

## **ENGINEERING REPORT**

New FM Booster Application for  
**KLMP(FM) – Rapid City, SD**  
**97.9 MHz**

Lic No. BLH-6472

**April, 2003**

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Exhibit 16.1 – RF Radiation Study

(Exhibit Numbering is in response to FCC Online Form 349, Section III-A)

## Discussion

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This firm has been retained to prepare the required engineering report in support of an application for an FM booster station for KLMP(FM), Rapid City, SD, SD, File No. BLH-6472. KLMP(FM) operates on Channel 250, 97.9 MHz. The proposed booster service contour will be entirely located within the service contour of KLMP(FM). This proposal meets the requirements of 47 C.F.R. §74.1235(c).

It has been determined that the booster may be used in the area without interference to any existing FM broadcast station, except to the signal of KLMP(FM). **Exhibit 11.1** of this report is a map showing the relationship of the booster to the primary station protected contour. The booster site is within the primary contour, and the 1 mV/m (60 dBu) contour of the booster does not extend beyond the primary station 1 mV/m contour. In addition to the KLMP(FM) license, KLMP(FM) also holds outstanding Construction Permit File No. BPH-20010306ABY for an increased CH250C operation of 100 kW at 579 meters HAAT from an alternate location. Licensing of this CP will not affect the booster operation.

The antenna will be a composite directional using three “off the shelf” vertically polarized Kathrein Scala CL-FM elements. The antennas will be mounted one wavelength apart and oriented in the appropriate directions to obtain the broadened pattern shown in the polar plot. Directional antenna information has been included as **Exhibit 11.2**. The antenna will be mounted on an existing tower as shown. The proposed antenna will not increase the overall tower height, therefore the FAA need not be notified. A copy of the existing Antenna Structure Registration has been included as **Exhibit 10.1**, and is matter of public record before the Commission. A copy of the vertical antenna plan has been included in **Exhibit 10.2**.

The proposed facility meets the requirements of the Rules for operation without a licensed operator in attendance. The transmitter site may be reached promptly at all hours and in all seasons. The transmitter will be equipped with proper control and interface circuits which will place the booster in a non-radiating condition in the event the proper incoming signal is absent. The transmitter and controls will be placed in a locked area to prevent unauthorized tampering with the equipment. A person or persons will be assigned to observe the signals of the station each day, and to take corrective action if required. The equipment proposed for operation is listed in the type-approved list of the Commission.

Prompt suspension of the booster operation will be made, in the event of equipment failure that could cause operation outside the specifications of the Rules. The data contained in this report is responsive to the Rules of the Commission, and provides information for FCC Form 349.

## Discussion (continued)

**RADIATION PROTECTION:** The Commission requires an engineering study regarding compliance with the guidelines for human protection from radiofrequency radiation. This report section is in response to that provision of the Rules.

The current Federal Communications Commission guidelines for RF radiation protection are set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01). A copy of the RF Radiation Study has been included in ***Exhibit 16.1***. The RF radiation will not result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in the Commission's rules. The facility will be properly marked with signs, and entry will be restricted by means of fencing with locked doors and/or gates. Any other means as may be required to protect employees and the general public will be employed.

**DISTANCES TO CONTOURS:** The following tabulation of the distances to the proposed service contour results from calculations performed in accordance with §73.313(d) and §73.333 Figure 1.

Munn-Reese, Inc. - Coldwater, MI 49036						
N. Lat. = 44 05 33 W. Lng. = 103 14 53						
HAAT and Distance to Contour - FCC Method - 30 Arc Sec.						
Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	1027.8	170.2	0.0309	-15.10	0.089	10.13
030	977.9	220.1	0.7619	-1.18	0.442	25.28
060	977.1	220.9	1.9938	3.00	0.715	31.65
090	974.9	223.1	2.2586	3.54	0.761	32.80
120	956.5	241.5	1.4370	1.57	0.607	30.61
150	1008.4	189.6	1.4655	1.66	0.613	27.31
180	1140.1	57.9	2.1414	3.31	0.741	17.05
210	1172.5	25.5	3.0892	4.90	0.890	13.32
240	1193.9	4.1	3.8844	5.89	0.998	14.08
270	1251.9	-53.9	2.6480	4.23	0.824	12.83
300	1228.2	-30.2	1.9219	2.84	0.702	11.89
330	1092.2	105.8	0.6847	-1.65	0.419	17.34
Ave El= 1083.44 M HAAT= 114.56 M AMSL= 1198 M						