

Technical Report Supporting a Form 349 Application for a New FM Translator Station

Pursuant to 47 C.F.R. Section 74:

for

*CH245D.P - Yankton, SD
CH245D (96.9 MHz)*

"New FM Translator Operation"

as a

*Commercial, Fill-In Translator
for Class B AM Station
WNAX(AM) - Yankton, SD*

March, 2018

Asher Broadcast Consulting, LLC
justinasher@consultant.com
1(202)875-2986

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Explanation of Technical Report

1

EXPLANATION OF PROPOSAL: This Form 349 Filing and accompanying technical report supports an original Construction Permit Application for a new FM Translator facility for CH245D.P - Yankton, SD. This FCC Form 349 Filing requests a new CH245D (96.9 MHz) operation with a power of 0.250 kW ERP (circular polarization). The FM Translator will operate from a COR of 636 meters AMSL. This Form 349 Filing will specify rebroadcast of Class B, AM Primary Station WNAX(AM) - Yankton, SD (570 kHz); Facility ID No. 57846. The Translator will be licensed to the community of Yankton, SD.

The applicant would like to note WNAX(AM) is presently rebroadcast on co-owned AM Fill-In Translator K260BO - Yankton, SD (Facility ID: 154848) and will serve substantially the same area as this CH245D.P AM Fill-In Translator proposal. Concurrent with, or prior to the commencement of operations of the future CH245D.P Translator, K260BO will be reassigned to an alternate Primary Station.

FACILITY COMPLIANCE SHOWINGS: A map of the proposed 60 dB μ service contour has been included in *Exhibit 1*. The proposed 60 dB μ contour of the Translator lies wholly inside the larger of the AM primary daytime 2.0 mV/m contour or a 25 mile radius around the AM site. The primary station service contour relationship has been plotted in *Exhibit 2*.

The proposed facility will be located on the tower bearing Antenna Structure Registration Number 1035330. In support of this filing, a copy of the existing ASRN has been included in *Exhibit 3*. A depiction of the tower and antenna configuration has been included in *Exhibit 4*. Further notification to the FAA or ASR governing authorities is not required as this proposal will not increase the overall tower height.

The applicant would like to note use of the NED 03 second terrain database for all allocation, contour and HAAT showings contained herein. A copy of the proposed HAAT calculation has been included in *Exhibit 5*.

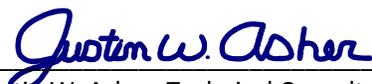
ALLOCATION COMPLIANCE SHOWINGS: The proposed Translator remains in compliance with 47 C.F.R. Section 74.1204 toward all allocation protection concerns. A general allocation study for this proposal is found in *Exhibit 6*. There is one additional facility, existing or proposed, close enough to merit further study. Therefore, a supplemental contour protection study has been provided toward this facility as included in *Exhibit 7*. It is believed sufficient clearance exists, precluding the need for additional contour protection showings.

Regarding protection of international concerns, the facility is, and will remain, more than 320 km from the common border between the United States and Canada or Mexico. As a result, no further international protection showings are believed required.

ENVIRONMENTAL COMPLIANCE SHOWINGS: The proposed facility complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments as set forth under §1.1310 and/or §1.1307(b)(3) of the Commission's rules and the guidelines for RF radiation protection guidelines as set forth in OET Bulletin No. 65 (Edition 97-01), and the accompanying Supplement A, (Edition 97-01). Compliance has been demonstrated in the attached **RF Appendix 1** of this filing. The facility is, or will be, properly marked with signs. Entry is, or will be, restricted by means of fencing with locked doors or gates. In addition, coordination with other users of the site will be secured to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

Regarding compliance with the NEPA, Nationwide Programmatic Agreement and NHPA Section 106 for tower co-location, compliance with the Agreement is not required where no new tower construction is being proposed and the tower is not being substantially altered. Specifically, compliance is not necessary where only an existing antenna and feed-line are being reused (diplexed) on an existing structure, as here. However, should the Commission determine compliance is necessary, upon notification to the applicant, the applicant will file FCC Form 621.

