

Comprehensive Technical Exhibit
Application for Construction Permit
WBSF-DT – Bay City, Michigan
Barrington Bay City License LLC
March, 2008

General

The following engineering statement and attached exhibits have been prepared for **Barrington Bay City License LLC**, licensee of television station WBSF(TV) (Facility ID: 82627) at Bay City, Michigan, and are in support of their application for construction permit for WBSF-DT post transition facilities.

WBSF(TV) currently operates on channel 46 as an NTSC facility. This facility has no pre-transition DTV operations due to timing of the original construction of the facility. As a result, WBSF is one of the few television facilities in the United States for which no companion digital channel currently exists. As a result, WBSF(TV) will flash-cut from analog to digital operations either at or prior to the conclusion of full power analog television broadcasts in February of 2009.

This application is therefore being submitted to request a construction permit for the DTV facilities to which WBSF will flash-cut. These facilities will differ slightly from those specified in Appendix B to the Commission's order adopting the DTV Table of Allotments ("Appendix B"). The proposed deviations from Appendix B facilities are necessary not only to accommodate the use of the existing NTSC antenna for DTV operations, but also to address international coordination issues with Industry Canada. These changes ultimately will result in a reduction of the area currently served by WBSF(TV), but will result in the timely issuance of a construction permit for the facility.

Discussion of WBSF-DT Allotment and Proposed Facilities

In the Commission's Table of Allotments, WBSF-DT is specified as operating in the post-transition environment on channel 46, which is the current NTSC channel of operations as previously discussed. Appendix B specifies a maximum effective radiated power of 50 kW at an

antenna center of radiation at 306 meters above average terrain and an antenna ID of 74778 for WBSF-DT operations.

The pattern contained within Antenna ID 74778 is not consistent with the antenna currently utilized for the WBSF(TV) analog operations. Rather, this pattern represents modifications to the relative field of the directional pattern along numerous azimuths. Exhibit E-1 tabulates a comparison between the currently utilized directional pattern and the antenna ID pattern. While the modified pattern was employed in order to provide replication of the current WBSF(TV) Grade B contour, the resulting noise limited service contour from the allocation parameters actually increases the WBSF(TV) service area with the largest increase occurring in an arc from approximately 65 to 90 degrees True.

The antenna currently utilized by WBSF(TV) is a Propagation Systems, Inc. (PSI) model UP1266C-46. This is a panel type antenna with 0.5 degrees of electrical beam tilt. The shape of the pattern from this antenna is similar to the pattern described in the associated antenna ID. As demonstrated, however, the antenna ID is in variance from the actual pattern which is due to replication mathematics and coordination issues with Industry Canada. As a result, the directional pattern specified in this application will be consistent with the actual licensed pattern for WBSF(TV), but will be different than that specified in the associated Antenna ID.

The allotment for WBSF(TV) and, subsequently, WBSF-DT, has been subject to negotiations with Industry Canada relative to the Canadian allotment for DTV channel 46 operations at Sarnia, Ontario. Barrington submitted an engineering statement to the Commission in January of 2007 commenting on the Canadian objections. In that engineering statement, it was demonstrated that no interference was predicted to occur to the Sarnia allocation. Furthermore,

that study demonstrated that if WBSF-DT were to be constructed at the allocation parameters and the Sarnia facility (CBLN-DT) were to be maximized, any predicted interference to that facility would lie entirely within the United States.¹

The issues pertinent to this particular allocation were specifically discussed by the Commission in the proceedings of the Seventh Report and Order and Eight Further Notice of Proposed Rule Making in MB Docket 87-268 released on August 6, 2007.² In that text, the Commission notes the submission of the above referenced interference study demonstrating the lack of interference to Canadian facilities. The Commission ultimately adopted the WBSF-DT allotment as proposed.

In order to ensure that the Commission need not seek further international coordination with regard to this allotment, this application proposes facilities that are designed to create a noise limited service contour, using the station's existing antenna, that is entirely encompassed by the Appendix B noise limited service contour. Although it is necessary to slightly reduce the population served, the applicant respectfully submits that grant of the instant application would allow prompt construction of post-transition facilities without the need for further international coordination. As described below, this proposal would reduce the population predicted to be served by only 3.24% relative to the station's analog Grade B population, and only 5.27% relative to the Appendix B population. Moreover, the population predicted to served by the proposed facilities is substantially consistent with the criteria adopted by the Commission for expedited processing of construction permit applications. The applicant therefore respectfully requests that the Commission grant this application on an expedited basis.

