Before the
Federal Communications Commission
Washington, D.C.

In the matter of:

	)	
Revitalization of the AM Radio Service	)	**MB Docket No. 13-249**
	)	

REPLY COMMENTS OF CARL T. JONES CORPORATION

Carl T. Jones Corporation, an engineering consulting firm, hereby submits reply comments responding to the Commission's October 23, 2015 Further Notice of Proposed Rule Making ("FNPRM") in the above-captioned proceeding. Carl T. Jones Corporation ("CTJC") provides technical assistance to AM broadcasters, supporting development of new and improved transmission facilities. The Corporation has been engaged in these endeavors continuously since 1935.

The instant FNPRM is the second part of a major revision to the technical standards intended to revitalize the use of the AM broadcast band to serve the needs of the listening public. The first part of this revitalization effort has been achieved by several changes in the Rules set forth in the First Report and Order issued in this proceeding. We have reviewed the comments that have been filed in response to the Commission's FNPRM and offer reply comments addressed to many of the comments of others regarding technical proposals therein advanced.

Critical Hours Protection to Class A AM Stations

In the FNPRM, the Commission proposes to eliminate the existing critical hours

protection afforded to Class A stations. We note that several commenters[1] support the Commission's proposal, we believe that the predicted results do not support eliminating this protection. The ionospheric reflections during full daytime conditions typically miss the Earth's surface. Thus the predicted interference conditions between stations can be reliably based on groundwave signals. However, during the hours immediately adjacent to sunrise and sunset there exists ionospheric conditions that support reflections of signals in the AM band which do impinge on the Earth's surface thereby creating interference to the groundwave service areas of other stations. Many AM radio stations are currently required to reduce their daytime power during these critical hours to afford interference protection to Class A stations.

We have developed an example of critical hours interference conditions which reveal some detrimental effects that are predicted should the Commission's proposal to eliminate critical hours protection be adopted. KMOX is a Class A station that operates on 1120 kHz, and is licensed to St. Louis, Missouri. KMOX is provided protection during critical hours by four co-channel daytime only stations, located in North Carolina, Mississippi, Oklahoma and the District of Columbia. The power reductions required during critical hours for these four stations to protect KMOX range from 1.55 dB to 6.02 dB to 12.22 dB.

The most severe required power reduction is for WUST, 1120 kHz, Washington, DC. Its authorized daytime power is 50 kW, while the authorized power during critical hours is 3 kW. We have calculated the predicted effect on the protected groundwave service area of KMOX should critical hours protection be discontinued, thereby permitting WUST to operate at 50 kW during critical hours. Figure 1 displays KMOX's predicted 0.1 mV/m protected groundwave service contour, and WUST's predicted 50 kW daytime skywave interfering contour. Figure 1A shows an expanded view of KMOX's protected

[1] Edward Paul DeLaHunt, Bemidji Radio, Inc. Comments at 6; R. Morgan Burrow, Jr., P.E. Comments at 4; Communications Technologies, Inc. Comments at 2.

service area and the area of potential interference that would result if the critical hours protection requirement were to be eliminated. The interference area shown contains 3,157,170 persons.

Change Nighttime Protection to Class A AM Stations

We have evaluated comments, both pro and con, and note that some commenters propose maintaining the nighttime status quo while others substantially agree with the Commission's proposal to change the protected nighttime contour for Class A stations from the 0.5 mV/m - 50% skywave contour to the 0.1 mV/m groundwave contour, and change the nighttime co-channel interfering contour from the 0.025 mV/m - 10% skywave contour to the 0.005 mV/m groundwave contour.

In our comments we provided studies that evaluated the nighttime skywave interference that could result to four Class A station's groundwave service area if the proposed nighttime groundwave interfering contour were to be the only nighttime interference protection provided. We concluded, and we note that many other commenters agree, that some type of protection to Class A stations from skywave interference is considered necessary, rather than depend on the avoidance of groundwave to groundwave contour overlap.