CERTIFICATION OF TECHNICAL CONSULTANT: *I declare, under penalty of perjury, that the contents of this report are true and accurate to the best of my knowledge and belief. I further certify I have over eighteen years of experience as a broadcast technical consultant before the Federal Communications Commission ("the FCC"); and am familiar with the Code of Federal Regulations Title 47 ("the Rules") as pertaining to this report and its contents herein. The underlying data utilized in this report was taken directly from FCC databases or indirectly through third party software vendors securing data directly from FCC databases. This firm cannot be held liable for errors or omissions resulting from the underlying data. The information contained herein is believed accurate to the date reported below.*



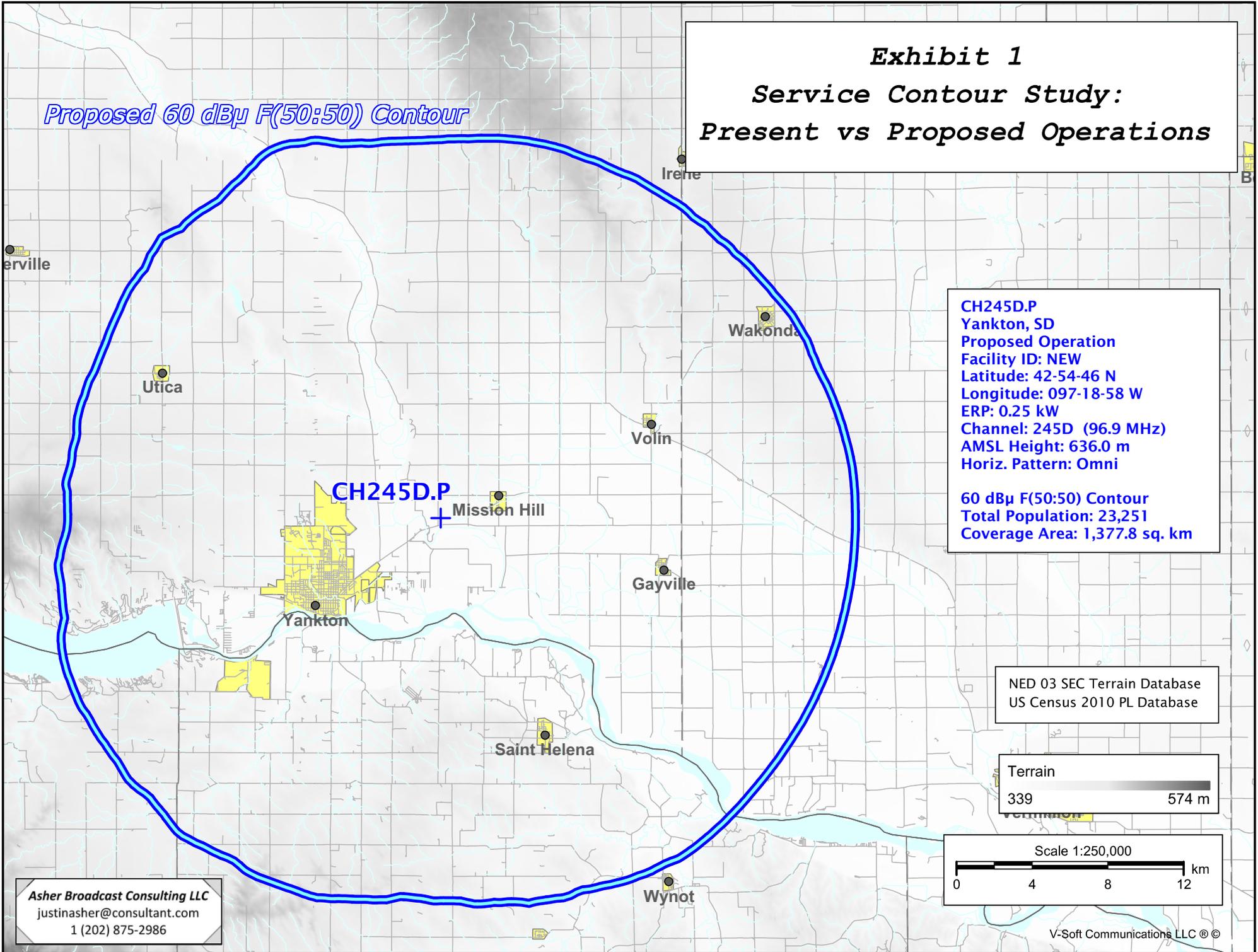
Justin W. Asher, Technical Consultant

March 22, 2018

Exhibit 1

Service Contour Study: Present vs Proposed Operations

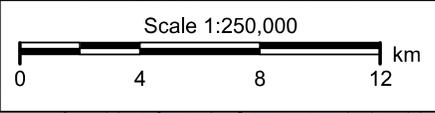
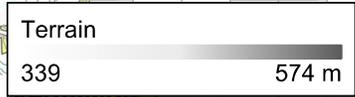
Proposed 60 dBμ F(50:50) Contour



CH245D.P
 Yankton, SD
 Proposed Operation
 Facility ID: NEW
 Latitude: 42-54-46 N
 Longitude: 097-18-58 W
 ERP: 0.25 kW
 Channel: 245D (96.9 MHz)
 AMSL Height: 636.0 m
 Horiz. Pattern: Omni

60 dBμ F(50:50) Contour
 Total Population: 23,251
 Coverage Area: 1,377.8 sq. km

NED 03 SEC Terrain Database
 US Census 2010 PL Database



Asher Broadcast Consulting LLC
 justinasher@consultant.com
 1 (202) 875-2986

Primary 2 mV/m Daytime Contour

**Exhibit 2
Service Contour Study:
Proposed vs Primary Operations**

WNAX 570 kHz
Yankton, South Dakota
Station Class: B
Region 2 Class: B
Facility ID: 57846
File Number: BL-19860411A1
42-54-47.0 N 97-18-58.0 W (NAD 27)
42-54-47.0 N 97-18-59.2 W (NAD 83)
Power: 5 kW, Non-Directional
Hours: Daytime
Pattern Type: Theoretical
