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January 4, 2021

SUPPLEMENTAL ENGINEERING EXHIBIT FOR WSIU DRT POWER LEVEL JUSTIFICATION

INTRODUCTION

The licensee of WSIU was granted a Digital Replacement Translator (DRT) for use in the Cape Girardeau/Jackson Missouri area with FCC file number 0000124757. The reason for the DRT is because the communities of Cape Girardeau and Jackson have long-standing reception issues that is a combination of the terrain and being on the edge of the contour area associated with licensed facility coverage of WSIU VHF channel 8. The existing terrain between the primary WSIU VHF channel 8 and the communities of Cape Girardeau and Jackson can be seen by the path profile shown as Exhibit #1. The distance from the WSIU channel 8 transmitter to the Cape Girardeau city center is 92 km, which is exactly in the null of the path profile. The null covers the entire Cape Girardeau and Jackson communities which represent approximately 70,000 people (2010 Census basis). This is a significant amount when looking at the entire coverage map showing the contour of WSIU. WSIU and WKPD are the only sources of PBS programming in that area and as can be seen in Exhibit #3 WKPD does not cover Cape Girardeau or Jackson at all.

Thus, it makes sense for the DRT to be designed to serve that location. When the DRT was originally considered, the antenna pattern was chosen to cover the Cape Girardeau/Jackson area while also backfilling some signal towards the WSIU channel 8 main transmitter site because terrain rises toward that direction. Field measurements conducted after the DRT facility has been constructed indicate that the antenna pattern needs to be rotated 180 degrees to more effectively serve the Cape Girardeau, Jackson, and WSIU contour fringe communities. There are WSIU viewers to the northeast of Cape Girardeau but most are on the NE side of the terrain obstacles shown on the path profile and can be served by the channel 8 signal. This is pointed out because this means that the proposed antenna rotation will have negligible effect on the viewers to the northeast of the terrain path obstacles and lots of benefit to the Cape Girardeau and Jackson communities.

PROPOSAL

The application to which this document is attached proposes to change the antenna orientation to 195 degrees with respect to true north but without any change in height. In addition, the ERP is proposed to be reduced to 3 kW.

It is well known among consulting engineers that Longley Rice "over-predicts" signal strength. Signal strength tests conducted by this engineer within Cape Girardeau and Jackson were made to determine if licensed facility measured signal strengths were in general agreement with the predicted values. Measurements indicate that with the licensed facility antenna orientation signal levels were much poorer than predicted (raw data available upon request). Much of that can be assigned to the very hilly terrain in Cape Girardeau and Jackson communities. West of Jackson, the terrain is flatter and more supportive of farming activities whereas the populated areas of Cape Girardeau and Jackson vary dramatically in elevation. I was actually raised in Cape Girardeau living there from early grade school and all through high school so I can personally attest to this. At that time, there were only 3 over the air TV stations (local KFVS ch12, Ch 6 in Paducah, (WPSD), and channel 3 (WSIL) in Illinois) that provided reception for Cape Girardeau. Later WSIU provided sketchy coverage.

Signal strength measurements were made by this firm using a calibrated setup and commercially available receiving antennas as well as a reference channel 28 dipole were made at the location around Cape Girardeau and Jackson. A map showing the location of the signals is provided as Exhibit #2. On average, the measured WSIU signal at these locations is approximately 20 dB less than the predicted value. At the same time the channel 28 measurements were made, measurements were also conducted on channel 36 (KBSI), which is located on the same tower 1000 feet above the DRT antenna. Unfortunately, KBSI had never made field strength measurements in Cape Girardeau or

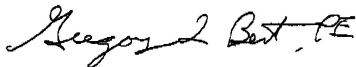
Jackson to serve as an additional reference. However, using the measured data for channel 36, the average signal was 10 dB less than the predicted signal.

