

**MULLANEY ENGINEERING, INC.**

9049 SHADY GROVE COURT  
GAITHERSBURG, MD 20877

**ENGINEERING EXHIBIT EE-1:**

**ALC COMMUNICATIONS  
FM TRANSLATOR STATION**

**NEW  
FM CHANNEL 277D  
SANDPOINT, IDAHO**

**APPLICATION FOR AUTHORITY TO  
CONSTRUCT OR MAKE CHANGES IN AN  
FM TRANSLATOR OR FM BOOSTER STATION**

**AUGUST 2013  
FCC FACILITY NUMBER  
157000**

**ENGINEERING EXHIBIT  
IN SUPPORT OF**

**APPLICATION FOR AUTHORITY TO  
CONSTRUCT OR MAKE CHANGES IN AN  
FM TRANSLATOR OR FM BOOSTER STATION**

**CH 277D  
SANDPOINT, IDAHO**

**ALC COMMUNICATIONS  
FM TRANSLATOR STATION  
NEW  
FM CHANNEL 277D  
SANDPOINT, IDAHO**

**TABLE OF CONTENTS:**

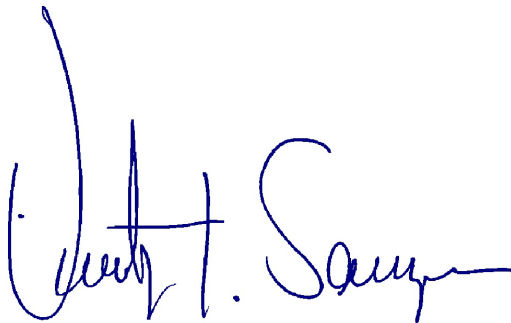
1. F.C.C. Form 349, Section III (Certification)
2. F.C.C. Form 349, Section IIIa (Engineering)
3. Declaration of Engineer
4. Narrative Statement
5. Figure 1, Topographic Map, FCC/FAA Tower Registration  
Not Required
6. Figure 2, Vertical Sketch of Supporting Structure
7. Figure 3, Proposed Translator Service and Primary Station  
Contours, Proposed Directional Antenna Relative Field  
Pattern, FM Translator Interference/Spacing Study
8. Figure 4, Updated LPFM Preclusion Study.

## **DECLARATION**

I, Timothy Z. Sawyer, declare and that I have provided engineering services in the area of telecommunications since 1969. My qualifications are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting radio telecommunications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained to prepare the instant engineering exhibit in support of **an application for Authority to Construct or Make Changes in a FM Translator of FM Booster Station, FCC Facility ID Number 157000.**

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under the penalty of perjury that the foregoing is true and correct.



---

Timothy Z. Sawyer

Executed on the 28<sup>th</sup> day of August 2013

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**NARRATIVE STATEMENT:**

**I. GENERAL:**

The engineering exhibit, of which this narrative is part, was prepared in support of an application for a construction permit for a NEW FM Translator Station at Sandpoint, Idaho.

The station will provide FM translator service for co-owned commercial FM Station KGZG-FM, Newport, Washington, FCC Facility ID: 29911

**Minor changes are proposed from the previously provided short form application**

The proposed FM Translator station will operate on channel 277D (103.3 MHz) with an effective radiated power (ERP) of 0.010 kilowatts (10 watts) and an antenna height above mean sea level of 1786 meters (AMSL) and above ground level of 23 meters (AGL). The applicant proposes to use a directional antenna system (RVR ACP-2) utilizing circular polarization (H & V), the details of which are included in Figure 3.

**TRANSMITTER LOCATION - FIGURE 1:**

The transmitting facility will consist of a single-bay directional FM antenna side-mounted on an existing 24 meter tall tower. FCC ASR registration and FAA notifications concerning this structure are not required. A topographic map is included in Figure 1.

**VERTICAL SKETCH OF SUPPORTING STRUCTURE - FIGURE 2:**

A vertical tower sketch showing the proposed antenna and the supporting structure is included as Figure 2. No change in the overall height of the structure is proposed. The FAA has not been notified of this proposal.