¹ Hypothetical parameters for the maximized Sarnia facility were assumed to be 1000 kW ERP at 305 meters above average terrain utilizing a non-directional antenna.

² See paragraph 105 in the Seventh Report and Order and Eighth Further Notice of Proposed Rulemaking.

The applicant intends in the future to seek a permit to construct expanded facilities based on the allotted height and effective radiated power and the actual directional antenna pattern of the station's antenna. However, because use of the existing antenna would cause a minimal extension of the station's contour beyond the Appendix B contour, the applicant wishes to avoid the need to request that the Commission seek further Canadian coordination or to discontinue service if such coordination is not concluded before the station's transition date.

This application also specifies a *de minimis* one-second correction to the geographic coordinates specified in Appendix B. The WBSF-DT allocation specifies geographic coordinates of 43-28-26 North Latitude and 83-50-44 West Longitude. A change in one second of latitude to 43-28-27 North Latitude is necessary to conform the station authorization with the ASR data for the structure that would be utilized.³

This map demonstrates that the proposed service contour approximates the Appendix B contour for WBSF-DT. The slight reduction in area served also translates into a reduction in the population served. The resident population by the 2000 Census within the proposed service contour is 924,516 persons, while 975,984 persons reside within the allocation service contour. The Grade B service contour of WBSF(TV) has a resident population of 955,446 persons. The reduction in the service area of the proposed contour relative to the Appendix B service contour is 5.27 percent of the population. When compared with the Grade B service contour, however, this reduction is merely 3.24 percent.

³ NAD27 coordinates for the proposed facility rounded to tenths of seconds are 43-28-26.8 North Latitude and 83-50-44.9 West Longitude.

It should be noted that since the proposed facility will reduce the service footprint relative to the Appendix B facilities, a corresponding reduction in predicted interference to other stations would result. As a result of this reduction in predicted interference as compared to Appendix B facilities, detailed interference studies have been omitted from this application.

DTV Checklist – FCC Form 301 Section III-D

The appropriate items on Section III-D of FCC Form 301 have been answered. This application is for the post-transition facilities for WBSF-DT. As a result, items 1(a), 1(d), 1(e), and 2-5 have been answered per the instructions. This section of the comprehensive technical exhibit will, however, provide additional information relative to these responses.

The proposed DTV facilities described in this application will operate on the DTV channel established for the station. Specifically, the proposed facilities would utilize channel 46 in the post-transition environment. This is the channel on which the applicant current operates an NTSC facility. Item 1(a) has therefore been provided with “yes” as a response.

Under item 1(d) a response of “yes” has been provided. As previously discussed, the proposed facility will not expand the noise limited service contour in any direction beyond the distance that would result from the parameters specified in Appendix B. Rather, the proposed facility would contract the resulting contour by a small amount. This decrease, as discussed, is necessary to avoid additional international coordination issues.

The response to item 1(e) is tied to the previous response provided under item 1(d). Specifically, the proposed facility will necessarily *decrease* the predicted population within the

service area by virtue of the decrease in the area encompassed by the noise limited service contour. It is therefore necessary for the applicant to answer “no” in this particular instance. As previously discussed, the decrease in the service area is not a substantial decrease, and results in a reduction only slightly greater than 5.0 percent.

The proposed facility will not have a significant environmental impact. The facility, as a result, will not fall under Section 1.1307 of the Commission’s Rules. More detailed information concerning this response will be contained in section of this technical exhibit pertinent to the Tech Box portion of FCC Form 301. The response of “yes” has thus been provided for item 2.

The proposed facility will also comply with the provisions of Section 73.625 of the Commission’s Rules. Additional information concerning this response will be provided in the subsequent Tech Box section of this exhibit. A response of “yes” has therefore been provided for item 3.

