

ENGINEERING STATEMENT
APPLICATION FOR A
CONSTRUCTION PERMIT FOR
AN EXISTING TELEVISION TRANSLATOR
K43DU, BUTTE, MONTANA
CHANNEL 43(Z) 18.2 KW MAX ERP 2531.2 METERS RC/AMSL

JULY 2005

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington)
) ss
District of Columbia)

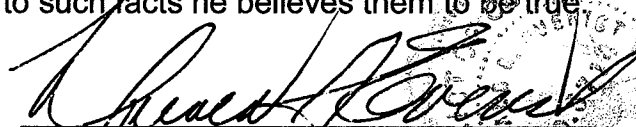
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That his qualifications are a matter of record in the Federal Communications Commission;

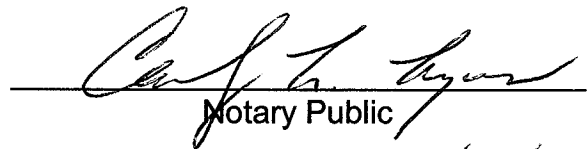
That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.

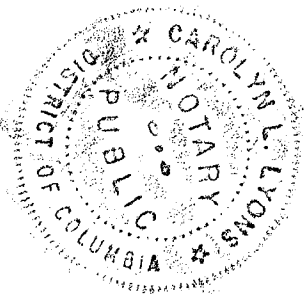


Donald G. Everist
District of Columbia
Professional Engineer
Registration No. 5714

Subscribed and sworn to before me this 20th day of July, 2005.


Notary Public

My Commission Expires: 2/28/2008



COHEN, DIPPELL AND EVERIST, P. C.

City of Washington)
) ss
District of Columbia)

Martin R. Doczkat being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer of the Pennsylvania State University, and is a staff engineer at Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;


That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.



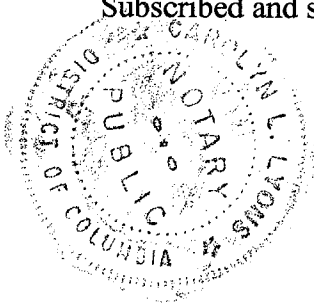
Martin R. Doczkat

Subscribed and sworn to before me this 20th day of July, 2005.



Notary Public

My Commission Expires: 2/28/2008



INTRODUCTION

This engineering statement has been prepared on behalf of Montana State University in support of its minor modification application to its licensed facility K43DU, Butte, Montana. This application proposes to increase the Effective Radiated Power ("ERP") of K43DU from its current authorized ERP of 0.338 kW to 18.2 kW maximum and replace the current panel antenna with a new antenna to handle the proposed increased ERP and implement a new directional pattern. Slight changes in the center of radiation will result due to antenna mounting requirements.

TRANSMITTER SITE

The new antenna will be mounted to the existing tower where the authorized K43DU facility is currently located. The tower is located at "XL Heights" approximately 2.8 miles east of the Silver Bow County Courthouse. This location can be found on United States Geological Survey quadrangle map, Elk Park Pass, Montana. A copy of the map labeled with the proposed transmitting site can be found as Exhibit E-1. The geographic coordinates of the site follow below.

North Latitude: 46° 00' 29"

West Longitude: 112° 26' 30"

NAD-27

ELEVATION DATA

Elevation of site above mean sea level	2516 Meters
Center of radiation of antenna above ground level	15.2 Meters
Center of radiation of antenna above mean sea level	2531.2 Meters

EQUIPMENT DATA

Transmitter:	Type-Approved
Transmission Line:	Andrew, Type HJ7-50A, 1-5/8", 35.0 meters with 90.2% efficiency
Antenna:	Andrew ALP8L12-HSBR with maximum gain of 20.18 and 3.00° of electrical beam tilt and 3.0° of mechanical beam tilt at N 220°E

POWER DATA

Transmitter:	1.0 kW
Transmission Line Loss:	0.098 kW
Input Into Antenna:	0.902 kW
Antenna Gain:	20.18
ERP:	18.2 kW

As indicated above, the transmitter with typical power output of 1.0 kW will deliver 0.902 kW to the input of the antenna. The antenna, having a maximum gain of 20.16, will produce maximum ERP of 18.2 kW. It is also proposed to use mechanical tilt of 3° at N 220° E. A coverage map of the proposed facility has been included as Exhibit E-2 of this report. The

antenna elevation pattern is included as Exhibit E-3 and associated tabulation E-3a and the resulting horizontal pattern is included as Exhibit E-4 and accompanying tabulation E-4a.

OTHER BROADCAST FACILITIES

A brief analysis was completed to determine the presence of stations in the vicinity of the K43DU tower using the July 15, 2005, data contained within the Commission's Consolidated Database System ("CDBS"). Seven authorized FM radio stations were found and four authorized NTSC and DT television stations were also found within 500 meters of the proposed site in addition to the licensee's current authorized K43DU facility. Although no adverse technical affects are expected due to the proposed changes, the licensee will take measures to resolve any problems proven to be related to the changes proposed in this application.

ALLOCATION SITUATION

The proposal protects all authorized facilities; however, two applications are predicted to either cause or receive prohibited contour overlap with the proposal as shown in Table I. FCC application no. BNPTTL-20000829AJJ is predicted to cause prohibited contour overlap to the proposal and FCC application no. 20000807AEZ is predicted to receive prohibited contour overlap from the proposal. Both of these applications are mutually exclusive. A Longley-Rice analysis has been used to investigate the potential interference. No interference was found to exist between either application and the proposal based on performing an analysis with a version of the Longley-Rice model known to very closely duplicate the Commission's results. Therefore, since no interference is caused to application no. BNPTTL-20000807AEZ and the proposal does not receive interference from FCC application no. BNPTTL-20000829AJJ, a waiver of the contour protection rules of Section 74.707 by use of the Longley-Rice terrain

propagation model as provided for in Section 74.707(e) of the Commission's Rules is hereby requested. A grant of this waiver is in the best public interest since K43DU is a translator for Montana State University's television station KUSM-TV which provides the only broadcast PBS service in the Butte, Montana area.

Other Licensed and Broadcast Facilities

No adverse technical effect is anticipated by the proposed DTV operation to any other FCC licensed facility. If required, the licensee will install filters or take other measures as necessary to resolve the problem.