Some commenters[2] have suggested that nighttime interference to Class A stations should be based on the RSS 50% exclusion method, such that any change in another station would not cause an increase in a site-to-site night limit. We support a different methodology: simply prohibit the overlap of any potential interfering station's predicted 10% skywave contour with the protected groundwave contour of the Class A station on a 20 to 1 desired to undesired ratio. We contend this method would be simpler to implement

[2] duTreil, Lundin & Rackley, Inc. Comments at 4-7; Hatfield & Dawson Consulting Engineers, LLC Comments at 1-2.

and would provide a more consistent level of interference protection.

We agree with some commenters that, as a practical matter, overall skywave interference levels preclude the satisfactory reception of nighttime AM signals below about 0.5 mV/m. We therefore support a 0.5 mV/m protected nighttime groundwave contour for Class A stations instead of the proposed 0.1 mV/m nighttime contour. We propose that the Class A protection criterion specify that there can be no overlap of the Class A station's nighttime 0.5 mV/m protected groundwave contour from a potential interfering station's 0.025 mV/m 10% skywave contour. We believe, and some commenters agree, that this protection criterion will serve to limit new nighttime interference to the Class A station's present groundwave service area while at the same time providing some relief to other stations operating on the Class A channel that desire a new nighttime service, in the case of daytime only Class D stations, or an improvement to their existing nighttime service in the case of Class B stations and for those Class D stations that already have secondary nighttime service.

Change Daytime Protection to Class B, C and D Stations

We note almost universal support among commenters, including ourselves, for the Commission's proposal to: change the first adjacent channel D/U protection ratio from 2 to 1 (6 dB) to 1 to 1 (0 dB); change the second adjacent channel protection criterion to prohibit overlap of the desired and undesired station's 25 mV/m signal contours; and eliminate the third adjacent channel protection requirement.

We observe, however, that among the commenters there seems to be no consensus as to the FNPRM's proposal to alter the protected daytime groundwave contour from 0.5 mV/m to 2.0 mV/m. A few commenters[3] contend that there should be no change to the

[3] AM Radio Preservation Alliance Comments at 33-39; R. Morgan Burrow, Jr., P.E. Comments at 2.

current 0.5 mV/m protected contour. Others support the proposed change to 2.0 mV/m. Still other commenters[4] believe that some increase in the protected contour is warranted. We also support the Commission's proposal to increase the daytime protected contour of Class B, C, and D stations but, for reasons previously stated in our comments, we support an increase only to the 1 mV/m contour rather than the proposed 2 mV/m contour.

We believe, as some other commenters[5] do, that selection of a new daytime protected signal contour should strike a balance between overcoming noise in urban environments and maintaining coverage and listenership in non-urban environments where the noise power in the AM band is considerably lower. Therefore we support increasing the daytime protected contour to 1 mV/m corresponding to a 6 dB increase over the current 0.5 mV/m contour.

The exception of course is the protected daytime groundwave service contour of Class A stations. The FNPRM proposed to maintain the present 0.1 mV/m. We agree, though some commenters[6] propose increasing this to 0.5 mV/m. While we did propose increasing the nighttime groundwave protected contour for Class A stations to 0.5 mV/m, that increase is based on the existing level of nighttime skywave interference. Daytime interference is much less and we believe the current standard should be maintained.

Conclusion

We are very encouraged by the widespread interest that is demonstrated by the plethora of comments that have been offered in this proceeding intended to discover ways and means to assist in the revitalization of the radio service in the AM band. The Commission's proposals set forth in the FNPRM elicited many sincere and thoughtful

[4] TZ Sawyer Technical Consultants, LLC Comments at 3; Edward A. Schrober, P.E. Comments at 3-4.
[5] National Association of Broadcasters Comments at 4-6.
[6] AM Broadcast Licensees Commenter at 2; Charles M. Anderson Comments at 1; Communication Technologies, Inc. Comments at 2; Crawford Broadcasting Company Comments at 1-2.

suggestions, both in favor and opposed to those proposals, and some of those commenters have provided engineering studies, both pro and con, that might serve to provide a framework that can be used to develop fair and equitable revisions to provide most, if not all, AM stations an avenue to achieve some modicum of improvement, while minimizing potential detriment.