It should also be noted that KFVS (another local TV Station) with a pre-repack channel 12 ERP of 6.8 kW was assigned the same power for channel 12, its post-repack channel. KFVS immediately filed an application and received a grant for operation at 11.8 kW, 2.4 dB higher than their allocated power most likely due to the poor reception again because of the terrain variations within Cape Girardeau and Jackson. The sites used by KBSI/WSIU and for KFVS are the highest points around and the best tower locations. The KFVS site is only 3.4 miles away from the KBSI/WSIU DRT site and the KFVS RCAMSL is 745 meters versus the KBSI 685 meter top mount position on the tower, and the WSIU DRT RCAMSL of 345 meters. The point from this notation is that the terrain is indeed challenging and the DRT required ERP to provide reliable reception is likely to be higher than the predicted values. Also worthwhile to note is the recent application submitted by KFVS to move to channel 32 with an ERP of 473 kW. Also because of the wide terrain variations, the UHF signal from the DRT will follow the terrain better than the channel 8 VHF propagation can. So over the air reception of the WSIU signal in the Cape Girardeau/Jackson area will be almost solely from the WSIU channel 28 signal.

This engineer recognizes that there is variability with the time of year and daily environment changes. With the antenna rotation and keeping the same ERP of 5 kW on average the signal should improve between 7 dB (on the sides of the current azimuth pattern) and 15 dB (in the null of the current azimuth pattern). The licensee of WSIU recognizes that the ERP of 5 kW does protrude outside the WSIU channel 8 contour. Instead of proposing the 5 kW ERP value, the value of 3 kW ERP is submitted with this application. In consultation with the staff at WSIU and on the basis of this consulting engineer's experience, the proposed value of 3 kW should provide adequate margin for reliable reception taking into account the Longley Rice "overprediction" of coverage and the widely varying terrain present in these communities.

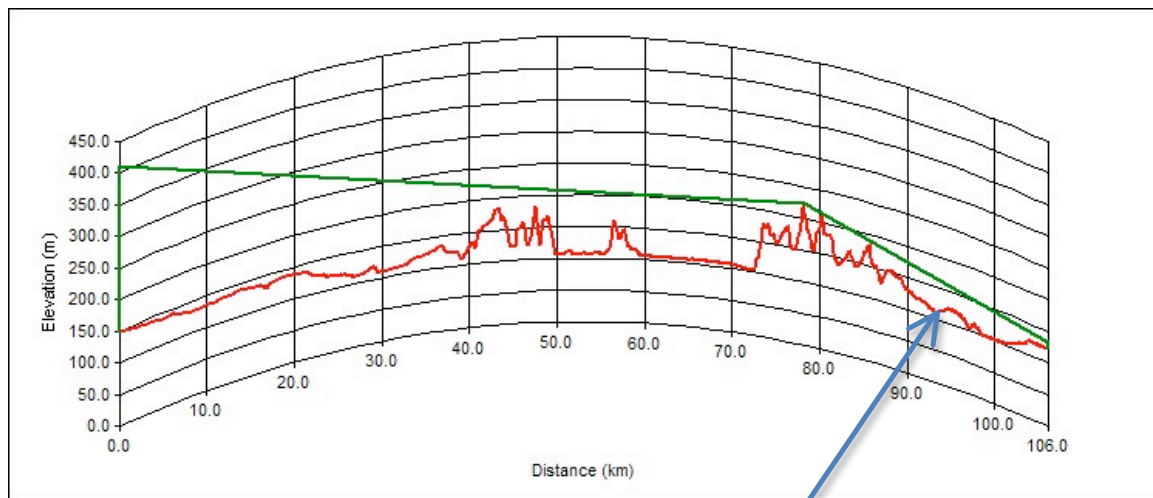
Considering the three following factors the value of 3 kW is proposed for the DRT ERP with the new rotation angle of the antenna. Number 1: The proposed DRT fulfills its objective to provide a reliable UHF signal to the population of roughly 70,000 people. Number 2: The proposed facility causes no interference with any authorization as confirmed by the interference analysis supplied with this application. Number 3: With the proposed value of 3 kW the WSIU DRT contour will still protrude outside the WSIU channel 8 contour but it is within the FCC's policy to consider this as a de minimis protrusion.