FCC Rule, Section 1.1307

The proposed 18.2 kW directional operation will utilize an Andrew, Type ALP8L12-HSBR antenna (or equivalent) described above with a center of radiation above ground of 15.2 meters. The proposed antenna will be side-mounted on a steel lattice tower with an overall height of 62 meters above ground.

As previously indicated, there are two AM stations located within 3.2 km of the proposed tower site. Since there will be no change in height, the electrical characteristic at the AM frequencies will be unchanged. According to the FCC database, there are also four FM and three TV stations located within 100 meters of the KXLF-TV tower. Access to the tower property is prevented by an eight foot security fence with a locked gate.

The proposed operation based upon the current OET Bulletin No. 65, Edition 97-01 dated August 1997 and Supplement A meets the provisions of the FCC radio frequency field ("RFF") guidelines, and thus, complies with Section 1.1307 of the FCC Rules. The elevation pattern for the Andrew, Type ALP8L12-HSBR antenna, Exhibit E-3, shows a maximum relative field of

less than 0.237 toward the ground (30° to 90° below the horizontal). Calculation according to OET Bulletin 65 predicts a maximum RFF power density of less than $98 \mu\text{W}/\text{cm}^2$, 2 meters above ground or less than 4.5% of the controlled Maximum Permissible Exposure (“MPE”) guideline.

For completeness, the contribution by facilities located within 100 meters to the electromagnetic field environment is considered herein, as there are multiple emitters in the area.

The RFF study will also consider the following stations:

Station

KXLF-TV	Channel 4	(same tower)
KXLF-DT	Channel 5	(same tower)
KFRD (FM)	Channel 202C3	(adjacent tower)
KAPC (FM)	Channel 217C2	(adjacent tower)
KTVM (TV)	Channel 6	(adjacent tower)
KWYB (TV)	Channel 18	(93 meters away/ 175°)
KBTZ (TV)	Channel 24	(93 meters away/ 175°)
KAAR (FM)	Channel 223C1	(62 meters away/ 7°)
KMBR (FM)	Channel 238C	(62 meters away/ 7°)

The RFF contribution of each station will be calculated using the following basic formula:

$$S = \frac{33.4(F^2) \text{ Total ERP}}{R^2}$$

where:

S = power density in $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

ERP = $[0.4 \text{ ERP}_v + \text{ERP}_A]$ for NTSC Stations

ERP_v = peak visual ERP in watts

$$\text{ERP}_A = \text{RMS aural ERP in watts}$$

KXLF-TV NTSC Facility

Channel 4 Freq: 66-72 MHz range
 ERP = (0.4)[100 kilowatts (visual)]+[10 kilowatts (aural)]
 Polarization = Horizontal
 RCAGL -2 meters = 46.3 meters

$$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2} \quad \text{Tot ERP} = 50,000 \text{ watts (Horizontal Only)}$$

$$R = 46.3 \text{ meters}$$

$$F = 0.25 \text{ (from manufacturer's data)}$$

$$S = < 48.7 \mu\text{W}/\text{cm}^2$$

Therefore, KXLF-TV contributes less than $48.7 \mu\text{W}/\text{cm}^2$ at 2 meters above ground.

The limit for a controlled environment for this frequency is $1000 \mu\text{W}/\text{cm}^2$.

KXLF-TV contributes less than 4.9% RFF level for a controlled environment two meters above the ground.

KXLF-DT DTV Facility

Channel 5 Freq: 76-82 MHz range
 ERP = 8 kW
 Polarization = Horizontal
 RCAGL -2 meters = 46.3 meters

$$S = \frac{33.4 (F^2) \text{Tot ERP}}{R^2} \quad \text{Tot ERP} = 8 \text{ kW (Horizontal Only)}$$

$$R = 46.3 \text{ meters}$$

$$F = 0.27 \text{ (from manufacturer's data)}$$

$$S = < 10 \mu\text{W}/\text{cm}^2$$

Therefore, KXLF-DT contributes less than $10 \mu\text{W}/\text{cm}^2$ at 2 meters above ground.

The limit for a controlled environment for this frequency is $1000 \mu\text{W}/\text{cm}^2$.

KXLF-DT contributes less than 1.0% RFF level for a controlled environment two meters above the ground.

KFRD (FM) FM Facility

Channel 202 Freq: 88.3 MHz
 ERP = 0.65 kW
 Polarization = Vertical
 RCAGL -2 meters = 6 meters

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 650 \text{ watts (Vertical only)}$$

$R = 6 \text{ meters}$
 $F = 0.3 \text{ (assumed value)}$

$$S = < 54.3 \mu\text{W}/\text{cm}^2$$

Therefore, KFRD (FM) contributes less than $54.3 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground.

The limit for a controlled environment is $1000 \mu\text{W}/\text{cm}^2$ for the FM band range.

KFRD (FM) contributes less than 5.4% RFF level for a controlled environment two meters above the ground.

KAPC (FM) FM Facility

Channel 217 Freq: 91.3 MHz
 ERP = 0.8 kW
 Polarization = Circular
 RCAGL -2 meters = 32 meters

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 1,600 \text{ watts (Horizontal and Vertical)}$$

$R = 32 \text{ meters}$
 $F = 0.3 \text{ (assumed value)}$

$$S = < 4.7 \mu\text{W}/\text{cm}^2$$

Therefore, KAPC (FM) contributes less than $4.7 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground.

The limit for a controlled environment is $1000 \mu\text{W}/\text{cm}^2$ for the FM band range.

KAPC (FM) contributes less than 0.5% RFF level for a controlled environment two meters above the ground.

KTVM (TV) NTSC Facility

Channel 6 Freq: 82-88 MHz range
 ERP = (0.4)[100 kilowatts (visual)]+[10 kilowatts (aural)]
 Polarization = Horizontal
 RCAGL -2 meters = 49 meters

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 50,000 \text{ watts (Horizontal Only)}$$

$$R = 49 \text{ meters}$$

$$F = 0.3 \text{ (assumed value)}$$

$$S = < 62.6 \mu\text{W}/\text{cm}^2$$

Therefore, KTVM (TV) contributes less than $62.6 \mu\text{W}/\text{cm}^2$ at 2 meters above ground.

