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ENGINEERING EXHIBIT EE-2:

**WALTON STATIONS NEW MEXICO, INC.
AM BROADCAST STATION KWES
RUIDOSO, NEW MEXICO
[BMP-20070508AAY]**

**AUTHORIZED: 1450 kHz 0.860 kW-N/1.0 kW-D ND-2-U Class C
PROPOSED: 1450 kHz 0.910 kW-D/1.0 kW-D ND-2-U Class C**

12 November 2008

FCC FACILITY ID NUMBER 160917

**ENGINEERING EXHIBIT
IN SUPPORT OF AN APPLICATION FOR
MODIFICATION OF CONSTRUCTION PERMIT
TO CHANGE TOWER HEIGHT AND NIGHTTIME OPERATING POWER
OF AN AUTHORIZED CLASS C AM BROADCAST STATION**



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DECLARATION

I, Alan E. Gearing, declare and state that I am a graduate electrical engineer with a Bachelor of Science degree in Electrical Engineering from SUNY University at Buffalo, that I am a registered professional engineer in the District of Columbia (since 1979), and that I have provided engineering services in the areas of broadcasting and radio communications since 1973. My qualifications as an expert in radio engineering are a matter of record with the Federal Communications Commission. I am a senior engineer with the firm of Mullaney Engineering, Inc., consulting broadcast and radio communications engineers with offices in Gaithersburg, Maryland.

The firm of Mullaney Engineering, Inc., has been retained by WALTON STATIONS NEW MEXICO, INC. to prepare the instant engineering exhibit and Section III-A of FCC Form 301 in support of *an Application for Modification of Construction Permit to change tower height and nighttime operating power of Class C AM broadcast station*, KWES, Ruidoso, New Mexico [FCC FACILITY ID NUMBER 160917]

All facts contained herein are true of my own knowledge except those stated to be on information and belief, and as to those facts, I believe them to be true. I declare under penalty of perjury that the foregoing is true and correct.

Alan E. Gearing, P.E.
District of Columbia Number 7406

Executed on the 12th day of November 2008



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NARRATIVE STATEMENT:

I. GENERAL:

The instant narrative statement, and the engineering exhibit of which it is part, have been prepared on behalf of WALTON STATIONS NEW MEXICO, INC. ("Walton"), permittee of Class C AM broadcast station KWES authorized to serve RUIDOSO, NEW MEXICO [FCC FACILITY ID NUMBER 160917].

Subsequent to loss of its authorized antenna tower, KWES has been either silent or operating under an STA (see BLSTA-20080813ABD and BSTA-20081104ADP). The latest STA permits operation with powers authorized in BMP-20070508AAY employing a new replacement tower that is ten feet shorter than the formerly authorized tower. The shorter tower was installed in order to eliminate the need for obstruction marking and lighting. **The purpose of the instant application is to regularize KWES's authorized daytime and nighttime operations employing the new shorter tower.**

The facilities specified herein have been constructed to comply with the most recent version of the *FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields* and the instant proposal is believed



to be categorically excluded from environmental processing, including Section 106 review pursuant to the provisions of Section 1.1306 of the Commission's Rules. A more detailed discussion of environmental factors is included under the heading Environmental Considerations below.

Information requested by exhibits in response to questions on Section III-A of FCC Form 301 [January 2008 edition] is incorporated in the following paragraphs, and accompanying figures and tables.

II. ENGINEERING DISCUSSION:

A. Transmitter/Antenna Location:

KWES will continue to employ its authorized transmitter/antenna site (shared with co-owned station KBUY[AM]) located just east of South Center Street in Ruidoso, Lincoln County, New Mexico. Figure 1 is a full-scale reproduction of a portion of the USGS 7.5 minute series topographic quadrangle map showing the location of the site. The geographic coordinates [NAD27 Datum] for the antenna location are:

Latitude: 33° 19' 34"
Longitude: 105° 40' 14"

Figure 2 herein is an aerial photograph showing the site and the surrounding area.

Other than for collocated and co-owned AM broadcast station KBUY (1360 kHz), there are no known radio facilities located within the general vicinity of the site. Also, there are no other broadcast facilities listed in the FCC's CDBS within 3.2 km of the site. Appropriate diplexing and filtering circuitry has been installed to ensure that any and all spurious emissions from the site are below required limits.



