

**Comprehensive Technical Exhibit**  
*Amendment to Application for Construction Permit*  
FCC File No. BPDFV-20111207ABF  
K13UF-D – Rexburg, Idaho  
Oregon Trail Broadcasting Company  
April, 2012

**Amendment to Application for Construction Permit**

The following engineering statement and attached exhibits have been prepared for **Oregon Trail Broadcasting Company** ("Oregon"), licensee of low power television translator station K13UF-D at Rexburg, Idaho, and are in support of their amendment to application for construction permit to modify that facility.<sup>1</sup> This amendment seeks to provide the antenna structure registration information required, and appropriately modify the geographic coordinates and elevation data originally submitted.

By way of letter dated December 28, 2011, the Staff advised Oregon of a discrepancy between the Antenna Structure Registration data and the data as submitted on the form pages. The Staff is absolutely correct in that the overall structure height as submitted in the tech-box portion is inconsistent with that on file with ASRN 1205978. After further investigation, it was determined that the owner of the tower on which Oregon would locate K13UF-D had not yet registered the correct tower with the Commission. That registration has been submitted, and the actual tower on which K13UF-D would be located is ASRN 1283753.

The proposed facility would operate with a maximum effective radiated power of 300 Watts at a center of radiation of 36 meters above ground level. When the 1575 meters above mean sea level site elevation is considered, the center of radiation is calculated as 1611 meters above mean sea level. A composite directional antenna pattern would be utilized by the facility. This pattern is comprised of three Kathrein-Scala DRV panels. These three panels combine to create the stock DRV-1/3HC pattern. No electrical or mechanical beamtilt is proposed to be used by the facility.

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<sup>1</sup> The facility ID for K13UF-D at Rexburg, ID is 1259.

The proposed transmitter power output is 85.2 Watts. The transmitter would be connected to 125 feet of semi-flexible foam dielectric coaxial cable with a nominal diameter of 1 5/8 inches. Data from the manufacturer of this transmission line indicates 0.9055 as the decimal efficiency for the run. This results in an antenna input power of 77.1Watts. Data from the manufacturer of the antenna indicates that the gain of the array is 3.89. The specified input power then achieves a maximum effective radiated power of 300 Watts. Thus, the specified transmitter power output achieves the authorized effective radiated power.

Exhibit E-1 compares the licensed 48 dBu F(50,90) service contour to the proposed 48 dBu F(50,90) service contour. The red contour is the licensed contour, while the blue is the contour that would result from the proposed facilities. As is demonstrated, these contours would have common overlap with each other, thus the proposed change would be minor in nature.

The use of a stringent emission mask by K13UF-D is proposed. Adequate interference protection to other facilities in the region is maintained through the use of the emission mask and afore mentioned directional antenna.

Exhibit E-2 and E-3 comprise the interference study for the proposed facility. As indicated in the study, the proposed facility is predicted to cause interference to two facilities. These two facilities are K13YF (Facility ID: 1262) and K13FS (Facility ID: 188117). In the case of K13FS, the proposed facility is not predicted to cause interference in excess of that permitted under the Commission's Rules. To K13YF extensive interference would be caused, however, that facility is also licensed to Oregon. Oregon will accept any potential interference that would be received by K13YF, or alternately may choose to surrender the license for that facility.

The proposed facility does not constitute a significant environmental impact, and is exempt from environmental processing. The facility would utilize an existing tower. Construction of the facility would not necessitate any excavation at the site. In addition, the proposed facility is not predicted to result in RF exposure at ground level in excess of the applicable safety standards.

