as you get better and more confident at it. That said, it's not the FEMO/FOBS job to document your personal fire or weather predictions or report them over the radio...you will likely get burned if you do this. Predict all you want in your own head but generally only report what happened in the past or what can be observed at the moment. You are obligated to report safety concerns but beware of crying wolf or making a public laughing stock of yourself.

The best skills for a FEMO or FOBS (outside of experience & training) are a good intuition and a natural curiosity. You have tasks to do but it is the only position on the line where your primary job is to scout and use all of your senses to report on what is

happening and why you think it is happening that way. Most other fire jobs are preoccupied with lots of other things and the FEMO/FOBS is in a very privileged position to get to observe all of the elements interacting. When you have the opportunity to simply observe and watch fire interact with weather, fuels and terrain for a whole day you are one of the luckiest people alive...the fire area is closed to the general public, the firefighters are busy grubbing in the dirt and the folks at camp are meeting and communing with their laptops. Don't squander the opportunity because nothing else will serve you better for creating a 'learned intuition' that will keep you safe on the fire line or for making good decisions from the office when you are promoted to that unenviable task.

Mitch Burgard, Prescribed Fire Specialist/AFMO, Glacier National Park

I would just reiterate the need for decent fire behavior obs. I have often seen flame lengths and rates of spread over or under-estimated.

Accurate fire behavior observations help to fine tune behave runs to more accurately predict what can be expected in the future (garbage in garbage out).

Dave Loveland, Rx Fire Specialist, Everglades NP