The limit for a controlled environment for this frequency is $1000 \mu\text{W}/\text{cm}^2$.

KTVM (TV) contributes less than 6.3% RFF level for a controlled environment two meters above the ground.

KWYB (TV) NTSC Facility (93 meters away)

Channel 18 Freq: 494-500 MHz range
 ERP = (0.4)[1780 kilowatts (visual)]+[178 kilowatts (aural)]
 Polarization = Horizontal
 RCAGL -2 meters = 121.4 meters (in comparison to KXLF-DT site)

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 890,000 \text{ watts (Horizontal Only)}$$

$$R = 121.4 \text{ meters}$$

$$F = 0.2 \text{ (assumed value)}$$

$$S = < 80.7 \mu\text{W}/\text{cm}^2$$

Therefore, KWYB (TV) contributes less than $80.7 \mu\text{W}/\text{cm}^2$ at 2 meters above ground.

The limit for a controlled environment for this frequency is $1656.67 \mu\text{W}/\text{cm}^2$.

KWYB (TV) contributes less than 4.9% RFF level for a controlled environment two meters above the ground.

KBTZ (TV) NTSC Facility (93 meters away)

Channel 24 Freq: 530-536 MHz range
 ERP = (0.4)[330 kilowatts (visual)]+[33 kilowatts (aural)]
 Polarization = Horizontal
 RCAGL -2 meters = 105.6 meters (in comparison to KXLDT site)

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 165,000 \text{ watts (Horizontal Only)}$$

$$R = 105.6 \text{ meters}$$

$$F = 0.2 \text{ (assumed value)}$$

$$S = < 19.8 \mu\text{W}/\text{cm}^2$$

Therefore, KBTZ (TV) contributes less than $19.8 \mu\text{W}/\text{cm}^2$ at 2 meters above ground.

The limit for a controlled environment for this frequency is $1776.67 \mu\text{W}/\text{cm}^2$.

KBTZ (TV) contributes less than 1.1% RFF level for a controlled environment two meters above the ground.

KAAR (FM) FM Facility (62 meters away)

Channel 223 Freq: 92.5 MHz
 ERP = 4.5 kW
 Polarization = Circular
 RCAGL -2 meters = 63.6 meters (in comparison to KXLDT site)

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 9,000 \text{ watts (Horizontal and Vertical)}$$

$$R = 63.6 \text{ meters}$$

$$F = 0.3 \text{ (assumed value)}$$

$$S = < 6.7 \mu\text{W}/\text{cm}^2$$

Therefore, KAAR (FM) contributes less than $6.7 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground.

The limit for a controlled environment is $1000 \mu\text{W}/\text{cm}^2$ for the FM band range.

KAAR (FM) contributes less than 0.7% RFF level for a controlled environment two meters above the ground.

KMBR (FM) FM Facility (62 meters away)

Channel 238 Freq: 95.5 MHz
 ERP = 50 kW
 Polarization = Circular
 RCAGL -2 meters = 67.6 meters (in comparison to KXLF-DT site)

$$S = \frac{33.4 (F^2) \text{ Tot ERP}}{R^2} \quad \text{Tot ERP} = 100,000 \text{ watts (Horizontal and Vertical)}$$
$$R = 67.6 \text{ meters}$$
$$F = 0.3 \text{ (assumed value)}$$

$$S = < 65.8 \mu\text{W}/\text{cm}^2$$

Therefore, KMBR (FM) contributes less than $65.8 \mu\text{W}/\text{cm}^2$ at 2 meters above the ground.

The limit for a controlled environment is $1000 \mu\text{W}/\text{cm}^2$ for the FM band range.

KMBR (FM) contributes less than 6.6% RFF level for a controlled environment two meters above the ground.

Total RFF contribution

17.2% (TV) + 4.5% (proposed) + 1.0% (DT) + 13.2% (FM) = 35.9% for the controlled environment two meters above ground including the proposed TV translator operation.

The entrance to the site is blocked by locked access for more than a mile away from the transmitter site on the access road.

Authorized personnel and rigging contractors will be alerted to the potential zone of high radiation on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations since the permittee indicates that:

- (a)(1) The existing facilities are not located in an officially designated wilderness area.
- (a)(2) The existing facilities are not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species and are not likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities will not affect any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing facilities are not located near any known Indian religious sites.
- (a)(6) The existing facilities are not located in a flood plain.
- (a)(7) The installation of the proposed facilities on a modified tower at an existing site will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines. Authorized personnel will be alerted to areas unauthorized on the tower where potential radiation levels are in excess of the FCC guidelines. A security fence with a locked gate prevents unauthorized access to the tower site.

