

**Comprehensive Technical Exhibit**  
*Application for Construction Permit*  
K13UF-D – Rexburg, Idaho  
Oregon Trail Broadcasting Company  
December, 2011

**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 application for construction permit to modify that facility.<sup>1</sup> This application seeks to change the directional antenna pattern of the facility, and increase the center of radiation. Exhibit E-1 compares the 48 dBu F(50,90) service contour of the licensed facility to the proposed 48 dBu F(50,90) service contour.

The proposed facility would operate with a maximum effective radiated power of 300 Watts at a center of radiation of 1610 meters AMSL. A composite directional antenna pattern would be utilized by the facility. This pattern is comprised of three Kathrein-Scala DRV panels, in order to create the stock DRV-1/3HC pattern. No electrical or mechanical beamtilt is proposed for use by the facility.

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.

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

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 these exhibits, the proposed facility is predicted to interfere with the facilities for Inkom, ID, proposed in BNPDTV-20100921ADZ and to the licensed facilities of K13YF at Ashton, ID.<sup>2</sup> The predicted interference to the Inkom facility is well within the acceptable limits under the Commission's Rules.

For K13YF the predicted interference is in excess of that normally permitted by the Commission's Rules. That facility, however, is licensed to Oregon. Oregon is cognizant of the potential for interference to viewers in the K13YF area, and will accept any resulting interference or submit the license of K13YF for cancellation as necessary. The proposed facility also complies with the provisions of Section 74.1030.

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.

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<sup>2</sup> The Facility ID for NEW (listed as 1399935-D.A) at Inkom, ID is 188117. The Facility ID for K13YF at Ashton, ID is 1262.

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**  
**December 5, 2011**

**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.X**

PROPOSED  
Latitude: 43-47-58 N  
Longitude: 111-46-32 W  
ERP: 0.30 kW  
Channel: 13  
Frequency: 213.0 MHz  
AMSL Height: 1610.0 m  
Elevation: 1565.672 m  
Horiz. Pattern: Directional  
Vert. Pattern: Yes  
Elec Tilt: 0.0  
Prop Model: None

