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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	
Amendment of Section 73.622(b)	)	
Digital Television Table of Allotments	)	MM Docket No. 99-___
Rapid City, South Dakota	)	RM-___

To: Chief, Allocations Branch

PETITION FOR RULE MAKING

Duhamel Broadcasting Enterprises ("Duhamel"), licensee of television station KOTA-TV, (NTSC Channel 3), Rapid City, South Dakota, by its undersigned attorneys and pursuant to Section 1.401 of the Commission's rules, hereby petitions the Commission to amend Section 73.622(b) of its rules to substitute DTV Channel 2 for DTV Channel 22 at Rapid City, South Dakota, as the digital television channel assigned to KOTA-TV.

1. As demonstrated by the attached Technical Narrative which supports KOTA-TV's future application for a digital construction permit should the instant Petition be granted, DTV Channel 2 can be allotted to KOTA-TV for digital television using the station's authorized NTSC transmitter site, in full compliance with all applicable coverage and allocation criteria. Specifically, the allocation of DTV Channel 2 to Rapid City, South Dakota at the KOTA-TV site will permit coverage of the entire community of Rapid City with the requisite 28 dBu contour. In addition, the allocation will not increase interference to more than an additional two percent of the population served by any other analog or digital television station.

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2. Should the Commission allocate the channel requested herein, Duhamel will promptly apply for a construction permit for the facility and undertake to build and operate the station if the permit is granted.

3. Allotment of a VHF channel, rather than a UHF channel, is necessary to facilitate the introduction of digital television service to the vast, sparsley populated, rural area served by KOTA-TV. The assignment of UHF Channel 22 to KOTA-TV's digital operation will require Duhamel to locate a new transmitter site for the digital operation and to construct a new tower facility which is capable of supporting the UHF antenna. This is because the tower KOTA-TV's NTSC operation currently utilizes cannot support the weight of an additional UHF antenna, (although it would support the weight of a VHF antenna) and there is no room at the site for the construction of a new tower capable of supporting the UHF antenna. In addition, the assignment of Channel 22 will necessitate Duhamel installing a significantly larger and more costly transmitter and transmission line and operating with a considerably higher and more costly power output level than would be required for VHF DTV operations, in order to serve this large, but sparsely populated market. Thus, the greatly increased cost involved in constructing the new tower required to support a UHF DTV operation, and the increased equipment costs and sustained operating costs required to operate a UHF DTV facility present a real impediment to the implementation of digital television in this small television market, an impediment that can be removed by substituting DTV Channel 2 for DTV Channel 22. Finally, it should be noted that the Rapid City market historically has been served by VHF facilities. Thus, the assignment of Channel 2 is expected to facilitate viewer reception of KOTA-DT.

For the foregoing reasons, Duhamel respectfully requests that the Commission promptly initiate the rule making requested herein and that it substitute DTV Channel 2 for DTV Channel 22 at Rapid City, South Dakota as the digital television channel assigned to KOTA-TV.

Respectfully submitted,

DUHAMEL BROADCASTING ENTERPRISES

By: Lauren Lynch Flick
Richard R. Zaragoza
Lauren Lynch Flick

Its Attorneys

FISHER WAYLAND COOPER LEADER
& ZARAGOZA L.L.P.
2001 Pennsylvania Avenue, N.W.
Suite 400
Washington, D.C. 20006
(202) 659-3494

Dated: July 1, 1999

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EXHIBIT A

SECTION V-D - DTV BROADCAST ENGINEERING DATA	FOR COMMISSION USE ONLY File No. _____ SSB Referral Date _____ Referred By _____

Name of Applicant	Call Letters (if issued)
DUHAMEL BROADCASTING ENTERPRISES	KOTA-DT

Complete Questions 1-5 of the Certification Checklist and provide all data and information for the proposed facility, as requested in Items 1-22, below. If an item is not applicable, enter N/A.

Certification Checklist: A correct answer of "Yes" to all of the questions below will ensure an expeditious grant of a construction permit. An answer of "No" will require additional evaluation of the applicable information in this form before a construction permit can be granted.

1. The proposed DTV facility complies with 47 C.F.R. Sections 73.622 and 73.623 in the following respects:

   (a) It will operate on the DTV channel for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☒ No

   (b) It will operate from a transmitting antenna located within 5.0 km (3.1 miles) of the DTV reference site for this station as established in 47 C.F.R. Section 73.622. ☒ Yes ☐ No

   (c) It will operate with an effective radiated power (ERP) and antenna height above average terrain (HAAT) that do not exceed the DTV reference ERP and HAAT for this station as established in 47 C.F.R. Section 73.622. ☐ Yes ☒ No

2. The proposed facility will not have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding the applicable health and safety guidelines, and therefore will not come within 47 C.F.R. Section 1.1307. ☒ Yes ☐ No

3. Pursuant to 47 C.F.R. Section 73.625, the DTV coverage contour of the proposed facility will encompass the allotted principal community. ☒ Yes ☐ No

4. The requirements of 47 C.F.R. Section 73.1030 regarding notification to radio astronomy installations, radio receiving installations and FCC monitoring stations have either been satisfied or are not applicable. ☒ Yes ☐ No

5. The antenna structure to be used by this facility has been registered by the Commission and will not require reregistration to support the proposed antenna, OR the FAA has previously determined that the proposed structure will not adversely effect safety in air navigation and this structure qualifies for later registration under the Commission's phased registration plan, OR the proposed installation on this structure does not require notification to the FAA pursuant to 47 C.F.R. Section 17.7. ☒ Yes ☐ No

Application Data:

1. Channel
   (a) DTV Channel No. 2

   (b) Associated analog TV station channel no., if any 3

2. Principal community to be served:

City or Town	State
Rapid City	SD

3. Effective radiated power (average power): *(in the main lobe of radiation, if directional)* 8 kw

4. Height of antenna radiation center above average terrain (HAAT): *(to the nearest meter)* 174 meters

5. **Purpose of Application:** *(check appropriate boxes)*

- [X] Construct a new (main) facility
- [ ] Construct a new auxiliary facility
- [ ] Modify construction permit for main facility
- [ ] Modify construction permit for auxiliary antenna
- [ ] Modify licensed main facility
- [ ] Modify licensed auxiliary antenna

If purpose is to modify, indicate the nature of change(s) by checking appropriate box(es) and specify the file number(s) of the authorizations affected.

