

ENGINEERING EXHIBIT
APPLICATION FOR
CONSTRUCTION PERMIT

prepared for

KXO, Inc.
KXO El Centro, California
Facility ID 35969
1230 kHz 1 kW ND-1 U

Table of Contents

FCC Form 301, Section III-A

Exhibit 11

Statement A	Nature of the Proposal and Daytime Antenna System Description
Figure 1	Transmitter Site Plat
Figure 2	Aerial Photographs

Exhibit 14

Statement B	Daytime Allocation and Coverage Considerations
Figure 3	Proposed Daytime Coverage Contours
Figure 3A	Proposed Daytime 1000 mV/m Coverage Contour (Detail)
Figure 4A	Daytime Allocation Study - Class C Caused Interference
Figure 4B	Daytime Allocation Study – Class C Received Interference
Figure 5	Daytime Allocation Study - 1 st Adjacent
Figure 6	Daytime Allocation Study - 2 nd and 3 rd Adjacent
Table 1	Proposed Daytime Distance to Contours
Table 2A-N	Daytime Allocation Study Data - Other Pertinent Stations
Table 3A-C	Daytime Distance to Contours - Using Region 2 Conductivity Data
Figure 7	Mexican Allocations Study

Exhibit 15

Statement C	Nighttime Allocation and Coverage Considerations
Table 4	Nighttime Interference Free Contour Calculations
Figure 8	Proposed Nighttime Coverage Contours

Exhibit 18

Statement D

Environmental Considerations

Exhibit 11 - Statement A
NATURE OF THE PROPOSAL
ANTENNA SYSTEM DESCRIPTION

prepared for
KXO, Inc.
KXO El Centro, California
Facility Id 35969
1230 kHz 1 kW ND-1 U

Nature of the Proposal

KXO, Inc. ("KXO") is the licensee of Standard Broadcast Radio Station KXO, 1230 kHz, El Centro, California (Facility Id 35969). KXO is presently licensed as a Class C station with authority to operate with 1 kW day and night utilizing a non-directional facility. The KXO tower also serves as the supporting structure for the co-owned KXO-FM (Ch 298B, El Centro, California, Facility Id 35970). In November 2004 KXO lost its tower structure in a storm. KXO was also advised that the landlord would not be renewing the lease for the property. Since that time KXO has been operating both stations under Special Temporary Authority. KXO(AM) is currently utilizing a horizontal wire antenna as authorized in BDSTA-20041029AJW (as extended.)

After an exhaustive two-year search, a suitable site has been secured approximately 2 miles from the currently licensed site. KXO herein seeks permission to reconstruct its full Class C facility and resume its normal service to El Centro and the surrounding communities.

The proposed site is within 16.3 km of the Mexican border. The site is farther from the Mexican border *and* pertinent Mexican broadcast stations than the licensed site, nevertheless, this proposal will require coordination with Mexico.

The instant proposal complies with Section 73.24(g). According to 2000 US Census data there are no people living within the 1,000 mV/m contour which extends 0.33 km from the tower site (see **Exhibit 14 – Figure 3A**). There are 55,727 persons within the 25 mV/m contour. This clearly meets the requirements of Section 73.24(g) of the Rules.

Antenna System Description

Exhibit 11 - Statement A
NATURE OF THE PROPOSAL
ANTENNA SYSTEM DESCRIPTION
(page 2 of 2)

The proposed facility will utilize a new tower that is 90.2 m (296 feet) in height. To facilitate the top mounted KXO-FM antenna, the tower will utilize a shunt fed, folded-unipole configuration. The new ground system will consist of 120 buried, #10 soft-drawn copper, radials that are 269 feet in length. Interspersed with the main radials will be 120, 50' foot long radials. All radials will be bonded to a 4" copper strap around the tower base and that copper strap will be bonded to the base of the tower with four 4" pieces of copper strap.

A property plat is shown in **Exhibit 11 – Figure 1** and an aerial photograph is included as **Exhibit 11 – Figure 2**.

Exhibit 14 - Statement B
DAYTIME COVERAGE AND ALLOCATION CONSIDERATIONS

prepared for
KXO El Centro, California
Facility Id 35969
1230 kHz 1 kW ND-1 U

KXO, Inc. (“KXO”) licensee of Standard Broadcast Radio Station KXO, 1230 kHz, El Centro, California proposes to maintain its Class C, 1 kW operating power utilizing a new transmitter site 2.1 miles (3.4 km) due North from its presently licensed site. The proposed coverage contours are shown in **Exhibit 14-Figures 3 and 3A**. These contours utilize ground conductivities obtained from FCC Figure M3. Distances to contours and associated ground conductivity data for the proposed KXO facility are summarized in **Exhibit 14-Table 1**.