Respectfully Submitted, April 18, 2016

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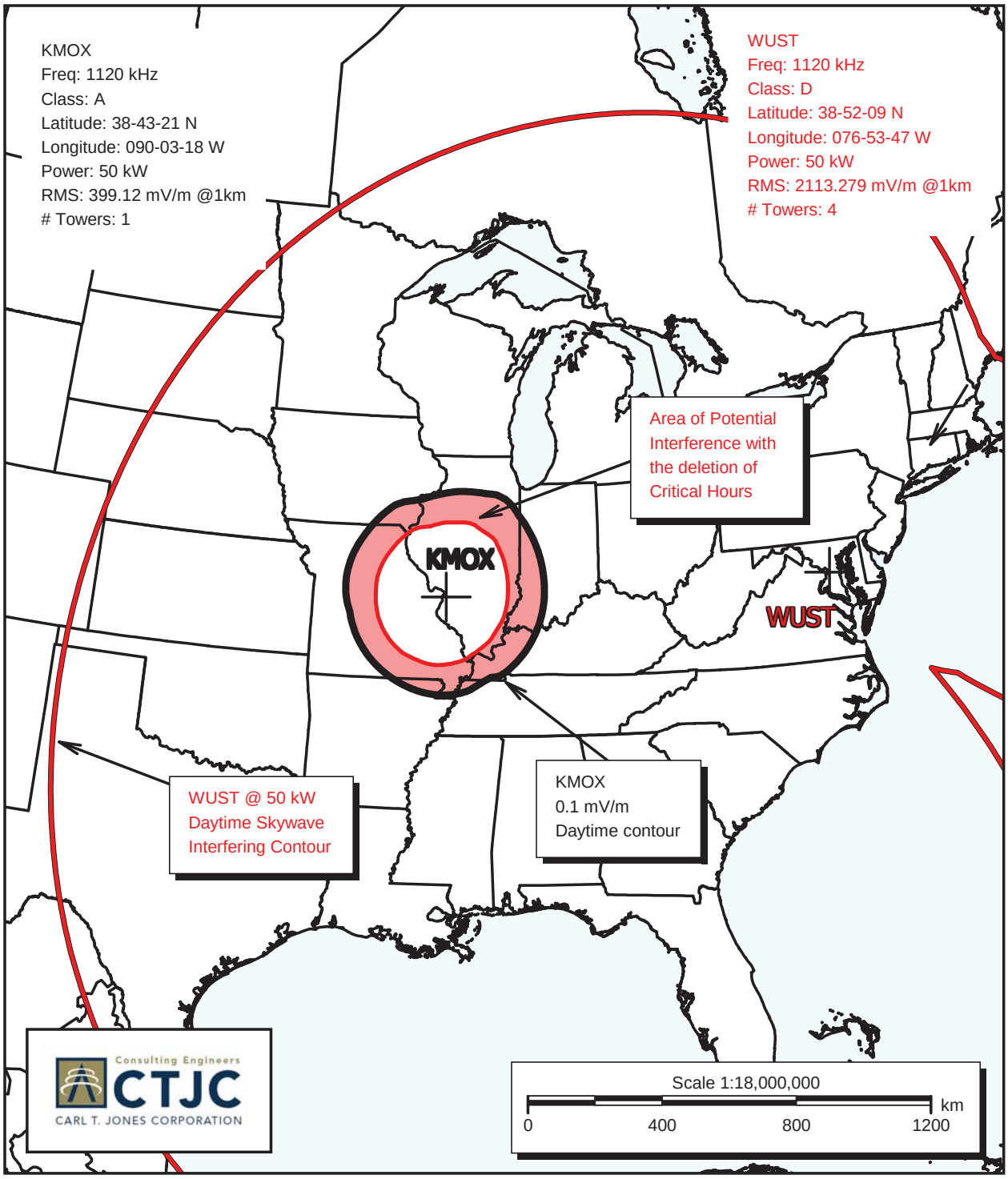
FIGURE 1



