

TECHNICAL EXHIBIT
MINOR CHANGE IN LICENSED FACILITY
STATION KAYO-FM (FACILITY ID 33622)
ELMA, WASHINGTON

DECEMBER 18, 2002

CH 257C 41 KW (MAX-DA) 638 M

TECHNICAL EXHIBIT
MINOR CHANGE IN LICENSED FACILITY
STATION KAYO-FM (FACILITY ID 33622)
ELMA, WASHINGTON
CH 257C 41 KW (MAX-DA) 638 M

Table of Contents

	Technical Narrative
Figure 1	Reference Site Location Map
Figure 2	Reference Site Allocation Study
Figure 3	Reference Site Coverage Map
Figure 4	Proposed Antenna and Supporting Structure
Figure 5	Proposed Site Location Map
Figure 6	Proposed Site Coverage Map
Figure 7	Proposed Site Allocation Study
Figure 8	Antenna Patterns

TECHNICAL EXHIBIT
MINOR CHANGE IN LICENSED FACILITY
STATION KAYO-FM (FACILITY ID 33622)
ELMA, WASHINGTON
CH 257C 41 KW (MAX-DA) 638 M

Technical Narrative

This Technical Exhibit was prepared on behalf of FM radio station KAYO-FM at Elma, Washington, in support of an application for minor change in licensed facility. Station KAYO-FM is currently licensed to operate as a Class C1 station on channel 257 (99.3 MHz) with an effective radiated power (ERP) of 12 kilowatts with an antenna height above average terrain (HAAT) of 650 meters (BLH-20020614AAH). By this instant application, it is proposed to modify the station class to C employing the “one-step” allotment process with a maximum ERP of 41 kilowatts and an antenna HAAT of 638 meters. Section 73.215 short-spaced processing at the proposed transmitter site is also requested towards station KQSN(FM) on channel 257A, at Naches, Washington (facility id 88006).

The proposal would not be subject to environmental processing in accordance with Section 1.1306. The existing tower structure registration number is 1027587. It is believed that this proposal conforms to all applicable rules and regulations of the FCC.

One-Step Upgrade

Since the proposed transmitter site requests short-spacing under Section 73.215 of the Commission’s Rules (as described below), a Channel 257C allotment reference site, fully-spaced to all domestic stations and allotments, described by the following geographic coordinates, is therefore proposed.

47° 14’ 17” North Latitude
123° 40’ 45” West Longitude

Figure 1 is a topographic site map showing the allotment reference site. As can be seen from Figure 1, the assumed reference site is suitable for a transmission facility. Figure 2 is an Allocation Study for Channel 257C at the reference allotment site. The proposed allotment reference site satisfies the Commission's minimum distance separations contained in Section 73.207(b) of the Commission's Rules toward all other domestic stations and allotments.

The allotment reference site is located 120 kilometers from the nearest Canadian land point. As explained further in this technical narrative, the proposed KAYO-FM transmitter site is located closer to Canadian soil than the allotment reference point and, hence, would protect all Canadian allotments and stations. It is therefore believed that this allotment reference site is in compliance with the U.S./Canadian FM Agreement.

Figure 3 is a coverage map showing that the allotment site's FCC predicted 70 dBu contour entirely encompasses the principal community of Elma.

Proposed Transmitter Location

The transmitting facility will be located at a new site and tower. A sketch showing the proposed antenna and supporting structure is shown on Figure 4. The location is uniquely described by the following geographic coordinates:

47° 19' 11" North Latitude
123° 20' 42" West Longitude

Blanketing Interference Concerns

The 115 dBu predicted "blanketing" contour of the proposed station would extend radially 2.5 kilometers from the transmitting site. The applicant recognizes its responsibility to resolve complaints of interference, including blanketing and receiver-induced interference as required by Sections 73.315(b), 73.316(e) and 73.318.