The locations of the protected and interfering contours of pertinent nearby domestic stations operating on the same channel, and within three channels above and below the proposed frequency of use, were predicted using the same methodology and M-3 conductivity data. The locations of the contours for each of these stations are shown on **Exhibit 14-Figures 4A, 4B, 5, and 6**, the radiation and conductivity assumptions, along with the resulting distances to the identified contours, are tabulated in **Exhibit 14-Table 2, Sheets A-N**. Where appropriate, notations are included in the data tabulations as to facility status or operational considerations.

Class C Allocations

Exhibit 14-Figure 4A shows the interference *caused* to other pertinent Class C stations operating on 1230 kHz and 1240 kHz. This analysis is done considering other Class C stations operating at 1 kW and the proposed facility operating at 250 watts. As shown, there is no interference *caused* to any other domestic Class C station from the facility proposed herein.

Similarly, **Exhibit 14-Figure 4B** shows the interference *received* from other pertinent Class C facilities. This analysis was done considering the proposed station and all other Class C stations operating at 250 watts. As shown, there is no interference *received* from any other domestic Class C station when using this method.

Exhibit 14 - Statement B
DAYTIME COVERAGE AND ALLOCATION CONSIDERATIONS
(page 2 of 4)

The KXO licensed and proposed 0.025 mV/m contours overlap the 0.5 mV/m contours of KOY and KAAA assuming the actual operating power for both stations. As shown in **Exhibit 14-Figure 4A**, there is no overlap when the proposed facility is considered at 250 watts.

Other Allocation Considerations

Exhibit 14-Figures 5 and 6 demonstrate that the proposed minor relocation will have no detrimental effect on an 1st, 2nd, or 3rd adjacent stations near KXO. Note that the two stations shown in **Exhibit 14-Figure 5** are both Class C facilities operating on 1240 kHz. The coverage and interfering contours for both facilities as well as the proposed KXO facility are predicted using actual 1 kW operating power levels. As shown, there is no caused or received interference to these facilities.

A “Tech Box” application, file number BNP-20040130BMZ, for a new AM facility at Desert Hot Springs, California (Facility Id 161373) was filed in the 2004 Auction 84 filing window. This application proposed operation on 1200 kHz (3rd adjacent to KXO.) According to that applicant, in an effort to eliminate a mutual exclusivity with other applications filed in the 2004 filing window, a subsequent, complete Form 301 application was filed (file number BNP-20051031AGQ) that proposes a change in frequency to 1220 kHz, 1st adjacent frequency to KXO. Due to the more recent frequency change request, only the 1220 kHz facility is considered in this allocation study as shown in **Exhibit 14-Figure 5**. The 3rd adjacent 1200 kHz facility is well removed from the KXO proposal and does not represent a limitation to the proposed KXO operation.

Section 73.37 Waiver Request

There is existing interference to KXO in the form of contour overlap of the proposed Desert Hot Springs 0.5 mV/m contour with the KXO 0.25 mV/m contour. The area of this existing overlap is 29 square kilometers. The instant proposal will increase this area of

Exhibit 14 - Statement B
DAYTIME COVERAGE AND ALLOCATION CONSIDERATIONS
(page 3 of 4)

overlap to 213 square kilometers as shown in **Exhibit 14-Figure 5**, most of which is over the unpopulated Salton Sea area.

In actual practice, the proposed overlap area receives no protected service from the licensed KXO and in fact, since the Desert Hot Springs facility is only a pending application for a new station that has not been accepted for filing by the Commission, there will be no actual interference. Further, KXO will not cause interference to the proposed Desert Hot Springs protected coverage area as shown in **Exhibit 14-Figure 5**.

To the extent a waiver of Section 73.37 of the Rules is required with respect to the Desert Hot Springs interfering contour overlap to the KXO operation proposed herein, one is hereby respectfully requested on behalf of the applicant.

Mexican Allocations Issues

Exhibit 14 - Figure 7 shows two Mexican facilities that impact the existing operation of KXO; cochannel, Class C station XESCT at Ensenada, Baja California (CDBS Facility Id 102713) and a long standing, proposed operation, XENVA2 on 1220 kHz at San Felipe, Baja California (CDBS Facility Id 102702). The contours in **Exhibit 14 - Figure 7** and associated distances in **Exhibit 14 - Table 3A, 3B, and 3C** are calculated based on Region 2 conductivity map as stated in the 1986 AM Agreement between the United States and Mexico.