**COVERAGE CONTOURS - FIGURE 3:**

The predicted coverage contours were calculated in accordance with the provisions of 47 CFR 73.313. In accordance with current FCC practice, no consideration was given to terrain roughness correction factors.

The average terrain elevations from 3 to 16 kilometers from the proposed translator site were obtained from the NGDC 30-second computer database. The standard twelve radials evenly spaced at 30-degree intervals were used for determining the average terrain elevations and the distance to the 60 dBu translator coverage contour.

The antenna radiation center heights above average terrain in the individual radial directions and the effective radiated power were used in conjunction with the F(50,50) curves of 47 CFR 73.333(Figure 1) to determine distances to the 60 dBu contour from the proposed translator and the FM primary station.

Figure 3 contains a map in which the predicted coverage contours of the translator and the primary station to be rebroadcast have been drawn.

**CHANNEL 277D ALLOCATION STUDY - FIGURE 3:**

The proposed site fully protects all other stations of concern as detailed in Figure 3. No prohibitive overlap with any other facility of concern is predicted to occur.

**LPFM PRECLUSION STUDY:**

An LPFM preclusion study, has been provided in the previously filed short-form amendment. However as there has been a minor adjustment to the operating parameters (but not location) an updated LPFM preclusion study is included as Figure 4.

No preclusion of any LPFM facilities will occur as a result of a grant of this proposal within any designated LPFM market grid, nor is the proposed facility located within any Top-50 market grid or buffer zone.

**OTHER CONSIDERATIONS:**

The "blanketing" contour of a 0.010 kilowatt FM station extends 40 meters. The applicant recognizes its responsibility to remedy complaints of blanketing interference as required by 47 CFR 73.318, and to protect existing or proposed facilities in accordance with the Commission's applicable rules. An intermodulation study has been conducted and no adverse impact on existing facilities or pending applications is anticipated. However, the applicant clearly recognizes its responsibility to remedy interference complaints to existing stations resulting from its proposed operation.

**ENVIRONMENTAL CONSIDERATIONS:**

The applicant believes its proposal will not significantly affect the environment for the following reasons.

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.

The site and this proposal are exempt from NHPA Section 106 review as no construction will occur that would trigger a review under NHPA Section 106.

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.)

Based upon a worst case downward field value of 1.0 for all angles below the horizon, and a power of 0.010-kilowatts, and an antenna height of 20 meters above ground. The power density level 2-meters above ground is predicted to be 0.0015 mW/cm<sup>2</sup> or less. The computed power density is 0.15% of the Commission's guidelines for a controlled area and 0.75% for an uncontrolled area. This level is well below the Commission's guidelines for maximum exposure levels to electromagnetic fields and no further study is required. The minimum safe distance for a controlled area is 0.8 meters (2.6 feet), the antenna is located at 23 meters (75 feet) above ground, therefore no exposure in excess of the guidelines can occur at ground level.

The applicant will fully-cooperate and coordinate with all site users as required by the Commission's rules.

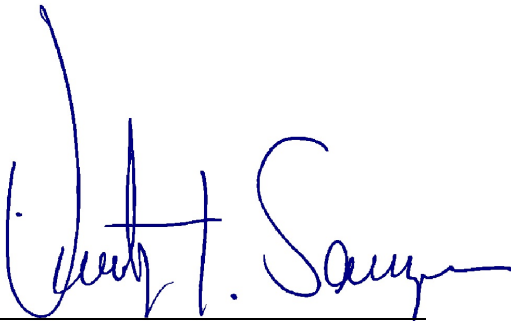
**II SUMMARY:**

The proposed FM translator will operate as a FM translator for commercial FM Broadcast Station KGZG-FM Newport, Washington with a maximum ERP 0.010 kilowatts (10 watts), utilizing a DIRECTIONAL circularly polarized antenna system.

Operation as proposed herein would not cause/increase any normally prohibited contour overlap, and would not have any significant impact on the environment.

The proposed operation is fully in compliance with all other areas of the Commission's rules and applicable international agreements.