The requirements of Section 73.1030 of the Commission’s Rules are applicable in this particular case, however, the applicant would be in compliance with this section of the Rules. The proposed facility would not operate in any of the radio astronomy zones described in Section 73.1030, however, it would be located in the vicinity of the Allegan, Michigan FCC monitoring facility. Utilizing the Commission’s distance calculation methodology, the proposed facility would be located at a distance of 197.16 kilometers (122.51 miles) at an azimuth of 59.9 degrees true from this protected facility. Since the proposed facility would operate with an average effective radiated power of 50 kW at a distance in excess of 80 kilometers from this protected facility, it is believed that no further notification is required to be made concerning this facility based on Section

73.1030(c)(3)(iv) of the Commission's Rules. The response of "yes" has therefore been provided for item 4.

The structure utilized for the facilities described in this application has been registered with the Commission. Specifically an Antenna Structure Registration Number of 1246943 has been assigned to the tower. The response of "yes" is therefore appropriate in this instance.

Tech Box – FCC Form 301 Section III-D

This section of the technical exhibit contains additional information relative to the responses required on the Tech Box section of FCC Form 301. Responses to items numbered 1 through 9 in this section have been answered in the appropriate blanks on the form page.

The antenna that would be utilized by the proposed facility is a Propagation Systems, Inc. (PSI) model UP1266C-46 panel type. This is the same antenna that is currently in use by the WBSF(TV) facility. This antenna is a directional antenna with 0.5 degrees of electrical beam tilt and no mechanical beam tilt. Items described under Section 73.625 of the Commission's Rules have been included in this application under Exhibit E-3.

The tower utilized by the proposed DTV facility is the same tower that is currently utilized by WBSF(TV). The antenna system for WSGW(AM) is located at a distance of 3.0 km from the WBSF(TV) tower. There are no other AM facilities in close proximity, and the tower utilized by the proposed facility would not be part of an AM radiation system. The proposed facility therefore complies with Section 73.625(c) of the Commission's Rules.

As indicated on the form pages, the proposed facility would satisfy the post-transition interference protection provisions of Section 73.616 of the Commission's Rules. Interference studies have been omitted from this exhibit as the proposed facilities are smaller in size than those permitted under the allocation in Appendix B. As a result, the proposed facility would cause *less* interference than the approved allocation facilities. The proposed facility therefore complies with the applicable interference provisions of the Commission's Rules.

The proposed WBSF-DT facilities would satisfy the principal community coverage requirements of Section 73.625 of the Commission's Rules. Exhibit E-4 is a map illustrating the predicted coverage of the proposed facility. As this map demonstrates, the entire community of license, Bay City, Michigan, would be served with a signal level of greater than 48 dBu F(50,90). For reference purposes, the 41 dBu F(50,90) contour has also been illustrated on this map.

The proposed WBSF-DT facility would not constitute a substantial environmental impact as previously mentioned. The absence of a significant environmental impact by the proposed facility is based on two considerations. The first of these considerations is the fact that the proposed facility would utilize the existing WBSF(TV) antenna, tower, and transmission line. Since no new excavation or construction would result, no additional environmental impact to the area would ensue.

Secondly, the proposed facility would not constitute an RF exposure hazard to persons at the site. No other broadcast facilities would utilize the WBSF tower. For the proposed WBSF-DT operation, a worst case scenario was assumed utilizing the calculations contained in OET Bulletin 65. The worst case scenario assumes that all energy radiating from the antenna would be directed

at the ground. The predicted power density from this antenna is therefore given by the following equation:

$$S = \frac{33.4(E_{\text{rel}})^2(ERP)}{h^2}$$

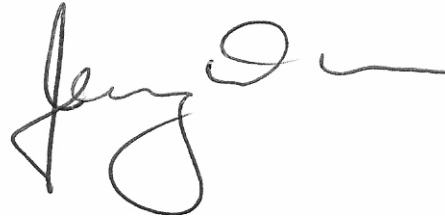
Since all radiation is assumed to be directed at the ground, the relative field component is assumed to have 1.0 as a value. The effective radiated power is simply the maximum effective radiated power of the proposed facility, which is 18.0 kW. The denominator term is the height of the center of radiation minus 2 meters to accommodate the average human height. This term therefore has 310 meters as a value since the center of radiation is 312 meters. The resulting worst case power density for WBSF-DT is 6.26 $\mu\text{W}/\text{cm}^2$. It is assumed that this power density occurs at all points in the vicinity of the tower.