For the proposed operation, a worst-case scenario is assumed utilizing the equations in OET Bulletin 65. The worst-case scenario assumes that all energy radiating from the proposed antenna would be directed at the ground. The predicted power density from this antenna is therefore given by the following equation:

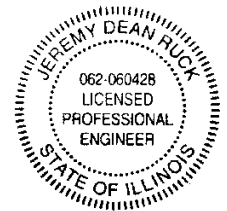
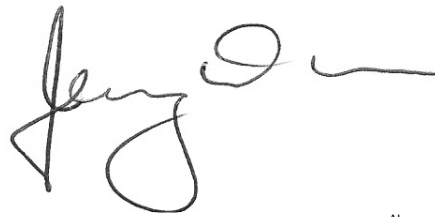
$$S = \frac{33.4(E_{\text{Ref}})^2(ERP)}{h^2}$$

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 300 Watts. The denominator term is the height of the center of radiation minus 2 meters to accommodate the average human height. This term therefore has 34 meters as a value since the center of radiation is 36 meters AGL. The resulting worst-case power density for K13UF is  $7.73 \mu\text{W}/\text{cm}^2$ . 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  $200 \mu\text{W}/\text{cm}^2$ . The proposed facility would therefore comply with the applicable safety standard.

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.

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, 2013

**Jeremy D. Ruck, PE**  
**April 30, 2012**

**K13UF-D**

BLDTV20090408ALN  
Latitude: 43-47-58 N  
Longitude: 111-46-32 W  
ERP: 0.30 kW  
Channel: 13  
Frequency: 213.0 MHz  
AMSL Height: 1589.0 m  
Elevation: 1574.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: None

**K13UF-D.AX**

BPDVL20111207ABF  
Latitude: 43-48-03.70 N  
Longitude: 111-46-36.60 W  
ERP: 0.30 kW  
Channel: 13  
Frequency: 213.0 MHz  
AMSL Height: 1611.0 m  
Elevation: 1557.292 m  
Horiz. Pattern: Directional  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: None

**D.L. Markley & Associates, Inc.**

- K13UF Licensed 48 dBu F(50,90)
- K13UF Proposed 48 dBu F(50,90)