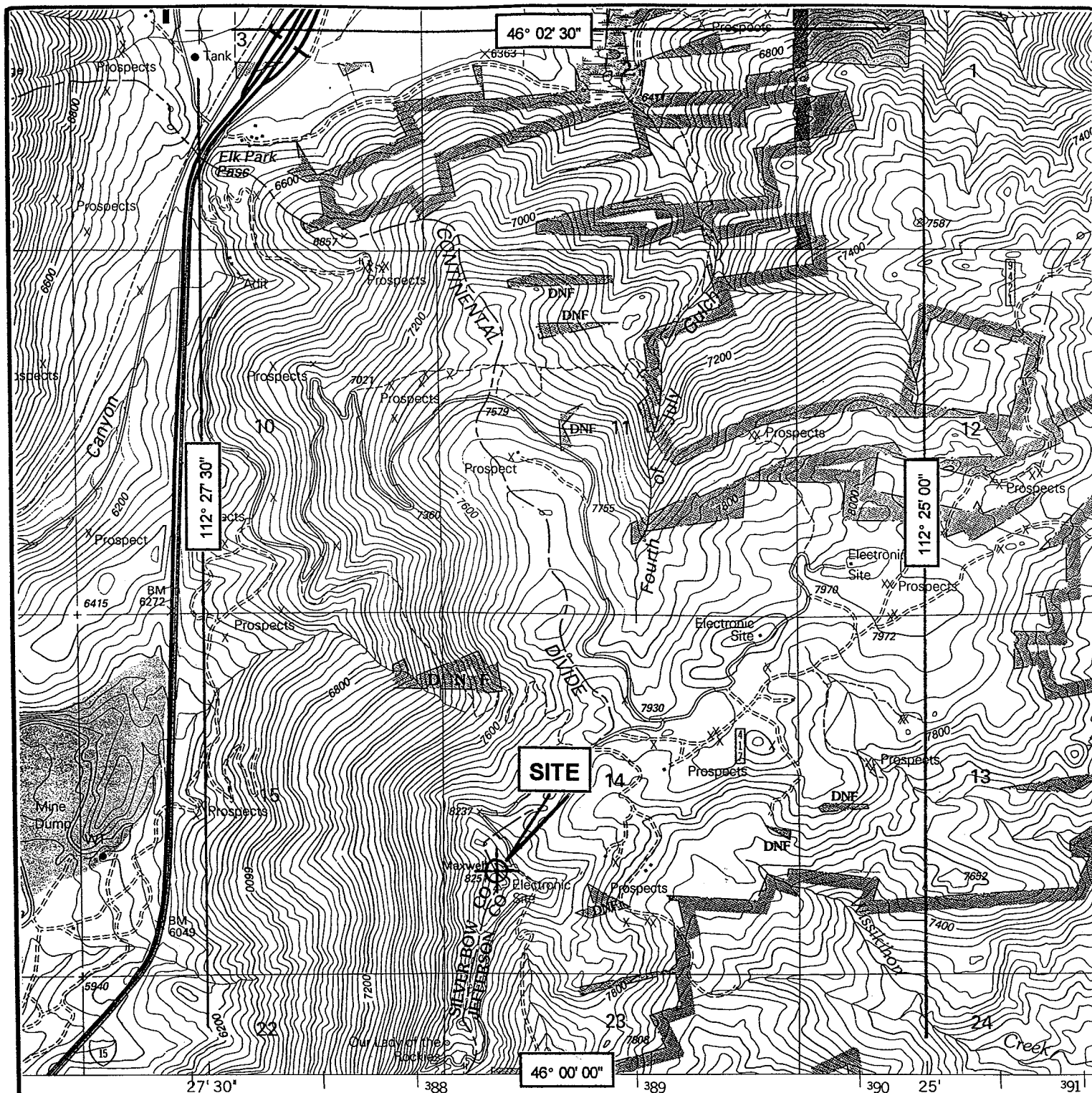
LPONE Study Results

Application Station Info Studied as Undesired

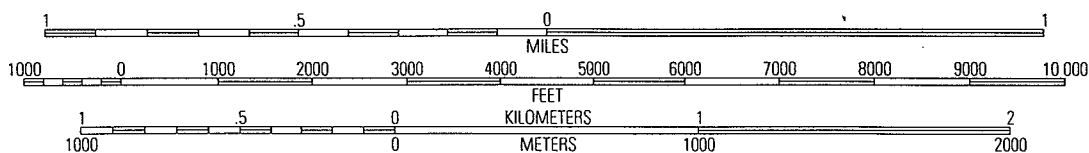
Channel: 43 TX USR Latitude: 46°, 0', 29" Max HAAT: 851.13 m Call: K43DU
 Application ID: 1816 Longitude: 112°, 26', 30" ERP: 18.2 kW OffSet: Z

<u>CALL</u> <u>City, State</u> <u>OWNER</u>	<u>Status</u>	<u>CH</u>	<u>ERP</u> <u>Offset Zone</u>	<u>R/C</u> <u>HAAT</u>	<u>Latitude</u> <u>Longitude</u>	<u>ARN</u> <u>Antenna ID</u> <u>Comments</u>	<u>App ID</u> <u>Facility ID</u>	<u>Sep_Dist</u> <u>Req_Dist</u> <u>Azimuth</u>	<u>Max. QRM</u> <u>QRM_Bearin</u>
NEW TX APP 43 10.000 kW 1,026.00 m 45° 44' 35.1" BNPTTL20000831EIS 538022 304.08 km BILLINGS, MT Z 0 108° 32' 36. 20751 130692 338.00 km TELECOM WIRELESS, LLC Sum of Contours < Sep. Dist. 94.17°									
K43GE TX LIC 43 0.008 kW 711.00 m 46° 34' 44.0" BLTT20001124AAL 539805 333.41 km JULIAETTA, ID Z 0 116° 41' 22. 20748 62454 338.00 km STATE BOARD OF EDUCATION (IEPBS) Sum of Contours < Sep. Dist. 282.54°									
NEW TX APP 43 7.280 kW 1,200.00 m 46° 52' 56.0" BNPTTL20000807AEZ 511558 153.40 km MISSOULA, MT N 0 113° 59' 11. 20734 125308 338.00 km JULIE MINTZ QRM Exists 309.95°									Caus: 2.40 dB Caus: 303.05°
K43JD TX CP 43 0.079 kW 1,602.60 m 43° 45' 19.0" BNPTT20000808ABP 627866 253.15 km REXBURG, ID Z 0 111° 57' 59. 20748 125502 338.00 km STATE BOARD OF EDUCATION, STATE OF IDAHO Sum of Contours < Sep. Dist. 171.33°									
NEW TX APP 43 7.380 kW 1,453.00 m 43° 29' 30.3" BNPTTL20000807ABZ 980820 281.36 km IDAHO FALLS, ID - 0 112° 2' 53.1" 20734 125170 338.00 km SEAN MINTZ Sum of Contours < Sep. Dist. 173.52°									
NEW TX APP 43 7.380 kW 1,528.00 m 43° 30' 44.0" BNPTTL20000807ABZ 591893 279.80 km IDAHO FALLS, ID - 0 111° 58' 30. 20734 125170 338.00 km SEAN MINTZ Sum of Contours < Sep. Dist. 172.27°									
K43IZ TX CP 43 0.405 kW 2,356.00 m 44° 29' 46.0" BNPTT20000831BTL 626262 307.94 km CODY, WY N 0 109° 9' 16.0" 23500 129413 338.00 km KULR CORPORATION, L.L.C. Sum of Contours < Sep. Dist. 121.98°									
NEW TX APP 43 150.0 kW 1,744.00 m 43° 32' 33.0" BNPTTL20000829AMH 531583 277.52 km IONA, ID Z 0 111° 53' 4.0" 36796 129627 338.00 km OREGON TRAIL BROADCASTING COMPANY Sum of Contours < Sep. Dist. 170.69°									
NEW TX APP 43 150.0 kW 1,709.00 m 43° 32' 27.0" BNPTTL20000830APO 525092 277.72 km IDAHO FALLS, ID + 0 111° 52' 57. 35971 128365 338.00 km KM COMMUNICATIONS, INC. Sum of Contours < Sep. Dist. 170.66°									