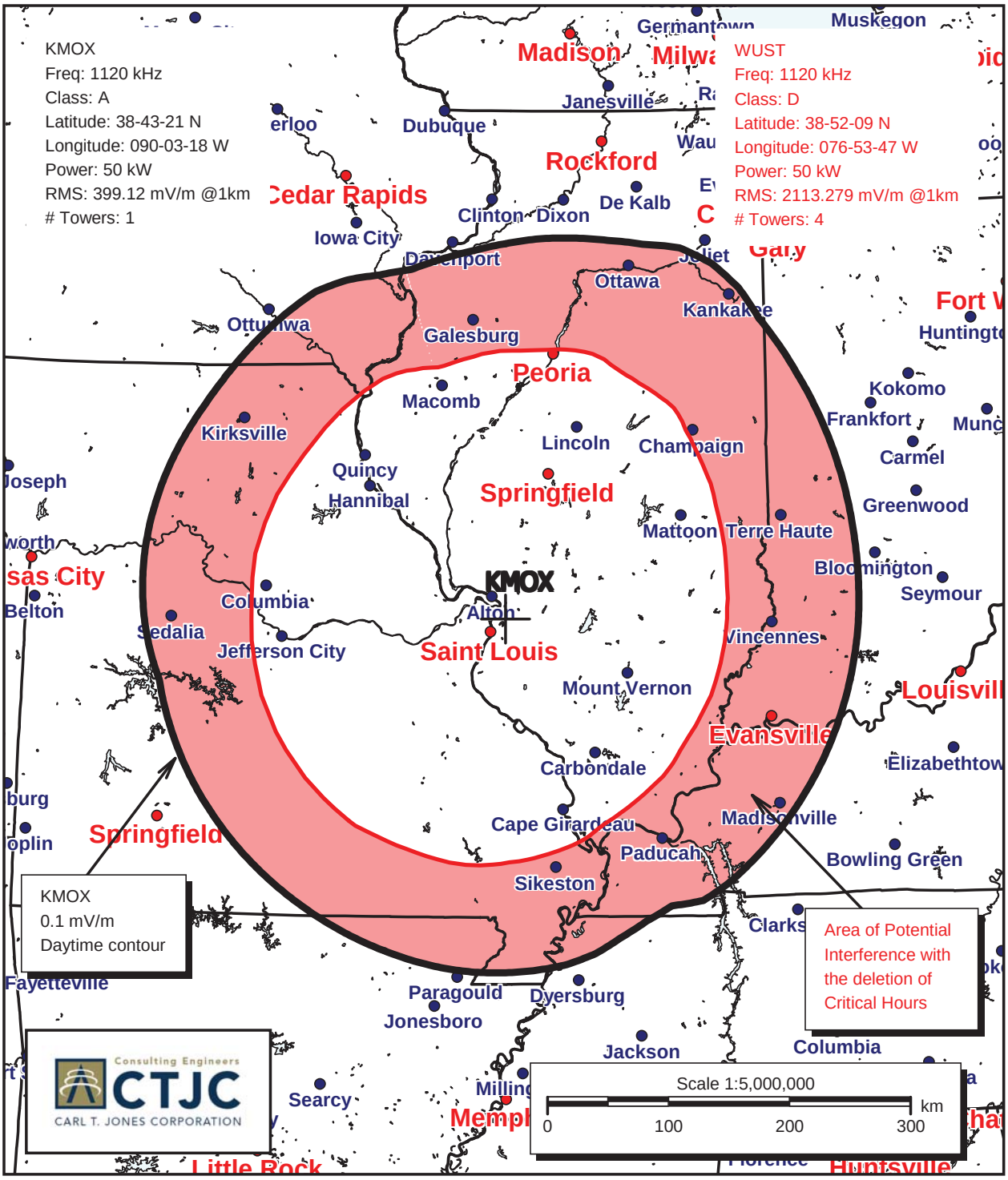
INTERFERENCE AREA TO KMOX - ST. LOUIX, MISSOURI DURING CRITICAL HOURS APRIL, 2016

POPULATIONS

0.1 mV/m daytime: 8,564,836 persons

Interference area with WUST @ 50.0 kW: 3,157,170 persons

FIGURE 1A



INTERFERENCE AREA TO KMOX - ST. LOUIX, MISSOURI DURING CRITICAL HOURS (EXPANDED)
APRIL, 2016

POPULATIONS
0.1 mV/m daytime: 8,564,836 persons

Interference area with WUST @ 50.0 kW: 3,157,170 persons