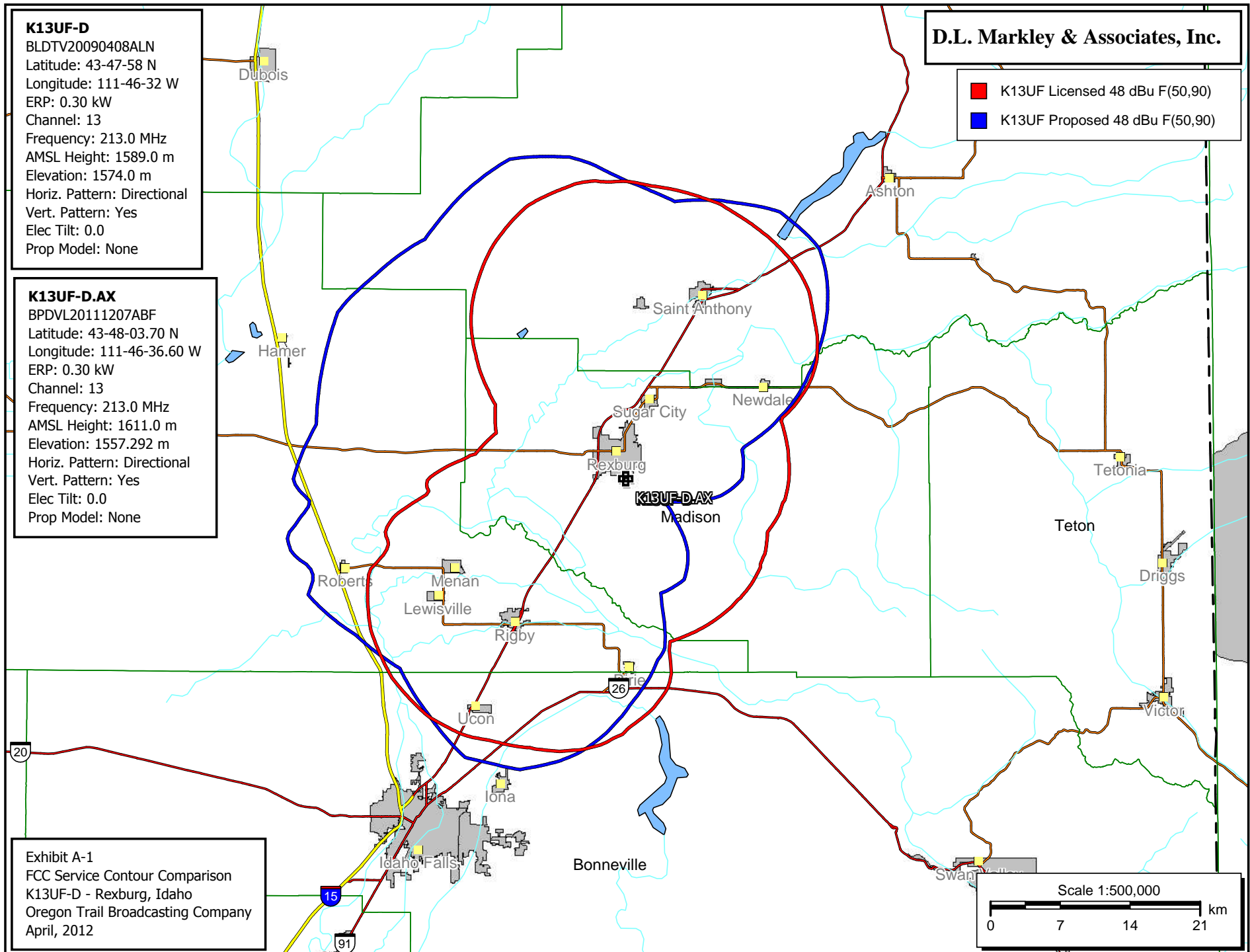


Exhibit A-1  
FCC Service Contour Comparison  
K13UF-D - Rexburg, Idaho  
Oregon Trail Broadcasting Company  
April, 2012

**K13UF-D.AX**

BPDVL20111207ABF

Latitude: 43-48-03.70 N

Longitude: 111-46-36.60 W

ERP: 0.30 kW

Channel: 13

Frequency: 213.0 MHz

AMSL Height: 1611.0 m

Elevation: 1557.292 m

Horiz. Pattern: Directional

Vert. Pattern: Yes

Elec Tilt: 0.0

Prop Model: Longley/Rice

Climate: Cont temperate

Conductivity: 0.0050

Dielec Const: 15.0

Refractivity: 301.0

Receiver Ht AG: 10.0 m

Receiver Gain: 0 dB

Time Variability: 10.0%

Sit. Variability: 50.0%

ITM Mode: Broadcast

**D.L. Markley & Associates, Inc.**

□ K13UF-D.AX (13)

■ K13FS-D.C (13)

■ K13YF (13-)

