K277BH Minor Modification
Channel 277D
Allocation Study
October 2005

The attached spacing study shows the spacing between the proposed fill-in translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study maps demonstrate compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The proposed transmitter site is located within the 60 dBu contour of second-adjacent-channel station KSJJ 275C1 Redmond. The proposed transmitter site is located 66.4 kilometers from the KSJJ transmitter site at 27 degrees True. KSJJ operates with 100 kW ERP at 597 meters HAAT along the 27 degree radial, placing a 70 dBu contour at the proposed site. Therefore, the appropriate interfering contour from the translator is 70 + 40 = 110 dBu. The free-space 110 dBu contour from the proposed translator has been calculated for the proposed directional antenna, and plotted on the attached 7.5 minute topographic map. There is no population within this contour; while there are some building shown at the base of the proposed antenna support structure, those are transmitter buildings, a cable headend, and water tanks. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KSJJ.

The attached spacing study demonstrates compliance with §73.207 of the Commission’s Rules regarding spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation. Specifically, the proposed site is located 18 km from K224AT Redmond, to which the spacing requirement is 10 km.

FMSTUDY.EXE Copyright 2004, Hatfield & Dawson, LLC Version 1.70

SEARCH PARAMETERS FM Database Date: 051017

Channel: 277A 103.3 MHz

Latitude: 44 34 45

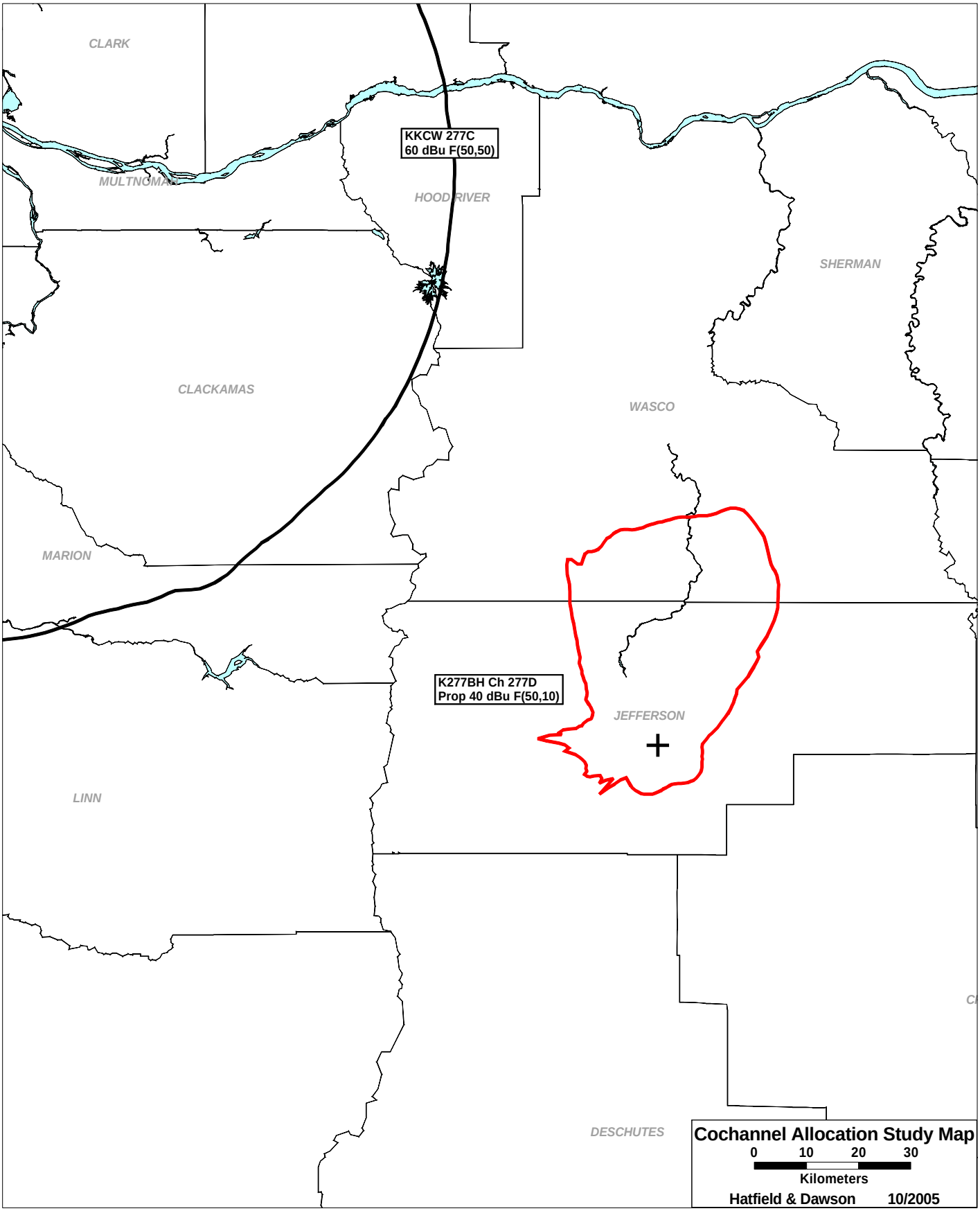
Longitude: 121 9 9

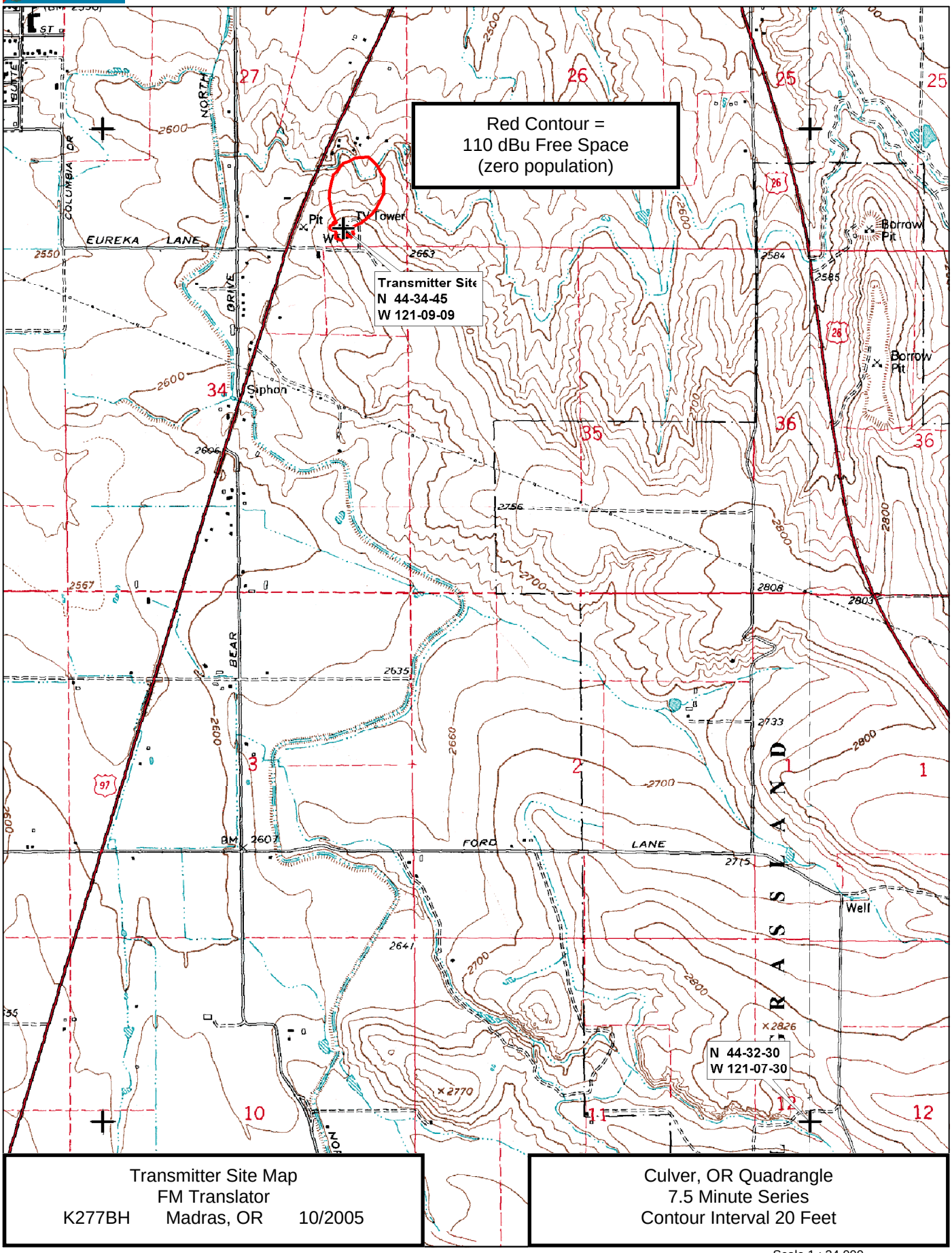
Safety Zone: 32 km

Job Title: K277BH AT ROWT SITE

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
K224AT	REDMOND		224D	0.023 DA	44-25-02	167.0	18.47	0
LIC	OR	BLFT-830505MG	92.7	635.0	121-06-01		0.00	TRANS
KSJJ	REDMOND		275C1	100.000	44-02-49	207.1	66.39	75
LIC	OR	BMLH-040702AFK	102.9	270.0	121-31-50		-8.61	SHORT
