

ENGINEERING EXHIBIT

Application for Construction Permit

prepared for

Mountain Licenses, L.P.

K09UP Colville, Washington

Facility ID 58691

Ch. 9 1.25 kW

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FCC Form 346, Section III - Engineering

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This material supplies a "hard copy" of the engineering portions of this application as entered September 7, 2004 for filing electronically. Since the FCC's electronic filing system may be accessed by anyone with the applicant's name and password, and electronic data may otherwise be altered in an unauthorized fashion, we cannot be responsible for changes made subsequent to our entry of this data and related attachments.

SECTION III - ENGINEERING DATA																																																																																																											
TECHNICAL SPECIFICATIONS Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.																																																																																																											
TECH BOX																																																																																																											
1.	Channel Number: 9																																																																																																										
2.	Frequency Offset: <input type="radio"/> No offset <input type="radio"/> Zero offset <input checked="" type="radio"/> Plus offset <input type="radio"/> Minus offset																																																																																																										
3.	Translator Input Channel No. : 28																																																																																																										
4.	Primary station proposed to be rebroadcast: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20%;">Call Sign</td> <td style="width: 30%;">City</td> <td style="width: 20%;">State</td> <td style="width: 30%;">Channel</td> </tr> <tr> <td>KAYU-TV</td> <td>SPOKANE</td> <td>WA</td> <td>28</td> </tr> </table>											Call Sign	City	State	Channel	KAYU-TV	SPOKANE	WA	28																																																																																								
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5.	Antenna Location Coordinates: (NAD 27) Latitude: Degrees 48 Minutes 34 Seconds 30 <input checked="" type="radio"/> North <input type="radio"/> South Longitude: Degrees 117 Minutes 55 Seconds 00 <input checked="" type="radio"/> West <input type="radio"/> East																																																																																																										
6.	Antenna Structure Registration Number: <input checked="" type="checkbox"/> Not Applicable <input type="checkbox"/> Notification filed with FAA																																																																																																										
7.	Antenna Location Site Elevation Above Mean Sea Level: 856.9 meters																																																																																																										
8.	Overall Tower Height Above Ground Level: 30 meters																																																																																																										
9.	Height of Radiation Center Above Ground Level: 21.3 meters																																																																																																										
10.	Maximum Effective Radiated Power (ERP) Towards Radio Horizon: 1.25 kW																																																																																																										
11.	Maximum ERP in any Horizontal and Vertical Angle: 1.25 kW																																																																																																										
12.	Transmitting Antenna: Before selecting Directional "Off-the-Shelf", refer to "Search for Antenna Information" under CDBS Public Access (http://svartifoss2.fcc.gov/prod/cdb/pubacc/prod/cdb_pa.htm). Make sure that the Standard Pattern is marked Yes and that the relative field values shown match your values. Enter the Manufacturer (Make) and Model exactly as displayed in the Antenna Search. <input type="radio"/> Nondirectional <input type="radio"/> Directional "Off-the-shelf" <input checked="" type="radio"/> Directional composite Manufacturer SCA Model 2XCL-713/HRM/HV																																																																																																										
Directional Antenna Relative Field Values: <input type="checkbox"/> N/A (Nondirectional or Directional "Off-the-shelf") Rotation (Degrees): <input checked="" type="checkbox"/> No Rotation																																																																																																											
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NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.																																																																																																											
CERTIFICATION																																																																																																											

13.	Interference : The proposed facility complies with all of the following applicable rule sections. Check all those that apply.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 6]
	TV broadcast analog system protection. a. <input checked="" type="checkbox"/> 47 C.F.R. Section 74.705	
	Digital TV station protection. b. <input checked="" type="checkbox"/> 47 C.F.R. Section 74.706	
	Low Power TV and TV translator station protection. c. <input checked="" type="checkbox"/> 47 C.F.R. Section 74.707	
14.	Environmental Protection Act. The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance, an Exhibit is required. By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.	<input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 7]
PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.		

SECTION III PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name ROBERT J. CLINTON		Relationship to Applicant (e.g., Consulting Engineer) CONSULTANT	
Signature		Date 9/7/2004	
Mailing Address CAVELL, MERTZ, & DAVIS, INC. 7839 ASHTON AVENUE			
City MANASSAS	State or Country (if foreign address) VA	Zip Code 20109 - 2883	
Telephone Number (include area code) 7033929090	E-Mail Address (if available) BCLINTON@CMDCONSULTING.COM		

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).

Exhibits

Exhibit 6

Description: EXHIBIT 6 - STATEMENT A -- ALLOCATION CONSIDERATIONS

EXHIBIT 6 - STATEMENT A -- ALLOCATION CONSIDERATIONS

Attachment 6

Description
EXHIBIT 6 - STATEMENT A -- ALLOCATION CONSIDERATIONS

Exhibit 7**Description:** EXHIBIT 7 - STATEMENT B -- ENVIRONMENTAL STATEMENTEXHIBIT 7 - STATEMENT B -- ENVIRONMENTAL STATEMENT

Attachment 7

Description
EXHIBIT 7 - STATEMENT B -- ENVIRONMENTAL STATEMENT

Exhibit 7 - Statement B
ENVIRONMENTAL CONSIDERATIONS
prepared for
Mountain Licenses, L.P.
K09UP Colville, Washington
Facility ID 58691
Ch. 9 1.25 kW

The instant proposal is not believed to have a significant environmental impact as defined under Section 1.1306 of the Commission's Rules. Consequently, preparation of an Environmental Assessment is not required.

