



United States  
Department of  
Agriculture

Forest  
Service

Rocky Mountain  
Research Station  
Fire Sciences  
Laboratory – Fire  
Behavior

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**TO:** Geographic Area Coordinating Centers  
Incident / Area Commanders

**FROM:** Colin C. Hardy —Project Leader, Fire Behavior Research Work Unit, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory, Missoula, Montana

**SUBJECT:** Rapid Response Research on 2005 Wildland Fire Incidents

**DATE:** May 18, 2005

This letter is regarding the third and final year of planned field deployments in support of the *Rapid Response* fire research project called “*Demonstration and integration of systems for fire remote sensing, ground-based fire measurement, and fire modeling.*” This project is funded and authorized by the USDA/USDOJ Joint Fire Sciences Program, and is designed to be conducted during and after ongoing fire incidents. We need to coordinate with you about our operations plans and about the qualifications of our Team. We ask for your input and cooperation as we work to ensure that our Team will be effective, safe and non-disruptive to your operations during our field sampling.

The primary research project is designed to compare state-of-the-science space-borne, airborne, and ground-based fire measurement systems during selected wildfire incidents. We plan on responding to a minimum of two on-going wildland fire incidents during the 2005 season, with one or more deployments of crew and instrumentation at each incident. A deployment involves: 1) establishing a measurement site within the incident perimeter at an area expected to burn within one or two burning periods; 2) recording site and vegetation observations; 3) installing a suite of autonomous electronic sensors; 4) locating an oblique-looking thermal sensor at a point from which the measurement site can be observed—location will be within an identified safety zone or outside the controlled perimeter; and 5) returning to the site following burning for post-fire observations and instrument demobilization. A second, companion research project will collect additional fire effects research data on one incident this summer after the fire is declared fully controlled.

#### **What’s the value of this work?**

Our rapid response team will work closely with and share data and results with Fire Use, Incident Management, and BAER teams. Ultimately, we will provide an evaluation of the relative accuracy and efficacy of alternative remote sensing methods for characterizing fires and for mapping post fire severity. This will include an improved set of quantitative indicators of burn severity that are scalable from the ground in ways that are useful to fire managers making challenging, timely decisions.

Our data will be useful in building the next generation of fire behavior and fire effects models. We will quantify the relationships between pre-fire fuel structure, fire behavior and post-fire effects.

#### **Who does this involve?**

**During-Fire Operations:** The during-fire operations will involve a 6-8 person Rapid Response research crew managed by a chief of operations. Mr. Ed Mathews (Missoula Fire Sciences Laboratory) will be our chief of operations during fires. He has held ICS qualifications as ICT1 and OSC2, and is currently qualified as a FBAN, RXB1 and RXI1, among other qualifications. He will coordinate and work closely with the Incident Management Team (IMT) to gather necessary research information at specific locations within the incident area and will serve as the chief liaison between the IMT, Division Superintendent, or Operations Section Chief and our Rapid Response Team.

A dedicated remote sensing aircraft managed and operated by Forest Service Research will be conducting airborne infrared remote sensing overflights from a nominal altitude of 5,000'-8,000' above ground level, all of which will be coordinated both through the local IMT Air Operations and with the appropriate Geographic Area Coordination Center. Our air operations safety procedures also stipulate that we work through the GACC to notify the National Interagency Coordination Center of our operations at each incident.

Post-Fire Operations: A crew will retrieve equipment and record immediate post-fire observations following extinction of combustion within the proximity of our instrument deployment site. Just as for the during-fire operations, our chief of operations will manage the immediate post-fire effort. Finally, for one incident, a second team will return to the site several days to several weeks following extinction to perform a post-burn fire severity sampling campaign and assessment.

### **How will we operate?**

We have prepared detailed operating plans both for the pre/during-fire operations as well as for post-fire operations; these will be made available to you upon initial contact during the incident. We will review our plan with each GACC and IMT for the particular incident(s) we wish to sample. Our chief of operations will routinely communicate in person with the IMT, and will also attend the daily IMT morning briefings.

All Rapid Response personnel practice LCES at all times, have personal protective equipment to current standards, have completed annual standards for survival training, and have successfully passed the appropriate work capacity test. All fire research personnel working on active wildfires will be red-carded appropriate to the tasks to which they are assigned. For example, all personnel associated with these studies who work within the perimeter of uncontrolled wildland fires hold current minimum red card qualifications at the FFT2 level or higher, including current physical fitness at the arduous level. We have prepared a Job Hazard Analysis for the field activities; we perform a pre-shift safety briefing and also hold an after action review. Each individual carries a radio that will be cloned by the Incident Command's communications staff.

### **When and where will we deploy?**

As soon as we are considering a candidate fire, we will be in contact with the GACC and the appropriate Incident Management Team to affect close coordination. Conversely, if you or your Team believes your incident is one that may continue for more than three burning periods, please contact us if you're willing to host our Rapid Response Team.

### **Contacts**

We are eager to work closely with you to ensure safe, effective operations for your teams and ours. Please refer comments or questions to:

Colin Hardy (office: 406-329-4978; cell: 406 239-8339; email: [chardy01@fs.fed.us](mailto:chardy01@fs.fed.us))  
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Sincerely,

/s/

COLIN C. HARDY  
Project Leader—Fire Behavior Research Work Unit  
For the JFSP Rapid Response Team