Under the uncontrolled environment condition of the applicable safety standard, the maximum permissible power density is a function of the frequency of the channel of operation. Since the upper limit is the quotient of the frequency and 1500, the lowest frequency in the channel of operation (662 MHz) will be utilized for the frequency term. This results in a maximum permissible power density of 441 $\mu\text{W}/\text{cm}^2$. Since the predicted worst-case power density is less than this value, it is apparent that the proposed facility would not constitute an RF exposure hazard to persons at the site.

In order to protect workers having access to the site from being exposed to levels of non-ionizing radiation which may exceed the applicable safety standards, the applicant certifies that it will coordinate with other present and future users of the site. Such coordination will include, but is not necessarily limited to, a reduction in transmitter power or cessation of operation.

Affidavit

The preceding statement and attached exhibits have been prepared by me, or under my direction, and are true and accurate to the best of my belief and knowledge.



Above signature is digitized copy of actual signature
License Expires November 30, 2009

Jeremy D. Ruck, PE
March 14, 2008

Exhibit E-1 - Comparison of WBSF(TV) Pattern and Antenna ID 74478 Pattern

Azimuth	WBSF(TV) Pattern		Antenna ID 74778		Difference	
	Relative Field	Relative dB	Relative Field	Relative dB	Relative Field	dB
0	0.559	-5.05	0.469	-6.58	-0.090	-1.52
10	0.695	-3.16	0.618	-4.18	-0.077	-1.02
20	0.746	-2.55	0.678	-3.38	-0.068	-0.83
30	0.722	-2.83	0.649	-3.76	-0.073	-0.93
40	0.647	-3.78	0.564	-4.97	-0.083	-1.19
50	0.534	-5.45	0.444	-7.05	-0.090	-1.60
60	0.405	-7.85	0.315	-10.03	-0.090	-2.18
70	0.171	-15.34	0.198	-14.07	0.027	1.27
80	0.100	-20.00	0.111	-19.09	0.011	0.91
90	0.100	-20.00	0.060	-24.44	-0.040	-4.44
100	0.100	-20.00	0.060	-24.44	-0.040	-4.44
110	0.100	-20.00	0.060	-24.44	-0.040	-4.44
120	0.100	-20.00	0.060	-24.44	-0.040	-4.44
130	0.153	-16.31	0.097	-20.26	-0.056	-3.96
140	0.245	-12.22	0.170	-15.39	-0.075	-3.17
150	0.382	-8.36	0.292	-10.69	-0.090	-2.33
160	0.544	-5.29	0.451	-6.92	-0.093	-1.63
170	0.704	-3.05	0.623	-4.11	-0.081	-1.06
180	0.861	-1.30	0.813	-1.80	-0.048	-0.50
190	0.964	-0.32	0.949	-0.45	-0.015	-0.14
200	1.000	0.00	1.000	0.00	0.000	0.00
210	0.914	-0.78	0.885	-1.06	-0.029	-0.28
220	0.767	-2.30	0.701	-3.09	-0.066	-0.78
230	0.742	-2.59	0.671	-3.47	-0.071	-0.87
240	0.808	-1.85	0.751	-2.49	-0.057	-0.64
250	0.737	-2.65	0.665	-3.54	-0.072	-0.89
260	0.554	-5.13	0.463	-6.69	-0.091	-1.56
270	0.531	-5.50	0.439	-7.15	-0.092	-1.65
280	0.686	-3.27	0.607	-4.34	-0.079	-1.06
290	0.745	-2.56	0.676	-3.40	-0.069	-0.84
300	0.673	-3.44	0.593	-4.54	-0.080	-1.10
310	0.553	-5.15	0.463	-6.69	-0.090	-1.54
320	0.571	-4.87	0.482	-6.34	-0.089	-1.47
330	0.675	-3.41	0.596	-4.50	-0.079	-1.08
340	0.651	-3.73	0.568	-4.91	-0.083	-1.18
350	0.539	-5.37	0.449	-6.96	-0.090	-1.59

D.L. Markley & Associates, Inc.

