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**Engineering Statement
Displacement of K43KW-D
Channel 26 at Gillette, WY
December 2017**

This Engineering Statement has been prepared on behalf of Central Wyoming College ("CWC"), licensee of digital TV translator station K43KW-D at Gillette, Wyoming. This material has been prepared in connection with a displacement application and request for Special Temporary Authority.

I. Background and Waiver Request

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. The translator licensee has received a 120-day notice from T-Mobile informing it that the translator station is likely to cause interference in areas where the wireless licensee intends to commence operations or FFA testing. Included with this Engineering Statement is a copy of that notice. Termination of operations would need to occur before the Special Displacement Window opens.

Under these circumstances, CWC respectfully requests a waiver of the Displacement Freeze, in accordance with the procedures announced by Public Notice on June 14, 2017. (See DA 17-584, *Incentive Auction Task Force and Media Bureau Set Forth Tools Available to LPTV/Translator Stations Displaced Prior to the Special Displacement Window*.) Grant of this waiver will allow the station to continue providing service to viewers with as little disruption as possible.

Accordingly, CWC is filing both a displacement application, and a request for Special Temporary Authority to begin operations on the requested channel.

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 facilities with which contour overlap exists. 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.

Study created: 2017.12.08 16:15:48

Study build station data: LMS TV 2017-12-08 (83)

Proposal: K43KW-D D26 LD LIC GILLETTE, WY
File number: GILLETTE26
Facility ID: 167621
Station data: User record
Record ID: 433
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	K22AD	N22	TX	LIC	GILLETTE, WY	BLTTL19940224JS	8.4 km
No	K25ME-D	D25	LD	CP	CASPER, WY	BNPDTL20100510ACS	146.6
Yes	K25MY-D	D25	LD	CP	SUNDANCE, WY	BDISDTL20110811ABJ	91.7
No	K25LI-D	D25	LD	LIC	WRIGHT, WY	BLDTT20100617AJX	69.4
No	K26GL-D	D26	LD	LIC	COLUMBUS, MT	BLDTT20130807AAR	325.6
No	K26LB-D	D26	LD	CP	WORDON, MT	BNPDTL20100510ABT	269.6
No	KNDB	D26	DT	LIC	BISMARCK, ND	BLCDT20100510AGW	450.3
No	K26KW-D	D26	LD	CP	DICKINSON, ND	BNPDTL20100506ACD	362.3
No	K26MO-D	D26	LD	CP	KADOKA, SD	BNPDTL20100510AHV	350.5
Yes	KBHE-TV	D26	DT	LIC	RAPID CITY, SD	BLEDT20081121AKE	187.2
Yes	K26LD-D	D26	LD	CP	BUFFALO, WY	BNPDTL20100505AHU	90.7
No	K26KR-D	D26	LD	CP	CHEYENNE, WY	BNPDTL20100324ACJ	354.3
Yes	K26LW-D	D26	LD	LIC	SHERIDAN, WY	BLDTT20120614ABH	113.4
No	K27LC-D	D27	LD	CP	MIDWEST, WY	BNPDTL20100510ACR	120.6
Yes	K27LJ-D	D27	LD	CP	MOORCROFT, WY	BNPDTL20100505AIK	65.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D26
Mask: Simple
Latitude: 44 18 17.00 N (NAD83)
Longitude: 105 33 55.00 W
Height AMSL: 1509.7 m
HAAT: 0.0 m
Peak ERP: 5.80 kW
Antenna: SCA-SL8 90.0 deg
Elev Pattn: Generic
Elec Tilt: 1.75

50.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	2.76 kW	179.4 m	41.1 km
45.0	4.80	179.5	44.0
90.0	5.80	129.8	41.8
135.0	4.96	97.7	38.2
180.0	2.68	55.3	29.0
225.0	2.60	54.7	28.7
270.0	3.01	83.2	33.8
315.0	2.41	122.9	36.8

Database HAAT does not agree with computed HAAT
Database HAAT: 0 m Computed HAAT: 113 m

Distance to Canadian border: 521.8 km

Distance to Mexican border: 1394.2 km

Conditions at FCC monitoring station: Grand Island NE
Bearing: 120.3 degrees Distance: 693.9 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:
Bearing: 176.7 degrees Distance: 462.2 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 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 (16 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 0.244 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Scala SL-8 antenna proposed

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in this application. This relative field value yields a worst-case adjusted average effective radiated power of 345.3 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 is calculated to be $45.1 \mu\text{W}/\text{cm}^2$, which is 12.5% of $361.3 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 26 frequency).

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.

December 8, 2017

Erik C. Swanson, P.E.