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FM TRANSLATOR - K216FL MINOR CHANGE APPLICATION TO A LICENSED FACILITY

CHANNEL DISPLACEMENT APPLICATION

**HAS FM CHANNEL 216D 91.1 MHZ
REQUESTS FM CHANNEL 206D 89.1 MHZ**

**0.090 KW MAX ERP
232.4 METERS RCAMSL
NONDIRECTIONAL ANTENNA
HUNTSVILLE, TEXAS**

ENGINEERING NARRATIVE

Executive Summary

The applicant proposes to modify the existing licensed facility of K216FL to specify operation on FM Channel 206D, a non-adjacent channel due to incoming interference from a full service facility.

Channel Displacement Justification – Incoming Interference From KNLY

This channel displacement application is the result of contour overlap of the interference contour from co-channel KNLY, New Waverly, Texas (FCC Facility ID:173796) to the service contour of K216FL, and outgoing interference from K216FL to the service contour of KNLY. This overlapping of contours cannot be resolved without a non-adjacent channel change. A map showing the FCC contour overlap from KNLY is included in Figure 6.

Other Additional Minor Changes are proposed

This proposal also makes minor changes to the facility's antenna system; changing from a directional antenna pattern to a nondirectional pattern, and adding circular polarization. The effective radiated power is slightly reduced from 0.099 kW to 0.090 kW.

A very minor change of site location is reported as a result of a new determination of geographical coordinates of the existing structure as reported in the associated tower registration ASR 1053388, and the tower's location confirmed using google earth satellite images.

Geographical Site Coordinate Correction (NAD83 Datum)

	EXISTING LICENSE	PROPOSED CORRECTION	Reported Shift (Seconds)
LATITUDE	30-42-13.7 N.	30-42-12.5 N.	- 1.2
LONGITUDE	95-28-32.8 W.	95-25-33.6 W.	+0.8

Operating Parameters

The proposal will operate on FM Channel 206D with a maximum effective radiated power (ERP) of 0.092 kilowatts (H & V) and an antenna radiation center height of 232.4 meters above mean sea level (RCAMSL). The facility will employ a 1-bay nondirectional antenna system with circular polarization. The antenna type is SWR FM1-1.

Antenna Elevation in Meters	
Site Elevation	125.4
Supporting Structure Overall Height AGL	194.1
Antenna AGL	107.0
Antenna RCAMSL	232.4

Figure 1 – FCC Tower Registration (ASR) - FAA Notification - 1053388

The existing antenna mounting structure is a guyed-supporting tower with an overall height of 194.1 meters above the ground. The supporting tower structure has been registered and issued ASR number: 1053388. The proposal DOES NOT require notification to the FAA. No change in the overall height of the existing structure will occur.

Figure 2 – Large Scale – Topographic Site Map

As the proposal involves a sight correction in station geographic coordinates, a large scale topographic site map is included as Figure 2.

Figure 3 – Proposed Service Area

The predicted f(50,50) FCC 60 dBu service contour from the present and proposed operation is provided in Figure 3.

The predicted coverage contour was calculated in accordance with the provisions of 47 C.F.R. §73.313. The antenna radiation center heights above average terrain in the individual radial directions and the effective radiated power in the appropriate directions were used in conjunction with the F(50,50) curves of 47 C.F.R. §73.333 to determine the distance 60 dBu contour.

Figure 4 - Allocation Considerations - FM Channel Study Contour to Contour

An allocation study using the contour to contour method shows no prohibitive contour overlap (or Intermediate Frequency distance spacing violation) will occur to, or from, this proposal when the proposed SWR FM1-1 antenna's vertical plane radiation characteristics are applied as detailed in Figure 5.

TV Channel 6 – Additional Allocation Considerations

As noted in the Figure 4, this proposal does not cause interference to operating or proposed Television Channel 6 facilities within the area at the time of filing. No interference is predicted to occur to TV Channel 6 operations.