Towers: 1 Augmentations: 0
Tower Electrical Height: 190 Deg; 277.59 m
RMS Theoretical: 395.9 mV/meter (per kW)
or 885.26 mV/meter at 5 kW

25 mile Radius from AM Site

Licensed 60 dBu F(50:50) Contour
Proposed 60 dBu F(50:50) Contour

WNAX(AM)
CH245D.P
K260BO.L

CH245D.P
Yankton, SD
Proposed Operation
Facility ID: NEW
Latitude: 42-54-46 N
Longitude: 097-18-58 W
ERP: 0.25 kW
Channel: 245D (96.9 MHz)
AMSL Height: 636.0 m
Horiz. Pattern: Omni

K260BO.L
Yankton, SD
BLFT20111019AHW
Facility ID: 154848
Latitude: 42-54-46 N
Longitude: 097-18-58 W
ERP: 0.25 kW
Channel: 260D (99.9 MHz)
AMSL Height: 636.0 m
Horiz. Pattern: Omni

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The applicant would like to note WNAX(AM) is presently being rebroadcast on co-owned AM Fill-In Translator K260BO - Yankton, SD (Facility ID: 154848) and will serve substantially the same area as this CH245D.P AM Fill-In Translator proposal. Concurrent with, or prior to the commencement of operations of the future CH245D.P Translator, K260BO will be reassigned to an alternate Primary Station.

NED 03 SEC Terrain Database
US Census 2010 PL Database

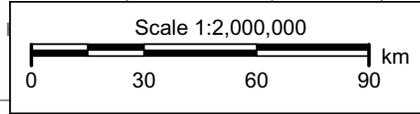


Exhibit 3

Copy of Existing Antenna Structure Registration (public record copy)

Registration Detail

Reg Number	1035330	Status	Constructed
File Number	A0453030	Constructed	07/10/1991
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type 3TA1 - Antenna Tower Array - 1st N = # towers 2nd N =

Location (in NAD83 Coordinates)

Lat/Long	42-54-46.0 N 097-18-59.0 W	Address	TWR 1 5 MILES NORTHEAST
City, State	YANKTON , SD		
Zip	57046	County	YANKTON
Center of AM Array	42-54-46.0 N 097-18-57.0 W	Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	357.2	Overall Height Above Ground (AGL)	283.2
Overall Height Above Mean Sea Level	640.4	Overall Height Above Ground w/o Appurtenances	282.4