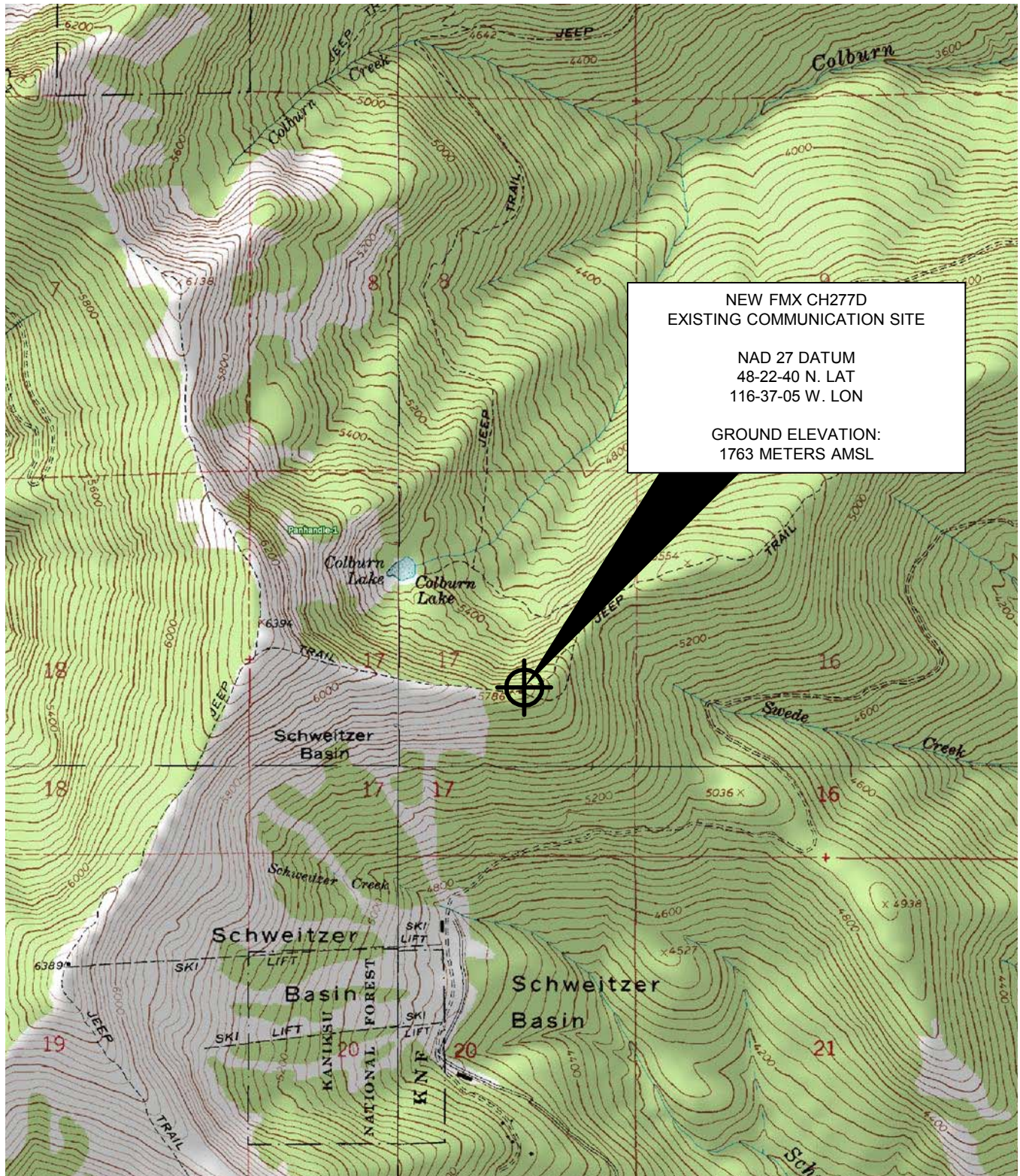
29 August 2013

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

Timothy Z. Sawyer

MULLANEY ENGINEERING, INC.  
9049 SHADY GROVE COURT  
GAITHERSBURG, MARYLAND USA  
TEL.: (301) 921-0115, ext 3.





