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**Engineering Statement
Minor Modification of K16JZ-D
Channel 16 at McDermitt, NV
September 2019**

This Engineering Statement has been prepared on behalf of Quinn River TV Maintenance District ("QRTV"), licensee of digital TV translator station K16JZ-D at McDermitt, NV. This material has been prepared in connection with an application for minor modification.

I. Background

QRTV proposes to relocate the translator transmitter site. This application qualifies as "minor" since there is overlap of the licensed and proposed F(50,90) coverage contours as depicted on the attached map exhibit.

II. Interference Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any authorized or pending proposed facilities. This study was performed using the Commission's TVStudy software.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. Based on the foregoing interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

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Study created: 2019.09.10 11:42:55

Study build station data: LMS TV 2019-09-09

Proposal: K16JZ-D D16 LD APP MCDERMITT, NV
File number: EAGLE16
Facility ID: 54293
Station data: User record
Record ID: 911
Country: U.S.

Build options:

Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KKJB	D15	DT	LIC	BOISE, ID	BLANK0000063943	268.3 km
No	K15AL-D	D15	LD	CP	WINNEMUCCA, NV	BLANK0000059877	69.1
No	K15AL-D	D15	LD	LIC	WINNEMUCCA, NV	BLDTT20070404AAO	69.1
No	K16LP-D	D16	LD	LIC	PARADISE, CA	BLANK0000058730	377.1
No	K16IW-D	D16	LD	CP	REDDING, CA	BLANK0000010674	414.5
No	K40JV-D	D16	LD	CP	STATELINE, ETC., CA	BLANK0000054391	359.7
No	KKIC-LD	D16	LD	LIC	BOISE, ID	BLANK0000016312	268.3
No	KKIC-LD	N16-	TX	LIC	BOISE, ID	BLTTL20060419AAE	268.3
No	K16JE-D	D16	LD	LIC	GLENNS FERRY, ID	BLDTT20110325AAL	243.4
No	KCJY-LP	D16z	LD	CP	TWIN FALLS, ID	BLANK0000054144	299.8
No	K16FD-D	D16	LD	LIC	BATTLE MOUNTAIN, NV	BLDTT20110902ACE	143.1
No	KQJB-LD	D16	LD	CP	CARSON CITY, NV	BNPDTL20090825AOU	335.1
No	K48MW-D	D16	LD	CP	ELY & MCGILL, NV	BLANK0000054603	356.7
No	K16IZ-D	D16	LD	LIC	EUREKA, NV	BLDTT20111230AAM	279.4
Yes	K16KT-D	D16	LD	CP	IMLAY, NV	BNPDTL20100512AHG	109.7
No	K16LG-D	D16	LD	LIC	LUND & PRESTON, NV	BLANK0000029300	352.0
No	K16FU-D	D16	LD	LIC	MINA / LUNING, NV	BLDTT20110311ABU	360.9
No	K16KU-D	D16	LD	CP	ROCKY POINT, NV	BNPDTL20100512AHY	270.7
No	K16FV-D	D16	LD	LIC	RYNDON, NV	BLDTT20111219AAX	192.5
No	K16GM-D	D16	LD	LIC	YERINGTON, NV	BLDTT20100429ADE	320.5
No	K16KI-D	D16	LD	CP	BEND, OR	BNPDTL20100716ACW	398.9
No	KUNP	D16	DT	LIC	LA GRANDE, OR	BLANK0000001679	408.7
No	K17HM-D	D16	LD	CP	WENDOVER, UT	BLANK0000053447	325.3
No	K17HB-D	D17	LD	LIC	WINNEMUCCA, NV	BLDTT20120117AEB	69.4

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D16
Mask: Stringent
Latitude: 41 37 56.60 N (NAD83)
Longitude: 117 44 30.40 W
Height AMSL: 1706.6 m
HAAT: 0.0 m
Peak ERP: 0.150 kW
Antenna: KAT-75-25SPLIT 0.0 deg
Elev Pattnr: Generic

48.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.149 kW	302.8 m	33.0 km
45.0	0.037	-154.2	8.3
90.0	0.002	-364.8	3.9
135.0	0.004	-372.9	4.9
180.0	0.048	38.1	9.9
225.0	0.031	402.4	27.3
270.0	0.004	418.7	17.8
315.0	0.042	395.6	28.8

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 83 m

Distance to Canadian border: 819.0 km

Distance to Mexican border: 1005.4 km

Conditions at FCC monitoring station: Livermore CA
Bearing: 219.6 degrees Distance: 553.4 km

Proposal is not within the West Virginia quiet zone area

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Conditions at Table Mountain receiving zone:
Bearing: 94.8 degrees Distance: 1061.1 km

No land mobile station failures found

Proposal is not within the Offshore Radio Service protected area

Study cell size: 1.00 km
Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%
Maximum new IX to LPTV: 2.00%

No IX check failures found.

