

TECHNICAL EXHIBIT  
APPLICATION FOR MODIFICATION OF  
CONSTRUCTION PERMIT  
TELEVISION STATION WJFW-DT  
RHINELANDER, WISCONSIN

May 26, 2006

CHANNEL 16 269 KW 362 M

TECHNICAL EXHIBIT  
APPLICATION FOR MODIFICATION OF CONSTRUCTION PERMIT  
TELEVISION STATION WJFW-DT  
RHINELANDER, WISCONSIN  
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Technical Statement

This Technical Exhibit was prepared on behalf of digital television broadcast station WJFW-DT, Rhinelander, Wisconsin, in support of an application for modification of construction permit. WJFW-DT is paired with analog NTSC TV station WJFW-TV, Channel 12. Pursuant to the FCC *Sixth Report and Order* concerning digital television, WJFW-DT was allotted Channel 16, with a maximum effective radiated power (ERP) of 510.5 kW and antenna height above average terrain (HAAT) of 506 m, as its transitional DTV allotment channel.\* WJFW-DT is authorized for operation on Channel 16 with a maximum directional ERP of 1000 kW with an HAAT of 489 m.†

The instant application proposes operation of the WJFW-DT facility at the existing WJFW-TV transmitter site, but using a different antenna pattern with a decrease in ERP and HAAT. The proposal complies with the DTV application “checklist” filing requirements‡ and the requirements the FCC Filing Freeze for television stations.§ The proposed WJFW-DT facility provides service to over 100% of the WJFW-DT baseline service population under the criteria adopted in the Report and

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\* See DTV Table of Allotments, *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders*, 14 FCC Rcd 1348, at Appendix B.

† See FCC File No. BPCDT-19991021ACD.

‡ See FCC *Public Notice*, “Commission Details Application Filing Procedures Digital Television (DTV)”, Released: October 16, 1997; and, FCC *Public Notice*, “Additional Application Processing Guidelines for Digital Television (DTV)”, Released: August 10, 1998.

§ See *August 2004 Filing Freeze PN*, DA 04-2446 (MB rel. Aug. 3, 2004).

Order in the Second Periodic Review of digital television (September 2004). This is demonstrated in Appendix 2 herein.

### Proposed Facilities

The proposed facility will employ a ERI model ALP24M3-HSO-16 non-directional transmitting antenna. The antenna is to be mounted with a center of radiation at 356 m above ground level and 857 m above mean sea level. The antenna radiation center HAAT is calculated to be 362 m based on the U.S.G.S. 3-second computer database.

The proposed facility provides minimum 48 dBu, f(50,90), coverage of Rhineland in compliance with Section 73.625(a)(1) of the FCC Rules. Figure 1 herein is a map depicting the predicted coverage contours of the proposed facility.

The proposed WJFW-DT facility meets the requirements of Section 73.622(f)(3) of the FCC Rules concerning the maximum permissible ERP for DTV stations with a decrease in HAAT relative to the DTV Allotment facility in Appendix B. \*\*

As illustrated on the coverage map at Figure 1, the proposed 41 dBu, f(50,90) contour of the proposed WJFW-DT facility will not extend beyond that of the WJFW-DT allotment facility.

The proposed transmitter is located within the Canadian coordination zone. However, because the proposal is a “checklist” facility, coordination with Canada is not believed to be necessary. The closest FCC Monitoring station is located at Allegan, Michigan at a distance of 428 km at a bearing of 142°True. The facility is

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\*\* See DTV Table of Allotments, *Second Memorandum Opinion and Order on Reconsideration of the Fifth and Sixth Report and Orders*, 14 FCC Rcd 1348, at Appendix B.

located more than 1000 km from the National Radio Quiet Zones in West Virginia and Colorado. The proposal is located more than 3.2 km from the closest AM broadcast facility.

No adverse electromagnetic impact is expected as a result of the proposed operation. However, the applicant recognizes its responsibility to correct objectionable electromagnetic interference problems that result from its proposed operation.

#### Tower Registration

The existing antenna structure is registered with the FCC. The FCC antenna structure registration number is 1044673. There will be no change in the overall height of the antenna structure as a result of the instant proposal.

#### Allocation Considerations

The proposed WJFW-DT facility meets the criteria of Section 73.622(f)(2) of the FCC Rules. Therefore, pursuant to that section, the application shall not be subject to further consideration of electromagnetic interference to other DTV or analog TV broadcast stations.