FCC Predicted Coverage Contours

The predicted coverage contours for the proposed operation were calculated in accordance with the provisions of Section 73.313. Pursuant with current FCC practice, the distances to the contours were calculated without consideration given to terrain roughness correction factors.

The average terrain elevations from 3 to 16 kilometers were obtained from U.S.G.S. 3-second digitized terrain database. The terrain elevations were then used in combination with the effective radiated power for determining the distances to coverage contours. The proposed 60 dBu reference contour, based on 41 kilowatts ERP and an HAAT of 638 meters, will exceed 84 kilometers. The proposed reference Class C0 contour distance, as specified in Section 73.211(b) is 83 kilometers. Therefore, this facility can be classified as a Class C facility as it exceeds the maximum reference contour distance for a Class C0 facility.

The proposed 12-bay, $\frac{1}{2}$ wave spaced FM antenna is describe in Figure 8. Sheet 1 is a horizontal relative field “envelope” for the directional antenna, used in calculating the contours from the proposed site. The pattern meets the 2 dB-decade and 15 dB min-to-max requirements of Section 73.316(b) and thus the 20 dB min-to-max ratio of the U.S./Canadian FM Agreement.

Figure 5 is a topographic site map showing the proposed transmitter site. Figure 6 is a map showing the predicted coverage contours. It is indicated that the FCC predicted 70 dBu coverage contour encompasses all of the Elma city limits.

Site Allocation Study

Channel 257C at the proposed site will satisfy the Commission’s minimum separation distance requirements, specified in Section 73.207(b) of the Rules, to all domestic assignments except to station KQSN(FM) at Naches, Washington (see Sheet 1 of Figure 7).

Section 73.215 processing is requested towards KQSN(FM). The actual separation distance is 204.8 kilometers from the proposed KAYO-FM site; the minimum fully spaced (Section 73.207) separation distance is 226 kilometers; the minimum short-spaced (Section 73.215) separation distance is 203 kilometers. The map in Figure 7 indicates that there will be no predicted prohibited contour overlap between the proposed KAYO-FM and KQSN(FM). Since station KQSN(FM) already operates pursuant to Section 73.215, its actual facilities were used in determining its protected (60 dBu) and interfering contour (40 dBu).

Canadian Compliance

The proposed site is located 111 kilometers from the nearest point of the Canadian border. There appear to be three stations of concern that are short-spaced. Station CFOX-FM, on channel 257 at Vancouver, is a Class C station that has a protected contour extending radially 97 kilometers. A new station on channel 258 at Sooke is a Class A station that has a protected contour extending 33 kilometers. A new station on channel 258 at Metchosin is a Class A station that has a protected contour extending 33 kilometers. The map in Sheet 4 of Figure 7 indicates that there will be no prohibited contour overlap on Canadian land between the proposed KAYO-FM (48 dBu contour) operation and CFOXFM. It is also shown that no prohibited contour overlap will occur on Canadian land between the proposed KAYO-FM (38 dBu contour) operation and the remaining Canadian stations/allotments.

Environmental Considerations

The proposed KAYO-FM facilities were evaluated in terms of potential radio frequency (RF) energy exposure at ground level to workers and the general public. The radiation center for the proposed, half-wave spaced, 12-Bay antenna is located 60 meters above ground level. The total ERP (horizontal & vertical polarizations) is 82 kW. A worst-case relative field value of 0.37 at a downward angle of 70° was assumed for the calculation (see Figure 8). Therefore, the “worst-case” calculated power density at a point 2 meters above ground level will be 0.0024 mW/cm². This is 1.2% of the FCC's recommended limit of 0.2 mW/cm² for FM frequencies for an “uncontrolled” environment.

Access to the transmitting site will be restricted and appropriately marked with warning signs. In the event that workers or other authorized personnel enter restricted areas or climb the tower, appropriate measures will be taken to assure worker safety with respect to radio frequency radiation exposure. Such measures include reducing the average exposure by spreading out the work over a longer period of time, wearing "accepted" RFR protective clothing and/or RFR exposure monitors or scheduling work when the stations are at reduced power or shut down. The proposed KAYO-FM operation appears to be otherwise categorically excluded from environmental processing.