Figure 5 – Adjacent Channel Protection to KTYR, Trinity, Texas

Protect to THIRD-ADJACENT Channel KTYR, Trinity, Texas is provided as the predicted interference contour from this proposal does not touch the surface of the earth and remains well above ground. No buildings or populated areas protrude into this elevated area. As no population exists within the predicted interference contour, this proposal is acceptable in accordance with the provision of 47 CFR §74.1204(d).¹

Figure 6 – Non-adjacent Channel Displacement Application

A map showing the predicted interference contour from co-channel KNLY, New Waverly, Texas (FCC Facility ID:173796) to the licensed K216FL facility is provided. No resolution of the interference from KNLY to K216FL can be resolved without a channel change as proposed herein. The operation of K216FL preceded the operation of KNLY by a number of years. The first, second, and third adjacent channels are precluded by existing facilities within the area, therefore, a non-adjacent channel change is sought to channel 206D.

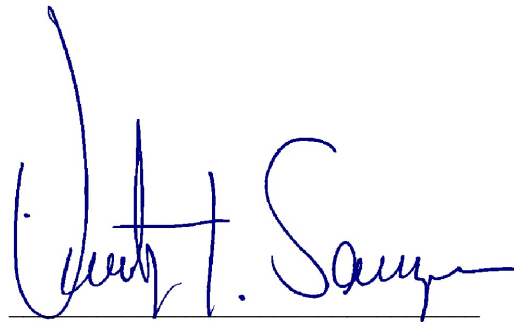
Environmental Evaluation Statement

The environmental evaluation statement concerning this proposal has been included in this application and can be found as a separate file upload within the application. A grant of this proposal would not be an action that would have a significant environmental effect, as demonstrated in the environmental evaluation statement.

Certification

The undersigned hereby certifies that this technical/engineering narrative statement and associated exhibits, tabulations, and figures were prepared by him or under his direction and are true and correct to the best of his knowledge and belief.

February 7, 2021

A handwritten signature in blue ink, reading "Timothy Z. Sawyer", is written over a horizontal line.

Timothy Z. Sawyer, Consulting Engineer

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¹ 47 CFR §74.1204 (d): The provisions of this section concerning prohibited overlap will not apply where the area of such overlap lies entirely over water. In addition, an application otherwise precluded by this section will be accepted if it can be demonstrated that no actual interference will occur due to intervening terrain, lack of population or such other factors as may be applicable.

EXISTING STRUCTURE - NO CHANGES ARE PROPOSED

Registration Detail

Reg Number	1053388	Status	Constructed
File Number	A1177979	Constructed	12/01/1993
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type	GTOWER - Guyed Structure Used for Communication Purposes		
Location (in NAD83 Coordinates - Convert to NAD27)			
Lat/Long	30-42-12.5 N 095-28-33.6 W	Address	0.18 miles SW of t Rd.
City, State	HUNTSVILLE , TX		
Zip	77340	County	WALKER
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
125.4	194.1
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
319.5	189.0

Painting and Lighting Specifications

FAA Chapters 4, 8, 12
Paint and Light in Accordance with FAA Circular Number [70/7460-1L](#)

FAA Notification

FAA Study	2020-ASW-7793-OE	FAA Issue Date	06/17/2020
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FCC TOWER REGISTRATION 1053388 FAA NOTIFICATION IS NOT REQUIRED