<u>CALL</u> <u>City, State</u> <u>OWNER</u>	<u>Status</u>	<u>CH</u>	<u>ERP</u> <u>Offset</u> <u>Zone</u>	<u>R/C</u> <u>HAAT</u>	<u>Latitude</u> <u>Longitude</u>	<u>ARN</u> <u>Antenna ID</u> <u>Comments</u>	<u>App ID</u> <u>Facility ID</u>	<u>Sep. Dist</u> <u>Req. Dist</u> <u>Azimuth</u>	<u>Max. ORM</u> <u>ORM</u> <u>Bearin</u>
NEW TX APP 43 1.000 kW 2,028.90 m 43° 40' 59.0" 114° 20' 51.0" BNPTTL20000828AIO 515608 299.10 km SUN VALLEY, ID Z 0 34701 126511 338.00 km DEAN M. MOSELY Sum of Contours < Sep. Dist. 210.84°									
NEW TX APP 43 10.000 kW 1,647.00 m 43° 30' 36.0" 114° 18' 18.0" BNPTTL20000828AOI 517086 314.37 km HAILEY, ID + 0 34957 127207 338.00 km DEAN M. MOSELY Sum of Contours < Sep. Dist. 208.57°									
NEW TX APP 43 150.0 kW 1,225.00 m 47° 32' 9.0" 111° 17' 2.0" BNPTTL20000829AHH 517493 191.48 km GREAT FALLS, MT - 0 34985 127238 338.00 km BEARTOOTH COMMUNICATIONS COMPANY Sum of Contours < Sep. Dist. 27.01°									
K43HF TX CP 43 5.000 kW 1,544.20 m 44° 54' 37.0" 116° 5' 56.0" BNPTTL20000830AHC 588580 310.99 km MCCALL, ID Z 0 41801 127399 338.00 km DEAN M. MOSELY Sum of Contours < Sep. Dist. 248.14°									
NEW TX APP 43 150.0 kW 2,113.00 m 47° 1' 6.0" 114° 0' 41.0" BNPTTL20000829AJJ 613538 164.70 km MISSOULA, MT - 0 44563 127790 338.00 km BEARTOOTH COMMUNICATIONS COMPANY No QRM 313.65°									Rcvd: 4.23 dB Rcvd: 138.34°
K43CI TX LIC 43 1.260 kW 1,761.00 m 46° 4' 9.0" 116° 27' 54.0" BLTT19890705IJ 130560 311.53 km GRANGEVILLE, ETC., ID N 0 16237 9891 338.00 km CENTRAL IDAHO TV, INC. Sum of Contours < Sep. Dist. 272.70°									
K43DU TX LIC 43 0.338 kW 2,531.00 m 46° 0' 29.0" 112° 26' 30.0" BLTTL19920814JC 176155 0.00 km BUTTE, MT N 0 20741 33757 338.00 km MONTANA STATE UNIVERSITY Within Protected Contour 0.00°									
K43DU TX CP 43 27.1 kW 2,531.20 m 46° 0' 29.0" 112° 26' 30.0" BPTT20020325ACP 599656 0.00 km BUTTE, MT Z 0 43084 33757 338.00 km MONTANA STATE UNIVERSITY Within Protected Contour 0.00°									
K43DC TX LIC 43 1.100 kW 1,765.00 m 47° 10' 44.0" 109° 32' 15.0" BLTT19901113IC 154217 257.82 km LEWISTOWN, MT N 0 34415 338.00 km MMM LICENSE II LLC Sum of Contours < Sep. Dist. 58.55°									
KRTV DT ALLO 44 1,000.0 kW 1,235.00 m 47° 32' 9.0" 111° 17' 2.0" 1075372 191.48 km GREAT FALLS, MT 0 180.00 m 26994 35567 338.00 km KRTV COMMUNICATIONS, INC. Sum of Contours < Sep. Dist. 27.01°									
K44GE TX LIC 44 0.211 kW 1,220.00 m 46° 35' 37.0" 111° 59' 5.0" BLTTL20020502AAX 603412 74.00 km HELENA, MT N 0 20778 38577 121.00 km WIRELESS ACCESS, L.L.C. Sum of Contours < Sep. Dist. 28.17°									



SCALE 1:24 000



CONTOUR INTERVAL 40 FEET

SITE COORDINATES:

(NAD-27)
N. 46° 00' 29"
W. 112° 26' 30"

EXHIBIT E - 1
TRANSMITTER SITE
FOR PROPOSED OPERATION OF
K43DU, BUTTE, MONTANA

JULY 2005

COHEN, DIPPELL AND EVERIST, P.C. CONSULTING ENGINEERS

ELK PARK PASS, MT

1996

NIMA 3776 III SW - SERIES V894

RADERSBURG

JEFFERSON

69

WALKERVILLE

K43DU SITE

74 dBu CONTOUR

Stodden Park

Bert Mooney - Silver Bow Airpt

BUTTE-SILVER BOW (BALANCE)