B. Proposed Antenna:

Walton has erected a 58.5-meter (192-foot) tower to replace the destroyed KBUY/KWES tower. The height of the new tower was shortened relative to that of the one being replaced in order to eliminate the need for obstruction marking and lighting. The new tower is grounded, of uniform cross-section, guyed, and constructed of galvanized steel. The antenna is fed with a symmetrical three-wire folded unipole. The metallic guys have been broken up with insulators to prevent distortion of the non-directional radiation pattern due to reradiation from the guys. The effective electrical length of the tower is 57.9 meters (190'), which at KWES's operating frequency of 1450 kHz is equivalent to 100.8 electrical degrees.

Figure 3 is a vertical plan sketch of the antenna tower. Since the overall height of the antenna structure is less than 60.96 meters (200'), notification to the Federal Aviation Administration (FAA) is not required - unless the structure penetrates the imaginary surfaces extending outward from nearby airports. The structure was checked using the Commission's online TOWAIR program which determined that antenna structure registration, and hence FAA notification, is not required. [No airports within 8 km (5 miles) of the site.]

The antenna ground system has been replaced with one of an identical configuration. It consists of 120 buried copper wire radials evenly spaced about the tower, with each radial extending a nominal distance of 45.7 meters (150'). In addition, a second set of 120 radials, each nominally 15 meters (50') in length, is interspersed between the longer radials. Finally, there is a 6m x 6m (20' x 20') mesh ground screen at the tower base. At KWES's operating frequency of 1450 kHz, the ground system has an effective electrical length of 79.6 degrees. Figure 4 is a site plat showing the tower location and the ground system layout.



The FCC's online Figure 8 program was used to determine the predicted efficiency of the antenna system at 1450 kHz. The theoretical efficiency thus determined is 306.1 mV/m at one kilometer for one kilowatt, in compliance with the minimum requirements of §73.189 of the FCC Rules.

C. Blanketing Area:

The location of the KWES 1.0 kW daytime and 0.910 kW nighttime 1000 mV/m (1 V/m) blanketing contours are shown on both the site map of Figure 1 and the site aerial photograph of Figure 2.

The 2000 U.S. Census populations within the proposed daytime 1000 mV/m and nighttime 1000 mV/m contours have been determined to be 119 persons. This number is well below the 300-person criteria specified in §73.24(g).

Walton agrees to resolve any legitimate complaint of blanketing interference within its proposed daytime and nighttime 1 V/m contours and to comply fully with the requirements of §§73.88 and 73.318 of the Rules.

D. Principal Community Coverage:

Figure 5-A, herein, is a map showing the location of the existing and proposed daytime 5.0 mV/m, 2.0 mV/m and, 0.5 mV/m contours. Figure 5-B, herein, is a map showing the location of the existing and proposed nighttime 22.1 mV/m 50% RSS night limit contours.

From Figures 5-A & 5-B it is evident that the principal community to be served (RUIDOSO, NEW MEXICO) **is not** completely contained within the proposed KWES daytime 5.0 mV/m or nighttime 22.1 mV/m 50% RSS NL contours. Therefore, Walton respectfully requests a waiver of §73.24(i) of the Rules. Further analysis reveals that **all 7,813 persons within Ruidoso are encompassed** by the proposed KWES daytime 5.0 mV/m contour. In addition, the proposed KWES daytime 5.0 mV/m contour encompasses 34.3 square kilometers within Ruidoso, which is **83.7% of Ruidoso's total**



area of 40.9 square kilometers. Likewise, further analysis reveals that **7,309 of the total 7,813 persons within Ruidoso, or 93.5%, are encompassed** by the proposed KWES 22.1 mV/m contour. In addition, the proposed KWES nighttime 22.1 mV/m contour encompasses 28.3 square kilometers within Ruidoso, which is **68.9% of Ruidoso's total area** of 40.9 square kilometers. Finally, from Figures 5-A & 5-B it can be seen that KWES's authorized daytime and nighttime operations suffer the same deficiencies. Hence, it is submitted that the public interest would be served by a continued waiver of §73.24(i) of the Rules to permit grant of the instant proposal.

E. Daytime Allocation Study:

Since the instant application is for the same power and from the same site as KWES's authorized operation (albeit with a slightly less efficient radiator) there should be no question that no prohibited contour overlap or prohibited interference would occur. This is confirmed by Table 1, herein, which is a tabulation of stations pertinent to the operation of KWES on 1450 kHz at Ruidoso¹. The last two columns of the table show the amount of clearance (black, positive numbers) or the amount of contour overlap (red, negative numbers). It is seen that in this instance no normally prohibited contour overlap (and hence no interference) is indicated. Hence, no allocation study maps are being submitted.