#### Environmental Considerations

With respect to the potential for human exposure to radio frequency (RF) radiation, calculations prepared in accordance with FCC Bulletin OET-65 (Edition 97-01) indicate that the proposal will not result in human exposure to RF radiation at ground level in excess of FCC standards. Power density calculations were conducted at 2-m above ground based on the following conservative assumptions, with the following results:

Call Sign	Channel	Average ERP (kW)	Antenna Height (m)	Relative Field Factor	FCC Limit <sup>††</sup> (mW/cm <sup>2</sup> )	Percentage of Limit
WJFW-DT	16	269	356	0.30	0.323	2.0%

As indicated above, the exposure to RF radiation at 2-m above ground level will not exceed 2.0% of the FCC limit for general population / uncontrolled exposure. Therefore, the proposal complies with the FCC limits for human exposure to RF radiation and it is categorically excluded from environmental processing.



Louis Robert du Treil, Jr.

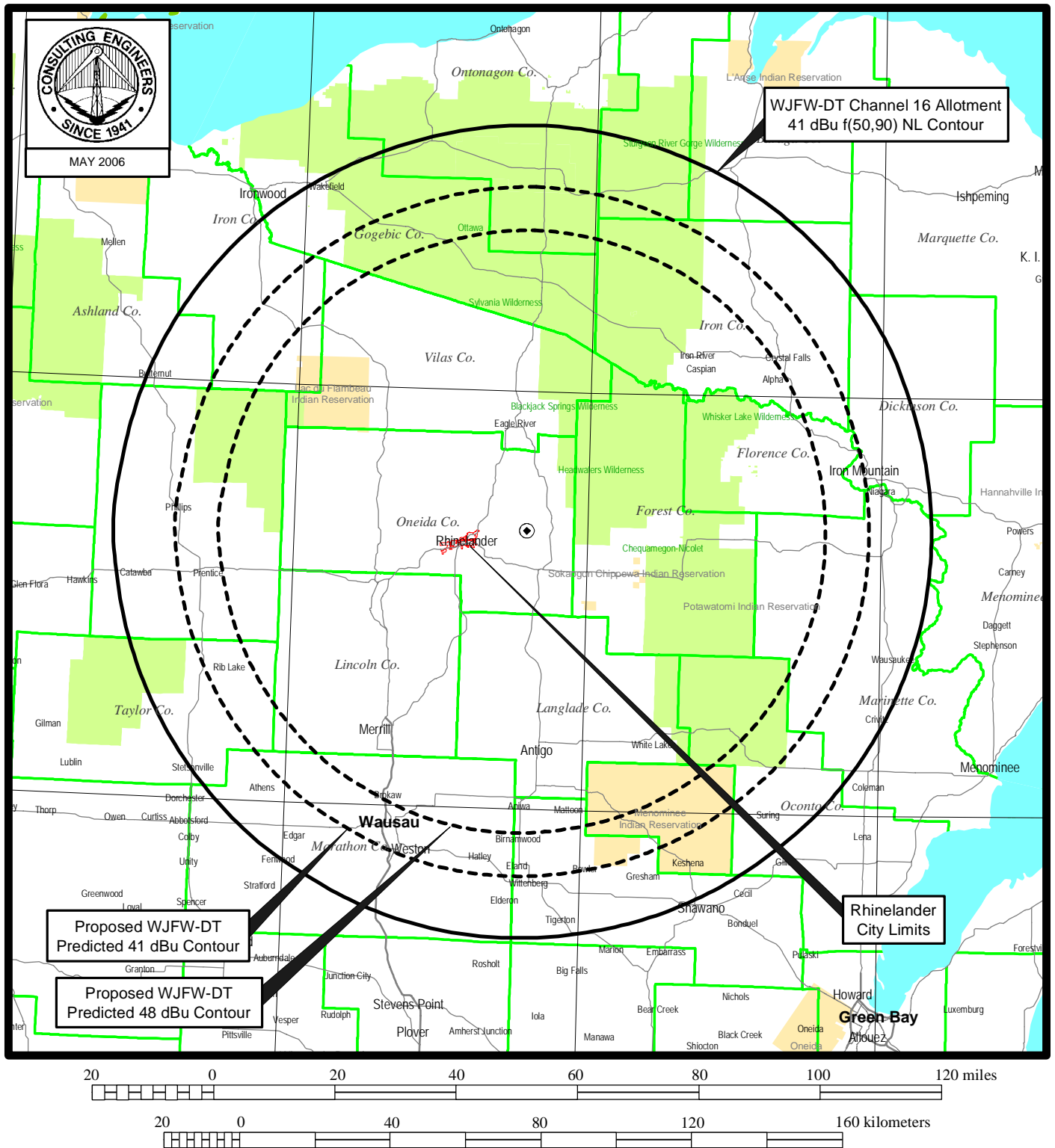
du Treil, Lundin & Rackley, Inc.  
201 Fletcher Ave.  
Sarasota, FL 34237