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

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

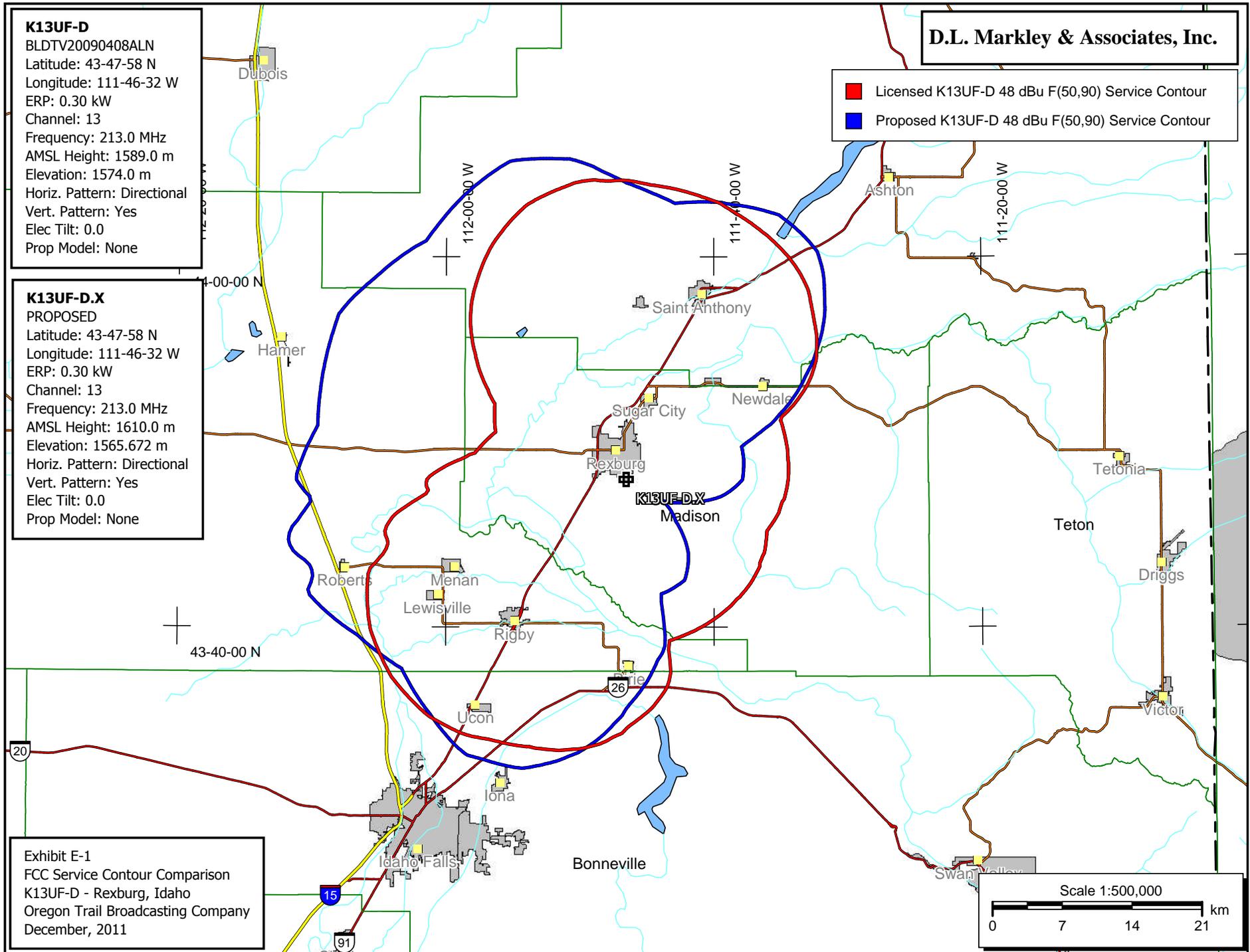


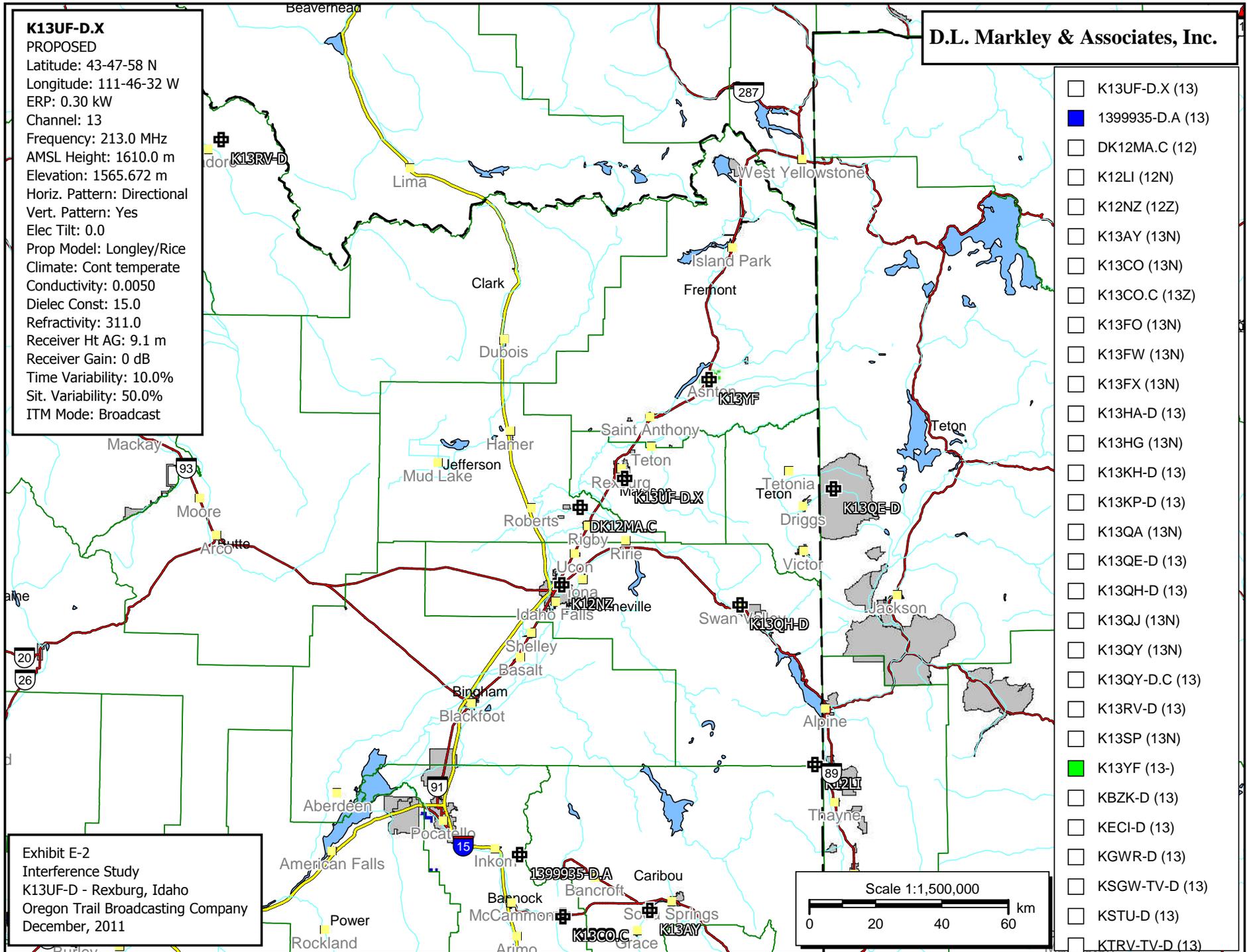
Exhibit E-1  
FCC Service Contour Comparison  
K13UF-D - Rexburg, Idaho  
Oregon Trail Broadcasting Company  
December, 2011

