

TECHNICAL EXHIBIT
APPLICATION FOR FM CONSTRUCTION PERMIT
RADIO STATION KARS-FM
LARAMIE, WYOMING

JANUARY 20, 2009

CH 275C1 72 KW 248 M

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Technical Narrative

The technical exhibit of which this narrative is part was prepared in support of an application for construction permit for radio station KARS-FM assigned to Laramie, Wyoming on Channel 275C1. The applicant proposes, via this minor-change application, to simply decrease the effective radiated power. No other changes are requested.

Existing Transmitter Location

A sketch showing the proposed antenna and supporting structure is shown on Figure 1.

Interference Concerns

The 115 dBu predicted "blanketing" contour of the proposed station would extend radially less than 4 kilometers from the transmitting site. No interference is expected. However, the applicant recognizes its responsibility to resolve complaints of interference, including blanketing and receiver-induced interference, as required by Sections 73.315(b), 73.316(e) and 73.318.

Determination of Overall Antenna HAAT

The overall antenna height above average terrain (HAAT) was determined by the method outlined in Section 73.313. The average terrain elevations along the standard eight radials, evenly spaced at 45-degree intervals, were obtained from the N.G.D.C. 30-second terrain database. The full 3 to 16 km portions of the radials were used for all radials.

Predicted Coverage Contours

The predicted coverage contours were calculated in accordance with Section 73.313 of the FCC Rules. The average terrain elevations from 3 to 16 km from the proposed site were computed using the NGDC 30-second terrain database. The distances to the predicted coverage contours were determined using the average elevations of 3-16 km portions of radials spaced every 10-degrees of azimuth. The antenna radiation center HAAT in each radial direction and the ERP were used in conjunction with the propagation prediction curves of Section 73.333 to determine the distances to contours.

Sheet 1 of Figure 2 is a map showing the predicted coverage contours. As indicated in Sheet 1 of Figure 2, although the predicted 60 dBu contour based on the normal FCC prediction method does encompass the entire community of Laramie, the predicted 70 dBu contour does not.

Due to terrain between the proposed transmitter site and the city of Laramie and pursuant to Section 73.313(e) of the FCC Rules, a supplemental method for contour prediction has been employed to predict the extent of the 70 dBu contour over Laramie. Use of a supplemental prediction method is justified

in this instance since the terrain roughness in the direction of Laramie "departs widely" from the average 50-meter terrain roughness (Δh) employed in the normal FCC prediction method.¹ The terrain roughness (Δh) was determined to be 410 meters along the direct radial through Laramie.²

The supplemental prediction method used was the Commission's Point-to-Point propagation model. Based on this model, the predicted 70 dBu contour extends 76.0 km from the transmitter site along the 12° T bearing toward Laramie. Based on a 70 dBu contour distance of 76.0 km, the predicted 70 dBu contour for the proposed facility will encompass 100% of the city of Laramie. Sheet 2 of Figure 2 shows the extent of the 70 dBu contour by the normal FCC method and by the supplemental Point-to-Point method. Since the normally predicted 70 dBu contour extends 50 km from the proposed transmitter site, the Point-to-Point model predicts an increase of 26 km (52%) in the distance to the 70 dBu contour. Therefore, it is concluded that the proposal complies with all of the Commission technical requirements.

¹ The FCC considers terrain to "depart widely" from the 50-meter Δh standard where the Δh value is 20 meters or less or 100 meters or greater.

² Δh was determined along the terrain segment from 10 km to 52 km, the furthest point of Laramie from the proposed transmitter site. Terrain data were derived from the USGS 3-second database at 0.1-km intervals along the radial.

Allocation Study

Figure 3 is an allocation study for Channel 275C1 at the proposed site. The figure contains a tabulation of actual and required separation distances from other pertinent stations and allotments. The proposed site meets the FCC's minimum separation requirements, specified in Section 73.207(b) of the Commission's Rules, to all assignments and stations.