- [ ] Antenna supporting structure height
- [ ] Effective radiated power
- [ ] Antenna height above average terrain
- [ ] Channel
- [ ] Antenna location
- [ ] Antenna system
- [ ] Other (summarize)

File Number(s) _____

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6. **Exact location of transmitting antenna..**

(a) Give address, city/state or if no address, specify distance and bearing relative to the nearest town or landmark.
1629 Skyline Drive, in Rapid City, Pennington County, South Dakota.

(b) Geographical coordinates *(to nearest second).* If mounted on element of an AM array, specify coordinates or center of array. Otherwise, specify tower location. Specify South Latitude and East Longitude where applicable; otherwise, North Latitude or West Longitude will be presumed. *(The Commission requires coordinates based on NAD 27.)*

Latitude	44 °	04 '	08 "	Longitude	103 °	15 '	03 "

7. (a) Elevation *(to the nearest meter)*

(1) of site above mean sea level; 1,146 meters

(2) of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and 185 meters

(3) of the top of supporting structure above mean sea level [(a)(1) + (a)(2)]. 1,331 meters

(b) Height of radiation center: *(to the nearest meter)*

(1) above ground; and 138 meters

(2) above mean sea level [(a)(1) + (b)(1)]; 1,284 meters

8. Attach as an Exhibit sketch(es) of the supporting structure, labeling all elevations required in item 7 above. If mounted on an AM directional array element, specify heights and orientations of all array towers, as well as location of any FM radiator.

Exhibit No. Figure 1

9. **Antenna**

(a) Manufacturer Dielectric (b) Model No. THP-S2-1-1-R

(c) Is a directional antenna proposed? [X] Yes [ ] No

If Yes, specify major lobe azimuth(s) 100 degrees True and attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). Exhibit No. Figure 2

(d) Is electrical beam tilt proposed? [ ] Yes [X] No

If Yes, specify N/A degrees electrical beam tilt and attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). Exhibit No. N/A

(e) Is mechanical beam tilt proposed? [ ] Yes [X] No

If Yes, specify N/A degrees mechanical beam tilt toward azimuth N/A True and attach as an Exhibit all data specified in 47 C.F.R. Section 73.625(c). Exhibit No. N/A

(f) The proposed antenna is: *(check only one box)*

[X] Horizontally polarized [ ] Circularly polarized [ ] Elliptically polarized [ ] Other: _____

Effective July 1, 1996, the Commission adopted rules which require Antenna Structure owners to apply for a registration number whenever antenna structures meet FAA notification criteria. As owners register these structures they are required to provide licensees with a copy of FCC Form 854R which provides the antenna structure registration number. (If you need additional information contact the FCC's Consumer Assistance Branch at 1-800-322-1117 for a copy of FACT SHEET #15, Antenna Structure Registration.)

10. Will the antenna be mounted on an antenna structure which has been registered with the Commission, to include the proposed antenna installation? [X] Yes [ ] No

If Yes, provide the seven digit registration number and, unless item 11 also applies, proceed to item 15. 1042359

11. Has the owner of the antenna structure filed an application for registration with the Commission that will include the proposed facility? [ ] Yes [ ] No

If yes, provide the date FCC Form 854 was filed and proceed to item 15. N/A

12. (If applicable) If the antenna structure is not yet registered but will be under the Commission's phased registration plan, has the FAA previously determined that the structure would not adversely affect safety in air navigation? [ ] Yes [ ] No

If Yes, proceed to item 15. N/A

13. Antenna structure will be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town or settlement where it is evident beyond all reasonable doubt that the structure is so shielded that it will not adversely affect safety in air navigation, and therefore does not require registration. [ ] Yes [ ] No

If yes, submit as an Exhibit a detailed explanation and/or diagram to support your claim and skip to item 15. Exhibit No. N/A

14. Antenna structure does not otherwise meet FAA Notification as defined under 47 C.F.R. Section 17.7 and therefore does not require registration. ☐ Yes ☐ No

    If Yes, give reason below.

    N/A

15. Is the supporting structure the same as that of another station(s) or proposed in another pending application(s)? ☒ Yes ☐ No

    If Yes, give the call letter(s) or file number(s) or both. KOTA-TV, KCLO-TV, KTEQ(FM), KOUT(FM)

16. Does the application propose to correct previous site coordinates? ☐ Yes ☒ No

    If Yes, list old coordinates.

Latitude ° N/A' "	Longitude ° N/A' "

17. Attach as an Exhibit a topographic map that shows clearly, legibly, and accurately, the location of the proposed transmitting antenna. This map must comply with the provisions of 47 C.F.R. Section 73.625(b). The map must further display clearly and legibly the original printed contour lines and data as well as latitude and longitude markings, and must bear a scale of distance in kilometers.

    Exhibit No. On File

18. Attach as an Exhibit a map *(Sectional Aeronautical Chart or equivalent)* which shows clearly, legibly, and accurately, and with the original printed latitude and longitude markings and a scale of distance in kilometers:

    Exhibit No. Figure 3

    (a) the proposed transmitting location, and the radials along which profile graphs have been prepared;
    (b) the DTV coverage contour as established in 47 C.F.R. Section 73.625(b); and
    (c) the legal boundaries of the principal community to be served.

19. Terrain and coverage data (to be calculated in accordance with 47 C.F.R. Section 73.625(b))

    Source of terrain data: *(check only one box below)*

    ☒ Linearly interpolated 30-second database (Source: N.G.D.C.)

    ☐ Linearly interpolated 3-second database (Source: _____)

    ☐ 7.5 minute topographic map

    ☐ Other *(briefly summarize)*

Radial bearing (degrees True)	Height of radiation center above average elevation of radial from 3 to 16 km (meters)	Predicted distance to the DTV Coverage Contour 28 dBu (kilometers)
*		
0	228.7	87.0
45	305.4	102.9
90	308.5	103.3
135	289.1	100.5
180	131.8	84.7
225	29.0	42.8
270	17.7	45.6
315	81.9	61.9

*Radial through principal community, if not one of the major radials. This radial should NOT be included in the calculation of HAAT.