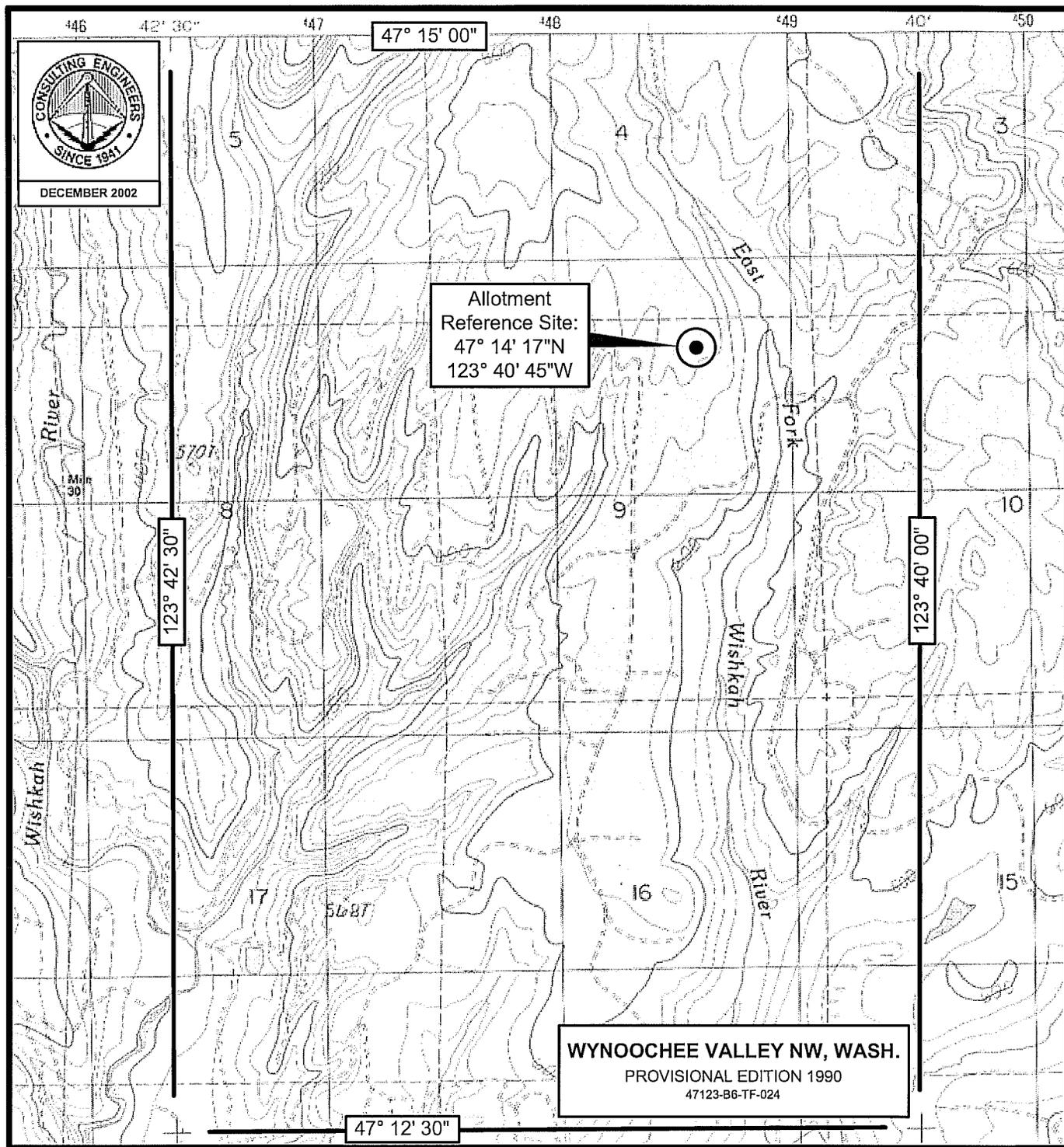


Jonathan N. Edwards

du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237
(941) 329-6000

December 18, 2002

Figure 1



ALLOTMENT REFERENCE SITE

STATION KAYO-FM
ELMA, WASHINGTON
CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