Radiofrequency Electromagnetic Field Exposure Analysis

The proposed facility has been evaluated in terms of potential radiofrequency electromagnetic field exposure at ground level in accordance with OET Bulletin No. 65, *Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*.³ The power density at the base of the tower was calculated using the appropriate procedure contained in Section 2, Supplement A, *Additional Information for Radio and Television Broadcast Stations*, of the Bulletin.

For the calculation, a combined horizontal and vertical polarized ERP of 144 kilowatts is employed with a radiation center of 45 meters above ground level. The use of an ERI *SHPX-10AC-SP* antenna is assumed, which is a 10 element "rototiller" type of antenna with a wavelength spacing of 0.926 between each element. It is calculated that the power density will not exceed 0.02 mW/cm² at two meters above ground level. This is 10 percent of the Commission's guideline value for an

³ OET Bulletin 65, Second Edition 97-01, August, 1997.

uncontrolled environment for a FM radio station.⁴ There are no other known high-powered emitters in the nearby vicinity.

Access to the transmitting site will be restricted and appropriately marked with warning signs. When it becomes necessary for workers to ascend the tower, appropriate measures, such as reduction or shut down of power if necessary, shall be taken to ensure that the human exposure to radiofrequency radiation will not exceed the FCC guidelines.

It is noted that this statement only addresses the potential for radiofrequency electromagnetic field exposure. All other aspects of the environmental processing analysis will be or already have been provided to the FCC by the tower owner as part of the tower registration process.

Charles A. Cooper

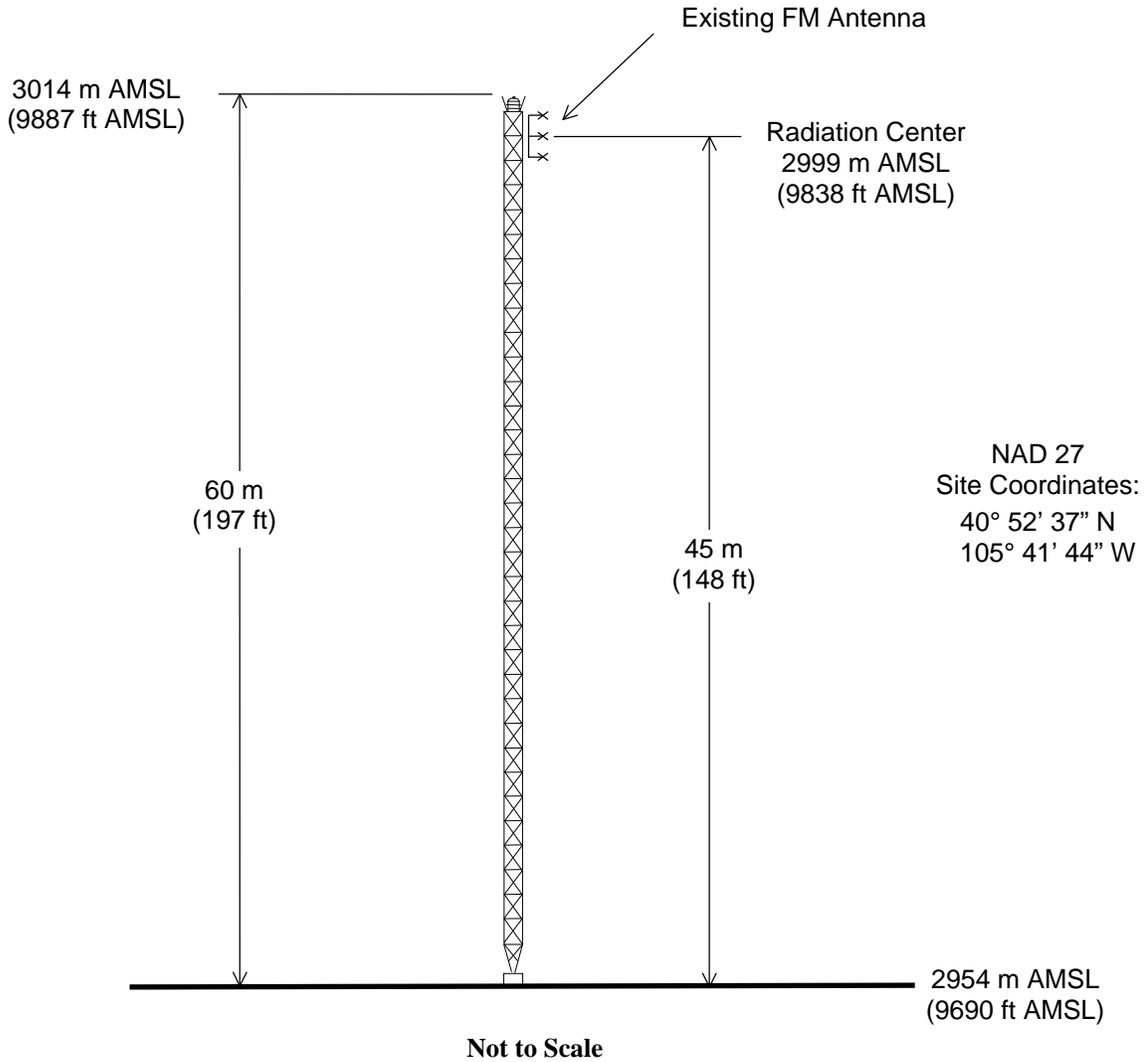
du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237
941.329.6000