K276EE	THE DALLES		276D	0.250	45-30-28	358.4	103.24	0
LIC	OR	BLFT-980209TI	103.1	38.0	121-11-20		0.00	TRANS
KKCW	BEAVERTON		277C	100.000	45-31-21	310.5	163.54	226
LIC	OR	BLH-011214AAF	103.3	470.0	122-44-45		-62.46	SHORT
K280BD	PRINEVILLE		277D	0.100 DA	44-26-07	135.1	22.57	0
CP	OR	BPFT-050824ABY	103.3	785.0	120-57-08		0.00	TRANS
NOTE:	LICENSE APPLICATION PENDING AS K277BH							
KXPC-FM	LEBANON		279C	90.000	44-34-49	270.5	107.18	95
LIC	OR	BLH-041222ABK	103.7	624.0	122-30-07	SS	12.18	CLEAR
KXPCaux	LEBANON		279C	0.600	45-00-35	297.5	105.31	0
CP	OR	BXPH-050506AAH	103.7	529.0	122-20-17		0.00	AUX
K280BD	PRINEVILLE		280D	0.045 DA	44-26-05	135.2	22.64	0
LIC	OR	BLFT-810508IB	103.9	785.0	120-57-06		0.00	TRANS

44444 END OF FM SPACING STUDY FOR CHANNEL 277 44444


CLARK
MULTNOMAH
HOOD RIVER
SHERMAN
CLACKAMAS
WASCO
MARION
JEFFERSON
LINN
DESCHUTES
KKCW 277C
60 dBu F(50,50)
K277BH Ch 277D
Prop 40 dBu F(50,10)
Cochannel Allocation Study Map
0 10 20 30
Kilometers
Hatfield & Dawson 10/2005