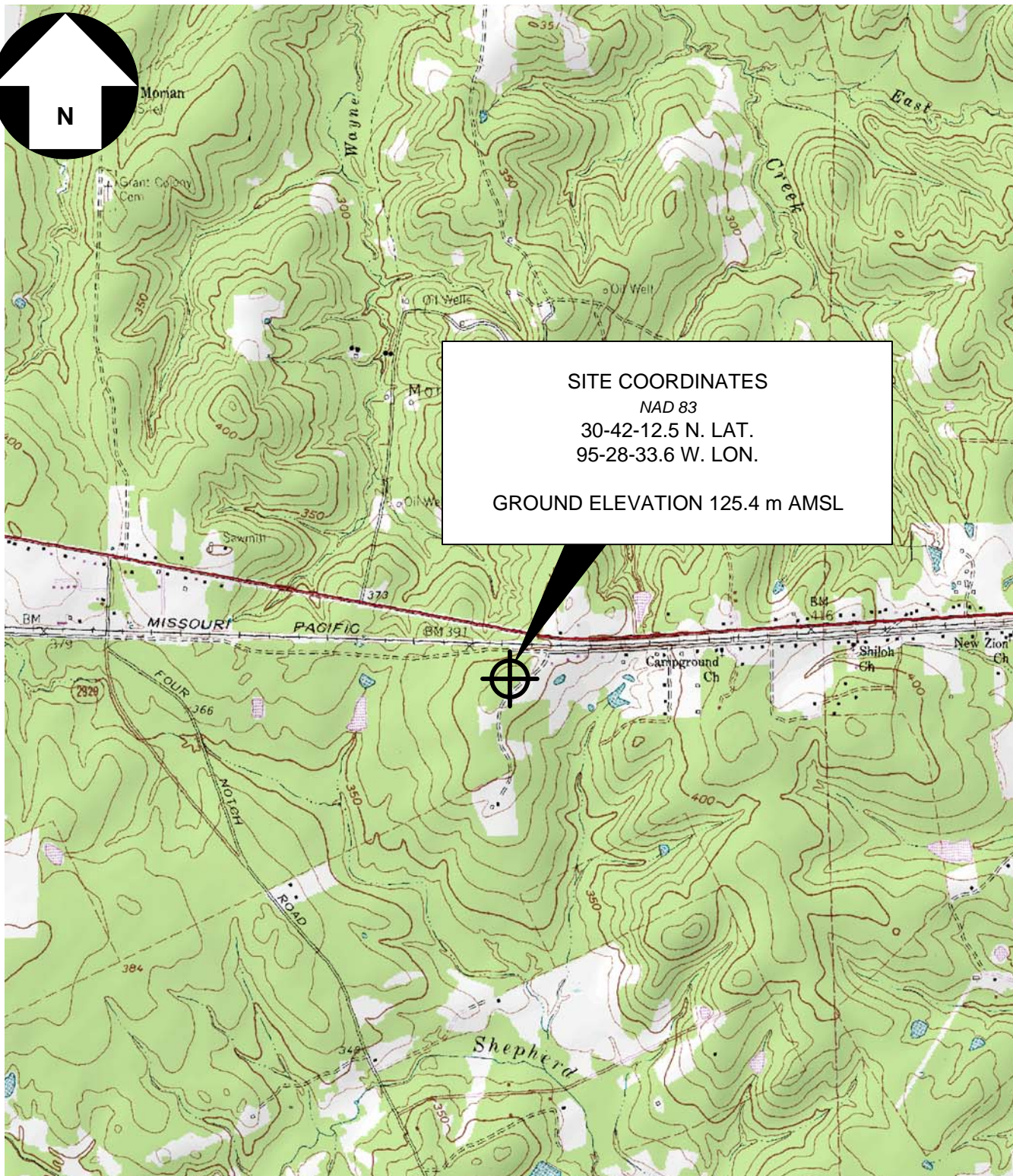
K216FL
HUNTVILLE, TEXAS

FIGURE
1

FALL CHURCH, VIRGINIA 22043-2555

SIZE A	CAGE NO N/A	DWG NO 20220207K216FL.F1	REV
SCALE N/A	FEBRUARY 2022	SHEET	

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TOPOGRAPHIC SITE MAP

**K216FL
HUNTSVILLE, TEXAS**

**FIGURE
2**

FALL CHURCH, VIRGINIA 22043-2555

SIZE
A

CAGE NO
N/A

DWG NO
20220207K216FL.F2

REV
NONE

(c) 2022, ALL RIGHTS RESERVED

SCALE 1:24,000

FEBRUARY 2022

SHEET

K216FL - LIC
FCC Application: BLFT20040115ABH
FCC FacID: 121879
NAD 83 Latitude: 30-42-13.70 N
NAD 83 Longitude: 095-28-32.80 W
ERP: 0.099 kW
Channel: 216 Frequency: 91.1 MHz
Antenna RCAMSL Height: 232.0 m
Antenna AGL Height: 107.0 m
Site Elevation: 125.0 m
Horiz. Pattern: Directional

Population Database: 2010 US Census
FCC F(50-50) 60.00 dBu
License Contour Population: 39,039
Proposed Contour Population: 45,389