III. Antenna Structure Registration Not Required

The proposed antenna will be installed on a 60 foot tower at the Eagle Creek communications site. The tower will be less than 200 feet tall and there are no airports within 5 miles of the site coordinates. Therefore this structure is exempted from FCC Antenna Structure Registration.

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	41-37-56.6 north
Longitude	117-44-30.4 west
Measurements (Meters)	
Overall Structure Height (AGL)	18.3
Support Structure Height (AGL)	18.3
Site Elevation (AMSL)	1694.0
Structure Type	
LTOWER - Lattice Tower	

IV. RF Exposure Study

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.40981 \times AdjERP(Watts)}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed facility were calculated for an elevation of 2 meters above ground (10.6 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.200 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein broadband panel antenna proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 6 watts at depression angles between 45 and 90 degrees below the horizontal. Assuming this power and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density from the proposed facility is calculated to be 1.8 $\mu W/cm^2$, which is 0.6% of 321.3 $\mu W/cm^2$ (the FCC maximum for uncontrolled environments at the Channel 16 frequency).

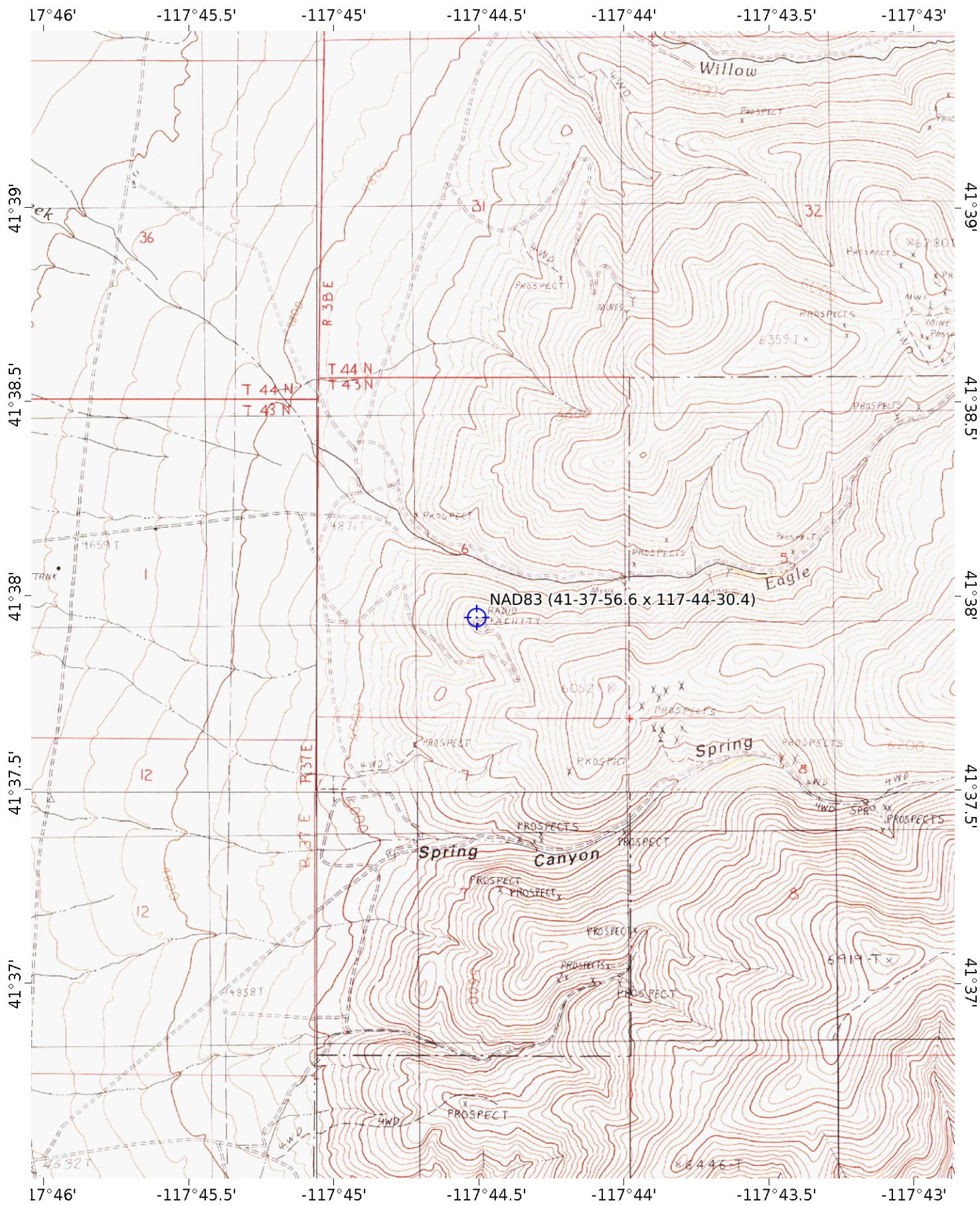
These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the

applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

September 10, 2019

Erik C. Swanson, P.E.



Mercator Projection
WGS84
USNG Zone 11TMG
CalTopo