Consulting Engineers

2104 West Moss Avenue

Peoria, Illinois 61604

WBSF

BLCT20061006ACR
Latitude: 43-28-26.80 N
Longitude: 083-50-44.60 W
ERP: 1600.00 kW
Channel: 46+
Frequency: 665.5 MHz
AMSL Height: 490.0 m
Horiz. Pattern: Directional
Prop Model: FCC Method

WBSF-DT.ALLOC

ALLOCATION
Latitude: 43-28-26 N
Longitude: 083-50-44 W
ERP: 50.00 kW
Channel: 46
Frequency: 665.0 MHz
AMSL Height: 490.0 m
Horiz. Pattern: Directional
Prop Model: FCC Method

WBSF-DT.PRO

PROPOSED
Latitude: 43-28-26.80 N
Longitude: 083-50-44.60 W
ERP: 18.00 kW
Channel: 46
Frequency: 665.0 MHz
AMSL Height: 490.0 m
Horiz. Pattern: Directional
Prop Model: FCC Method

Exhibit E-2

Service Contour Comparison
WBSF-DT - Bay City, Michigan
Barrington Bay City License LLC
March, 2008

D.L. Markley & Associates, Inc.

- WBSF(TV) Grade B Service Contour
- WBSF-DT Allocation Service Contour
- WBSF-DT Proposed Service Contour

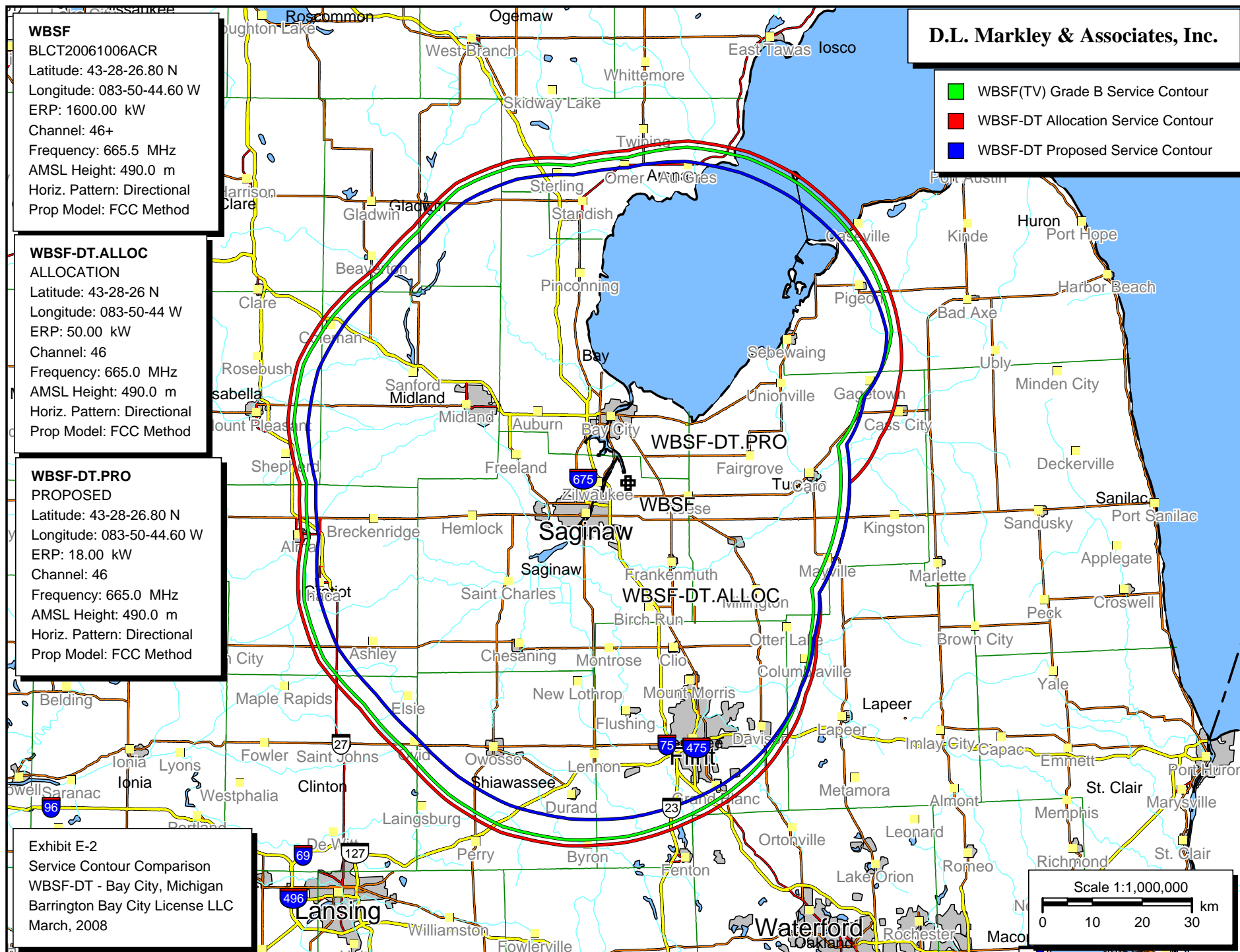


Exhibit E-3

This exhibit consists of this page of text and the following three pages. Together, they provide information required under Section 73.625(c) of the Commission's Rules.