PRESENT AND PROPOSED SERVICE CONTOUR

K216FL TO CHANNEL 206D - CHANNEL DISPLACEMENT

MINOR CHANGE APPLICATION
PROPOSED NONDIRECTIONAL
0.092 KW RCAMSL 232.4 METERS

FIGURE 3

LICENSED - BLACK CONTOUR
PROPOSED - BLUE CONTOUR

FCC 60 DBU F(50,50)
SERVICE CONTOUR

K216FL - LIC
K216FL - APP

K216FL - APP
FCC Application: THIS APPLICATION
FCC FacID: 121879
NAD 83 Latitude: 30-42-12.50 N
NAD 83 Longitude: 095-28-33.60 W
ERP: 0.092 kW
Channel: 206 Frequency: 89.1 MHz
Antenna RCAMSL Height: 232.4 m
Antenna AGL Height: 107.0 m
Site Elevation: 125.4 m
Horiz. Pattern: Omni

TZSTC
2022
FEBRUARY

New Waverly

Map Generated On 2/7/2022
NED 3 Second US Terrain

Scale 1:250,000

0 4 8 12 km

Channel Displacement From Ch 216D to Ch 206D

FIGURE 4

Pensacola Christian College, Inc.

REFERENCE CH# 206D - 89.1 MHz, Pwr= 0.092 kW, HAAT= 132.8 M, COR= 232.4 M

30 42 12.5 N. Average Protected F(50-50)= 11.6 km

95 28 33.6 W. Omni-directional

CH CITY	CALL	TYPE STATE	ANT	AZI. <--	DIST FILE #	LAT. LNG.	Pwr(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
209C1 Trinity	KTYR	LIC DCN TX		353.2 173.2	40.51 BLED20121214ADW	31 03 58.60 95 31 35.40	100.000 179	7.7 251	61.3 Aleluya Broadcasting Netwo	19.8	-21.4*
207C1 Humble	KSBJ	LIC CN TX		182.9 2.8	90.53 BLED20190308AAO	29 53 16.10 95 31 23.30	87.000 160	86.6 190	57.6 Hope Media Group	-7.0	17.3
206C1 Palestine	KYFP	LIC DCN TX		351.0 170.9	145.97 BLED20061130ABL	32 00 12.60 95 43 06.90	100.000 148	140.4 282	49.5 Bible Broadcasting Network	-6.5	49.5
205C1 Lufkin	KLDN	LIC DCN TX		40.7 221.0	103.47 BLED19910418KA	31 24 28.60 94 45 53.70	50.000 198	84.3 282	56.8 Bd Supervisors, Louisiana	7.3	28.9
207D Humble	KSBJ-FM3	CP DCN TX		180.3 0.3	63.05 0000117710	30 08 04.90 95 28 45.70	5.600 157	45.0 157	28.7 Ksbj Educational Foundatio	7.3	17.8

TV CHANNEL 6 PROTECTION - NO OVERLAP OF CONTOURS OR INTERFERENCE AREAS IS PREDICTED

06 -- KIPS-LD« Beaumont	APP DCN TX		128.3 308.8	116.35 0000013791		30 03 06.00 94 31 38.00	3.000 615	6.9 615	49.7	56.6R	59.8M
06 -- KCVH-LD Houston	LI HN TX		181.5 1.5	126.51 0000183660		29 33 45.20 95 30 35.90	3.000 427	6.6 427	41.4	48.0R	78.5M

Terrain database is NED 03 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM
 In & Out distances between contours are shown at closest points. Reference Zone= West Zone, Co to 3rd adj ch
 Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
 "*"affixed to 'IN' or 'OUT' values = site inside restricted contour.

Facility is okay with respect to AM station towers.
 Facility is okay with respect to FCC monitoring stations.
 Facility is okay toward West Virginia Quiet Zone.
 Facility is okay toward Table Mountain.

TV Channel 6, facility is okay with respect to TV Channel 6 operations. No prohibitive overlap occurs.

* With regards to contour overlap to 3rd adjacent channel station KTYR, Channel 209C1, Trinity, Texas, no prohibitive contour overlaps occurs with the vertical plane (elevation) pattern from this proposal is considered.

The requirements of 47 CFR Section 74.1204(d) are met as no population exists or is possible within the predicted interference contour - see application Figure 5 for detailed interference study results.