January 21, 2009

⁴ The FCC maximum guideline for a FM broadcast station in an uncontrolled environment is 0.2 mW/cm².



ASRN: Not Necessary



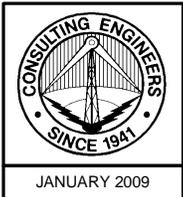
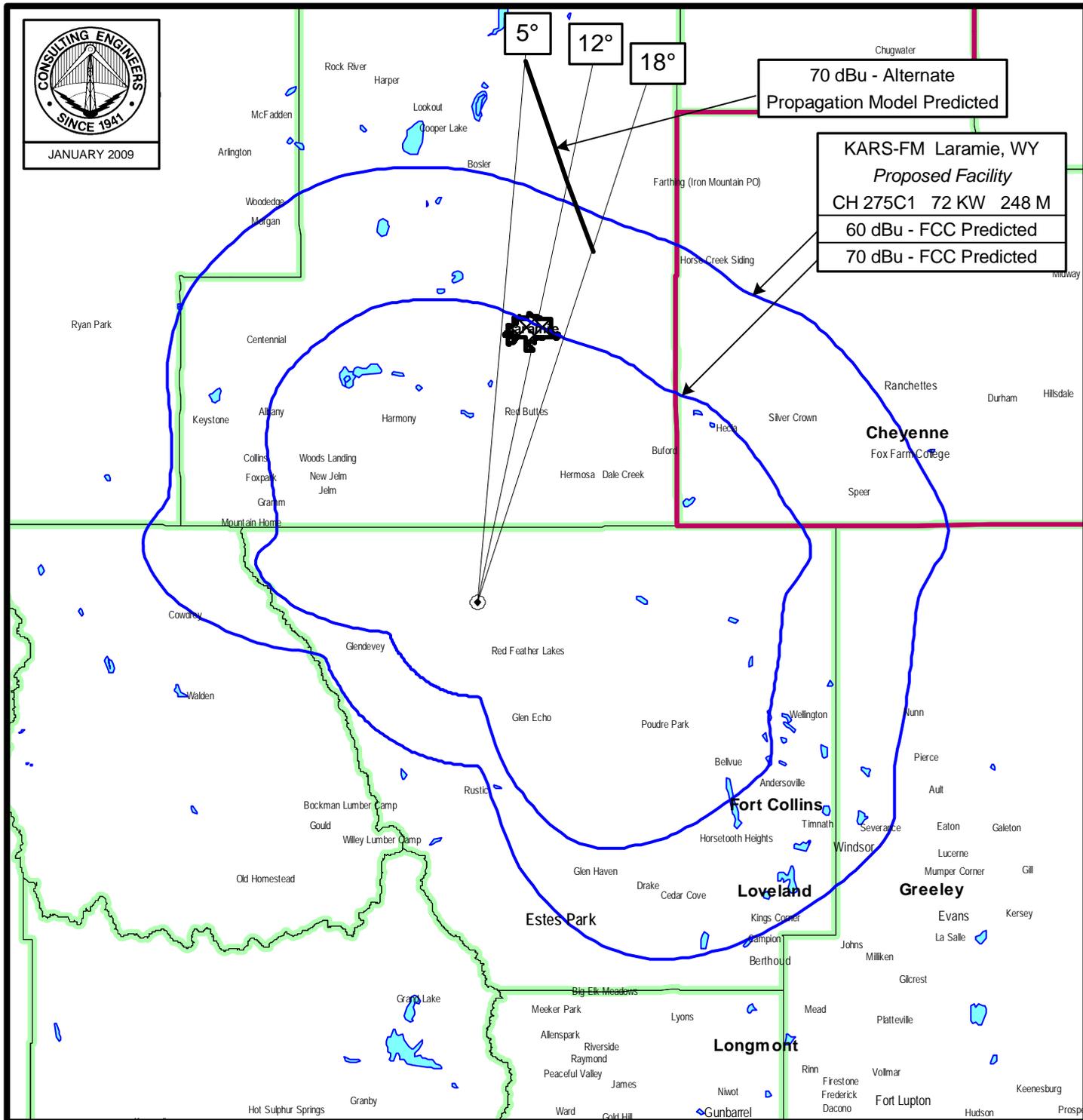
ANTENNA AND SUPPORTING STRUCTURE