WBSF-DT - Horizontal Plane Pattern
Pre-Rotation Antenna Pattern....

Azimuth (deg)	Effective Field
0.0	0.559
10.0	0.695
20.0	0.746
30.0	0.722
40.0	0.647
50.0	0.534
60.0	0.405
70.0	0.171
80.0	0.100
90.0	0.100
100.0	0.100
110.0	0.100
120.0	0.100
130.0	0.153
140.0	0.245
150.0	0.382
160.0	0.544
170.0	0.704
180.0	0.861
190.0	0.964
200.0	1.000
210.0	0.914
220.0	0.767
230.0	0.742
240.0	0.808
250.0	0.737
260.0	0.554
270.0	0.531
280.0	0.686
290.0	0.745
300.0	0.673
310.0	0.553
320.0	0.571
330.0	0.675
340.0	0.651
350.0	0.539

Rotation Angle = 0

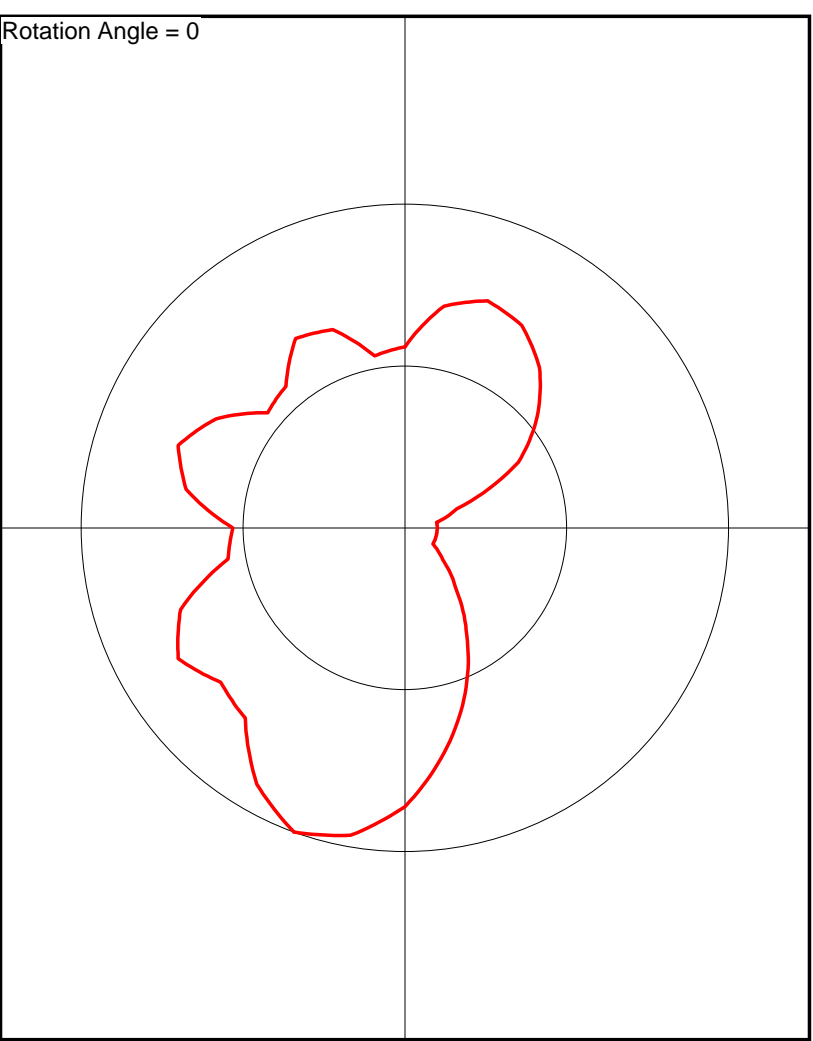


Exhibit E-3 - Horizontal Plane Pattern Tabulation

Station: WBSF-DT

Maximum ERP: 18

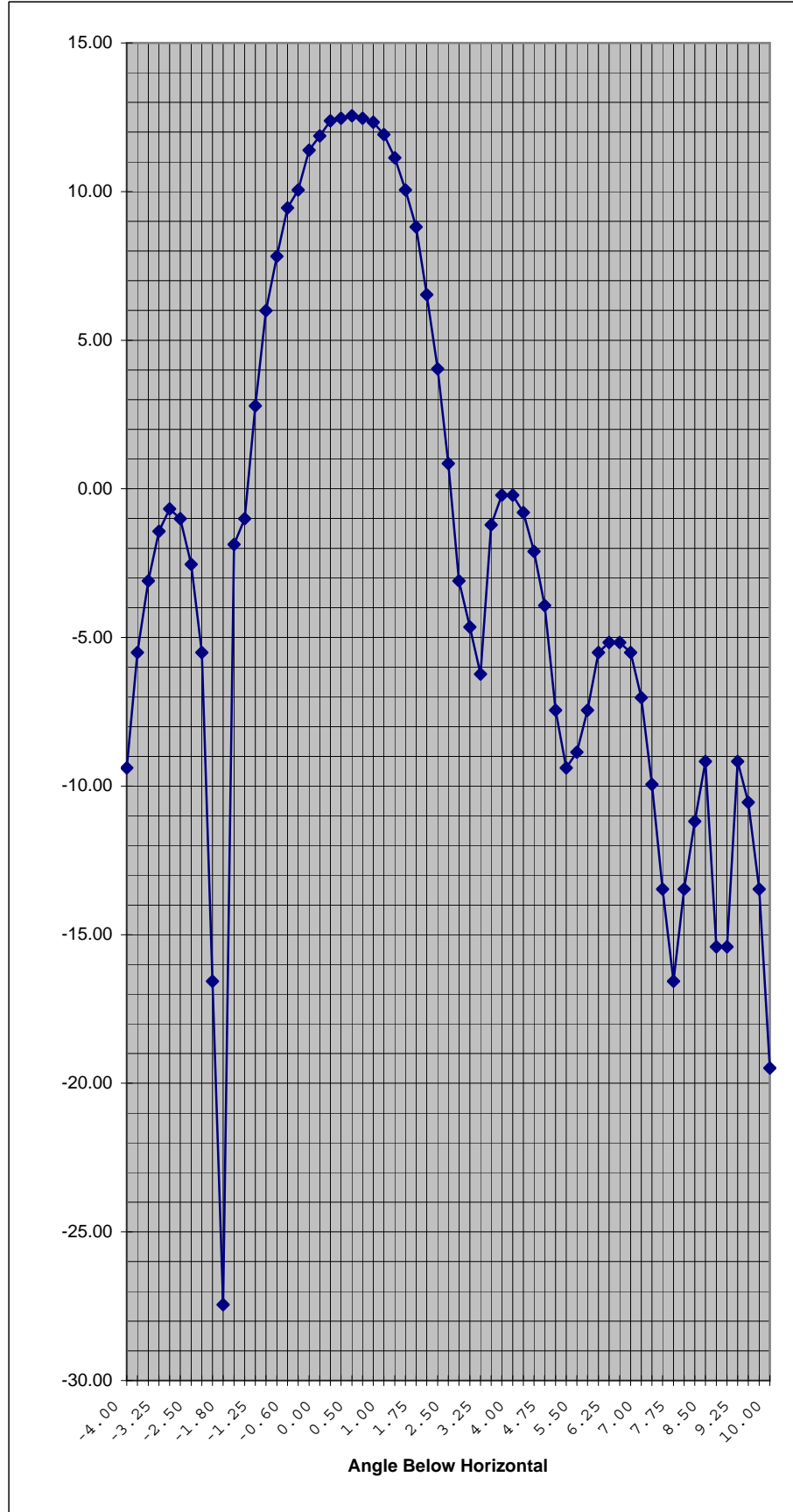
Azimuth	Relative Field	Relative Power	ERP (kW)	ERP (dBk)
000	0.559	0.3125	5.62	7.50
010	0.695	0.4830	8.69	9.39
020	0.746	0.5565	10.02	10.01
030	0.722	0.5213	9.38	9.72