Nature of The Proposal

Mountain Licenses, L.P., (*"Mountain"*) proposes herein a minor modification under the FCC Rules for K09UP, Channel 9, Colville, Washington (file number BLTVL-19860709IA). The instant proposal herein seeks a minor modification to specify a different transmitter location, a different antenna system, and a higher effective radiated power ("ERP") than that presently licensed.

The proposed K09UP antenna will be side mounted on an existing unregistered structure approximately 1.7 km north and west of its currently licensed site, atop "Eagle Peak". The existing tower is 30 meters overall. This height passes the FCC's TOWAIR program for the proposed transmitter site. No change to the structure's overall height is proposed, thus the structure is not anticipated to require lighting, marking, or FCC registration.

The use of existing transmitting locations has been characterized as being environmentally preferable by the Commission, according to Note 1 of §1.1306 of the FCC Rules. Therefore, it is believed that this application may be categorically excluded from environmental processing pursuant to §1.1306 of the Commission's rules.

Human Exposure to Radiofrequency Electromagnetic Field

The proposed operation was evaluated for human exposure to radiofrequency (RF) energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET 65"). The proposed K09UP transmitting antenna will be situated such that its center of radiation is 21.3 meters above

Exhibit 7 - Statement B
ENVIRONMENTAL CONSIDERATIONS
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ground. An ERP of 1.25 kilowatts, horizontally polarized, will be employed. The transmitting antenna (a custom Scala model 2xCL-713) has a relative field of less than 70 percent from 40 to 90 degrees below the horizontal plane (*i.e.*, below the antenna), according to data provided by the manufacturer. Thus, a value of 70 percent relative field is used for this calculation. The “uncontrolled/general population” limit specified in §1.1310 for Channel 9 is $200 \mu\text{W}/\text{cm}^2$.

Using formula 2 from OET 65, Supplement A, (assuming typical 10 percent aural carrier level), the proposed facility would contribute a power density of $27.4 \mu\text{W}/\text{cm}^2$ at two meters above ground level near the antenna support structure, or 13.7 percent of the general population/uncontrolled limit. At ground level locations away from the base of the support structure, the calculated RF power density is even lower, due to the increasing distance from the transmitting antenna.

Two other broadcast facilities are authorized near the K09UP site. A Construction Permit (“CP”) for radio station KCRK-FM (Ch. 221A, Colville, WA), and a CP for K321BC (Ch. 231D, Colville, WA) authorizes operation on the same tower structure¹. According to information provided by the applicant, the KCRK-FM antenna will be located approximately 7 meters above the K09UP antenna, or 28.3 meters above ground level. The applicant has been informed that a 2 bay full wavelength spaced ERI antenna will be used to transmit the authorized 3.5 kW ERP for the KCRK facility at this location. This transmitting antenna has a relative field of less than 55 percent from 20 to 90 degrees below the horizontal plane (*i.e.*, below the antenna), according to data provided by the manufacturer. Thus, a value of 55 percent relative field is used for this calculation. The “uncontrolled/general population” limit specified in §1.1310 for Channel 221 (92.1 MHz) is $200 \mu\text{W}/\text{cm}^2$.

¹According to information provided by the applicant, there is only one tower on Eagle Peak. As a “worst case” scenario, it is assumed herein that both KCRK-FM and K231BC will operate from the same tower, in spite of the coordinate variances, which differ by as much as 600 meters. The FM authorizations may require minor modification to correspond to actual site data.

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ENVIRONMENTAL CONSIDERATIONS
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The formula used for calculating FM signal density in this analysis is essentially the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

<i>S</i>	=	power density in microwatts/cm ²
<i>ERP</i>	=	total (average) ERP in Watts (H + V)
<i>F</i>	=	relative field factor
<i>D</i>	=	distance in meters

Using this formula and the assumptions above, the KCRK-FM facility would contribute a power density of 101.9 µW/cm² at two meters above ground level near the antenna support structure, or 51 percent of the general population/uncontrolled limit.

According to data extracted from the Commission's database, the K231BC transmitting antenna will be situated such that its center of radiation is 20 meters above ground. An ERP of 0.01 kilowatts, circularly polarized, will be employed. Assuming a "worst case" relative field of 100 percent, and using the same formula as above, the K231BC facility would contribute a power density of 2.1 µW/cm² at two meters above ground level near the antenna support structure, or 1 percent of the general population/uncontrolled limit.

Summing the individual contributions to RF exposure from K09UP, KCRK-FM and K231BC, the total calculated level of RF electromagnetic field is 65.7 percent of the uncontrolled / general population MPE limit at two meters above ground level. No other authorized FM, AM, or TV stations are located within 6 km of K09UP.

Safety of Tower Workers and the General Public

As demonstrated herein, excessive levels of RF energy attributable to the proposed K09UP will not be caused at publicly accessible areas at ground level near the antenna supporting structure. Consequently, members of the general public are not exposed to RF levels in excess of the

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ENVIRONMENTAL CONSIDERATIONS
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Commission's guidelines. Nevertheless, tower access will be restricted and controlled through the use of a locked fence. Additionally, appropriate RF exposure warning signs will be posted.

With respect to worker safety, it is believed that based on the preceding analysis, excessive exposure will not occur in areas at ground level. A site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed on the tower in areas where high RF levels may be present. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. On-site RF exposure measurements may also be undertaken to establish the bounds of safe working areas. The applicant will coordinate exposure procedures with any pertinent stations.

Conclusion

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules, hence preparation of an Environmental Assessment is not required.