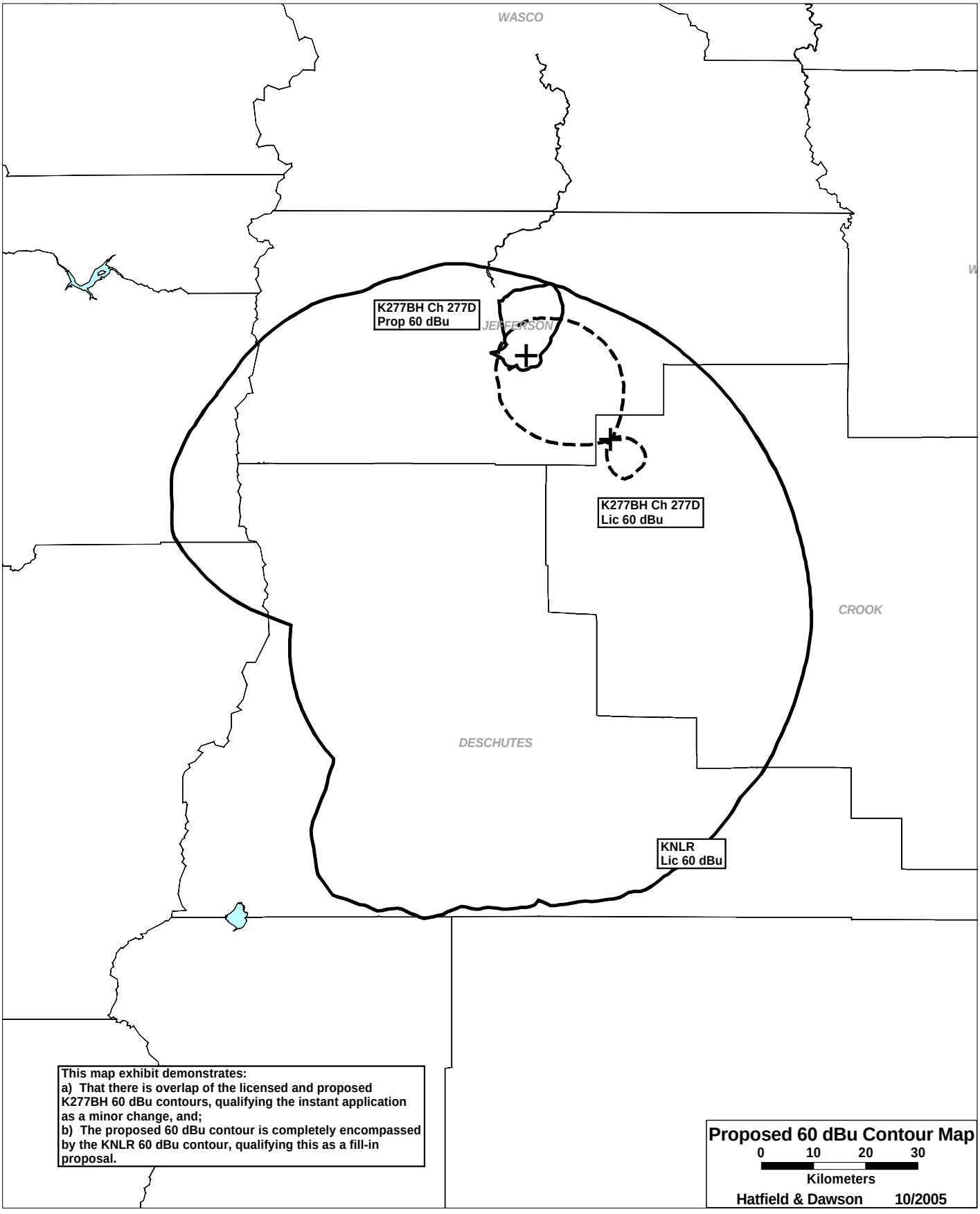


Transmitter Site Map
FM Translator
K277BH Madras, OR 10/2005

Culver, OR Quadrangle
7.5 Minute Series
Contour Interval 20 Feet

TN
MN (16.5°E)

Scale 1 : 24,000
1" = 609.6 m Data Zoom 13-1


WASCO
K277BH Ch 277D
Prop 60 dBu
JEFFERSON
K277BH Ch 277D
Lic 60 dBu
CROOK
DESCHUTES
KNLR
Lic 60 dBu
This map exhibit demonstrates:
a) That there is overlap of the licensed and proposed K277BH 60 dBu contours, qualifying the instant application as a minor change, and;
b) The proposed 60 dBu contour is completely encompassed by the KNLR 60 dBu contour, qualifying this as a fill-in proposal.
Proposed 60 dBu Contour Map
0 10 20 30
Kilometers
Hatfield & Dawson 10/2005

K277BH Minor Modification
Channel 277D
NIER Study
October 2005

Facilities Proposed

The proposed operation will be on Channel 277D (103.3 MHz) with a maximum lobe effective radiated power of 250 Watts. Operation is proposed with an antenna to be mounted on an existing wooden structure.