040	0.647	0.4186	7.53	8.77
050	0.534	0.2852	5.13	7.10
060	0.405	0.1640	2.95	4.70
070	0.171	0.0292	0.53	-2.79
080	0.100	0.0100	0.18	-7.45
090	0.100	0.0100	0.18	-7.45
100	0.100	0.0100	0.18	-7.45
110	0.100	0.0100	0.18	-7.45
120	0.100	0.0100	0.18	-7.45
130	0.153	0.0234	0.42	-3.75
140	0.245	0.0600	1.08	0.34
150	0.382	0.1459	2.63	4.19
160	0.544	0.2959	5.33	7.26
170	0.704	0.4956	8.92	9.50
180	0.861	0.7413	13.34	11.25
190	0.964	0.9293	16.73	12.23
200	1.000	1.0000	18.00	12.55
210	0.914	0.8354	15.04	11.77
220	0.767	0.5883	10.59	10.25
230	0.742	0.5506	9.91	9.96
240	0.808	0.6529	11.75	10.70
250	0.737	0.5432	9.78	9.90
260	0.554	0.3069	5.52	7.42
270	0.531	0.2820	5.08	7.05
280	0.686	0.4706	8.47	9.28
290	0.745	0.5550	9.99	10.00
300	0.673	0.4529	8.15	9.11
310	0.553	0.3058	5.50	7.41
320	0.571	0.3260	5.87	7.69
330	0.675	0.4556	8.20	9.14
340	0.651	0.4238	7.63	8.82
350	0.539	0.2905	5.23	7.18

