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IN REPLY REFER TO:  
(BLM OR-934)

May 15, 2006

## **STRATEGIC PLAN INTERAGENCY RADIO BACKBONE SYSTEM**

### **OBJECTIVES OF THE STRATEGIC PLAN**

The product expected from this team is the development of a Strategic Plan that will enable implementation of a radio system (backbone and subscriber units) that can serve both the Bureau of Land Management (BLM) and the Forest Service (FS) in this geographic area. The system must:

1. Be logical and effective in meeting mission delivery requirements for fire management and resource management programs for both the BLM and the FS.
2. Meet safety needs for employees in the field (i.e., maximum coverage and high system reliability).
3. Be cost effective.
4. Be easy to operate.

### **TEAM MEMBERS**

Carl Gossard – BLM and FS – Assistant Director for Fire Operations, OR/WA  
Thuy Ta – BLM – OR/WA Radio Program Manager  
Dale Guenther – FS – Information Technical Specialist  
Mike Andler – FS Information Solutions Organization (ISO) – Telecomm. Manager, PNW Zone  
Russ Sveda – BLM – Radio Telecommunications Specialist  
Tom Thomison – FS – National Telecommunications Manager  
Rick Rine – FS – Deputy Forest Supervisor, Fremont/Winema National Forest

The team had initial meetings on February 28 and March 1, 2006, followed by a conference call on March 30. Briefings were provided to the BLM Associate State Director and FS Deputy Regional Forester between the dates of the last meeting and the conference call.

### **STRATEGIC PLAN COMPONENTS**

Three elements will be required to plan and begin implementation of a single radio backbone system to meet the requirements given to the team. These components are a radio coverage map, a frequency plan, and interagency direction dealing with specific elements between the BLM and the FS.

## **Element 1 - Coverage Map**

### Background

Coverage maps exist for each Forest/District in Oregon and Washington. To adequately implement a region-wide backbone system, a coverage map for the entire region needs to be developed. This map would identify areas of coverage, areas with no coverage, and areas of overlapping coverage. Decisions could then be made on where to relocate mountaintop repeaters to ensure coverage across the region. This process could serve as a template for other States/Regions to utilize.

### Proposal

**Work should begin on this coverage map with a target completion date of December 31, 2006.** A group of subject matter experts will be assigned responsibility to complete a regional coverage map. Proposed group members include Dale Guenther, Mary Anne Sanford, Thuy Ta, and Mike Andler, with assistance from Russ Sveda as needed.

The following six steps will be needed to develop this map:

Step 1. Identify the location of existing mountain repeater locations with information such as latitude and longitude of site, elevation, antenna height, antenna type, antenna gain, tower height, transmit power, transmission frequency, radio type, soil type, etc. *May 2006*

Step 2. Use the information from step 1 to generate a plot map of existing coverage using the TAP program. *June 2006*

Step 3. Field sample to verify the accuracy of the coverage map produced in step 2. *July 2006*

Step 4. Finalize the map, correcting any deficiencies found in step 3. *August 2006*

Step 5. Evaluate where there are holes in coverage and areas where there is duplicate coverage. *August 2006*

Step 6. Determine where repeaters could be removed from duplicate coverage areas and moved to areas with no coverage. *Complete by October 1, 2006*

The moving of mountaintop repeaters should begin as soon as access is possible in the spring of 2007. It is anticipated that implementation of a common backbone system will require several years dependent on funding, access to sites, etc.

### Cost Estimate

**Labor – 6 work months - \$31,200**

**Travel and Per Diem - \$15,000**

**Supplies and Equipment - \$10,000**

The implementation costs and schedule will be dependent on the results of the determination made upon completion of the coverage map.

## Element 2 - Frequency Plan

### Background

A list of all frequencies used by the BLM and the FS in Oregon and Washington will need to be compiled. Once this is done there are two options for managing frequencies.

Option 1. Analyze ways to share frequencies more efficiently. (Example, if a collocated BLM/FS office is currently using two different sets of frequencies, it may be more efficient to have the office(s) share all four frequencies.) This could provide local units a chance to improve efficiencies in frequency management but may limit opportunities for improvement across the entire geographic area.

Option 2. Wipe the slate clean and reassign frequencies across the entire geographic area. This would give us more flexibility in overall management of frequencies across the area. However, there could be some issues to overcome. It is possible that existing repeater/antenna combinations would not be able to handle different frequencies and would need to be modified. Second, a reassignment of frequencies of this magnitude would require approval by the National Telecommunications Information Administration.

### Proposal

**The team should proceed with the development of a frequency plan utilizing Option 1 listed above.** Selection of this option would still involve the development of frequency agreements but would allow us to deal with them as they come up during implementation. The timeframe would be much shorter than trying to reassign and get approval from the National Telecommunications and Information Administration on a geographic-area basis.

**The timeframe for the development of a frequency plan would be determined upon completion of the coverage map.**

### Cost Estimate (FY 2007 funding)

**Labor – 3 work months - \$15,600**

**Travel and Per Diem - \$5,000**

**Supplies and Equipment - \$2,000**

## Element 3 - Interagency Direction for Implementation

A mutually agreed-upon direction for implementation needs to be in place to allow implementation of an interagency backbone system. Four areas needing common direction are: 1) standardization of equipment; 2) the use of Radio Control Over Internet Protocol (RCOIP) technology; 3) the timing of conversion to digital narrowband; and 4) future radio system support.