May 26, 2006

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<sup>††</sup> for general population/uncontrolled environments

Figure 1



## PREDICTED COVERAGE CONTOURS

TELEVISION STATION WJFW-DT  
RHINELANDER, WISCONSIN  
CHANNEL 16 269 KW 362 M

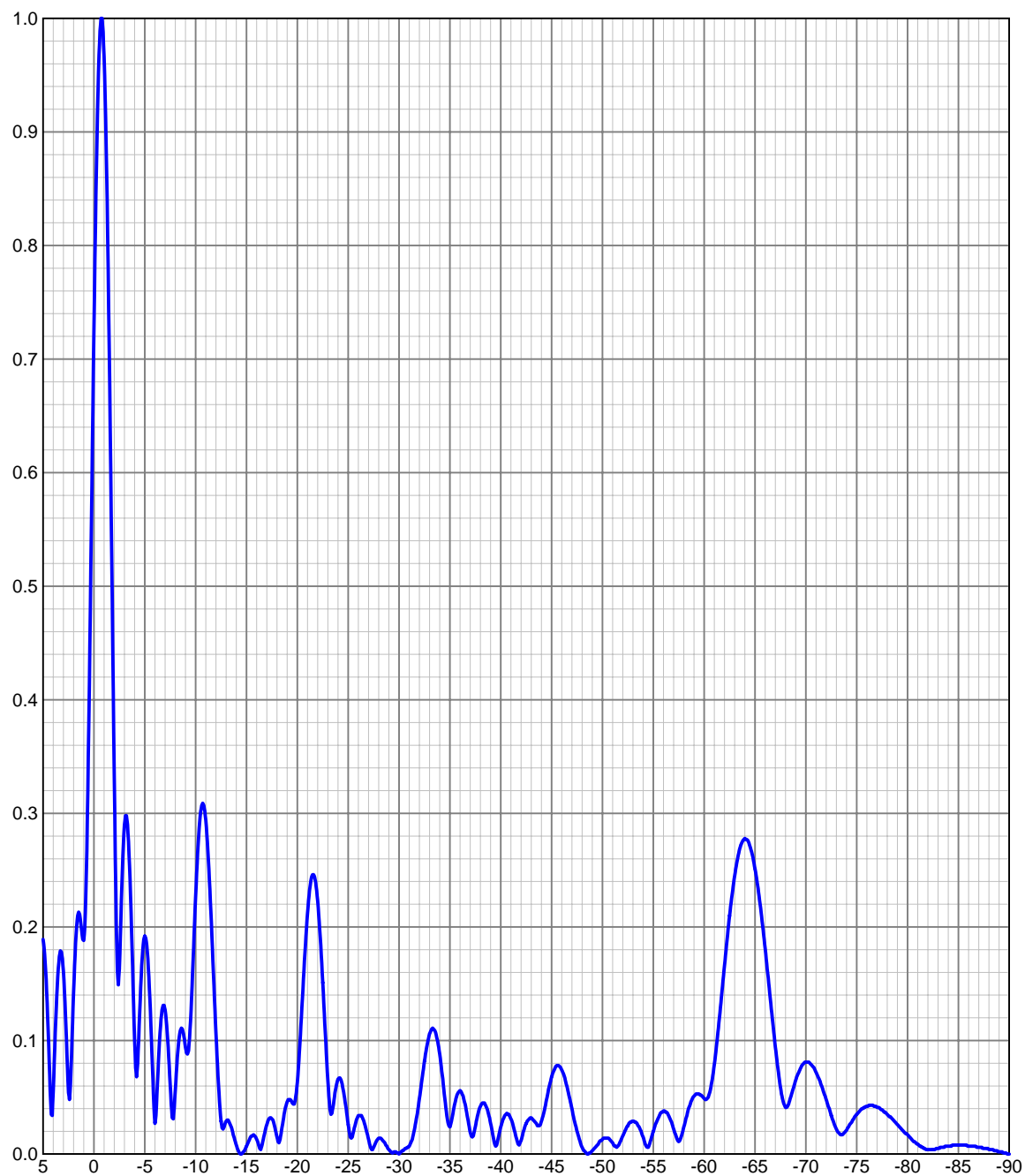
du Treil, Lundin & Rackley, Inc. Sarasota, Florida