# **FM TRANSLATOR TRANSMITTER SITE TOPOGRAPHIC MAP OF SITE**

CHANNEL 277D  
SANDPOINT, IDAHO

**FIGURE  
1**

GAITHERSBURG, MARYLAND U.S.A

SIZE  
A

FSCM NO  
N/A

DWG NO  
20130829SANDPOINTCH277

REV  
NONE

(c) 2013, ALL RIGHTS RESERVED

SCALE 1:24,000

AUGUST 2013

SHEET 1 OF 2



# FCC TOWER REGISTRATION NOT REQUIRED

## FAA NOTIFICATION NOT REQUIRED

### DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

### Your Specifications

#### NAD83 Coordinates

Latitude	48-22-39.7 north
Longitude	116-37-08.7 west

#### Measurements (Meters)

Overall Structure Height (AGL)	24
Support Structure Height (AGL)	24
Site Elevation (AMSL)	1763

#### Structure Type

GTOWER - Guyed Structure Used for Communication Purposes



### FAA NOTIFICATION AND/OR FCC TOWER REGISTRATION

CH 277D (FMX)  
SANDPOINT, IDAHO

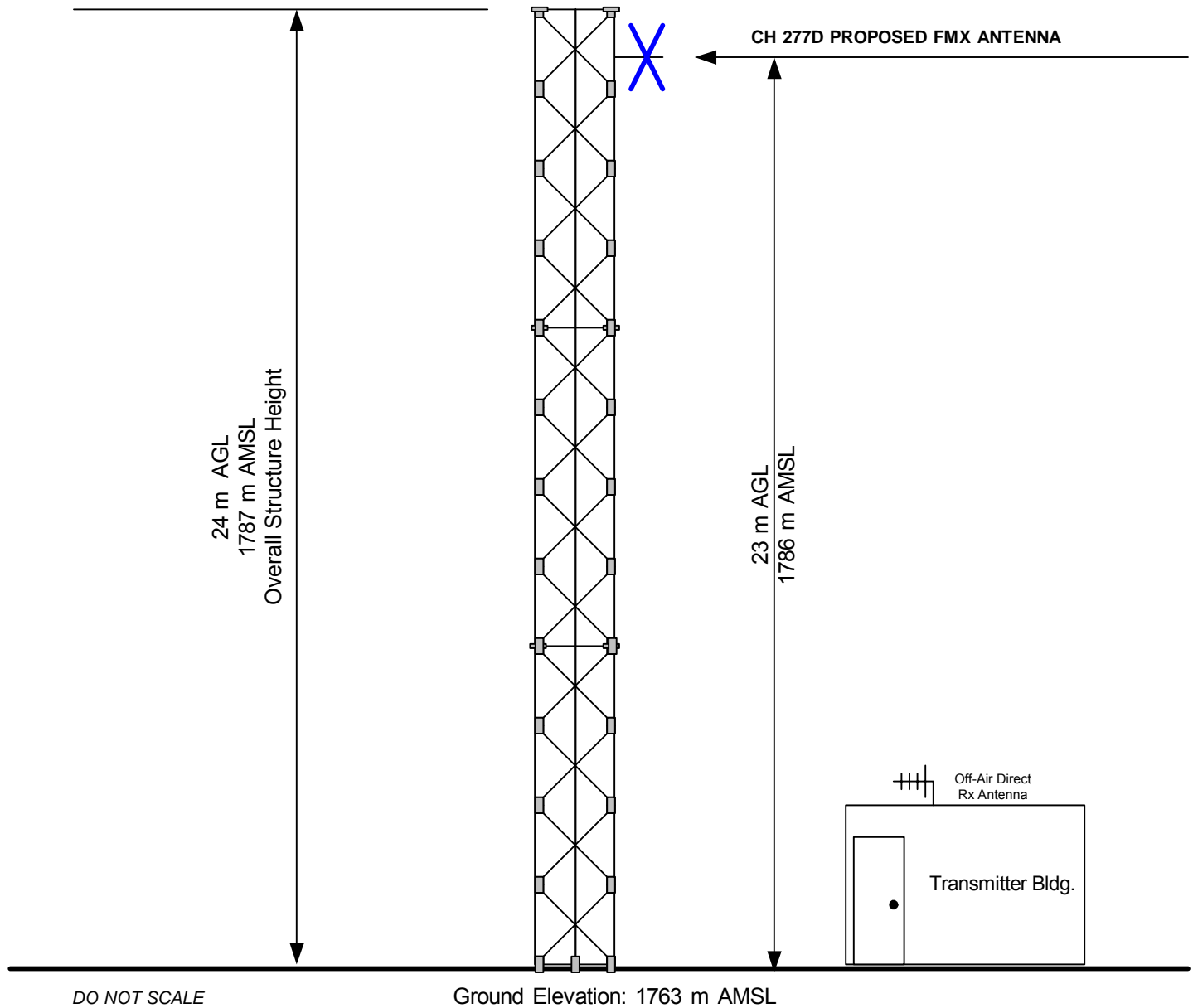
**FIGURE  
1**

GAITHERSBURG, MARYLAND U.S.A

SIZE A	FSCM NO N/A	DWG NO 20130829SANDPOINTCH277	REV NONE
SCALE N/A	AUGUST 2013		SHEET 2 OF 2

(C) 2013, ALL RIGHTS RESERVED

This is an existing structure.  
 Proposal is exempt from Section 106 NHPA processing  
 No increase in structure height - FAA notification not require  