20. Does the proposed facility satisfy the interference protection provisions of 47 C.F.R. Section 73.623(a)? (Applicable only if **Certification Checklist** items 1(a) , (b), or (c) are answered "No.") [X] Yes [ ] No

    If No, attach as an Exhibit justification therefore, including a summary of any related previously granted waivers. Exhibit No. N/A

21. If the proposed facility will not satisfy the coverage requirement of 47 C.F.R. Section 73.625, attach as an Exhibit justification therefore. (Applicable only if **Certification Checklist** item 3 is answered "No.") Exhibit No. N/A

22. Environmental Statement. *(See 47 C.F.R. Section 1.1301 et seq.)*

    (a) If a Commission grant of this application comes within 47 C.F.R. Section 1.1307, such that it may have a significant environmental impact, submit as an Exhibit an Environmental Assessment required by 47 C.F.R. Section 1.1311. Exhibit No. N/A

    (b) If No, explain briefly why not.
    Proposal appears to be categorically excluded. No RF energy exposure to workers or general public in excess of FCC guidelines.

    (c) Pursuant to OST Bulletin No. 65, the applicant must explain in an Exhibit what steps will be taken to limit the RF radiation exposure to the public and to persons authorized access to the tower site. In addition, where there are multiple contributors to radio frequency radiation, you must certify that the established RF radiation exposure procedures will be coordinated with all stations. See Text

CERTIFICATION

I certify that I have prepared this Section of this application 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 (Typed of Printed) Jonathan N. Edwards	Relationship to Applicant (e.g., Consulting Engineer) Technical Consultant
Signature Jon. Ed	Address (include ZIP Code) du Treil, Lundin & Rackley, Inc. 201 Fletcher Ave., Sarasota, FL 34237
Date April 20, 1999	Telephone No. (include Area Code) (941) 329-6000

TECHNICAL EXHIBIT
APPLICATION FOR DTV CONSTRUCTION PERMIT
STATION KOTA-DT
RAPID CITY, SOUTH DAKOTA

April 20, 1999

CH 2 8 KW (MAX-DA) 174 M

TECHNICAL EXHIBIT
APPLICATION FOR DTV CONSTRUCTION PERMIT
STATION KOTA-DT
RAPID CITY, SOUTH DAKOTA
CH 2 8 KW (MAX-DA) 174 M

Table of Contents

Technical Narrative

Figure 1 Antenna and Supporting Structure

Figure 2 Antenna Patterns

Figure 3 Predicted Coverage Contour

Figure 4 Allocation Study

Figure 5 Technical Specifications

TECHNICAL EXHIBIT
APPLICATION FOR DTV CONSTRUCTION PERMIT
STATION KOTA-DT
RAPID CITY, SOUTH DAKOTA
CH 2 8 KW (MAX-DA) 174 M

Technical Narrative

This Technical Exhibit supports an application for television (TV) station KOTA on NTSC (analog) channel 3 at Rapid City, South Dakota. This application requests a construction permit (CP) for a digital television (DTV) operation on channel 2 at Rapid City. The Federal Communications Commission (FCC) assigned channel 22 as KOTA's DTV allotment in the Memorandum, Opinion and Order (MO&O) concerning reconsideration of the 6th Report and Order in MM Docket No. 87-268.

The FCC assigned an ERP of 1000 kW-DA at an antenna HAAT of 201 meters for the DTV allotment on channel 22. However, station KOTA-DT proposes to use channel 2 for its DTV facility.

Station KOTA-DT wishes to operate on channel 2 for many reasons. It is the lower first adjacent channel to the current NTSC operation (Ch 3). Use of channel 2 would also make it easier for current KOTA-TV viewers to locate the DTV operation, as normal viewing is on the VHF band. Also, use of a VHF channel would allow for a substantially less transmitter power to serve the same market area as a comparable UHF DTV facility.

For the foregoing reasons, the FCC is respectfully requested to change KOTA's DTV allotment from channel 22 to channel 2.

Station KOTA proposes to operate DTV channel 2 at its allotted DTV site (44-04-08 N, 103-15-03 W), 1629 Skyline Drive, in Rapid City, Pennington County, South Dakota. The proposed Dielectric DTV directional antenna (DA) will be side-mounted below the current analog antenna. It is proposed to operate with a DA maximum DTV ERP of 8 kW. The antenna HAAT for the channel 2 DTV operation will be 174 meters.

The proposed KOTA DTV facilities (8 kW-DA, 174 m) comply with Section 73.622(f)(6) of the FCC's rules concerning maximum allowable ERP and antenna height for DTV Stations.

No map of site is being submitted since this information is already on file for the KOTA analog operation. A sketch of antenna and pertinent elevations are included as Figure 1. The FCC antenna registration number for the structure is 1042359.

Figure 2 is the horizontal and vertical plane radiation patterns for the proposed DTV antenna system.

There are no known authorized full service AM stations within 5 kilometers (3 miles) of the KOTA transmitter site. The following is a list of known authorized full service FM and TV stations within 16 kilometers (10 miles) of the proposed DTV site.

Station	Channel	Bearing (°True)	Distance (km)
KTEQ, Rapid City, SD	217A	0	0.0
KOUT, Rapid City, SD	254C1	0	0.0
KFXS, Rapid City, SD	262C1	14	0.2
KBHE-FM, Rapid City, SD	207C3	163	1.9
KKMK, Rapid City, SD	230C1	171	2.5
KLMP, Rapid City, SD	250C1	169	2.6
KIQK, Rapid City, SD	281C1	187	5.3
NEW(CP), Rapid City, SD	292C	205	12.3
KOTA-TV, Rapid City, SD	3	0	0.0
KCLO-TV, Rapid City, SD	15	0	0.0
KEVN-TV, Rapid City, SD	7	170	0.3
KBHE-TV, Rapid City, SD	*9	163	1.9
KBHE-TV(CP), Rapid City, SD	*9	162	2.0

Although no adverse electromagnetic impact is expected, the applicant recognizes its responsibility to correct problems that result from its proposed DTV operation.