Painting and Lighting Specifications

FAA Chapters 3, 4, 5, 13
 Paint and Light in Accordance with FAA Circular Number 70/7460-1J

FAA Notification

FAA Study	97-AGL-4906-OE	FAA Issue Date	11/13/1997
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Owner & Contact Information

FRN	0002750206	Owner Entity Type	
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Owner

Saga Communications, Inc.
 Attention To: Gregory Urbiel
 73 Kercheval Avenue, Suite 201
 Grosse Pointe Farms , MI 48236

P: (313)886-7070
 F:
 E: gurbiel@sagacom.com

Contact

Smithwick , Gary S Esq
 5028 Wisconsin Avenue, NW Suite 301
 Washington , DC 20016

P: (202)363-4050
 F:
 E: gsmithwick@fccworld.com

Last Action Status

Status	Constructed	Received	06/27/2005
Purpose	Admin Update	Entered	06/27/2005
Mode	Interactive		

Related Applications

06/27/2005	A0453030 - Admin Update (AU)
12/09/1997	A0041751 - New (NE)

Comments

Comments

None

History

Date	Event
06/28/2005	Registration Printed
06/27/2005	FRN association email send: Tower email
06/27/2005	ASR Application receipt email sent: Tower email

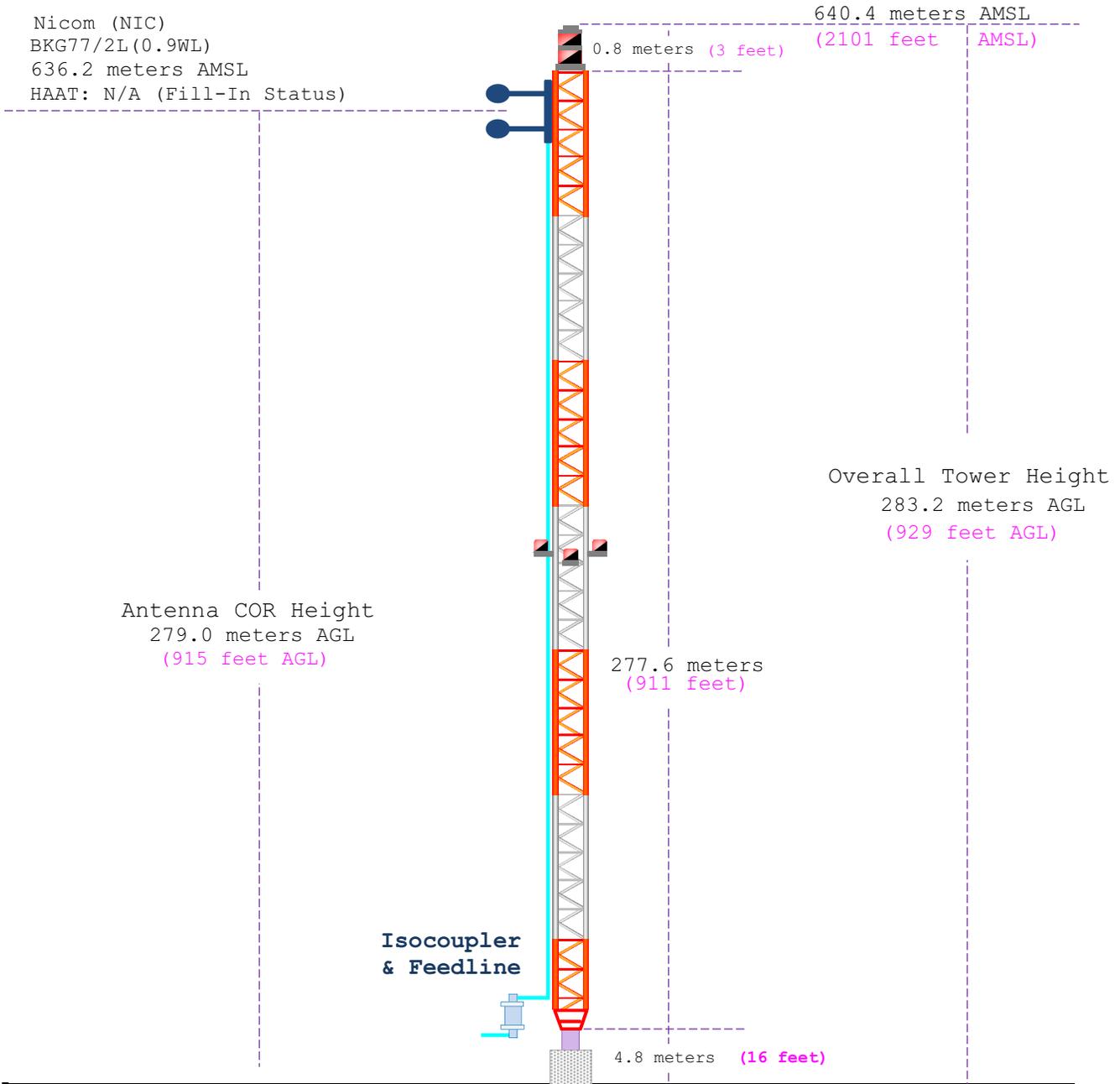
All History (4)