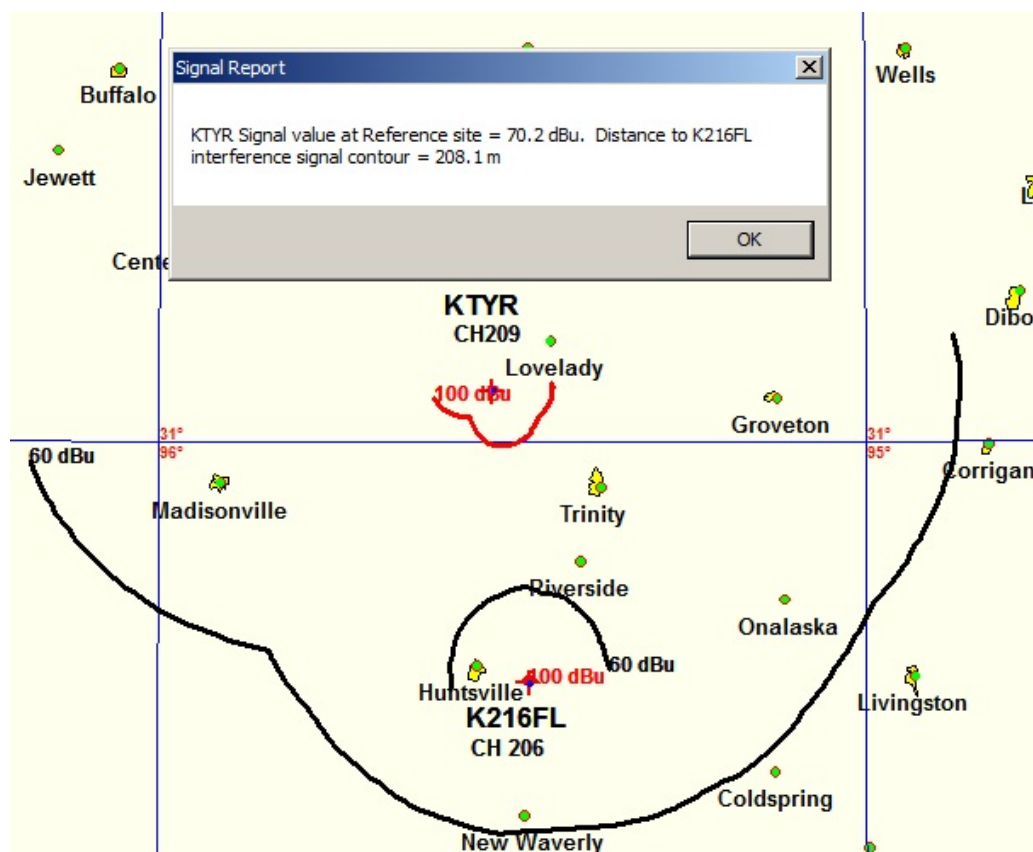
Figure 5

THIRD-ADJACENT CHANNEL CONTOUR OVERLAP WAIVER REQUEST
(IF REQUIRED)

TO STATION KTYR (Ch. 209C1)
TRINITY, TEXAS

Basis for Waiver Request 47 CFR §74.1204(d)
No population within predicted interference contour area

Third-Adjacent Channel Station KTYR (Ch. 209C1), a licensed facility, is predicted to have a signal level of 70.2 dBu at the proposed site (the reference site). The D/U (desired to undesired) signal ratio is 40 dBu. Thus, the interfering signal level from this proposal is $70.2 + 40 = 110.2$ dBu. The map below shows the calculated predicted signal level from KTYR at the proposed translator site, and the predicted interfering contour distance (maximum horizontal distance of 208.1 meters).



As shown in detail in Figure 5-2 the interference signal from this proposal remains at all times above the surface (ground) at an elevation of approximately 22 meters. There are no tall building, roof tops, or occupied spaces within the interference contour from this proposal. No interference is predicted to occur to a populated area.

Applicant believes that it has demonstrated that due to lack of population within the interference contour to KTYR, and that it is in compliance with the Commission's rules. Should a waiver of the rules with regards to the third-adjacent station contour overlap be necessary, it respectfully requests that said waiver be granted. A grant is in the public interest in that it has been demonstrated that no harm will occur and that no population is present within the interference contour radius of 208 meters from the tower.