RADIO STATION KARS-FM

LARAMIE, WYOMING

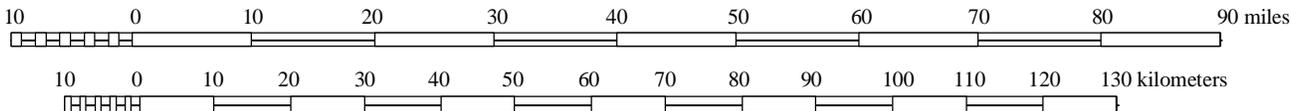
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70 dBu - Alternate
Propagation Model Predicted

KARS-FM Laramie, WY
Proposed Facility
CH 275C1 72 KW 248 M
60 dBu - FCC Predicted
70 dBu - FCC Predicted



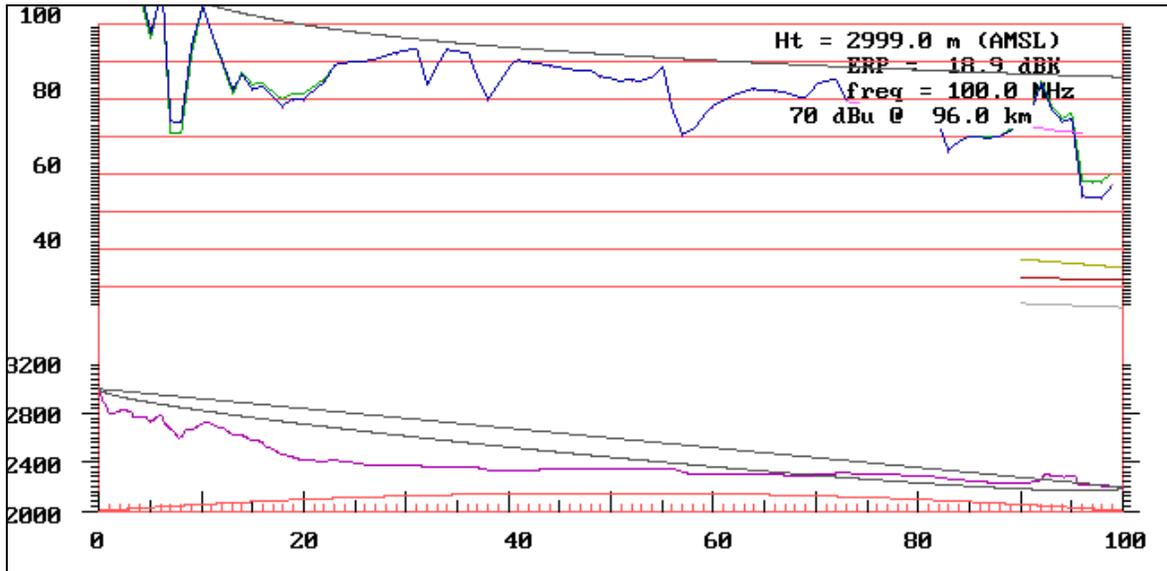
PREDICTED COVERAGE CONTOURS

KARS FM STATION
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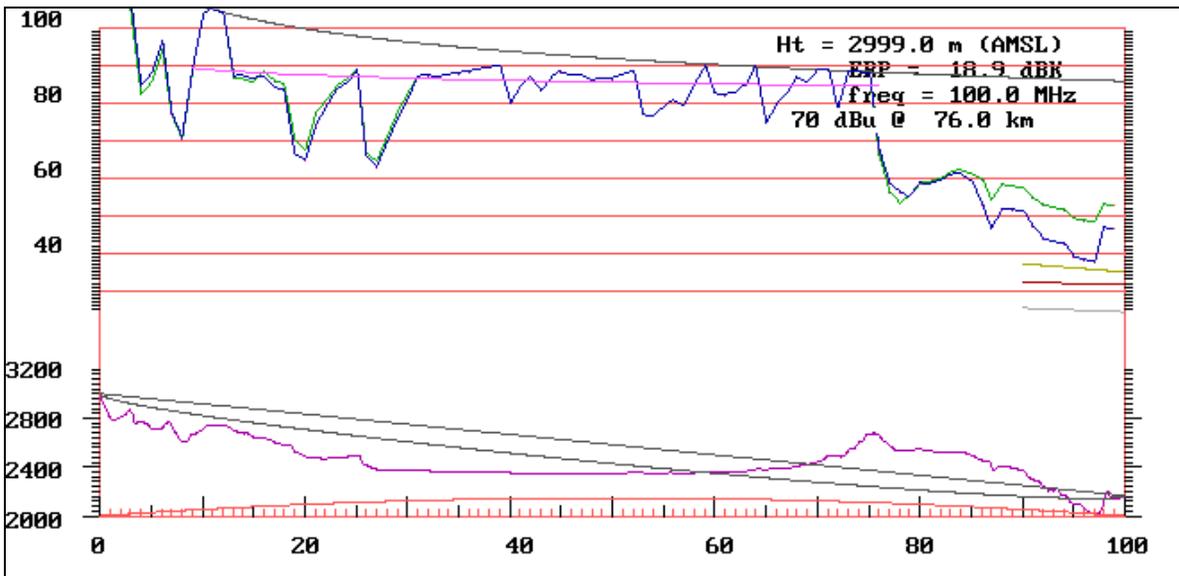
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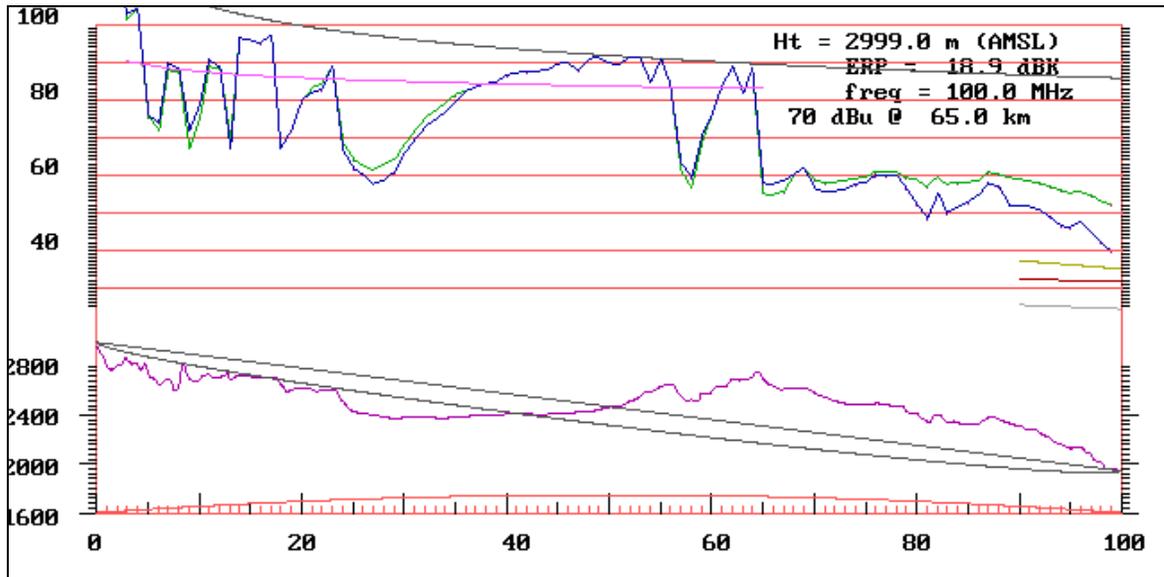
Alternate Propagation Model Results