The proposed antenna support structure will not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

NIER Study

Television translator stations K56BV, K58BK, K63CC, K66BC, and K69BI also operate from this transmitter site. Each of these television translators holds a construction permit for displacement into the core television spectrum. Each of the construction permits is for operation on a lower frequency, with greater ERP, than the existing licenses. Therefore, the construction permit facilities have been studied as the worst case circumstance.

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.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed **K277BH** antenna system assume a Type 1 element pattern, which is the “worst case” FM element pattern. The highest calculated ground level power density occurs at a distance of 4 meters from the base of the antenna support structure. At this point the power density is calculated to be 44.7 µW/cm², which is 4.5% of 1000

$\mu W/cm^2$ (the FCC standard for controlled environments) and 22.4% of 200 $\mu W/cm^2$ (the FCC standard for uncontrolled environments).

K56BV, K58BK, K63CC, and K69BI hold construction permits to operate from a common 1-level Kathrein panel antenna array on **Channels 30, 32, 48, and 45**, respectively. Power density levels produced by that TV translator antenna (combined operation proposed for all four translators) were calculated for an elevation of 2 meters above ground level (17 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 30° and 90° below the horizontal. The calculations in this report assume a worst case relative field value of 0.200 at these angles, based on review of vertical plane pattern data provided by the antenna manufacturer.

For Madras Ch. 30, Ch. 32, and Ch. 38, this relative field value yields a worst case adjusted effective radiated power of 48 Watts (20% aural assumed) at depression angles between 30° and 90° below the horizontal. Assuming this worst-case effective radiated 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 5.5 $\mu W/cm^2$.

> For Madras Ch. 30, this is 0.3% of 1891 $\mu W/cm^2$ (the FCC standard for controlled environments at the Ch. 30 visual carrier frequency), and 1.5% of 378 $\mu W/cm^2$ (the FCC standard for uncontrolled environments at the Ch. 30 visual carrier frequency).
>
> For Madras Ch. 32, this is 0.3% of 1931 $\mu W/cm^2$ (the FCC standard for controlled environments at the Ch. 32 visual carrier frequency), and 1.4% of 386 $\mu W/cm^2$ (the FCC standard for uncontrolled environments at the Ch. 32 visual carrier frequency).
>
> For Madras Ch. 38, this is 0.3% of 2051 $\mu W/cm^2$ (the FCC standard for controlled environments at the Ch. 38 visual carrier frequency), and 1.3% of 410 $\mu W/cm^2$ (the FCC standard for uncontrolled environments at the Ch. 38 visual carrier frequency).

For Madras Ch. 45, this relative field value yields a worst case adjusted effective radiated power of 41 Watts (20% aural assumed) at depression angles between 30° and 90° below the horizontal. Assuming this worst-case effective radiated 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 4.7 $\mu W/cm^2$. This is 0.2% of 2191 $\mu W/cm^2$ (the FCC standard for controlled environments at the Ch. 45 visual carrier frequency), and 1.1% of 438 $\mu W/cm^2$ (the FCC standard for uncontrolled environments at the Ch. 45 visual carrier frequency).

K66BC holds a construction permit to operate from a 4-level Kathrein panel antenna array on Channel 34. Power density levels produced by that TV translator antenna were calculated for an elevation of 2 meters above ground level (15 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 30° and 90° below the horizontal. The calculations in this report assume a worst case relative field value of 0.100 at