- 1) Standardization of equipment

### Background

Currently, both the BLM and the FS are procuring repeaters of the same type (i.e., Daniels products). This is not by design but is merely coincidental.

The BLM is currently procuring Bendix King hand-held radios, but also has Racal and E.F. Johnson products in the field. The FS is also utilizing several different brands of radio in the field. A decision to utilize one type of radio would simplify things for both users and programmers.

#### Direction

**The BLM and the FS will coordinate on the procurement of mountaintop repeaters within Oregon and Washington.** The relocation of repeaters beginning in 2007, based on decisions made upon completion of the coverage map, will be made regardless of current equipment ownership.

**The costs for procurement of additional repeaters and future replacement repeaters will be distributed to the agencies based on who is receiving the primary benefit of coverage.**

**Our goal is to have one common model hand-held radio for use by the BLM and FS in Oregon and Washington.** This will greatly simplify user training, reduce the number of different radios technicians must program, and will be more user friendly in the field. Avenues to achieve this desired result may include modification of equipment specifications or the development of a sole source justification. This information would be available to both the BLM and the FS procurement officials.

Both of these decisions are consistent with efforts going on at the national level to simplify radio operations for field users.

#### 2) The use of Radio Control Over Internet Protocol

#### Background

This technology was utilized in the updating of the radio system on the Lakeview/Fremont/Winema National Forests (NFs) during a system upgrade this past year. The unit experienced several instances of system failure during the spring and summer. The failure of critical radio systems is an unacceptable outcome for the safety of our employees.

Neither the BLM nor the FS Continuing Government Activity (CGA) has recommended final approval of RCOIP as a technology for utilization in their respective radio systems. Current status is as follows:

- a. New RCOIP purchases are currently under a moratorium in the FS. The moratorium is in place on a system-by-system basis to ensure that the networks will support RCOIP technology, and that there is a radio link backup to respective repeaters from (at least) a District / major office.
- b. Waivers for RCOIP purchase are being granted if the conditions listed above in item a. will be met. Two such waivers have been approved recently: the Olympic and the Mount Baker-Snoqualmie NFs. The Mt. Hood NF RCOIP waiver request is awaiting approval.
- c. New RCOIP equipment has been purchased for the Ochoco, Deschutes, and Winema NFs. These three Forests will not see RCOIP technology implemented until the radio system designs have been reviewed by the Architecture and Engineering Group. (The Winema NF

is part of the Fremont-Winema study; the Ochoco and Deschutes NFs are in a radio frequency review process.)

- d. The Fremont NF has RCOIP technology installed at this time. All mountaintop repeaters are accessible from at least one District office via radio control. This system is being used to extend radio control to the Lakeview Interagency Fire Center (and other sites) as needed.

#### Decision

**There will be no further conversion to RCOIP technology in Oregon and Washington until all current problems with reliability have been resolved. Any decisions on conversion of a field unit after the reliability issues are resolved will be a joint line management decision (BLM and FS) before implementation.**

#### 3) Conversion to Digital Narrowband

##### Background

The BLM and the FS are on different schedules for implementation of digital narrowband. These schedules need to be synchronized.

Both the BLM and the FS are currently able to communicate on narrowband analog; and BLM has the capability to go to digital now. The FS is based on analog, narrowband technology. Some repeaters are digital capable, but all subscriber units (mobiles and hand-helds) are analog only. If BLM decides to implement digital technology, the BLM and FS would need to develop “channel” agreements.

##### Decision

Nationally, it has been decided that BLM will not go digital until all partners are ready to make the move to digital.

**The proposed policy for Oregon/Washington will be that any new equipment purchased will be digital capable to ensure that when it is time to go digital, all the hardware will be in place.**

#### 4) Future Radio System Support

##### Background

If we have one radio system serving both the BLM and the FS, we need to have one organization supporting the system. Right now, the ISO has the ticket process in place; and ISO technicians can be called upon to respond to a large geographic area. The BLM technicians are staffed at a level to support the local BLM radio systems, but could assist other offices as needed on a limited basis. When you have different management organizations, requirements, and procedures, the differences can lead to difficulties in workload prioritization and in meeting organizational requirements. A decision needs to be made whether to go with the ISO process for both agencies, use the BLM model of having radio technicians in the field reporting to Forest Supervisors/District Managers, or whether to develop some modified version somewhere between the two methods to service a single-radio system.

Decision

**An Interagency Radio Systems Coordination Group will be established in Oregon and Washington to provide oversight to the implementation of this strategy.** This group will be chartered and given direction by the BLM State Director and the FS Regional Forester.

It is anticipated that the system support organization for an interagency radio backbone system will be an integrated program utilizing the strong points of both the ISO organization and the BLM radio support organization. The Interagency Radio Systems Coordination Group will be charged with the development of this process and will provide oversight to the support organization.

This eight-member group will consist of:

A representative for Emergency Services (Assistant Director for Fire Operations) - Chair

BLM Chief Information Officer

A Designated Representative from CGA

The BLM State Office Radio Program Manager

Field users (One FS and one BLM with an eastside/westside mix)

Field managers (One FS and one BLM with an eastside/westside mix)

The actions identified above are agreed to and implementation of this strategy should proceed.

/s/ James G. Kenna

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James G. Kenna, Associate State Director  
USDI Bureau of Land Management, OR/WA

/s/ Michael Ash

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