**K13UF-D.X**

PROPOSED

Latitude: 43-47-58 N  
Longitude: 111-46-32 W  
ERP: 0.30 kW  
Channel: 13  
Frequency: 213.0 MHz  
AMSL Height: 1610.0 m  
Elevation: 1565.672 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: 311.0  
Receiver Ht AG: 9.1 m  
Receiver Gain: 0 dB  
Time Variability: 10.0%  
Sit. Variability: 50.0%  
ITM Mode: Broadcast

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



- K13UF-D.X (13)
- 1399935-D.A (13)
- DK12MA.C (12)
- K12LI (12N)
- K12NZ (12Z)
- K13AY (13N)
- K13CO (13N)
- K13CO.C (13Z)
- K13FO (13N)
- K13FW (13N)
- K13FX (13N)
- K13HA-D (13)
- K13HG (13N)
- K13KH-D (13)
- K13KP-D (13)
- K13QA (13N)
- K13QE-D (13)
- K13QH-D (13)
- K13QJ (13N)
- K13QY (13N)
- K13QY-D.C (13)
- K13RV-D (13)
- K13SP (13N)
- K13YF (13-)
- KBZK-D (13)
- KECI-D (13)
- KGWR-D (13)
- KSGW-TV-D (13)
- KSTU-D (13)
- KTRV-TV-D (13)

Exhibit E-2  
Interference Study  
K13UF-D - Rexburg, Idaho  
Oregon Trail Broadcasting Company  
December, 2011



Exhibit E-3  
 Outgoing Interference Population Report

K13UF-D.X (13) Rexburg, ID - PROPOSED  
 Broadcast Type: Digital Service: G [Stringent Emission Mask]  
 Lat: 43-47-58 N Lng: 111-46-32 W ERP: 0.3 kW AMSL: 1610.0 m  
 TV Outgoing Interference Study  
 Signal Resolution: 1.0 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: 12/2/2011  
 TV Database Date: 12/2/2011