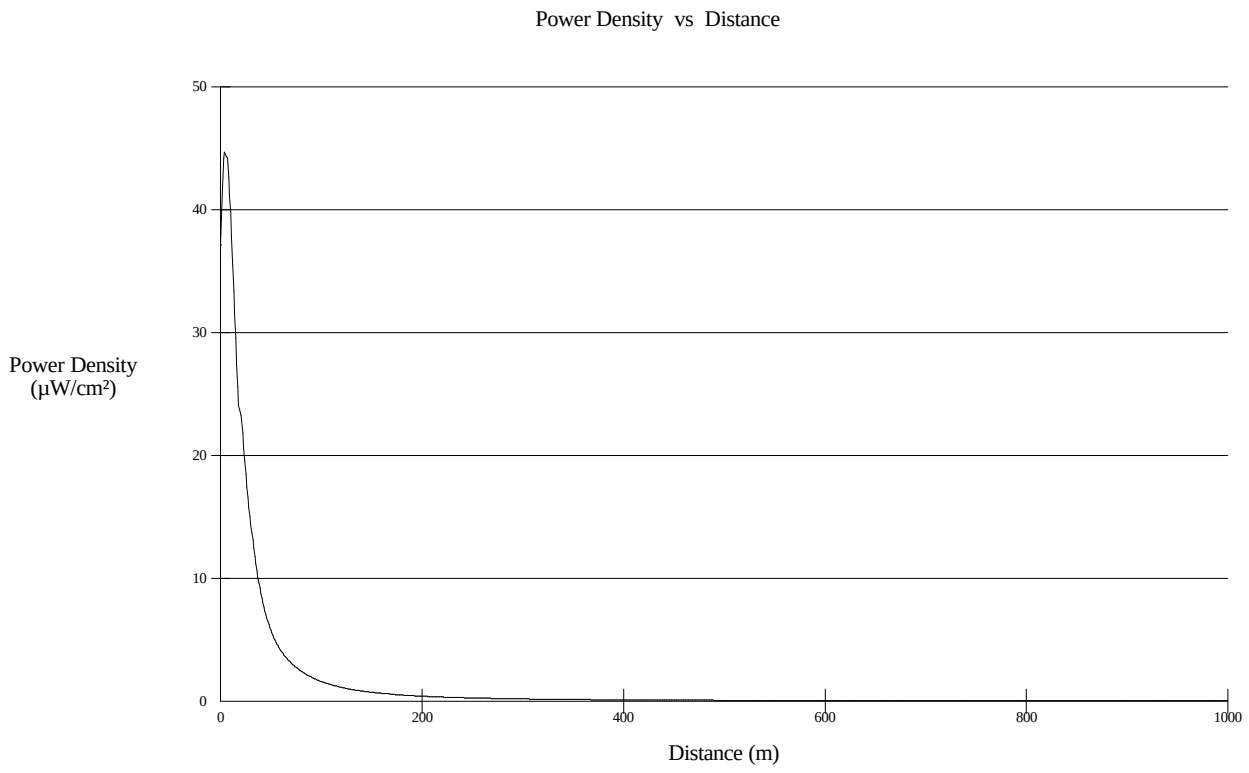
these angles, based on review of vertical plane pattern data provided by the antenna manufacturer.

For Madras Ch. 34 this relative field value yields a worst case adjusted effective radiated power of 104.4 Watts (20% aural assumed) at depression angles between 30° and 90° below the horizontal. Assuming this worst-case effective radiated 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 15.5 μW/cm², which is 0.8% of 1971 μW/cm^2 (the FCC standard for controlled environments at the Ch. 34 visual carrier frequency), and 3.9% of 394 μW/cm^2 (the FCC standard for uncontrolled environments at the Ch. 34 visual carrier frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of K277BH and the and the TV translators at this site (were their maxima to coincide, which they do not) is 31.6% of the FCC standard for uncontrolled environments.

Public access to the site is restricted and the antenna tower is posted with warning signs. 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 radiation in excess of FCC guidelines.



Ground-Level NIER Analysis OET FMModel

K277BH Madras
Antenna Type: Scala CA5-CP (ring stub assumed for this analysis)
Number of Elements: 1
Element Spacing: dna

Distance: 1000 meters
Horizontal ERP: 250 Watts
Vertical ERP: 250 Watts

Antenna Height: 17 meters AGL

Maximum Power Density is 44.7 µW/cm2 at 4 meters from the antenna structure.