FIGURE 5-2
FROM K216FL FM TRANSLATOR
TO KTYR CHANNEL 209C1

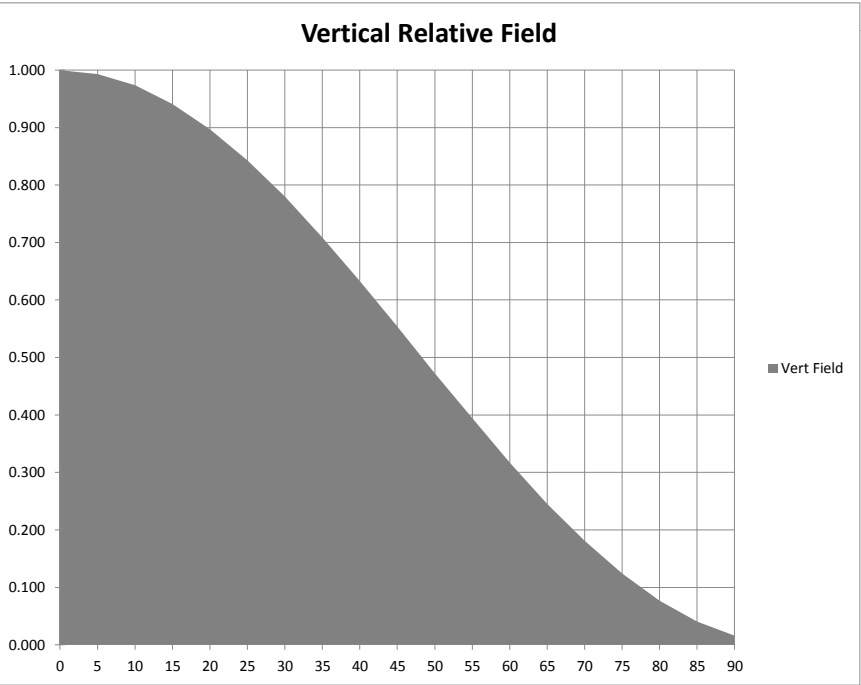
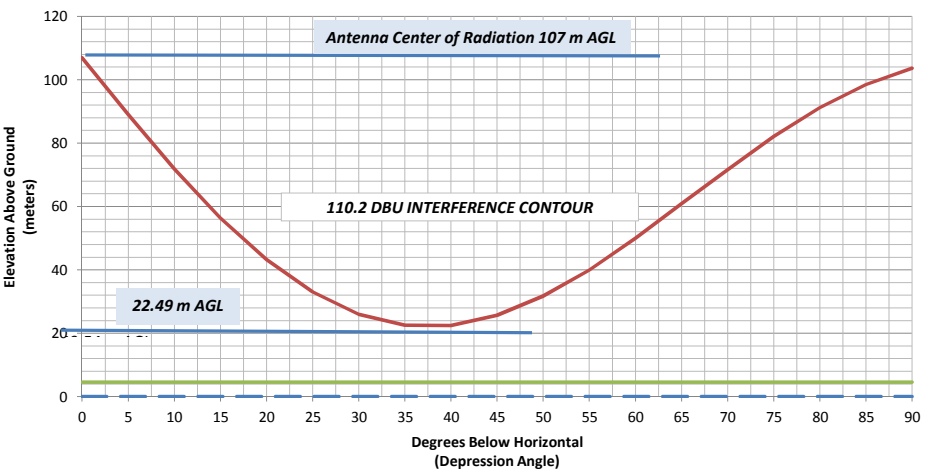
	Antenna
Manufacturer	SWR
Model	FM1
Number of Bays	1
Inter-Bay Spacing	1

Center of Radiation:	107	m AGL
Effective Radiated Power (ERP):	92	Watts
Interference Contour FS:	110.20	dBu
E Field Strength:	0.25293	V/m
Free Space Impedance:	377	Ohms
Power Density:	0.00016969	W/m^2
Maximum Free Space Distance:	207.71	meters