2

WHITEHALL

CARDWELL

THREE

WILLOW CREEK

43

41

55

2

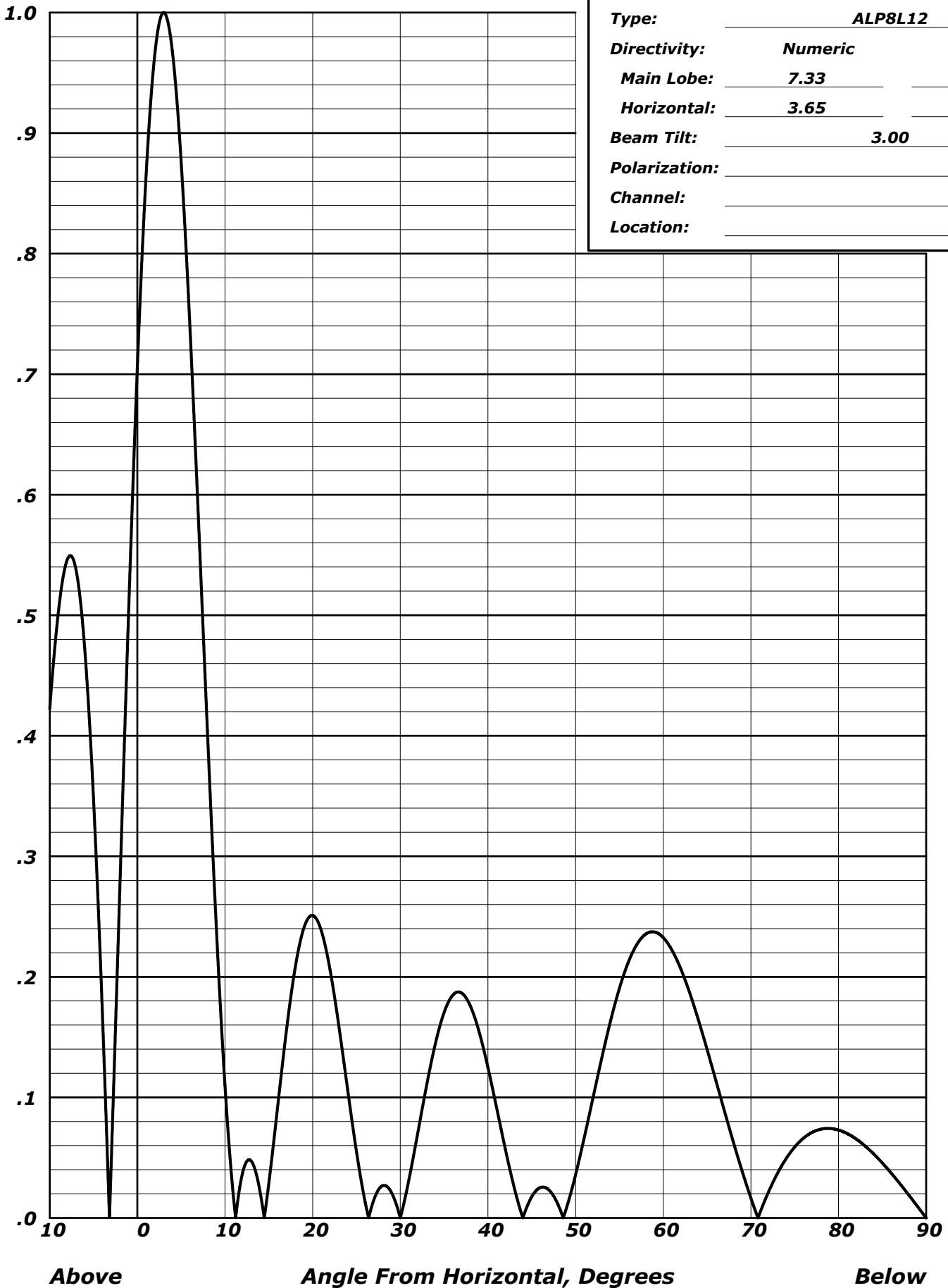
EXHIBIT E-2
PREDICTED 74 dBu PROTECTED CONTOUR
FOR THE PROPOSED OPERATION OF
K43DU, BUTTE, MONTANA
18.2 kW MAX. ERP RC/AMSL 2531.2 METERS
JULY 2005

0 5 10 15
Kilometers

CREATED WITH MAPTITUDE(r) GIS FOR WINDOWS FROM CALIPER CORPORATION

**ANDREW**
ELEVATION PATTERN

Type:	ALP8L12	
Directivity:	Numeric	dBd
Main Lobe:	7.33	(8.65)
Horizontal:	3.65	(5.63)
Beam Tilt:	3.00	
Polarization:		
Channel:		
Location:		