Cochannel station XESCT is located 143.4 km from the licensed KXO site. The proposed KXO facility will be 146.1 km from XESCT, 2.7 km *farther*. As shown in **Exhibit 14 - Figure 7**, the entire 0.025 mV/m interfering contour of the licensed KXO facility entirely encompasses the coverage area of XESCT and therefore there is no increase in the contour overlap to XESCT by the proposed KXO operation. As demonstrated by the licensed and proposed 0.5 mV/m KXO contours, the signal toward XESCT will be maintained or reduced by the proposed KXO facility.

Exhibit 14 - Statement B
DAYTIME COVERAGE AND ALLOCATION CONSIDERATIONS
(page 4 of 4)

The instant application proposes to locate at a site that is also farther from the proposed 1220 kHz Mexican station at San Felipe. The licensed KXO is 201.5 km from the XENVA2 site. The new site for KXO will be 204.6 km distant, an increase of 3.1 km. As shown in **Figure 7**, when using Region 2 conductivity assumptions, there is existing contour overlap to the licensed KXO 0.5 mV/m contour by the proposed XENVA2 0.5 mV/m contour. The contour from the new KXO facility will essentially duplicate this existing contour overlap.

KXO has operated from its presently licensed location since 1928. According to previous agreements between the United States and Mexico, the KXO operation predates all Mexican stations and allocations on this channel; therefore more recently constructed Mexican facilities created the grandfathered overlap. Nevertheless, this necessary relocation of KXO proposes a site farther away from both Mexican facilities will cause no meaningful increase in interference.

Conclusion

Based upon these tables and figures, it is believed that this 2 mile relocation is compliant with the appropriate allocation requirements of the Commission's Rules and policies. Further, the maintaining the station's 1 kW operating power will not cause additional interference to any operating station and is therefore clearly in the public interest.

Exhibit 15 - Statement C
**NIGHTTIME ALLOCATIONS AND
COVERAGE CONSIDERATIONS**

prepared for
KXO El Centro, California
Facility Id 35969
1230 kHz 1 kW ND-1 U

KXO, Inc. (“KXO”) licensee of Standard Broadcast Radio Station KXO, 1230 kHz, El Centro, California proposes to maintain its Class C, 1 kW operating power utilizing a new transmitter site 2.1 miles (3.4 km) due North from its presently licensed site. The proposed 21 mV/m nighttime interference free coverage contour is shown in **Exhibit 14-Figures 8**. As shown, the nighttime interference free contour completely encompasses the community of license, El Centro, California. This contour utilizes ground conductivities obtained from FCC Figure M3. Distances to contours and associated ground conductivity data for the proposed KXO facility are summarized in **Exhibit 14-Table 1**. Details of the nighttime interference free contour calculations are provided in **Exhibit 14-Table 4**.

The proposed relocation of KXO to a sight 2.1 miles from its licensed site will not increase the nighttime limit to any domestic or foreign station operating on 1220 kHz, 1230 kHz, or 1240 kHz. Details of the night study can be provided upon request of Commission staff.

Exhibit 18 - Statement D
ENVIRONMENTAL CONSIDERATIONS

prepared for
KXO El Centro, California
Facility Id 35969
1230 kHz 1 kW ND-1 U

KXO, Inc. ("KXO") proposes relocate the transmitting facilities of KXO(AM), El Centro, California to a new tower. This application proposes the use of a new tower site for KXO(AM) and its co-owned FM station, KXO-FM (Ch 298B, El Centro, California, Facility Id 35970). An environmental study in accordance with Section 1.1306 of the Commission's Rules has been commissioned by others. The applicant believes there to be no issues related to NEPA Section 106. It is believed that preparation of an Environmental Assessment is not required. Only the impact of human exposure to radiofrequency energy is evaluated herein.

The proposed operation at this site was evaluated for human exposure to radiofrequency energy using the procedures outlined in the Commission's OET Bulletin No. 65 ("OET-65"). OET-65 describes a means of determining whether a proposed facility exceeds the radiofrequency exposure guidelines adopted in Section 1.1310. Under present Commission policy, a facility may be presumed to comply with the limits specified in Section 1.1310 if it satisfies the exposure criteria set forth in OET-65. Based upon that methodology, and as demonstrated in the following, the proposed transmitting system will comply with those guidelines.