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Transmitting Antenna Manufacturer's Pattern Data

*(two pages follow)*



**ELEVATION PATTERN****Type:****ALP24M3****Channel:****16****Directivity:****Numeric****dBd****Location:****Main Lobe:****25.21****14.02****Beam Tilt:****-0.75****Horizontal:****13.29****11.23****Polarization:****Horizontal****Relative Field**

## TABULATED DATA FOR ELEVATION PATTERN

Type: ALP24M3

Polarization: Horizontal

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB
5.00	0.189	-14.47	-6.75	0.129	-17.79	-27.00	0.013	-37.72	-50.50
4.75	0.162	-15.81	-7.00	0.127	-17.92	-27.50	0.006	-44.44	-51.00
4.50	0.109	-19.25	-7.25	0.101	-19.91	-28.00	0.014	-37.08	-51.50
4.25	0.045	-26.84	-7.50	0.061	-24.29	-28.50	0.011	-39.17	-52.00
4.00	0.055	-25.19	-7.75	0.032	-30.03	-29.00	0.004	-47.96	-52.50
3.75	0.118	-18.53	-8.00	0.056	-25.04	-29.50	0.002	-53.98	-53.00
3.50	0.164	-15.70	-8.25	0.090	-20.87	-30.00	0.000	-40.00	-53.50
3.25	0.178	-14.97	-8.50	0.109	-19.25	-30.50	0.004	-47.96	-54.00
3.00	0.161	-15.86	-8.75	0.108	-19.33	-31.00	0.007	-43.10	-54.50
2.75	0.112	-19.02	-9.00	0.094	-20.54	-31.50	0.021	-33.56	-55.00
2.50	0.054	-25.35	-9.25	0.089	-20.96	-32.00	0.049	-26.20	-55.50
2.25	0.075	-22.50	-9.50	0.117	-18.64	-32.50	0.082	-21.72	-56.00
2.00	0.143	-16.89	-9.75	0.170	-15.37	-33.00	0.106	-19.49	-56.50
1.75	0.194	-14.27	-10.00	0.227	-12.88	-33.50	0.109	-19.25	-57.00
1.50	0.213	-13.43	-10.50	0.302	-10.40	-34.00	0.088	-21.11	-57.50
1.25	0.200	-13.98	-11.00	0.294	-10.63	-34.50	0.049	-26.20	-58.00
1.00	0.188	-14.52	-11.50	0.213	-13.43	-35.00	0.024	-32.40	-58.50
0.75	0.246	-12.16	-12.00	0.106	-19.49	-35.50	0.045	-26.94	-59.00
0.50	0.381	-8.38	-12.50	0.029	-30.75	-36.00	0.056	-25.04	-59.50
0.25	0.553	-5.14	-13.00	0.029	-30.75	-36.50	0.044	-27.13	-60.00
0.00	0.726	-2.78	-13.50	0.024	-32.40	-37.00	0.019	-34.42	-60.50
-0.25	0.870	-1.21	-14.00	0.008	-41.94	-37.50	0.024	-32.40	-61.00
-0.50	0.968	-0.28	-14.50	0.000	-40.00	-38.00	0.042	-27.54	-61.50
-0.75	1.000	0.00	-15.00	0.007	-43.10	-38.50	0.043	-27.33	-62.00
-1.00	0.966	-0.30	-15.50	0.016	-35.92	-39.00	0.027	-31.37	-62.50
-1.25	0.865	-1.26	-16.00	0.013	-37.72	-39.50	0.007	-43.10	-63.00
-1.50	0.712	-2.95	-16.50	0.007	-43.10	-40.00	0.024	-32.40	-63.50
-1.75	0.525	-5.60	-17.00	0.026	-31.70	-40.50	0.035	-29.12	-64.00
-2.00	0.332	-9.58	-17.50	0.031	-30.17	-41.00	0.031	-30.17	-64.50
-2.25	0.182	-14.77	-18.00	0.015	-36.48	-41.50	0.015	-36.48	-65.00
-2.50	0.163	-15.76	-18.50	0.024	-32.40	-42.00	0.012	-38.42	-65.50
-2.75	0.237	-12.49	-19.00	0.046	-26.74	-42.50	0.027	-31.37	-66.00
-3.00	0.290	-10.75	-19.50	0.045	-26.94	-43.00	0.032	-29.90	-66.50
-3.25	0.294	-10.63	-20.00	0.063	-24.01	-43.50	0.027	-31.37	-67.00
-3.50	0.254	-11.90	-20.50	0.137	-17.27	-44.00	0.029	-30.75	-67.50
-3.75	0.181	-14.82	-21.00	0.212	-13.47	-44.50	0.048	-26.38	-68.00
-4.00	0.100	-20.00	-21.50	0.246	-12.18	-45.00	0.068	-23.35	-68.50
-4.25	0.074	-22.62	-22.00	0.223	-13.03	-45.50	0.078	-22.16	-69.00
-4.50	0.125	-18.06	-22.50	0.151	-16.42	-46.00	0.074	-22.62	-69.50
-4.75	0.173	-15.24	-23.00	0.065	-23.74	-46.50	0.060	-24.44	-70.00
-5.00	0.192	-14.33	-23.50	0.041	-27.74	-47.00	0.040	-27.96	-70.50
-5.25	0.178	-14.99	-24.00	0.066	-23.61	-47.50	0.020	-33.98	-71.00
-5.50	0.137	-17.27	-24.50	0.057	-24.88	-48.00	0.006	-44.44	-71.50
-5.75	0.077	-22.21	-25.00	0.026	-31.70	-48.50	0.000	-40.00	-72.00
-6.00	0.027	-31.37	-25.50	0.019	-34.42	-49.00	0.003	-50.46	-72.50
-6.25	0.063	-24.01	-26.00	0.034	-29.37	-49.50	0.008	-41.94	-73.00
-6.50	0.107	-19.41	-26.50	0.030	-30.46	-50.00	0.013	-37.72	-73.50