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Exhibit E-3 - VERTICAL RADIATION PATTERN

Angle	Relative Field	ERP dBk.
-4.00	0.080	-9.39
-3.75	0.125	-5.51
-3.50	0.165	-3.10
-3.25	0.200	-1.43
-3.00	0.218	-0.68
-2.75	0.210	-1.00
-2.50	0.176	-2.54
-2.25	0.125	-5.51
-2.00	0.035	-16.57
-1.80	0.010	-27.45
-1.50	0.190	-1.87
-1.40	0.210	-1.00
-1.25	0.325	2.79
-1.00	0.470	5.99
-0.80	0.580	7.82
-0.60	0.700	9.45
-0.40	0.750	10.05
-0.20	0.875	11.39
0.00	0.925	11.88
0.25	0.980	12.38
0.40	0.990	12.47
0.50	1.000	12.55
0.60	0.990	12.47
0.80	0.975	12.33
1.00	0.930	11.92
1.25	0.850	11.14
1.50	0.750	10.05
1.75	0.650	8.81
2.00	0.500	6.53
2.25	0.375	4.03
2.50	0.260	0.85
2.75	0.165	-3.10
3.00	0.138	-4.65
3.25	0.115	-6.23
3.50	0.205	-1.21
3.75	0.230	-0.21
4.00	0.230	-0.21
4.25	0.215	-0.80
4.50	0.185	-2.10
4.75	0.150	-3.93
5.00	0.100	-7.45
5.25	0.080	-9.39
5.50	0.085	-8.86
5.75	0.100	-7.45
6.00	0.125	-5.51
6.25	0.130	-5.17
6.50	0.130	-5.17
6.75	0.125	-5.51
7.00	0.105	-7.02
7.25	0.075	-9.95
7.50	0.050	-13.47
7.75	0.035	-16.57
8.00	0.050	-13.47
8.25	0.065	-11.19
8.50	0.082	-9.17
8.75	0.040	-15.41
9.00	0.040	-15.41
9.25	0.082	-9.17
9.50	0.070	-10.55
9.75	0.050	-13.47
10.00	0.025	-19.49

Note: Relative field same for all azimuths.
ERP in dBk based on maximum ERP azimuths.





WBSF-DT.PRO**PROPOSED**

Latitude: 43-28-26.80 N
Longitude: 083-50-44.60 W
ERP: 18.00 kW
Channel: 46
Frequency: 665.0 MHz
AMSL Height: 490.0 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 0.5
Prop Model: FCC Method

City of License
Bay City, Michigan

D.L. Markley & Associates, Inc.

-  Proposed 48 dBu F(50,90) Service Contour
-  Proposed 41 dBu F(50,90) Service Contour