CDBS FM SEPARATION STUDY - REFERENCE SITE

Channel: 257C												Separation Buffer: 65 km	
												Coordinates: 47-14-17 N 123-40-45 W	
Call Id	City St	File Status	Channel Num	ERP Freq	DA HAAT	Latitude Longitude	73 215	Bear	Dist. (km)	Req. (km)	73.215	73.207	
KWJZ 57843	SEATTLE WA	BLH LIC C	19970317KB	255C 98.9	58.0 714	Y 15000	47-30-14 121-58-29	N	76.4	132.09	99.0	105.0	
KAYO-FM 33622	ELMA WA	BLH LIC C	20020614AAH	257C1 99.3	12.0 650	Y 39954	46-58-31 123-08-21	Y	125.4	50.34			
KQSN 88006	NACHES WA	BLH LIC C	20000210ABI	257A 99.3	0.79 274	N	46-36-02 120-52-06	Y	107.3	225.53	203.0	226.0	
CFOXF 96554	VANCOUVER BC	C		257C 99.3	72.0 686	Y	49-21-29 122-57-09	N	12.6	241.82	203.0	306.0	
<i>See Technical Narrative</i>													
95032	SOOKE BC	C		258A 99.5		N	48-21-28 123-41-10	N	359.8	124.50	165.0	182.0	
<i>See Technical Narrative</i>													
	METCHOSIN BC	E RM C		258A 99.5		N	48-24-09 123-34-20	N	3.5	129.72	165.0	182.0	
<i>See Technical Narrative</i>													
KWJJ-FM 13738	PORTLAND OR	BLH LIC C	199111106KG	258C1 99.5	52.0 386	N	45-29-20 122-41-40	N	158.4	208.68	188.0	209.0	
	ILWACO WA	RM ADD C	bg-21	259A 99.7			46-18-33 124-02-31		195.1	106.91	89.0	95.0	
KISW 47750	SEATTLE WA	BLH LIC C	20000204AAG	260C 99.9	58.0 714	Y 15848	47-30-14 121-58-29	Y	76.4	132.09	99.0	105.0	