Automated Letters

06/28/2005	Authorization, Reference 432705
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Exhibit 4

Vertical Plan of Antenna System



Ground Elevation: 357.2 meters AMSL (1172 feet AMSL)		
Address: Tower 1 - 1.5 miles northeast of Yankton		
City: Yankton		
County: Yankton		
State: South Dakota		
	Latitude (D M S)	Longitude (D M S)
	NAD 27 datum values: 42 54 46.01165	97 18 57.79853
	NAD 83 datum values: 42 54 46.00000	97 18 59.00000
Antenna Structure Registration 1035330	Drawing Is Not To Scale	Asher Broadcast Consulting, LLC justinasher@consultant.com 1(202)875-2986

Exhibit 5

HAAT and Miscellaneous Coordinate Information

HAAT Calculation (1927):

N. Lat. = 425446.0 W. Lng. = 971858.0
 HAAT and Distance to Contour,
 FCC, FM 2-10 Mi, 51 pts Method - NED 03 SEC

Azi.	AV EL	HAAT	ERP kW	dBk	Field	60-F5
000	403.6	232.4	0.2500	-6.02	1.000	19.95
030	386.3	249.7	0.2500	-6.02	1.000	20.66
060	367.4	268.6	0.2500	-6.02	1.000	21.40
090	354.6	281.4	0.2500	-6.02	1.000	21.87
120	354.4	281.6	0.2500	-6.02	1.000	21.88
150	361.2	274.8	0.2500	-6.02	1.000	21.63
180	398.2	237.8	0.2500	-6.02	1.000	20.18
210	373.6	262.4	0.2500	-6.02	1.000	21.16
240	368.5	267.5	0.2500	-6.02	1.000	21.35
270	410.1	225.9	0.2500	-6.02	1.000	19.67
300	400.8	235.2	0.2500	-6.02	1.000	20.07
330	381.8	254.2	0.2500	-6.02	1.000	20.84

Ave El= 380.04 M HAAT= 255.96 M AMSL= 636.0

NAD 1983 to NAD 1927 Conversion:

	<u>Latitude</u>	<u>Longitude</u>
NAD 27 datum values:	42 54 46.01165	97 18 57.79853
NAD 83 datum values:	42 54 46.00000	97 18 59.00000

Various Coordinate Conversion Calculations (NAD 1983):

Position Type	Lat Lon
Degrees Lat Long	42.9127778°, -097.3163889°
Degrees Minutes	42°54.76667', -097°18.98333'
Degrees Minutes Seconds	42°54'46.0000", -097°18'59.0000"
UTM	14T 637423mE 4752503mN
UTM centimeter	14T 637423.78mE 4752503.94mN
MGRS	14TPN3742352503
Grid North	1.1°
GARS	166MB16
Maidenhead	EN12IV29AB85
GEOREF	FJHN41015476

Exhibit 6

Tabulation of Proposed Allocation

Blue Text indicates contour protection studies toward select station(s) as included in **Exhibit 7**.