KXO(AM) 1230 kHz - Contribution to points 2 meters from the tower

The general population/uncontrolled maximum permitted exposure ("MPE") limit specified in §1.1310 for 1230 kHz is 614 mV/m electric field strength and 1.63 A/m magnetic field strength. At KXO(AM)'s frequency, the electrical height of the tower is 0.369 wavelengths (132.8 degrees). KXO(AM) is proposing to operate with 1 kW non-directionally both day and night.

Interpolated results from Figures 3 and 4 of OET-65, Supplement A, are used for the analysis herein. As stated above, the closest "publicly accessible" point to the tower base will be at least 2 meters from the tower base. The calculated electric ("E") field and

Exhibit 18 - Statement D
ENVIRONMENTAL CONSIDERATIONS
(page 2 of 4)

magnetic (“H”) field along with the percentage of the general population / uncontrolled MPE limit (when squared per the technique described in OET-65) is shown in the table below.

<u>Power</u> (kW)	<u>Height</u> (deg)	<u>Distance</u> (m)	<u>E Field</u> (V/m)	<u>E Field</u> <u>Percent of</u> <u>MPE</u> (%)	<u>H Field</u> (A/m)	<u>H Field</u> <u>Percent of</u> <u>MPE</u> (%)
1.0	132.8	2.0	102.1	2.8	0.25	2.4

KXO-FM 107.1 MHz - Maximum Contribution at 2 meters Above Ground Level

The new KXO-FM facility will operate with an effective radiated power (“ERP”) of 50 kW with the antenna center of radiation 74 meters above ground level. KXO-FM will utilize an ERI 8-bay, half wave spaced directional antenna (model number SHPX-8AC-DA-HW). According to data provided by the antenna manufacturer, the maximum relative field value in nearby downward directions (between 13 and 90 degrees below the horizon) does not exceed 0.23. Thus, a relative field value of 0.23 relative field was used for this calculation. The general population / uncontrolled maximum permitted exposure (“MPE”) limit specified in §1.1310 for 107.5 MHz is 200 $\mu\text{W}/\text{cm}^2$.

The formula used for calculating FM signal density in this analysis is essentially the same as equation (9) in OET-65.

$$S = (33.4098) (F^2) (ERP) / D^2$$

Where:

S	=	power density in microwatts/cm ²
F	=	relative field factor
ERP	=	total (average) ERP in Watts
D	=	distance in meters

Using this formula and the assumptions above, the proposed KXO-FM facility is predicted to contribute a power density of 34.1 $\mu\text{W}/\text{cm}^2$ at two meters above ground level near antenna support structure (such as a point two meters from the base of the tower). This is 17.0 percent of the general population/uncontrolled MPE limit. At ground level

Exhibit 18 - Statement D
ENVIRONMENTAL CONSIDERATIONS
(page 3 of 4)

locations away from the base of the tower, the calculated RF power density is even lower, due to the increasing distance from the transmitting antenna.

Consideration of All Facilities

A summary of total calculated RF electromagnetic field from all non-excluded transmitting facilities is provided herein for locations at ground level outside at a distance greater than two meters from the tower base. Given the assumptions above, the calculated percentage of the RF electromagnetic field MPE at the closest publicly accessible point near the tower base is summarized in the table below. As shown, considering all broadcast facilities, in no case will the human exposure to RF electromagnetic fields exceed the uncontrolled / general population MPE limit specified in §1.1310.

<u>Facility</u>	<u>Maximum MPE</u>
KXO(AM)	2.8 %
<u>KXO-FM</u>	<u>17.0 %</u>
Total	19.8%

Safety of Tower Workers and the General Public

As demonstrated herein, excessive levels of RF energy will not be caused at accessible areas near the tower. With respect to worker safety, a site exposure policy will be employed protecting maintenance workers from excessive exposure when work must be performed in the vicinity of or on the tower. Such protective measures may include, but will not be limited to, restriction of access to areas where levels in excess of the guidelines may be expected, power reduction, or the complete shutdown of facilities when work or inspections must be performed in areas where the exposure guidelines will be exceeded. Further, no worker will be permitted to climb an energized tower. On-site RF exposure measurements may also be undertaken to more specifically establish the bounds of safe working areas.

Conclusion

Based on the preceding, it is believed that the instant proposal may be categorically excluded from environmental processing under Section 1.1306 of the Rules.

Exhibit 18 - Statement D
ENVIRONMENTAL CONSIDERATIONS
(page 4 of 4)