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Calculation of Predicted Service Population  
Using FCC OET Bulletin No. 69 Methodology

*(three pages follow)*

Summary of analysis:

FCC Baseline Data for WJFW-DT from Public Notice, "DTV Channel Election Information and First Round Election Filing Deadline," Released: December 21, 2004, DA 04-3922, Table II.

Rhineland, WI, WJFW-TV, NTSC = 272,130; DTV = 382,994.

Using lesser of the NTSC and DTV Baselines, baseline population = 272,130.

From OET-69 Analysis, net service of WJFW-DT proposed facility =  $273,373 - 1,000 = 272,373$ .

Calculated percentage of service =  $272,373 / 272,130 \times 100\% = \underline{100.1\%}$

2000 Census data selected  
TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Date: 05-17-2006 Time: 12:15:25

Record Selected for Analysis

WJFWDT USERRECORD-01 RHINELANDER WI US  
Channel 16 ERP 269. kW HAAT 362. m RCAMSL 00857 m  
Latitude 045-40-03 Longitude 0089-12-29  
Status APP Zone 2 Border  
Last update Cutoff date Docket  
Comments  
Applicant

Cell Size for Service Analysis 2.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Facility meets maximum height/power limits

Azimuth (Deg)	ERP (kW)	HAAT (m)	41.0 dBu F(50,90) (km)
0.0	269.000	357.0	91.4
45.0	269.000	355.0	91.3
90.0	269.000	348.6	90.7
135.0	269.000	352.2	91.0
180.0	269.000	363.1	92.0
225.0	269.000	373.5	92.8
270.0	269.000	378.8	93.2
315.0	269.000	367.3	92.3

Evaluation toward Class A Stations

No Spacing violations or contour overlap to Class A stations

Class A Evaluation Complete

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quite zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance  
Distance to border = 257.3km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

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# Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
16	WJFWDT	RHINELANDER WI	USERRECORD01

## Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
14	WIWB	SURING WI	127.8	LIC	BLCT	-19980622KF
15	WQOW-TV	EAU CLAIRE WI	201.3	CP MOD	BMPCDT	-20041001AOM
15	WQOW-DT	EAU CLAIRE WI	207.7	PLN	DTVPLN	-DTVP0202
16	WTVO	ROCKFORD IL	375.7	LIC	BLCDDT	-20021024AAS
16	WTVO-DT	ROCKFORD IL	375.7	PLN	DTVPLN	-DTVP0216
16	KTCI-TV	ST. PAUL MN	313.2	LIC	BMLEDT	-20050322AGB
16	KTCI-DT	ST. PAUL MN	313.2	PLN	DTVPLN	-DTVP0226
20	WHRM-TV	WAUSAU WI	91.2	LIC	BLET	-20010813ABC