The KOTA transmitter site is approximately 549 kilometers from the closest point of the Canadian border. The site is more than 1,300 kilometers from the closest point of the Mexican border. The closest FCC monitoring station is at Grand Island, Nebraska, approximately 528 kilometers to the southeast. The closest point of the National Radio Quiet Zone (VA/WV) is more than 1,900 kilometers to the east. The closest point of the Table Mountain Radio Quiet Zone (CO) is approximately 465 kilometers to the south-southwest. The closest radio astronomy site operating on TV channel 37 is at Los Alamos, New Mexico, approximately 957 kilometers to the south-southwest. These separations are sufficient to not be a concern for coordination purposes.

Figure 3 is a map showing the DTV predicted coverage contour. The map provides the predicted 28 dBu

f(50,90) noise limited contour. The extent of the contour has been calculated using the normal FCC prediction method. The Rapid City city limits were derived from information contained in the 1990 U.S. Census for South Dakota. The population within the predicted 28 dBu contour is based on 1990 Census information. The U.S. land area within the predicted 28 dBu contour is based on the use of a computer algorithm.

Figure 4 is the separation study for DTV channel 2 at the KOTA site. The study has been used to determine the assignments requiring interference studies using the procedures outlined in the FCC's OET-69 bulletin.[1] Interference calculations for the proposed KOTA DTV operation are summarized below.

Station	Channel	FCC Service Population	Prop. DTV Interference Population
KXMA-TV, Dickinson, ND	NTSC-2	46,869	1,546 (3.30%)

Station KXMA-TV on analog channel 2 receives calculated interference to 1,546 people (3.30% of FCC service population) from the proposed KOTA DTV operation. Some of this interference is masked by interference caused by NTSC station KBME-TV (Bismarck, ND). New calculated interference

[1] The du Treil, Lundin & Rackley, Inc. DTV interference analysis program is based on the program and procedures adopted by the FCC in the Sixth Report and Order and subsequent Memorandum Opinion and Order. The principles outlined in OET Bulletin No. 69 are employed except that annular sector cells are employed instead of square grid cells of 4 square kilometers in area. The annular sector cells are 1-arc degree by 1 kilometer in dimension. The annular sector cell areas vary from approximately 0.02 square kilometer close to the station transmitter site to 2 square kilometers at the greatest extent of a station's protected contour. In some instances, the resulting higher cell resolution of the DLR routine produces different results than the standard FCC 4-square-kilometer FCC grid method. However, the DLR routine results have been found to

will be caused to only 851 people within the KXMA-TV service area (1.82%). The proposed KOTA DTV operation does not cause calculated interference to any other analog or DTV assignment. Therefore, the proposal complies with the FCC's 2%/10% interference standard.

Although a secondary service, an examination was made of the low power television (LPTV) stations potentially impacted by the proposed KOTA DTV operation on channel 2 as compared to the current DTV allotment on channel 22.

It does not appear at this time that any LPTV station will be displaced by the proposed KOTA DTV operation on channel 2. It is predicted that LPTV station K02NY on channel 2 at Chadron, Nebraska will received calculated interference to only 28 persons within its service area. This represents less that 1% of the K02NY service area and it is therefore believed that station K02NY will not be displaced by the proposed KOTA DTV operation. It does not appear that any other authorized LPTV station will be displaced by the proposed KOTA DTV operation on channel 2.

The proposed KOTA DTV facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the KOTA DTV antenna is located 138 meters above ground level. The maximum DTV ERP is 8 kW. A relative field value of 0.4 is assumed for the antenna's downward radiation (see Sheets 3 and 4 of Figure 2). The

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closely agree with the FCC results when the FCC uses higher resolution (i.e. smaller grid cell area) in its program.

calculated power density at a point 2 meters (6.6 feet) above ground level is 0.0023 mW/cm^2. This is 1.15% of the FCC's recommended limit of 0.2 mW/cm^2 for channel 2 for an "uncontrolled" environment and 0.23% of the recommended limit of 1.0 mW/cm^2 for a "controlled" environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. As this is a multi-user site, an agreement will control access to the site. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down. The proposed KOTA DTV operation appears to be otherwise categorically excluded from environmental processing.