CH	CALL	TYPE	ANT	AZI	DIST	LAT	PWR (kW)	INT (km)	PRO (km)	*IN*	*OUT*
CITY	STATE		<--	FILE #	LNG	HAAT (M)	COR (M)	LICENSEE	(Overlap in km)		
REFERENCE CH# 245D - 96.9 MHz, Pwr= 0.25 kW, HAAT= 256.0 M, COR= 636 M DISPLAY DATES 42 54 46.0 N. Average Protected F(50-50)= 20.91 km DATA 06-21-17 97 18 58.0 W. Omni-directional SEARCH 06-21-17											
243C	KNWC-FM	LIC_CN		43.0	92.44	43 31 07.0	100.000	12.6	86.9	59.1	4.4
	Sioux Falls	SD		223.5	BMLED20030304AAH	96 32 05.0	488	918	University Of Northwestern		
245C	KDLO-FM	LIC_CN		354.6	229.30	44 57 57.0	100.000	189.1	85.3	20.2	82.4
	Watertown	SD		174.4	BLH19790226AB	97 35 22.0	479	1030	Alpha 3e Licensee Llc		
245D	K245AM	LIC_C_		96.0	94.55	42 49 04.0	0.100	24.8	7.4	47.8	20.8
	Le Mars	IA		276.8	BLFT20090724AAI	96 09 47.0	65	462	Powell Broadcasting Compan		
247C1	KMXC	LIC_CX		11.4	92.66	43 43 46.0	100.000	9.5	69.4	62.8	22.2
	Sioux Falls	SD		191.6	BLH20121116AJV	97 05 14.0	260	758	Townsquare Media Sioux Fal		
245C1	KZKX	LIC_CX		168.5	202.90	41 07 23.6	100.000	157.3	60.3	25.0	79.5
	Seward	NE		348.9	BLH20160408AAU	96 50 03.7	183	614	Alpha 3e Licensee Llc		
248C3	KEXL	LIC_CX		187.9	66.38	42 19 17.0	6.500	3.1	31.7	43.0	33.5
	Pierce	NE		7.9	BLH20091030AFQ	97 25 40.0	141	669	Wjag Incorporated		
246D	K246CJ	LIC_DC_		120.2	82.14	42 32 16.0	0.250	22.0	14.6	38.3	35.0
	Sioux City	IA		300.8	BLFT20160411AAX	96 26 58.0		486	Cup O' Dirt, Llc		
246A	AL5573	VAC__N		113.5	116.77	42 29 11.0	6.000	46.3	30.1	48.6	54.1
	Moville	IA		294.4	RM9561	96 00 36.0	100	494	Mountain West Broadcasting		
	10/19/2004:	per MB 04-93		reserved	for noncommercial educ. use.						
242D	K242BE	LIC_C_		181.2	98.38	42 01 41.0	0.115	0.8	10.2	77.5	87.1
	Norfolk	NE		1.1	BLFT20151215ADQ	97 20 25.0		612	Community Broadcasting, In		
245C1	KIAQ	LIC_CN		94.9	259.43	42 40 18.0	100.000	158.9	61.5	78.7	131.6
	Clarion	IA		277.0	BLH19870120KA	94 09 11.0	176	518	Alpha 3e Licensee Llc		
298C3	KILV	LIC_ZCX		128.4	125.41	42 12 26.0	25.000	5.5	1.8	11.5R	113.9M
	Castana	IA		309.2	BLED20021002ACU	96 07 26.0	100	432	Educational Media Foundati		
298C3	KILV	APP_ZCX		128.4	125.41	42 12 26.0	25.000	5.5	1.8	11.5R	113.9M
	Whiting	IA		309.2	BPED20170317AAB	96 07 26.0	100	432	Educational Media Foundati		
298C3	KILV	RSV-A__		133.1	128.64	42 07 02.0	25.000	5.5	1.8	11.5R	117.1M
	Whiting	IA		313.9		96 10 43.0	100	427	Educational Media Foundati		
247C3	KBLR-FM	LIC_ZEN		146.9	168.37	41 38 21.0	25.000	3.4	33.1	143.3	134.1
	Blair	NE		327.6	BLH20010830AAH	96 12 31.0	92	436	Walnut Radio, Llc		

Terrain database is NED 03 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
 Contour distances are on direct line to and from reference station. Reference zone= West Zone, Co to 3rd adjacent.
 All separation margins (if shown) include rounding.
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt (Y,N,X)
 < = Contour Overlap
 Reference station has protected zone issue: AM tower