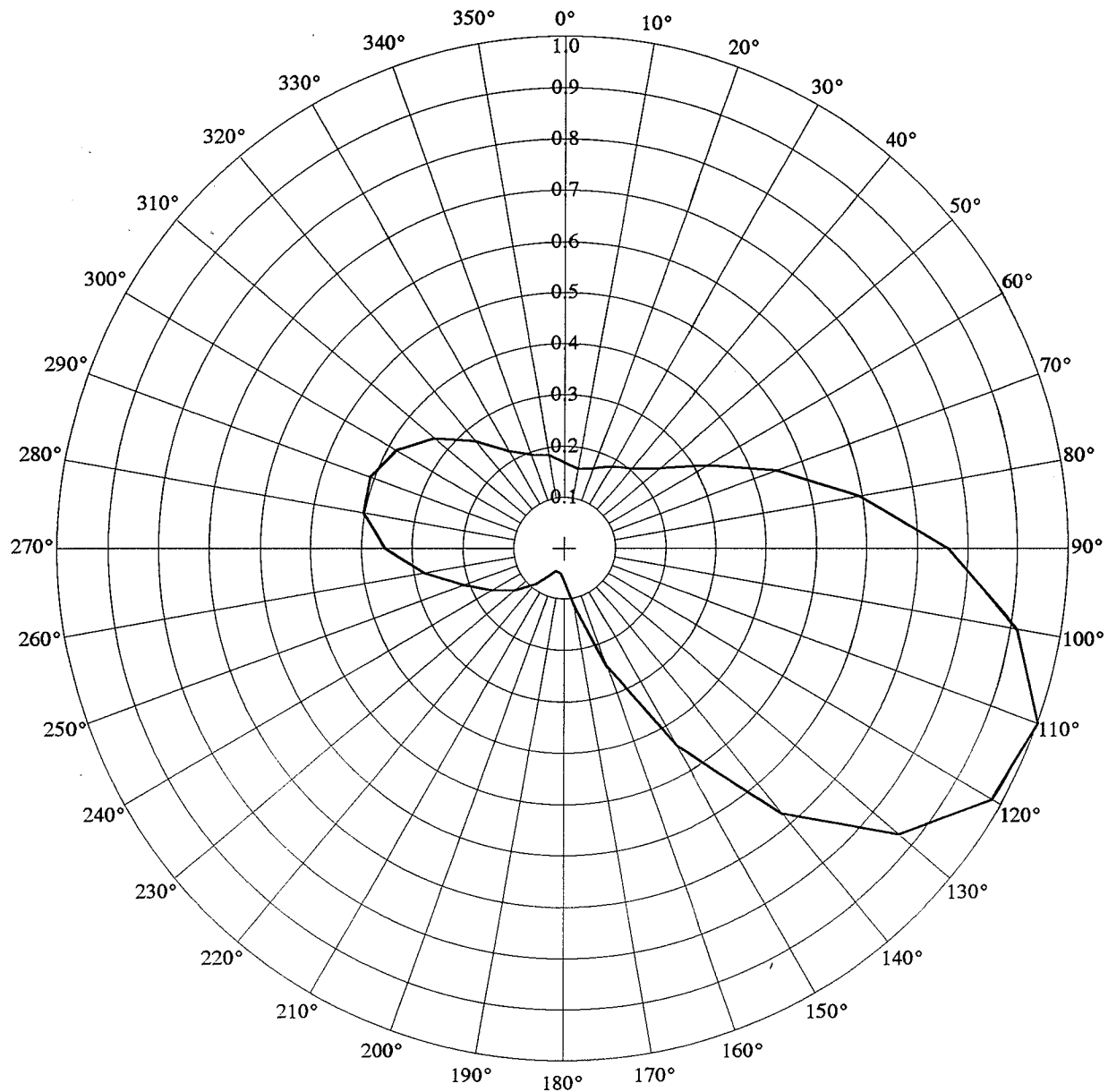
Relative Field

TABULATED DATA FOR ELEVATION PATTERN
TYPE : ALP8L12

Angle	Field	dB	Angle	Field	dB	Angle	Field	dB	Angle	Field	dB
-5 To 10			10 To 90								
In 0.25 Increments			In 0.5 Increments								
-5.00	0.347	-9.19	8.75	0.281	-11.04	35.00	0.170	-15.37	62.50	0.197	-14.10
-4.75	0.308	-10.24	9.00	0.242	-12.31	35.50	0.179	-14.93	63.00	0.187	-14.56
-4.50	0.265	-11.53	9.25	0.206	-13.72	36.00	0.185	-14.66	63.50	0.176	-15.08
-4.25	0.220	-13.16	9.50	0.172	-15.30	36.50	0.187	-14.55	64.00	0.165	-15.68
-4.00	0.172	-15.30	9.75	0.140	-17.11	37.00	0.187	-14.58	64.50	0.152	-16.34
-3.75	0.121	-18.32	10.00	0.110	-19.21	37.50	0.183	-14.77	65.00	0.140	-17.08
-3.50	0.069	-23.25	10.50	0.057	-24.90	38.00	0.176	-15.10	65.50	0.127	-17.92
-3.25	0.014	-36.81	11.00	0.015	-36.68	38.50	0.166	-15.59	66.00	0.114	-18.85
-3.00	0.041	-27.66	11.50	0.017	-35.54	39.00	0.154	-16.24	66.50	0.101	-19.90
-2.75	0.098	-20.14	12.00	0.037	-28.59	39.50	0.140	-17.06	67.00	0.088	-21.09
-2.50	0.156	-16.12	12.50	0.047	-26.54	40.00	0.125	-18.08	67.50	0.075	-22.44
-2.25	0.215	-13.36	13.00	0.047	-26.53	40.50	0.108	-19.31	68.00	0.063	-24.02
-2.00	0.273	-11.27	13.50	0.038	-28.34	41.00	0.091	-20.82	68.50	0.051	-25.90
-1.75	0.332	-9.59	14.00	0.022	-33.26	41.50	0.074	-22.66	69.00	0.039	-28.21
-1.50	0.390	-8.19	14.50	0.001	-58.84	42.00	0.057	-24.94	69.50	0.027	-31.23
-1.25	0.446	-7.00	15.00	0.029	-30.82	42.50	0.040	-27.90	70.00	0.017	-35.63
-1.00	0.502	-5.98	15.50	0.060	-24.50	43.00	0.025	-32.00	70.50	0.006	-44.19
-0.75	0.556	-5.09	16.00	0.092	-20.74	43.50	0.011	-38.81	71.00	0.004	-48.84
-0.50	0.609	-4.31	16.50	0.124	-18.12	44.00	0.001	-60.00	71.50	0.013	-37.86
-0.25	0.659	-3.63	17.00	0.155	-16.19	44.50	0.010	-39.88	72.00	0.021	-33.42
0.00	0.706	-3.02	17.50	0.183	-14.75	45.00	0.018	-35.08	72.50	0.029	-30.68
0.25	0.751	-2.49	18.00	0.207	-13.67	45.50	0.023	-32.88	73.00	0.036	-28.76
0.50	0.792	-2.02	18.50	0.227	-12.89	46.00	0.025	-31.94	73.50	0.043	-27.32
0.75	0.831	-1.61	19.00	0.241	-12.37	46.50	0.025	-31.92	74.00	0.049	-26.20
1.00	0.866	-1.25	19.50	0.249	-12.09	47.00	0.023	-32.79	74.50	0.054	-25.32
1.25	0.897	-0.95	20.00	0.251	-12.01	47.50	0.018	-34.84	75.00	0.059	-24.61
1.50	0.924	-0.69	20.50	0.247	-12.14	48.00	0.011	-39.15	75.50	0.063	-24.04
1.75	0.947	-0.47	21.00	0.238	-12.47	48.50	0.002	-54.59	76.00	0.066	-23.59
2.00	0.966	-0.30	21.50	0.224	-13.00	49.00	0.009	-40.75	76.50	0.069	-23.24
2.25	0.981	-0.17	22.00	0.205	-13.75	49.50	0.022	-33.21	77.00	0.071	-22.97
2.50	0.992	-0.07	22.50	0.183	-14.74	50.00	0.036	-28.90	77.50	0.073	-22.78
2.75	0.998	-0.02	23.00	0.159	-15.99	50.50	0.051	-25.84	78.00	0.074	-22.66
3.00	1.000	0.00	23.50	0.133	-17.55	51.00	0.067	-23.48	78.50	0.074	-22.60
3.25	0.998	-0.02	24.00	0.106	-19.49	51.50	0.083	-21.57	79.00	0.074	-22.59
3.50	0.992	-0.07	24.50	0.080	-21.96	52.00	0.100	-19.99	79.50	0.074	-22.64
3.75	0.982	-0.16	25.00	0.055	-25.19	52.50	0.117	-18.65	80.00	0.073	-22.74
4.00	0.967	-0.29	25.50	0.032	-29.78	53.00	0.133	-17.52	80.50	0.072	-22.90
4.25	0.950	-0.45	26.00	0.013	-37.84	53.50	0.149	-16.55	81.00	0.070	-23.10
4.50	0.928	-0.65	26.50	0.003	-49.68	54.00	0.164	-15.72	81.50	0.068	-23.36
4.75	0.904	-0.88	27.00	0.015	-36.25	54.50	0.178	-15.01	82.00	0.066	-23.67
5.00	0.876	-1.15	27.50	0.023	-32.66	55.00	0.190	-14.40	82.50	0.063	-24.03
5.25	0.845	-1.46	28.00	0.027	-31.44	55.50	0.202	-13.90	83.00	0.060	-24.45
5.50	0.812	-1.81	28.50	0.026	-31.72	56.00	0.212	-13.48	83.50	0.057	-24.93
5.75	0.776	-2.20	29.00	0.021	-33.57	56.50	0.220	-13.14	84.00	0.053	-25.48
6.00	0.739	-2.63	29.50	0.012	-38.29	57.00	0.227	-12.88	84.50	0.049	-26.11
6.25	0.700	-3.10	30.00	0.001	-60.00	57.50	0.232	-12.69	85.00	0.046	-26.82
6.50	0.659	-3.62	30.50	0.015	-36.47	58.00	0.235	-12.56	85.50	0.042	-27.63
6.75	0.617	-4.19	31.00	0.032	-29.83	58.50	0.237	-12.50	86.00	0.037	-28.57
7.00	0.575	-4.81	31.50	0.051	-25.84	59.00	0.237	-12.50	86.50	0.033	-29.65
7.25	0.531	-5.49	32.00	0.071	-23.01	59.50	0.236	-12.55	87.00	0.028	-30.92
7.50	0.488	-6.23	32.50	0.090	-20.87	60.00	0.233	-12.67	87.50	0.024	-32.45
7.75	0.445	-7.03	33.00	0.110	-19.19	60.50	0.228	-12.84	88.00	0.019	-34.34
8.00	0.403	-7.90	33.50	0.128	-17.86	61.00	0.222	-13.07	88.50	0.014	-36.81
8.25	0.361	-8.85	34.00	0.144	-16.80	61.50	0.215	-13.35	89.00	0.010	-40.30
8.50	0.320	-9.89	34.50	0.159	-15.98	62.00	0.207	-13.69	89.50	0.005	-46.31