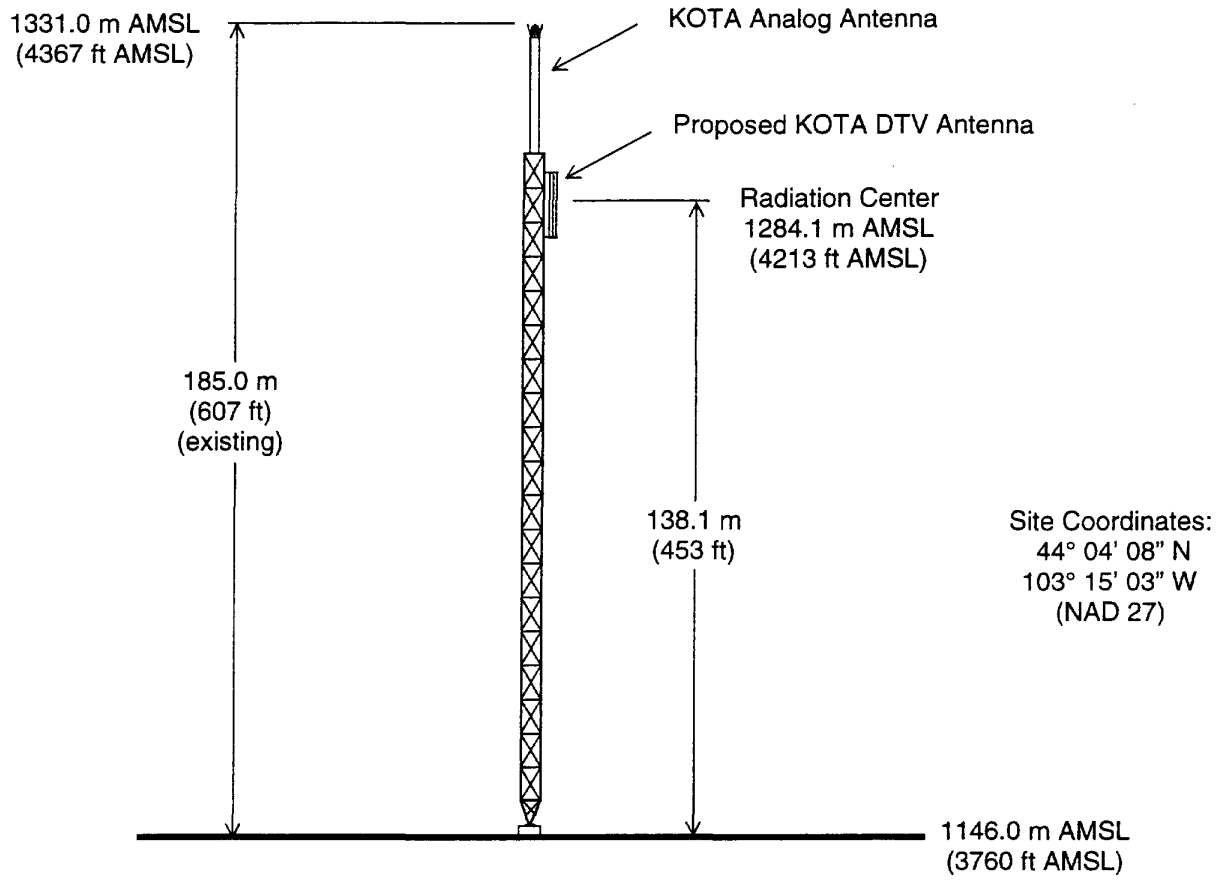
Jonathan N. Edwards

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

April 20, 1999

Figure 1

Tower Reg. No. 1042359



Not to Scale

ANTENNA AND SUPPORTING STRUCTURE

STATION KOTA-DT

RAPID CITY, SOUTH DAKOTA

CH 2 8 KW (MAX-DA) 174 M

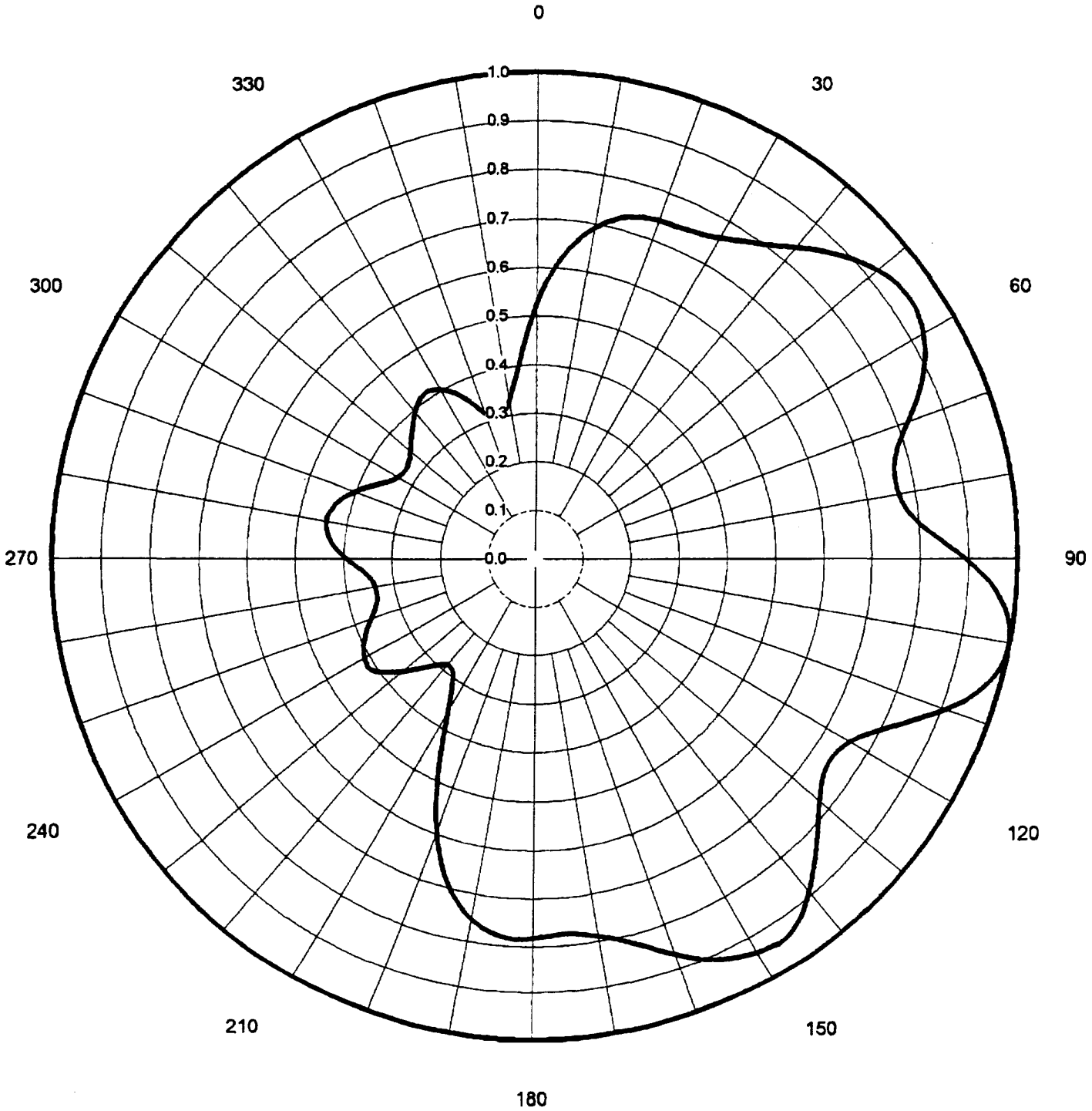
du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Dielectric

Proposal Number	DCA-8197		
Date	17-Mar-99		
Call Letters	KOTA-DT	Channel	2
Location	Rapid City, SD		
Customer			
Antenna Type	THP-S2-1-1-R		