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## Analysis of Interference to Affected Station 9

### DTV Baseline Analysis

Channel	Call	City/State	Application	Ref. No.
16	WJFW-DT	RHINELANDER WI	DTVPLN	-DTVP0248

### Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
15	WQOW-DT	EAU CLAIRE WI	207.7	PLN	DTVPLN	-DTVP0202
16	WTVO-DT	ROCKFORD IL	375.7	PLN	DTVPLN	-DTVP0216
16	KTCI-DT	ST. PAUL MN	313.2	PLN	DTVPLN	-DTVP0226
16	WTHXTV	MANITOWOC WI	211.7	PLN	DTVPLN	-NPLN0975

Results for: 16A WI RHINELANDER DTVPLN DTVP0248 PLN

HAAT 506.0 m, ATV ERP 510.0 kW

	POPULATION	AREA (sq km)
within Noise Limited Contour	386152	40021.5
not affected by terrain losses	383904	39506.0
lost to NTSC IX	912	112.8
lost to additional IX by ATV	0	0.0
lost to ATV IX only	0	0.0
lost to all IX	912	112.8

### NTSC Baseline Analysis

Channel	Call	City/State	Application	Ref. No.
12	WJFWTV	RHINELANDER WI	DTVPLN	-NPLN0806

### Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
11	WLUKTV	GREEN BAY WI	169.4	PLN	DTVPLN	-NPLN0748
12	WISNTV	MILWAUKEE WI	301.7	PLN	DTVPLN	-NPLN0805
13	WNMU	MARQUETTE MI	129.0	PLN	DTVPLN	-NPLN0839
13	WEAUTV	EAU CLAIRE WI	177.0	PLN	DTVPLN	-NPLN0874

Results for: 12N WI RHINELANDER DTVPLN NPLN0806 PLN

	POPULATION	AREA (sq km)
within Noise Limited Contour	386154	40029.5
not affected by terrain losses	339410	35696.4

lost to NTSC IX	67202	5718.5
lost to additional IX by ATV	0	0.0
lost to all IX	67202	5718.5

# Analysis of current record

Channel	Call	City/State	Application Ref. No.
16	WJFWDT	RHINELANDER WI	USERRECORD-01

## Stations Potentially Affecting This Station

Chan	Call	City/State	Dist(km)	Status	Application Ref. No.
15	WQOW-TV	EAU CLAIRE WI	201.3	CP MOD	BMPCDT -20041001AOM
15	WQOW-DT	EAU CLAIRE WI	207.7	PLN	DTVPLN -DTVP0202
16	WTVO	ROCKFORD IL	375.7	LIC	BLCDT -20021024AAS
16	WTVO-DT	ROCKFORD IL	375.7	PLN	DTVPLN -DTVP0216
16	KTCI-TV	ST. PAUL MN	313.2	LIC	BMLEDT -20050322AGB
16	KTCI-DT	ST. PAUL MN	313.2	PLN	DTVPLN -DTVP0226

Total scenarios = 2

Result key: 1  
Scenario 1 Affected station 9  
Before Analysis

Results for: 16A WI RHINELANDER USERRECORD01 APP

HAAT 362.0 m, ATV ERP 269.0 kW	POPULATION	AREA (sq km)
within Noise Limited Contour	279929	28737.4
not affected by terrain losses	273373	28294.5
lost to NTSC IX	0	0.0
lost to additional IX by ATV	1000	8.1
lost to ATV IX only	1000	8.1
lost to all IX	1000	8.1

Potential Interfering Stations Included in above Scenario 1

16A IL ROCKFORD BLCDT 20021024AAS LIC

Result key: 2  
Scenario 2 Affected station 9  
Before Analysis

Results for: 16A WI RHINELANDER USERRECORD01 APP

HAAT 362.0 m, ATV ERP 269.0 kW	POPULATION	AREA (sq km)
within Noise Limited Contour	279929	28737.4
not affected by terrain losses	273373	28294.5
lost to NTSC IX	0	0.0
lost to additional IX by ATV	1000	8.1
lost to ATV IX only	1000	8.1
lost to all IX	1000	8.1

Potential Interfering Stations Included in above Scenario 2

16A IL ROCKFORD DTVPLN DTVP0216 PLN

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