 FCC Tower Registration Not Required



## VERTICAL SKETCH OF SUPPORTING STRUCTURE

CH277D (FMX)  
 SANDPOINT, IDAHO

**FIGURE  
2**

GAITHERSBURG, MARYLAND U.S.A

SIZE  
A

FSCM NO  
N/A

DWG NO  
20130829SANDPOINTCH277F2

REV

(c) 2013, ALL RIGHTS RESERVED

SCALE NO SCALE

AUGUST 2013

SHEET

**KGZG-FM**

BLH20031017ACO  
FCC Facility ID: 29911  
Latitude: 48-23-09 N  
Longitude: 117-14-15 W  
ERP: 87.00 kW  
Channel: 283 Frequency: 104.5 MHz  
Antenna HAAT Height: 319.0 m  
Antenna AMSL Height: 1225.0 m  
Antenna AGL Height: 29.0 m  
Ground Elevation: 1196.0 m  
Horiz. Pattern: Directional

**PROPOSED FM TRANSLATOR SERVICE CONTOUR  
WITH PRIMARY STATION SERVICE CONTOUR**

NEW-T  
CHANNEL 277D  
SANDPOINT, IDAHO

FIGURE 3

**FCC 60 DBU F(50,50) SERVICE CONTOURS****NEW-T**

THIS APPLICATION  
FCC Facility ID: 157000  
Latitude: 48-22-40 N  
Longitude: 116-37-05 W  
ERP: 0.01 kW  
Channel: 277 Frequency: 103.3 MHz  
Antenna AMSL Height: 1786.0 m  
Antenna AGL Height: 23.0 m  
Ground Elevation: 1763.0 m  
Horiz. Pattern: Directional

**CONTOURS DISPLAYED**

RED CONTOUR IS PROPOSED FM TRANSLATOR  
BLACK CONTOUR IS PRIMARY STATION

Scale 1:500,000

0 8 16 24 km



Mullaney  
Engineering, Inc.