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
1399935-D.A (13)	Inkom	ID	117.5	195.6
DK12MA.C (12)	Rexburg, Etc.	ID	16.0	237.0
K12LI (12N)	Thayne, Etc.	WY	103.4	146.3
K12NZ (12Z)	Idaho Falls	ID	37.2	210.6
K13AY (13N)	Grace, Etc.	ID	130.1	176.7
K13CO (13N)	Fish Creek, Etc.	ID	132.7	188.1
K13CO.C (13Z)	Fish Creek, Etc.	ID	133.1	188.0
K13FO (13N)	Wood River, Etc.	WY	230.0	81.4
K13FW (13N)	Cooke City, Etc.	MT	202.0	47.0
K13FX (13N)	South Fork, Etc.	WY	187.0	74.0
K13HA-D (13)	Mink Creek	ID	171.9	178.7
K13HG (13N)	Ketchum, Etc.	ID	207.6	267.3
K13KH-D (13)	Townsend	MT	275.9	3.6
K13KP-D (13)	Boulder	MT	274.5	354.0
K13QA (13N)	Clark, Etc.	WY	246.8	58.2
K13QE-D (13)	Driggs	ID	63.0	92.8
K13QH-D (13)	Swan Valley/irwin	ID	51.5	137.6
K13QJ (13N)	Randolph	UT	243.5	166.6
K13QY (13N)	Dingle, Etc.	ID	169.0	166.2
K13QY-D.C (13)	Dingle, Etc	ID	169.0	166.2
K13RV-D (13)	Leadore	ID	158.6	310.0
K13SP (13N)	Sunlight Basin, Etc	WY	219.3	60.2
K13YF (13-)	Ashton	ID	39.1	40.5

KBZK-D (13)	Bozeman	MT	220.3	18.7
KECI-D (13)	MISSOULA	MT	398.2	334.7
KGWR-D (13)	ROCK SPRINGS	WY	341.3	139.3
KSGW-TV-D (13)	Sheridan	WY	383.4	74.6
KSTU-D (13)	SALT LAKE CITY	UT	350.6	185.9
KTRV-TV-D (13)	Nampa	ID	347.9	270.7

Call	Area	HUnits	Contour	Masked Ix	Unmasked Ix	%
1399935-D.A (13)	7.2	82	76,620	0	178	0.23
DK12MA.C (12)	0.0	0	234	0	0	0.00
K12LI (12N)	0.0	0	612	0	0	0.00
K12NZ (12Z)	0.0	0	23,653	0	0	0.00
K13AY (13N)	0.0	0	5,917	0	0	0.00
K13CO (13N)	0.0	0	585	0	0	0.00
K13CO.C (13Z)	0.0	0	657	0	0	0.00
K13FO (13N)	0.0	0	54	0	0	0.00
K13FW (13N)	0.0	0	66	0	0	0.00
K13FX (13N)	0.0	0	11	0	0	0.00
K13HA-D (13)	0.0	0	1,509	0	0	0.00
K13HG (13N)	0.0	0	1,650	0	0	0.00
K13KH-D (13)	0.0	0	3,924	0	0	0.00
K13KP-D (13)	0.0	0	1,606	0	0	0.00
K13QA (13N)	0.0	0	43	0	0	0.00
K13QE-D (13)	0.0	0	6,994	0	0	0.00
K13QH-D (13)	0.0	0	134	0	0	0.00
K13QJ (13N)	0.0	0	558	0	0	0.00
K13QY (13N)	0.0	0	2,660	0	0	0.00
K13QY-D.C (13)	0.0	0	2,366	0	0	0.00
K13RV-D (13)	0.0	0	220	0	0	0.00
K13SP (13N)	0.0	0	0	0	0	0.00
K13YF (13-)	10.6	99	1,403	0	264	18.82
KBZK-D (13)	0.0	0	116,240	0	0	0.00
KECI-D (13)	0.0	0	207,880	0	0	0.00
KGWR-D (13)	0.0	0	50,986	0	0	0.00
KSGW-TV-D (13)	0.0	0	61,502	0	0	0.00
KSTU-D (13)	0.0	0	2,391,089	0	0	0.00
KTRV-TV-D (13)	0.0	0	715,042	0	0	0.00

	Housing Units	Population
Idaho		
Bannock County		
Total	33,191	82,839
1399935-D.A (13)	82	178
Fremont County		
Total	8,531	13,242
K13YF (13-)	99	264
Power County		
Total	2,944	7,817
1399935-D.A (13)	0	0