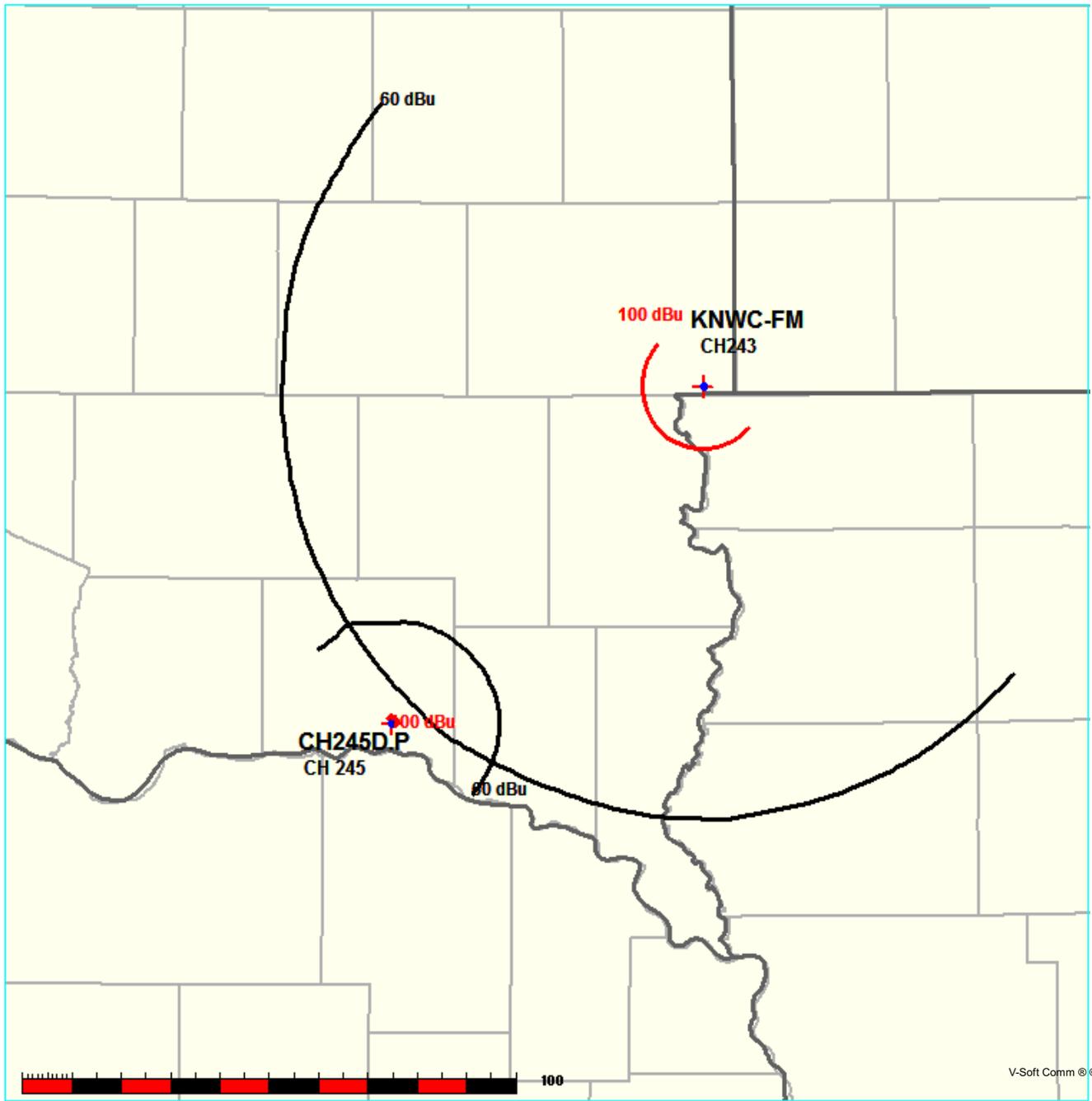
Exhibit 7

Contour Protection Studies Toward Select Allocation Concern(s)