AZIMUTH PATTERN

Gain	2.25	(3.52 dB)	Frequency	57.00 MHz
Calculated / Measured	Calculated		Drawing #	THP-S2-2



TECHNICAL EXHIBIT
APPLICATION FOR DTV CONSTRUCTION PERMIT
STATION KOTA-DT
RAPID CITY, SOUTH DAKOTA
CH 2 8 KW (MAX-DA) 174 M

Tabulation of Proposed Azimuth Antenna Pattern

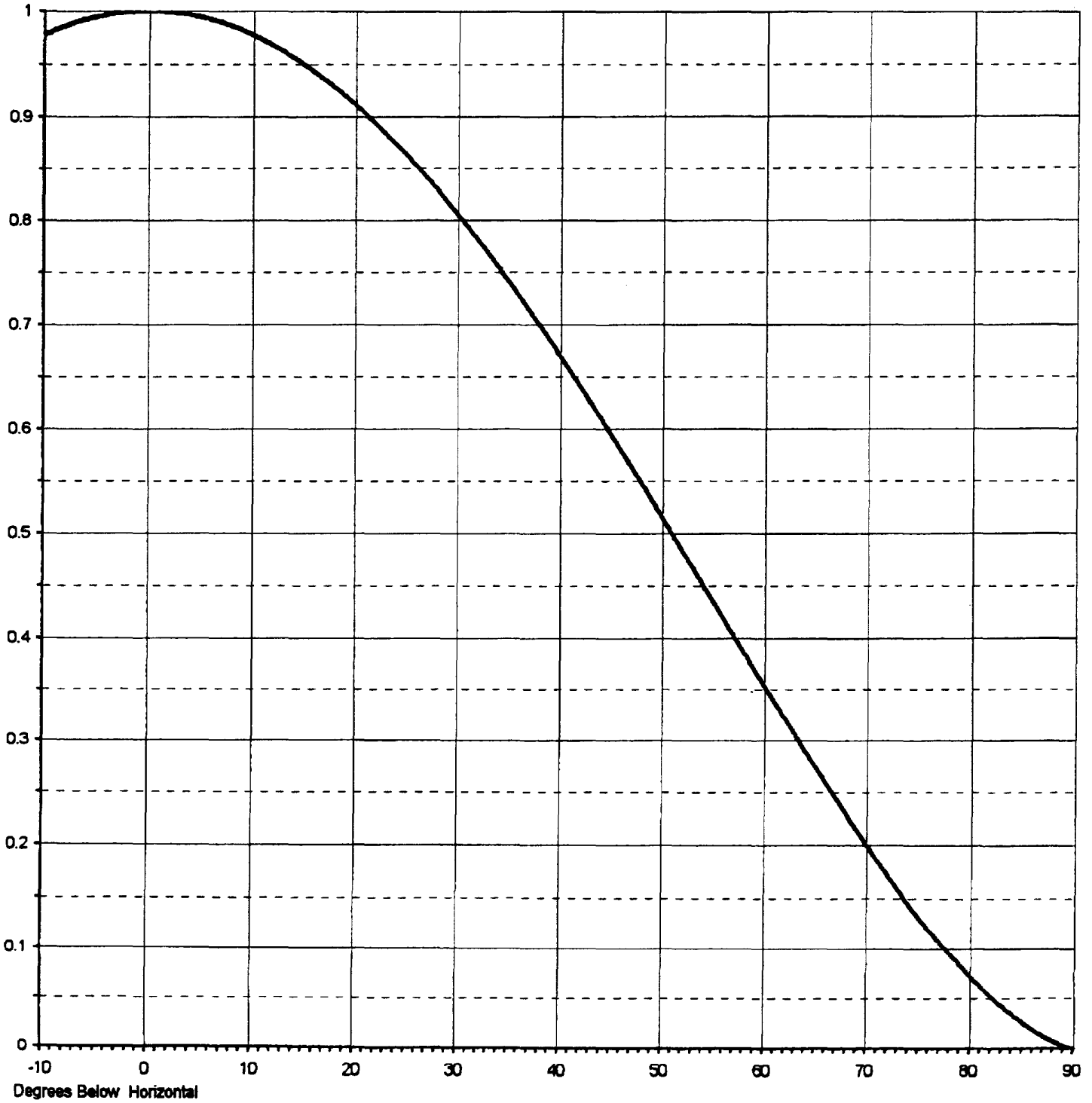
Azimuth (Deg.T)	Relative Field	Azimuth (Deg.T)	Relative Field
0	0.521	180	0.783
10	0.690	190	0.751
20	0.741	200	0.592
30	0.763	210	0.362
40	0.836	220	0.286
50	0.924	230	0.362
60	0.929	240	0.409
70	0.824	250	0.362
80	0.767	260	0.337
90	0.894	270	0.393
100	1.000	280	0.441
110	0.910	290	0.400
120	0.757	300	0.333
130	0.776	310	0.341
140	0.893	320	0.393
150	0.936	330	0.402
160	0.867	340	0.319
170	0.789	350	0.328

Dielectric

Proposal Number	DCA-8197	Figure 2 Sheet 3 of 4	
Date	17-Mar-99		
Call Letters	KOTA-DT	Channel	2
Location	Rapid City, SD		
Customer			
Antenna Type	THP-S2-1-1-R		

ELEVATION PATTERN

RMS Gain at Main Lobe	1.10	(0.41 dB)	Beam Tilt	0.00 deg
RMS Gain at Horizontal	1.10	(0.41 dB)	Frequency	57.00 MHz
Calculated / Measured	Calculated		Drawing #	01H011000-90