AUGUST 2013

Deer Park

Spirit Lake

Athol

Ponderay

Sandpoint

Dover

East Hope

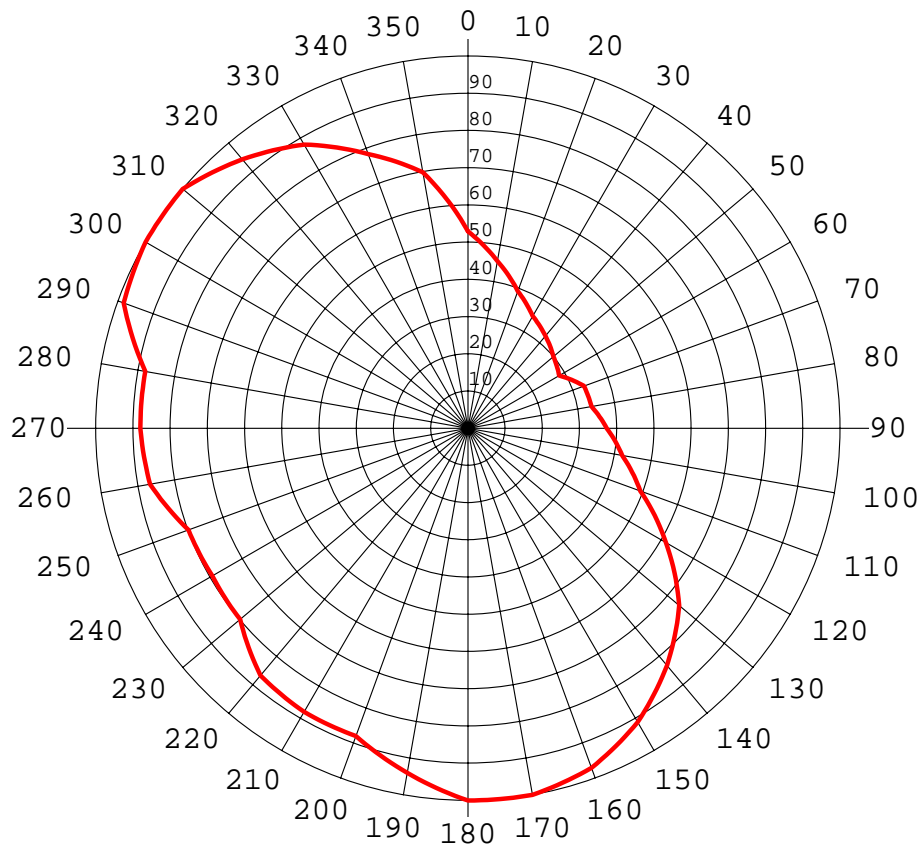
Clark Fork

Chewelah

Cusick

St River

FIGURE 3 - DIRECTIONAL ANTENNA PATTERN



Azi	Rel	kW	dB	Azi	Rel	kW	dB
0	0.529	0.003	-5.53	180	1.000	0.010	0.00
10	0.456	0.002	-6.82	190	0.940	0.009	-0.54
20	0.392	0.002	-8.13	200	0.880	0.008	-1.11
30	0.348	0.001	-9.17	210	0.880	0.008	-1.11
40	0.324	0.001	-9.79	220	0.867	0.008	-1.24
50	0.300	0.001	-10.46	230	0.799	0.006	-1.95
60	0.283	0.001	-10.96	240	0.793	0.006	-2.01
70	0.332	0.001	-9.58	250	0.799	0.006	-1.95
80	0.337	0.001	-9.45	260	0.867	0.008	-1.24
90	0.373	0.001	-8.57	270	0.880	0.008	-1.11
100	0.421	0.002	-7.51	280	0.880	0.008	-1.11
110	0.493	0.002	-6.14	290	0.984	0.010	-0.14
120	0.614	0.004	-4.24	300	1.000	0.010	0.00
130	0.741	0.005	-2.60	310	1.000	0.010	0.00
140	0.832	0.007	-1.60	320	0.943	0.009	-0.51
150	0.912	0.008	-0.80	330	0.880	0.008	-1.11
160	0.971	0.009	-0.26	340	0.784	0.006	-2.11
170	1.000	0.010	0.00	350	0.698	0.005	-3.12

## NEW FM-T SANDPOINT IDAHO CHANNEL 277D

FIGURE 3

REFERENCE CH# 277D - 103.3 MHz, Pwr= 0.01 kW DA, HAAT= 718.6 M, COR= 1786 M  
 48 22 40.0 N. ALC Communications  
 116 37 05.0 W. Average Protected F(50-50)= 14.97 km  
 Standard Directional