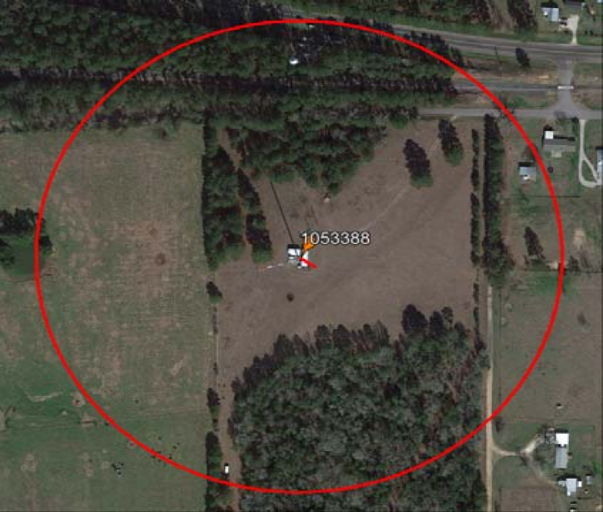
INCOMING		OUTGOING
Rx Level	D/U Ratio	IX Contour
70.20	40.00	110.20
		DBU

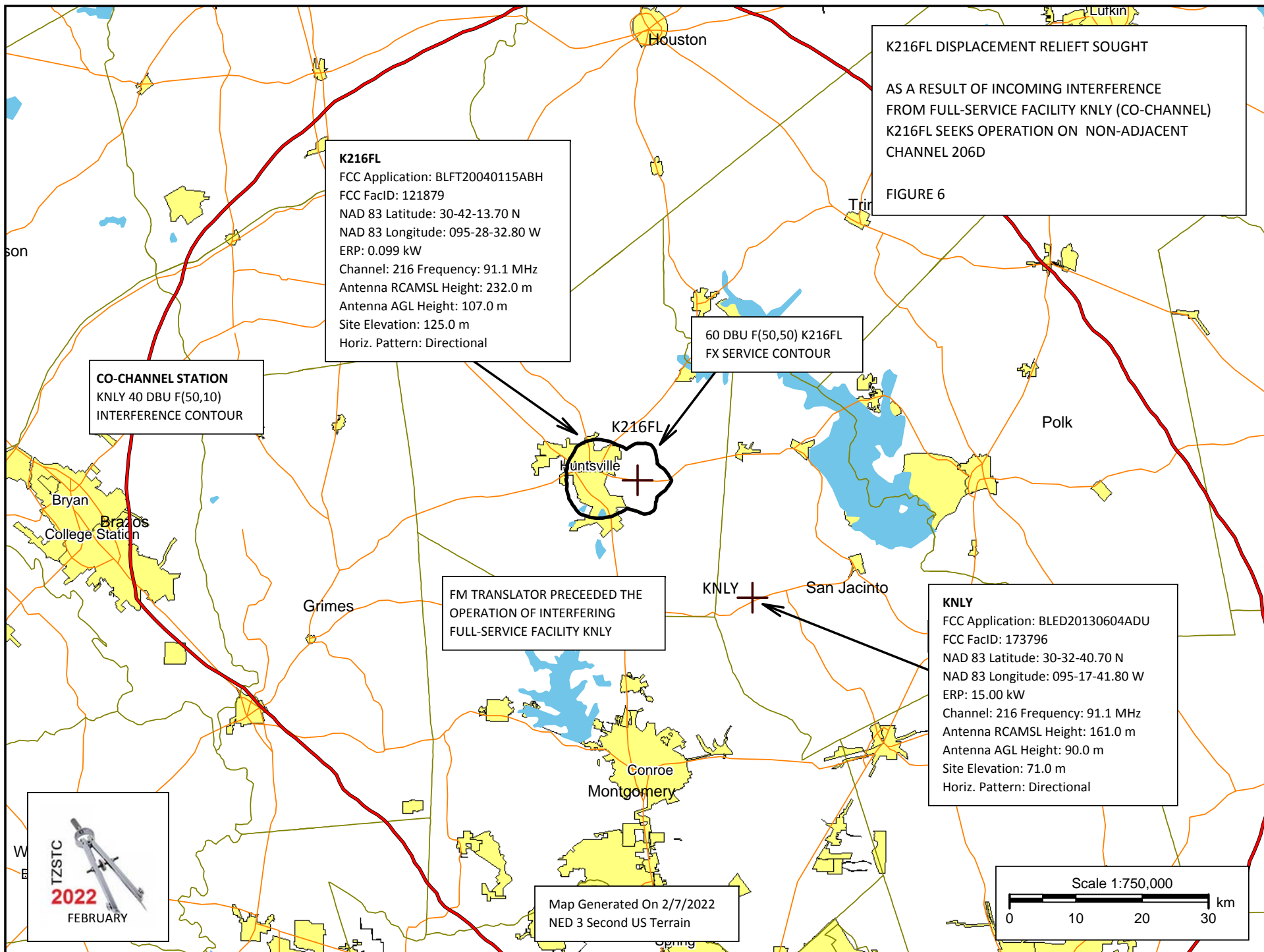
IX Contour Distance

DEPRESSION ANGLE	RELATIVE		ERP WATTS	IN METERS			
	FIELD	POWER		VECTOR LENGTH	HORIZONTAL	VERTICAL	AGL
0	1.0000	1.0000	92.00	207.71	207.71	0.00	107.00
5	0.9930	0.9860	90.72	206.26	205.47	17.98	89.02
10	0.9740	0.9487	87.28	202.31	199.24	35.13	71.87
15	0.9410	0.8855	81.46	195.46	188.80	50.59	56.41
20	0.8970	0.8046	74.02	186.32	175.08	63.72	43.28
25	0.8430	0.7106	65.38	175.10	158.69	74.00	33.00
30	0.7800	0.6084	55.97	162.01	140.31	81.01	25.99
35	0.7090	0.5027	46.25	147.27	120.63	84.47	22.53
40	0.6330	0.4007	36.86	131.48	100.72	84.51	22.49
45	0.5540	0.3069	28.24	115.07	81.37	81.37	25.63
50	0.4730	0.2237	20.58	98.25	63.15	75.26	31.74
55	0.3940	0.1552	14.28	81.84	46.94	67.04	39.96
60	0.3170	0.1005	9.24	65.84	32.92	57.02	49.98
65	0.2450	0.0600	5.52	50.89	21.51	46.12	60.88
70	0.1810	0.0328	3.01	37.60	12.86	35.33	71.67
75	0.1240	0.0154	1.41	25.76	6.67	24.88	82.12
80	0.0770	0.0059	0.55	15.99	2.78	15.75	91.25
85	0.0410	0.0017	0.15	8.52	0.74	8.48	98.52
90	0.0160	0.0003	0.02	3.32	0.00	3.32	103.68



GOOGLE EARTH IMAGE OF 208 METER RADIUS (110.2 DBU INTERFERENCE CONTOUR) FROM TOWER SITE NO TALL BUILDINGS WITHIN AREA - CONTOUR REMAINS 22 METERS OR GREATER ABOVE ALL POINTS OF EARTH SURFACE - THERE ARE NO STRUCTURES OR ROOFTOPS THAT PENETRATES VERTICALLY INTO THE INTERFERENCE CONTOUR AREAS. IMAGE DATE 1/18/2020





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FM TRANSLATOR - K216FL
FM CHANNEL 206D 89.1 MHZ (CHANNEL CHANGE)
0.092 KW MAX ERP H&V (0.184 KW TOTAL)
HUNTSVILLE, TEXAS

ENVIRONMENTAL EVALUATION STATEMENT

A grant of this proposal would NOT be an action which would have a significant environmental effect as demonstrated in this environmental evaluation statement. Any changes in equipment, or construction, if necessary will not trigger any event with regards to Section 106 of the National Historical Preservation Act (NHPA). This is an existing and developed communications site with restricted fencing about the tower.

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high intensity white lights. Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

FCC FM MODEL CALCULATED POWER DENSITY AT 2 METERS AGL (USING EPA TYPE 1 ANTENNA)

0.184 KW (H + V) TOTAL CR AGL 107 M	MPE ($\mu\text{W}/\text{CM}^2$)	CALCULATED VALUE ($\mu\text{W}/\text{CM}^2$)	% OF MPE	PASS/FAIL
CONTROLLED AREA	1000	0.3356	0.03%	PASS
PUBLIC AREA	200		0.17%	PASS

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs are posted at the site. The applicant will coordinate exposure procedures with any co-located facilities and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

February 7, 2021

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