Graph 1. Point-to-Point Coverage Model for 5° Radial.



Graph 2. Point-to-Point Coverage Model for 12° Radial.



Graph 3. Point-to-Point Coverage Model for 18° Radial.

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Proposed Site Allocation Study

40° 52' 37" North Latitude
 105° 41' 44" West Longitude

Call Id	City St	File Status Num	Channel Freq	ERP HAAT	DA Id	Latitude Longitude	73 215	Bear	Dist. (km)	Req. min
KTRR 50375	LOVELAND CO	BLH LIC C	273C2 20051107AEI	17 102.5	234	N 104-49-03	40-38-31	Y 109.2	78.60	79.0
<i>(Separation distance rounds to 79 kilometers. Therefore, no short-spacing.)</i>										
KARS-FM 10334	LARAMIE WY	BLH LIC C	275C1 20051031ABO	100 102.9	248	N 105-41-44	40-52-37	N 98.3	0.00	
<i>(Applicant's existing authorization)</i>										
KAVD 79249	PARKER CO	BPH CP C	276C0 20070314ACY	100 103.1	448	N 104-08-48	39-31-57	N 138.2	199.19	196.0
KHNA 166001	WARREN WY	AIR APP C	BMPH 20070117AFI	277C2 103.3	50 71	Y 88152 104-43-19	41-09-34	Y 68.6	87.70	79.0

APPENDIX

TRANSMITTING ANTENNA VERTICAL PLANE PATTERN

FIGURE 1. VERTICAL PATTERN PLOT ERI SHPX10-AC-SP

ELECTRONICS RESEARCH, INC
7777 GARDNER ROAD
CHANDLER, IN. 47610

-----THEORETICAL-----
VERTICAL PLANE RELATIVE FIELD

10 ERI TYPE SHP, SHPX, LP, OR LPX ELEMENTS
-1.46 DEGREE(S) ELECTRICAL BEAM TILT
0 PERCENT FIRST NULL FILL
0 PERCENT SECOND NULL FILL

POWER GAIN IS 4.276 IN THE HORIZONTAL PLANECS.167 IN THE MAX.)

9-19-02
ELEMENT SPACING:
0.926 WAVELENGTH