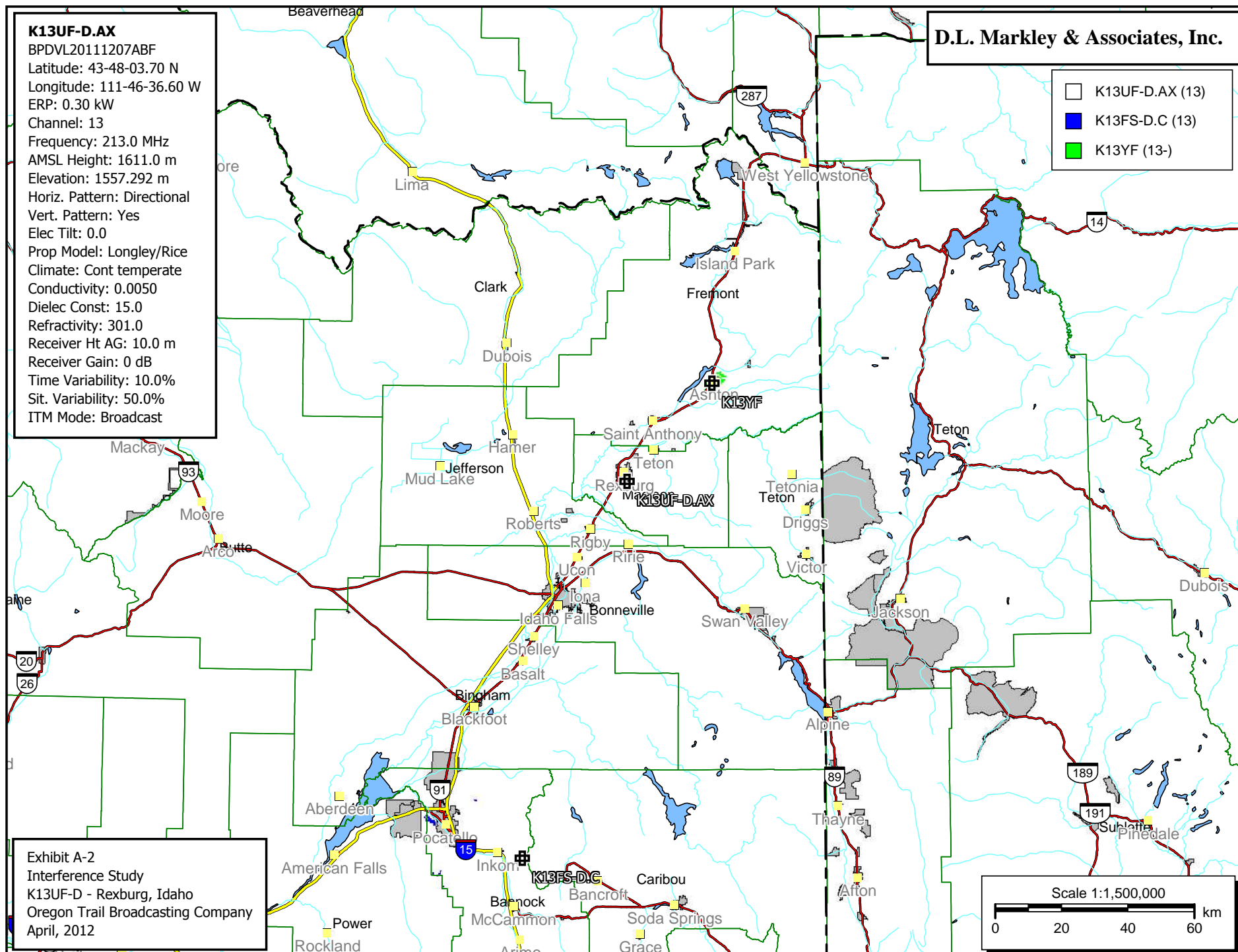


Exhibit A-3  
Outgoing Interference Population Report

K13UF-D.AX (13) Rexburg, ID - BPDVL20111207ABF  
Broadcast Type: Digital Service: G [Stringent Emission Mask]  
Lat: 43-48-03.70 N Lng: 111-46-36.60 W ERP: 0.3 kW AMSL: 1611.0 m  
TV Outgoing Interference Study  
Signal Resolution: 0.5 km  
Consider NTSC Taboo: Yes  
KWX error points are considered to  
be interference free coverage.  
Default # of radials computed for contours: 72  
Contours calculated using 8 radial HAAT.  
LR Profile Spacing Increment: 0.1 km  
Masked interference points are being  
counted as interference.  
Using LPTV/translator D/U rules.  
Pop Centroid DB: 2000 US Census (SF1)

Study Date: 4/30/2012  
TV Database Date: 4/30/2012

Primary Terrain: V-Soft 3 Second US Terrain  
Secondary Terrain: V-Soft 30 Second US Database

Population Database: 2010 US Census (PL)

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Stations Considered:

Call Letters	City	State	Dist	Azi
K13FS-D.C (13)	Inkom	ID	117.7	195.5
K13YF (13-)	Ashton	ID	39.0	40.8

Call	Area	HUnits	Contour	Masked	Ix	Unmasked	Ix	%
K13FS-D.C (13)	6.3	14	76,620		0		31	0.04
K13YF (13-)	12.5	235	1,403		0		591	42.12

	Housing Units	Population
Idaho		
Bannock County		
Total	33,191	82,839
K13FS-D.C (13)	14	31
Fremont County		
Total	8,531	13,242
K13YF (13-)	235	591
Power County		
Total	2,944	7,817
K13FS-D.C (13)	0	0