Dielectric

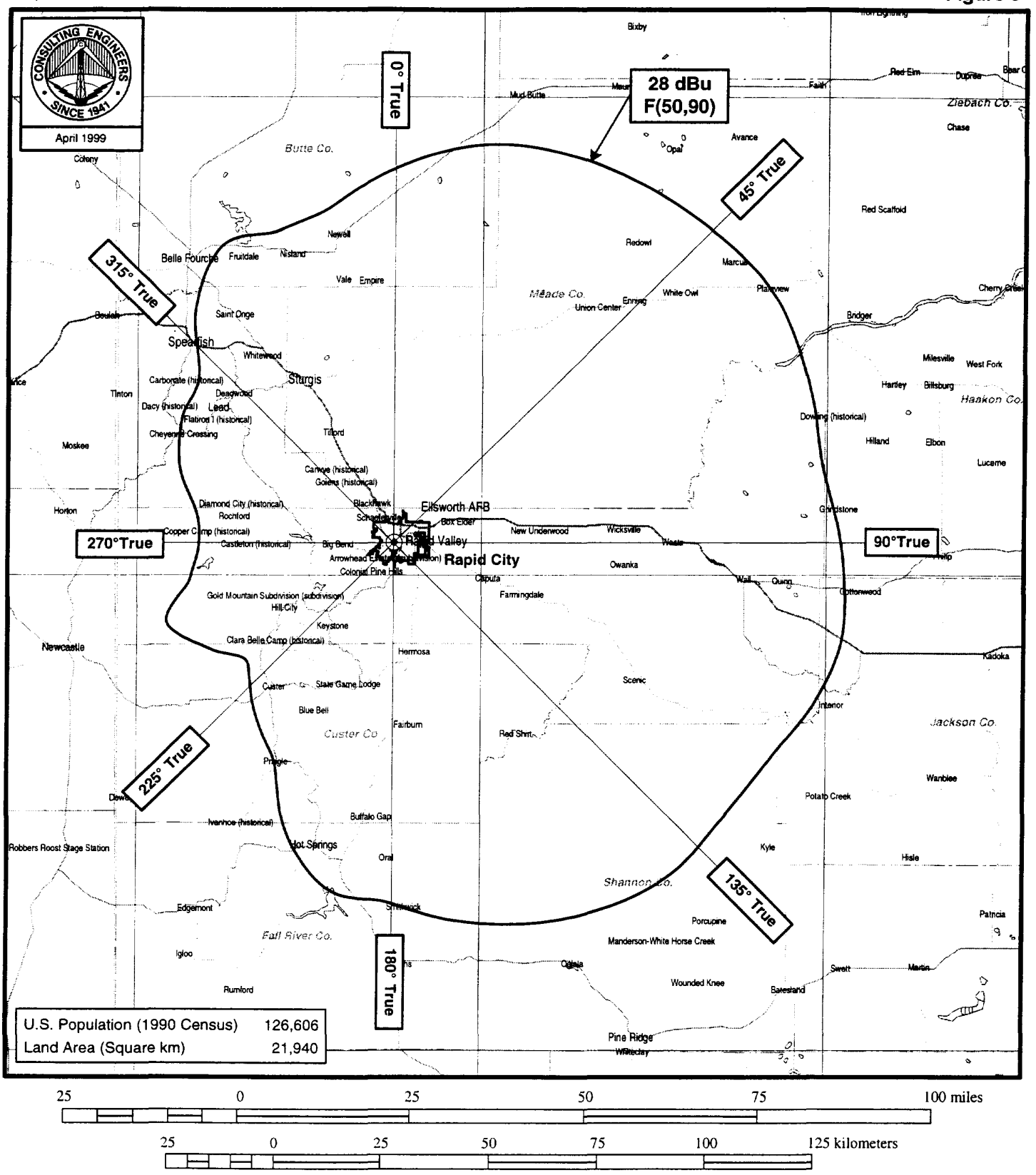
Proposal Number **DCA-8197**
Date **17-Mar-99**
Call Letters **KOTA-DT** Channel **2**
Location **Rapid City, SD**
Customer
Antenna Type **THP-S2-1-1-R**