HORIZONTAL PLANE PATTERN

TRUE NORTH



RELATIVE FIELD

EXHIBIT E - 4

HORIZONTAL RADIATION PATTERN
FOR THE
PROPOSED OPERATION OF
K43DU, BUTTE, MONTANA

JULY 2005

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
WASHINGTON, D.C.

EXHIBIT E-4a
HORIZONTAL PLANE RADIATION
FIELD VALUES
FOR THE PROPOSED OPERATION OF
K34DU, BUTTE, MONTANA
CHANNEL 43 (Z) 18.2 KW MAX ERP 2531.2 METERS RC/AMSL
JULY 2005

<u>Azimuth</u> N ° E, T	<u>Field</u> <u>Values</u>	<u>Azimuth</u> N ° E, T	<u>Field</u> <u>Values</u>
0	0.169	180	0.064
10	0.158	190	0.049
20	0.167	200	0.047
30	0.185	210	0.061
40	0.203	220	0.090
50	0.243	230	0.128
60	0.326	240	0.164
70	0.447	250	0.211
80	0.593	260	0.280
90	0.761	270	0.355
100	0.912	280	0.403
110	1.000	290	0.410
120	0.978	300	0.385
130	0.865	310	0.336
140	0.673	320	0.274
150	0.445	330	0.221
160	0.246	340	0.196
170	0.114	350	0.185

Section III - Engineering

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: _____

2. Frequency Offset:

☐

No offset

☐

Zero offset

☐

Plus offset

☐

Minus offset

3. Translator Input Channel No. _____

4. Primary station proposed to be rebroadcast:

Call Sign	City	State	Channel
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5. Antenna Location Coordinates: (NAD 27)

_____ ° _____ ' _____ " ☐ N ☐ S Latitude
_____ ° _____ ' _____ " ☐ E ☐ W Longitude

6. Antenna Structure Registration Number: _____

☐

Not applicable

☐

FAA Notification Filed with FAA

7. Antenna Location Site Elevation Above Mean Sea Level: _____ meters

8. Overall Tower Height Above Ground Level: _____ meters

9. Height of Radiation Center Above Ground Level: _____ meters

10. Maximum Effective Radiated Power (ERP) Towards Radio Horizon: _____ kW

11. Maximum ERP in any Horizontal and Vertical Angle: _____ kW

12. Transmitting Antenna: ☐ Nondirectional ☐ Directional "Off-the-shelf" ☐ Directional composite

Manufacturer	Model
--------------	-------

Directional Antenna Relative Field Values:

Rotation: _____ ° ☐ No rotation ☐ N/A (Nondirectional)

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

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. ☐ Yes ☐ No See Explanation in Exhibit No.

TV broadcast analog system protection.

- a. ☐ 47 C.F.R. Section 74.705.

Digital TV station protection.

- b. ☐ 47 C.F.R. Section 74.706.

Low Power TV and TV translator station protection.

- c. ☐ 47 C.F.R. Section 74.707.

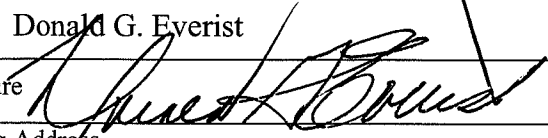
14. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance. An **Exhibit is required.** ☐ Yes ☐ No See Explanation in Exhibit No.
- Exhibit No.

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.

PREPARER'S CERTIFICATION ON PAGE 6 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 Donald G. Everist		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date July 20, 2005	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, NW, Suite 1100			
City Washington		State or Country (if foreign address) DC	ZIP Code 20005
Telephone Number (include area code) (202) 898-0111		E-Mail Address (if available) cde@attglobal.net	

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).