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**Engineering Statement  
Displacement of K48AC-D  
Channel 25 at Kasilof, AK  
May 2018**

This Engineering Statement has been prepared on behalf of Alaska Public Telecommunications, Inc. ("Alaska Public"), licensee of digital TV translator station K48AC-D at Kasilof, AK. This material has been prepared in connection with a displacement application.

**I. Background**

The translator currently operates on a channel above Channel 36, which will be the highest channel remaining for terrestrial television broadcasting per the results of the 2017 spectrum auction. Accordingly, Alaska Public is filing this displacement application during the Commission's Special Displacement Window, which is scheduled for April 10 through June 1, 2018.

**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: 2018.05.08 13:42:19

Study build station data: LMS TV 2018-05-08 (125)

Proposal: K48AC-D D25 LD APP KASILOF, AK  
File number: KASILOF25  
Facility ID: 797  
Station data: User record  
Record ID: 667  
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	K24JP-D	D24	LD	CP	ANCHORAGE, AK	BNPDTL20090826ACY	152.8 km
No	K26LZ-D	D26	LD	CP	ANCHORAGE, AK	BNPDTL20101005AAL	149.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D25  
Mask: Simple  
Latitude: 60 16 32.00 N (NAD83)  
Longitude: 151 18 32.00 W  
Height AMSL: 172.2 m  
HAAT: 0.0 m  
Peak ERP: 1.30 kW  
Antenna: SCA-CL 14-83 (ID 92753) 0.0 deg  
Elev Pattn: Generic

49.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.379 kW	154.5 m	29.5 km
45.0	0.917	127.3	32.3
90.0	0.002	125.5	7.9
135.0	0.001	97.8	6.1
180.0	0.393	70.7	21.9
225.0	0.917	145.3	33.4
270.0	0.002	166.4	9.1
315.0	0.001	165.3	7.8

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 132 m

Distance to Canadian border: 565.9 km

Distance to Mexican border: 3939.2 km

Conditions at FCC monitoring station: Kenai AK  
Bearing: 358.2 degrees Distance: 49.9 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:  
Bearing: 104.4 degrees Distance: 3847.6 km

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. 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

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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 (30 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 0.543 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Scala CL1483 antenna array proposed in this application. This relative field value yields a worst-case adjusted average effective radiated power of 383 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 14.2  $\mu W/cm^2$ , which is 4% of 357.3  $\mu W/cm^2$  (the FCC maximum for uncontrolled environments at the Channel 25 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.

May 8, 2018

Erik C. Swanson, P.E.