TABULATION OF ELEVATION PATTERN

Elevation Pattern Drawing #: **01H011000-90**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10.0	0.977	2.4	0.999	10.6	0.975	30.5	0.801	51.0	0.501	71.5	0.179
-9.5	0.979	2.6	0.998	10.8	0.974	31.0	0.795	51.5	0.493	72.0	0.172
-9.0	0.982	2.8	0.998	11.0	0.973	31.5	0.789	52.0	0.485	72.5	0.165
-8.5	0.984	3.0	0.998	11.5	0.971	32.0	0.782	52.5	0.477	73.0	0.158
-8.0	0.985	3.2	0.998	12.0	0.968	32.5	0.776	53.0	0.468	73.5	0.151
-7.5	0.987	3.4	0.997	12.5	0.965	33.0	0.769	53.5	0.460	74.0	0.145
-7.0	0.989	3.6	0.997	13.0	0.962	33.5	0.763	54.0	0.452	74.5	0.138
-6.5	0.990	3.8	0.997	13.5	0.959	34.0	0.756	54.5	0.444	75.0	0.132
-6.0	0.992	4.0	0.996	14.0	0.956	34.5	0.749	55.0	0.436	75.5	0.125
-5.5	0.993	4.2	0.996	14.5	0.953	35.0	0.743	55.5	0.428	76.0	0.119
-5.0	0.994	4.4	0.996	15.0	0.950	35.5	0.736	56.0	0.420	76.5	0.113
-4.5	0.995	4.6	0.995	15.5	0.947	36.0	0.729	56.5	0.412	77.0	0.107
-4.0	0.996	4.8	0.995	16.0	0.943	36.5	0.722	57.0	0.404	77.5	0.101
-3.5	0.997	5.0	0.994	16.5	0.940	37.0	0.715	57.5	0.395	78.0	0.095
-3.0	0.998	5.2	0.994	17.0	0.936	37.5	0.708	58.0	0.387	78.5	0.089
-2.8	0.998	5.4	0.993	17.5	0.932	38.0	0.701	58.5	0.379	79.0	0.083
-2.6	0.998	5.6	0.993	18.0	0.928	38.5	0.694	59.0	0.371	79.5	0.078
-2.4	0.999	5.8	0.992	18.5	0.924	39.0	0.687	59.5	0.363	80.0	0.072
-2.2	0.999	6.0	0.992	19.0	0.920	39.5	0.679	60.0	0.355	80.5	0.067
-2.0	0.999	6.2	0.991	19.5	0.916	40.0	0.672	60.5	0.347	81.0	0.062
-1.8	0.999	6.4	0.991	20.0	0.912	40.5	0.665	61.0	0.339	81.5	0.057
-1.6	0.999	6.6	0.990	20.5	0.907	41.0	0.657	61.5	0.331	82.0	0.052
-1.4	1.000	6.8	0.989	21.0	0.903	41.5	0.650	62.0	0.323	82.5	0.047
-1.2	1.000	7.0	0.989	21.5	0.898	42.0	0.642	62.5	0.315	83.0	0.043
-1.0	1.000	7.2	0.988	22.0	0.894	42.5	0.635	63.0	0.307	83.5	0.038
-0.8	1.000	7.4	0.988	22.5	0.889	43.0	0.627	63.5	0.300	84.0	0.034
-0.6	1.000	7.6	0.987	23.0	0.884	43.5	0.619	64.0	0.292	84.5	0.030
-0.4	1.000	7.8	0.986	23.5	0.879	44.0	0.612	64.5	0.282	85.0	0.026
-0.2	1.000	8.0	0.985	24.0	0.874	44.5	0.604	65.0	0.275	85.5	0.022
0.0	1.000	8.2	0.985	24.5	0.869	45.0	0.596	65.5	0.267	86.0	0.018
0.2	1.000	8.4	0.984	25.0	0.864	45.5	0.588	66.0	0.259	86.5	0.015
0.4	1.000	8.6	0.983	25.5	0.859	46.0	0.581	66.5	0.252	87.0	0.012
0.6	1.000	8.8	0.982	26.0	0.853	46.5	0.573	67.0	0.244	87.5	0.009
0.8	1.000	9.0	0.982	26.5	0.848	47.0	0.565	67.5	0.237	88.0	0.007
1.0	1.000	9.2	0.981	27.0	0.842	47.5	0.557	68.0	0.229	88.5	0.004
1.2	1.000	9.4	0.980	27.5	0.837	48.0	0.549	68.5	0.222	89.0	0.002
1.4	1.000	9.6	0.979	28.0	0.831	48.5	0.541	69.0	0.215	89.5	0.001
1.6	0.999	9.8	0.979	28.5	0.825	49.0	0.533	69.5	0.207	90.0	0.000
1.8	0.999	10.0	0.978	29.0	0.819	49.5	0.525	70.0	0.200		
2.0	0.999	10.2	0.977	29.5	0.813	50.0	0.517	70.5	0.193		
2.2	0.999	10.4	0.976	30.0	0.807	50.5	0.509	71.0	0.186		

Figure 3



PREDICTED NOISE-LIMITED COVERAGE CONTOUR

STATION KOTA-DT

RAPID CITY, SOUTH DAKOTA

CH 2 8 KW (MAX-DA) 174 M

du Treil, Lundin & Rackley, Inc., Sarasota, Florida

DTV -> TV Separation Study

Job Title :KOTA-DT — Separation Buffer 161 km
Zone : 2 — FCC TV DB Date : 04/09/99
Channel 2 (54- 60 MHz) — Coordinates : 44-04-08 103-15-03

Call Status	City St	FCC File No.	Channel Zone	ERP(kW) HAAT(m)	Latitude Longitude	Bear. True	Dist. (km)	Req. (km)
KTWOTV LIC	CASPER WY	BLCT-2084	2(+) II	100 610	42-44-03 106-20-00	240.3	290.43 16.83	273.6 CLEAR
KXMATV LIC	DICKINSON ND	BLCT-2414	2(+) II	100 256	46-43-30 102-54-58	4.9	296.37 22.77	273.6 CLEAR[1]
KNOPTV LIC	NORTH PLATTE NE	BLCT-791022KJ	2(-) II	100 192	41-12-13 100-43-58	146.3	379.43 105.83	273.6 CLEAR
KOTATV LIC	RAPID CITY SD	BLCT-1496	3(+) II	100 201	44-04-08 103-15-03	0.0	0.00 11.00	11.0/125 CLOSE

** End of TV Separation Study for Channel 2 **

DTV ->DTV Separation Study

Job Title :KOTA-DT — Separation Buffer 161 km
Zone : 2 — FCC DTV DB Date: 12/18/98
Channel 2 (54- 60 MHz) — Coordinates : 44-04-08 103-15-03

Call Status	City St	FCC File No.	Channel Zone	ERP(kW) HAAT(m)	Latitude Longitude	Bear. True	Dist. (km)	Req. (km)

No DTV records located on this channel & within
the required separation plus a safety factor.

[1] Proposed DTV operation complies with FCC's 2%/10% interference policy using procedures outlined in FCC's OET-69 Bulletin.

TECHNICAL EXHIBIT
APPLICATION FOR DTV CONSTRUCTION PERMIT
STATION KOTA-DT
RAPID CITY, SOUTH DAKOTA
CH 2 8 KW (MAX-DA) 174 M

Technical Specifications

Channel	2
Frequency	54-60 MHz
Proposed Site Coordinates (NAD 27)	44° 04′ 08″ North Latitude 103° 15′ 03″ West Longitude
Site Elevation above mean sea level	1146.0 m
Average elevation above mean sea level of 8 equally spaced radials, 3-16 kilometers	1110.1 m
Overall height of proposed antenna structure	
Above ground	185.0 m
Above mean sea level	1331.0 m
Height of antenna radiation center	
Above ground	138.1 m
Above mean sea level	1284.1 m
Above average terrain	174 m
DTV Transmitter	
Rated power output (average)	5 kW
Transmission line	Dielectric
Nominal diameter	(3-1/8″) 7.94 cm
Length	(550 ft) 167.6 m
Efficiency (1.35 dB loss)	73.3%
Antenna	Dielectric THP-S2-1-1-R
Polarization	Horizontal
Peak Power Gain	2.5
Main Lobe	100° T

Proposed Operation

Transmitter output power (average)	4.14 kW
Transmission line loss	0.94 kW
Antenna input power	3.20 kW
Effective Radiated Power (MAX-DA) (DTV average)	8.0 kW