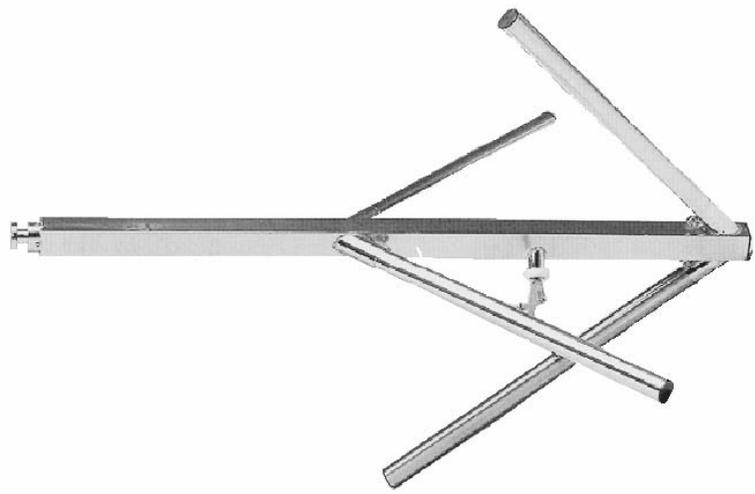
FMCommander Single Allocation Study - 06-21-2017 - NED 03 SEC
CH245D.P's Overlaps (In= 59.05 km, Out= 4.45 km)

CH245D.P CH 245 D
Lat= 42 54 46.0, Lng= 97 18 58.0
0.25 kW 256 m HAAT, 636 m COR
Prot.= 60 dBu, Intef.= 100 dBu

KNWC-FM CH 243 C BMLED20030304AAH
Lat= 43 31 07.0, Lng= 96 32 05.0
100.0 kW 488 m HAAT, 918 m COR
Prot.= 60 dBu, Intef.= 100 dBu



**Exhibit 8 - Copy of Manufacturer's
Antenna Documentation
(public record copy)**



NICOM
BKG77

Low Power

**Broadband
FM Circular
Polarization
Antenna
Antena de
FM Banda Ancha
Polarizacion Circular**

This antenna, constructed completely of stainless steel, offers circular polarization for better coverage especially in urban areas. In order to facilitate and decrease shipping costs, this model is simple to break down and reassemble when ready to be installed. It is insulated with Teflon, and with the appropriate connector has a maximum input of 0.5 kw.

Esta antena, fabricada completamente de acero inoxidable, le ofrece polarización circular para mejor alcance, especialmente en zonas urbanas. Para facilitar y desminuir los costos de transportación, este modelo es fácil de desarmar y volver a montar tan pronto que la quiera instalar. Está aislada con Teflon, y con el conector apropiado tiene una entrada máxima de 0.5 kw.



TECHNICAL SPECIFICATIONS (per bay)

Antenna type	circular polarization dipole	Front-to-back ratio	3 dB
Frequency range	87.5 - 108 MHz	Lightening protection	all parts grounded
Bandwidth	500 kHz max	Max wind velocity	119 mph (190 km/h)
Impedance	50 ohms	Wind load	8 Lbs (3.6 kg)
Connectors	N type (0.5 kw)	Wind surface	0.3 ft ² (0.04 m ²)
Power rating	500 Watts max	Materials (external)	stainless steel
VSWR	< 1.1:1	Mounting	from 2" to 4"
Polarization	vertical and horizontal	Weight	7.7 Lbs (3.5 kg)
Gain	- 3 dBd (referred to half-wave dipole)	Dimensions	58"×32"×32" (1450×800×800mm)
H plane	omnidirectional ±1.5 dB (with a 4" mast)	Packing	72"×6"×6" (1500×152×152mm)
V plane	omnidirectional ±3 dB (with a 4" mast)		

**Exhibit 8 - Copy of Manufacturer's
Antenna Documentation
(public record copy)**

Plot of Vertical Radiation Pattern

Manufacturer: NicomUSA, Inc.
Make/Model: BKG77/2
Polarization: Circular
Inter Bay Spacing: 0.9 λ (Wavelength)
Antenna Gain: -0.1 dBd

Frequency: 87.5 MHz - 108.0 MHz
Weight: 14 kg
Max Power: 5.0 kW
Return Loss: -27.1 dB
R.C. Phase: -89°