F. Ground Conductivities and Unattenuated Field Strengths:

A computerized representation of the FCC Conductivity Map, Figure M-3, was used to establish the effective ground conductivities for all stations in the absence of measurement data. No measurement data were readily

¹ Daytime allocation studies involving Class C stations are typically carried out based on the assumption of 250-watt, nondirectional operation by all Class C stations for interference received, while for interference caused other Class C stations are assumed to be operating at full licensed power (see §73.37(b)). The analysis shown in Table 1 employs this assumption.



available for any station. Where applicable, the equivalent distance method was used to establish the distances to contours.

The FCC's AM station database was used to obtain parameters of all stations considered in the allocation study except for the proposed operation, which is specified herein.

As the latest version of FCC Form 301 [January 2008] no longer specifically refers to a tabulation of supporting data employed in generating groundwave contour locations depicted in coverage and allocation showings, such data are not being submitted herein, but will be supplied to the Commission upon request.

G. Nighttime Allocation Study:

Section 73.182(a)(3) of the FCC Rules states: "On local channels the separation required for the daytime protection shall also determine the nighttime separation." Hence, no separate nighttime allocation analysis has been conducted with respect to domestic stations. Ruidoso is not located close enough to the Canadian border to trigger any special requirements concerning Class C nighttime allocations.

However, a study employing a computer program which accesses a copy of the FCC's CDBS AM station database was carried out relative to protection to Mexican and other Region 2 stations. Results of that study relative to Mexican stations are shown in Table 2. The table clearly shows that the instant proposal fully complies with the pertinent international agreement with respect to protection to Mexican stations. No other Region 2 stations were identified that required special study.

The 50% RSS night limit at Ruidoso on 1450 kHz was determined to be 22.1 mV/m and the 25% RSS night limit was determined to be 29.2 mV/m. Table 2 provides calculation details of these RSS night limits.



H. Environmental Considerations:

The applicant believes its proposal will not significantly adversely affect the environment for the following reasons.

The instant proposal specifies replacing an existing AM broadcast antenna tower with a similar, but slightly shorter, tower. The new tower will not need to be painted or lighted for aviation warning purposes as the old tower was. Consequently, the visual impact of the tower will be reduced as will be its energy use and hence carbon footprint. Also, under such circumstances a Section 106 review of the proposal is believed to be unnecessary.

Operation of the proposed facility will not involve the exposure of workers or the general public to levels of radio frequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. [The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No. 86 (1986) and ANSI/IEEE C95.1-1992.]

The tower is surrounded by a gated fence, at least six feet tall. The fence will not be less than two meters from any point on the tower, folded unipole skirt wires, or feed line. This is the “worst case” distance from Section 1 of Supplement A to OET Bulletin No. 65 (Edition 97-01) assuming: a 9.0 kW, 1450 kHz, AM station (KWES) operating in combination with a 1.0 kW, 1450 kHz, AM station (KWES), and an antenna radiator with electrical height between 0.25 and 0.50 wavelength.

The fence gate will be kept locked and appropriate warning signs are posted on each face of the fence. Procedures will be adopted to protect workers requiring access to the tower inside the fenced area, including reduction of power or cessation of operation, to comply with germane exposure guidelines.



III. SUMMARY:

Walton proposes to continue operation of Class C AM broadcast station KWES on 1450 kHz at RUIDOSO, NEW MEXICO. The only changes proposed are to shorten the electrical length of the KWES antenna tower and to slightly increase night power to compensate for the lower radiation efficiency.

The technical modifications proposed herein constitute a **minor change** relative to those currently authorized to KWES.

Based upon the technical specifications contained in available station facility databases and the engineering analysis carried out during the development of the technical operating parameters proposed herein, the undersigned believes that the proposed operation:

- 1) would not have any significant impact on the environment;
- 2) would not result in prohibited contour overlap and would not create or receive prohibited interference;
- 4) with the exception of principal community coverage requirements, **for which waivers have been requested and for which supporting documentation has been provided**, is otherwise fully in compliance with all pertinent Commission rules and policies, as well as all applicable international agreements.



Alan E. Gearing, P.E.