CH CITY	CALL	TYPE ANT STATE	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
277D Sandpoint	1564290	APP DV_ ID	0.0 0.0	0.00 BNPFT20030317JHR	48 22 40.0 116 37 05.0	0.010	33.9 1782	8.9 Alc Communications	-42.8*	-43.0*
276C1 Post Falls	KCDA	LIC ZCX ID	209.9 29.4	102.03 BLH20030908ACL	47 34 52.0 117 17 47.0	18.500 531	111.1 1251	75.3 Capstar Tx Lic	-23.4*<	4.1
278C2 Wallace	R15085	ADD ____ ID	146.9 327.5	107.82	47 33 49.0 115 50 01.0	50.000 150	102.2 1460	69.9 Spanish Peaks Broadcasting	-9.5<	12.2
involuntary channel substitution per BNPFT-20070411ABF - from Channel 248										
275D Sandpoint	1564806	APP DV_ ID	153.7 333.8	18.43 BNPFT20030317LGM	48 13 45.0 116 30 28.0	0.007	0.2 1105	9.3 Benefield Broadcasting, Inc.	2.5	8.9
280C1 Spokane	KBBB	LIC NCX WA	210.6 30.1	100.16 BLH20020802AAS	47 36 04.0 117 17 53.0	39.000 432	9.4 1129	76.3 Mapleton License Of	76.5	23.7 Spokane
277A Grand Forks	AL8356<	AL ____ BC	299.1 117.8	148.22	49 00 39.0 118 23 25.0	6.000 100	68.3 563	38.0	111.5R	36.7M
277A Grand Forks	9619<	DEL ____ BC	299.1 117.8	148.22	49 00 39.0 118 23 25.0	0.000	0.0 463	0.0	111.5R	36.7M
277A Kimberley	AL8390<	AL ____ BC	17.4 197.9	152.39	49 41 00.0 115 59 00.0	6.000 100	86.7 100	38.0	111.5R	40.9M
277A Grand Forks	9620<	ADD ____ BC	298.9 117.5	153.81	49 01 50.0 118 27 39.0	0.000	0.0 357	0.0	111.5R	42.3M
276C1 Columbia Falls	KRVO	LIC ZCX MT	84.0 265.7	166.96 BLH20060914AAAY	48 30 43.0 114 22 13.0	8.000 720	112.3 2009	76.8 Rose Communications, Inc.	43.6	69.6
278D Coeur D' alene	1546803	APP _C_ ID	187.8 7.6	76.45 BNPFT20030317ITB	47 41 47.0 116 45 21.0	0.004	7.6 888	5.4 Your Christian Companion N	53.3	46.0
278D Coeur D' alene	1567927	APP _C_ ID	187.8 7.6	76.45 BNPFT20130826ADL	47 41 47.0 116 45 21.0	0.004	7.6 888	5.4 Your Christian Companion N	53.3	46.0
275C Cranbrook	R57532<	USE ____ BC	30.6 211.4	140.41	49 27 34.0 115 37 44.0	100.000 600	13.7 600	97.0	93.5R	46.9M
7/26/01: limited to 7.35kW & 753m along 138.2 deg towards 276B1 in Columbia Falls, MT and limited to 14kW & 753m along 156.9 deg towards 275B in Pablo, MT and limited to 28.5kW & 753m along 118.8 deg towards 276B in Browning, MT										

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)  
 ""affixed to 'IN' or 'OUT' values = site inside protected contour.  
 < = Station meets FCC minimum distance spacing for its class.  
 < = Contour Overlap

-----NO PROBLEMS FOUND ----- NO PROHIBITIVE OVERLAP-----

FIGURE 4

DI STANCES TO LPFM MARKET  
LPFM PRECLUSION STUDY REQUIRED

SANDPOINT ID CHANNEL 277

Reference Lat : 48-22-40.0  
Lon : 116-37- 5.0

Search Radius: 100.00 Miles (160.9 KM)  
Freeze Radius: 47.80 Miles (76.9 KM)

MARKET NO *****	DI STANCE MI LES/KM *****	BEARI NG DEGREES *****	CITY *****	STATE *****
93	62.2(100.1)	217.2	# Spokane 47-39-32.0 / 117-25-30.0	WA

# indicates Spectrum Limited LPFM Market  
& indicates Spectrum Available LPFM Market  
\ indicates 20 Min Grid

\* To trigger a more detail study - a proposal must be located within 76.9 kilometers of a LPFM preclusion market.

PROPOSED FACILITY IS OUTSIDE OF ANY LPFM PRECLUSION MARKET GRID OR BUFFER  
NO FUTHER STUDY IS REQUIRED. SEE MAP FIGURE 4.

**LPFM PRECLUSION STUDY (UPDATED)**  
SANDPOINT ID CHANNEL 277  
FIGURE 4