Sincerely,



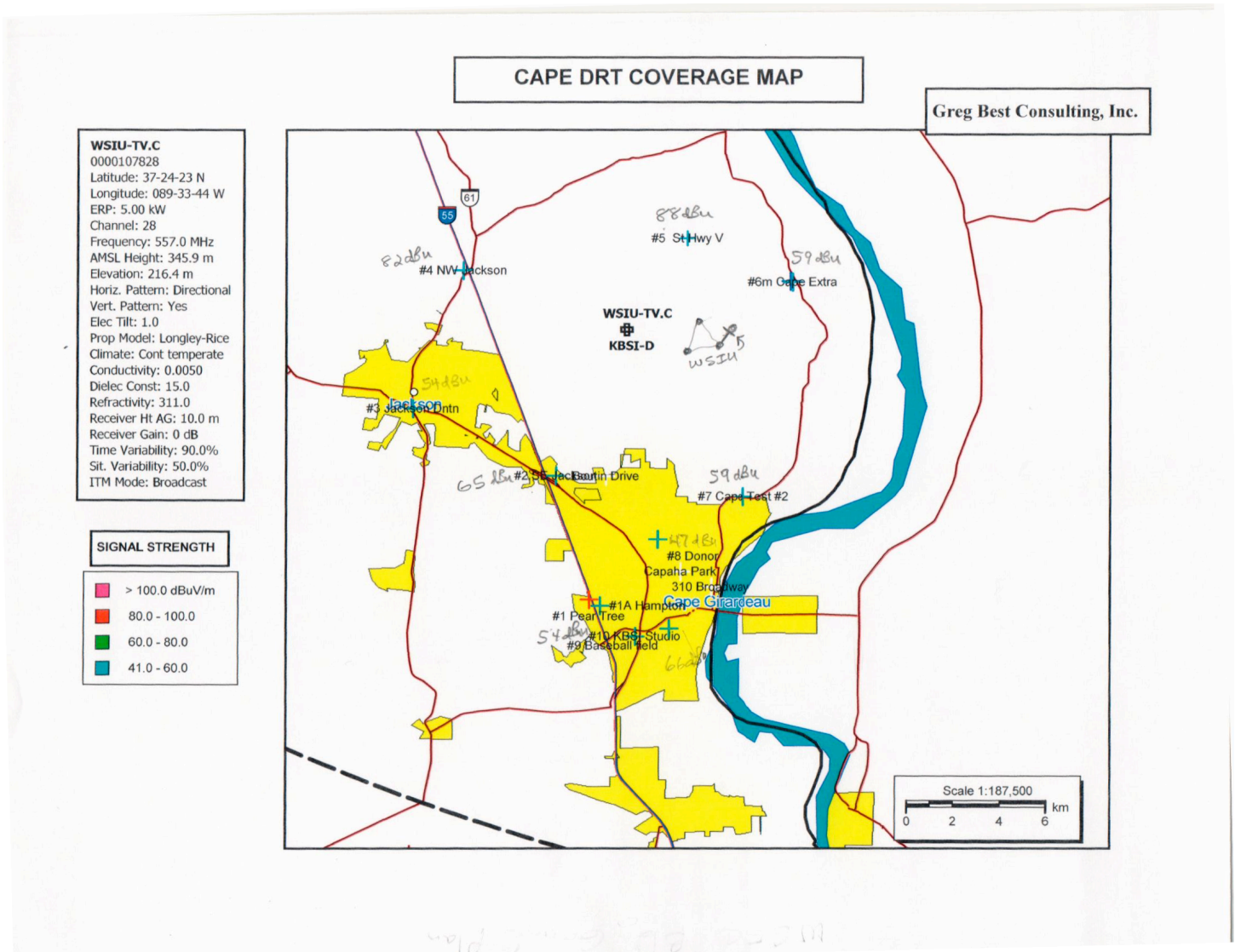
Consulting Engineer

Exhibit #1—Path Profile from WSIU Channel 8 transmission site to Cape Girardeau.



Location of Cape Girardeau & Jackson Communities

Exhibit #2—Map showing Measurement Locations and Signal Strength Measured.



WSIU & WKPD SERVICE CONTOURS

WSIU-TV
BLEDT-20090612ADB
Latitude: 38-06-11 N
Longitude: 089-14-40 W
ERP: 53.00 kW
Channel: 8
Frequency: 183.0 MHz
AMSL Height: 410.5 m
Elevation: 148.1 m
Horiz. Pattern: Omni
Vert. Pattern: Yes
Elec Tilt: 0.5

WKPD-D
0000087419
Latitude: 37-05-40 N
Longitude: 088-40-20 W
ERP: 90.00 kW
Channel: 23
Frequency: 527.0 MHz
MSL Height: 270.4 m
Elevation: 112.5 m
Horiz. Pattern: Directional
Vert. Pattern: Yes
Elec Tilt: 0.75
Prop Model: None