Figure 3



PREDICTED F(50,50) COVERAGE CONTOURS

STATION KAYO-FM

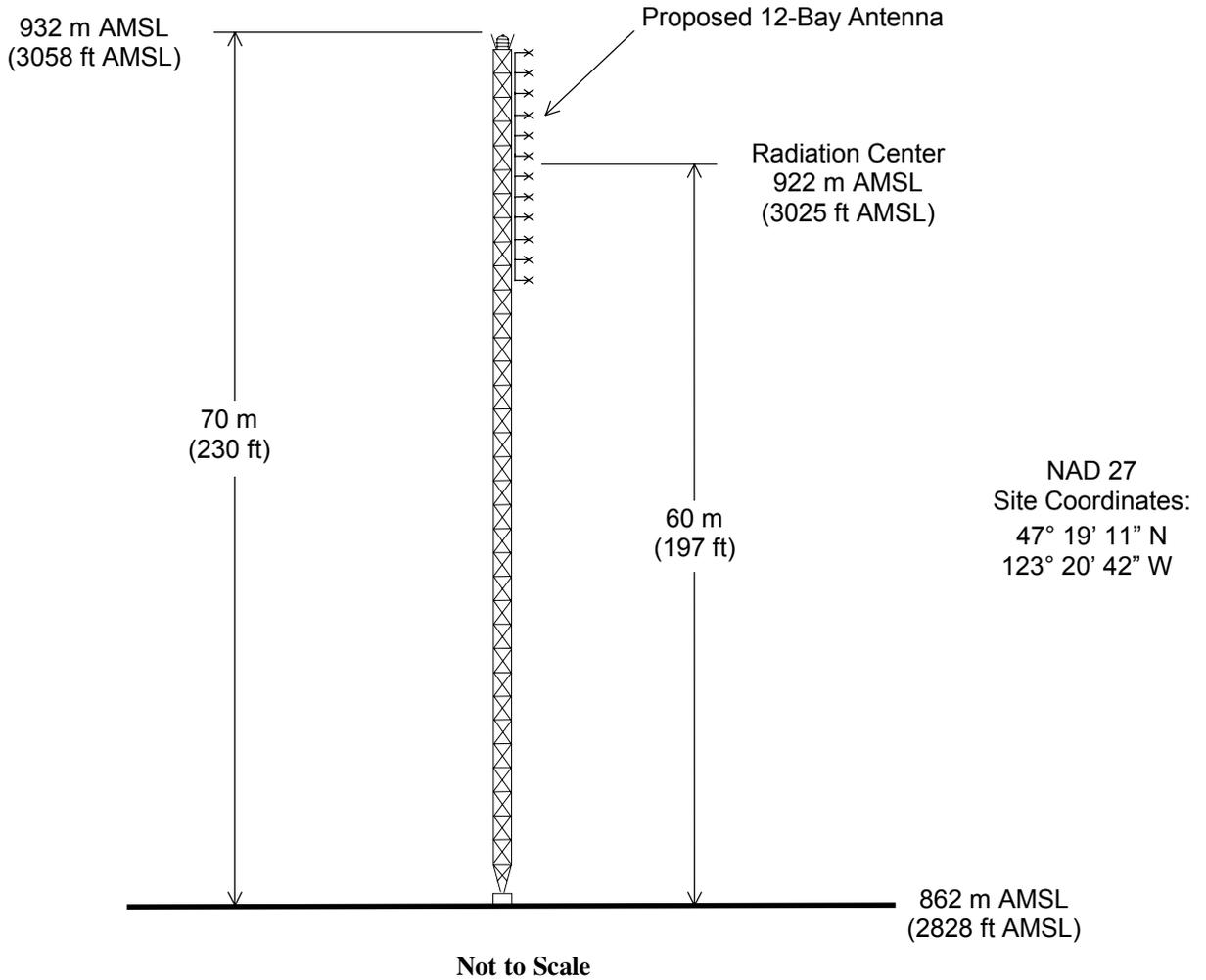
ELMA, WASHINGTON

CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida



FAA Notification Filed



PROPOSED ANTENNA AND SUPPORTING STRUCTURE

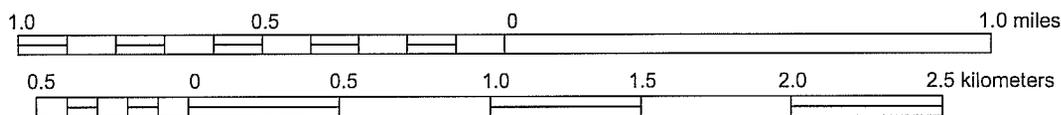
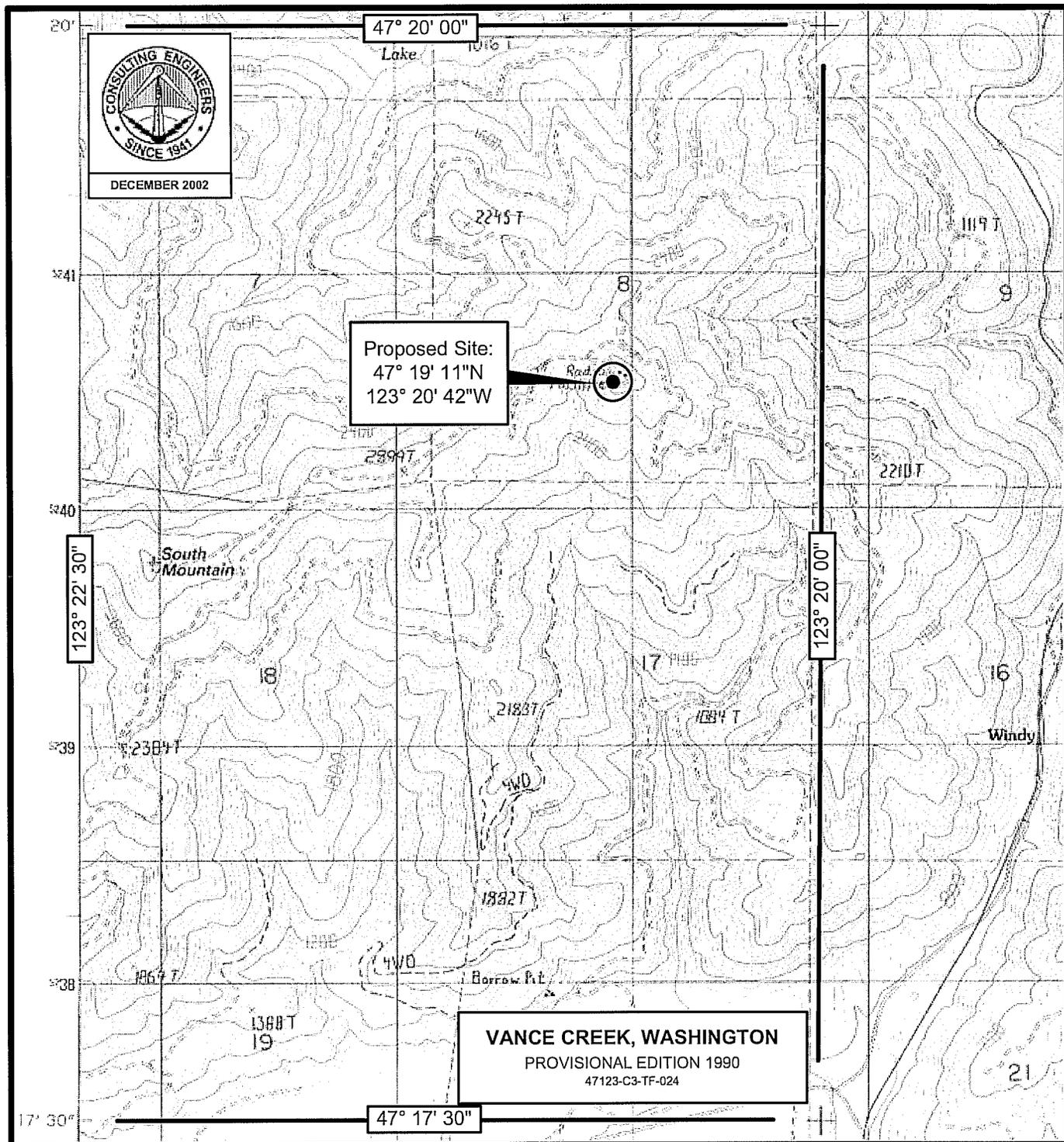
STATION KAYO-FM

ELMA, WASHINGTON

CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 5

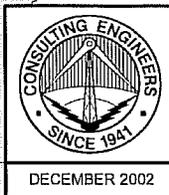


PROPOSED TRANSMITTER SITE

STATION KAYO-FM
ELMA, WASHINGTON
CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

Figure 6



Proposed KAYO-FM
 70 dBu F(50,50)
 60 dBu F(50,50)

Elma city limits derived from 2000 U.S. Census information for Washington

Average elevations from 3.2 to 16.1 km were obtained from the U.S.G.S. 3-second digitized terrain database for determining distances to contours

60 dBu Contour
 U.S. Land Area: 19,400 km²
 U.S. Population (2000 Census): 2,684,600

PREDICTED F(50,50) COVERAGE CONTOURS

STATION KAYO-FM
 ELMA, WASHINGTON

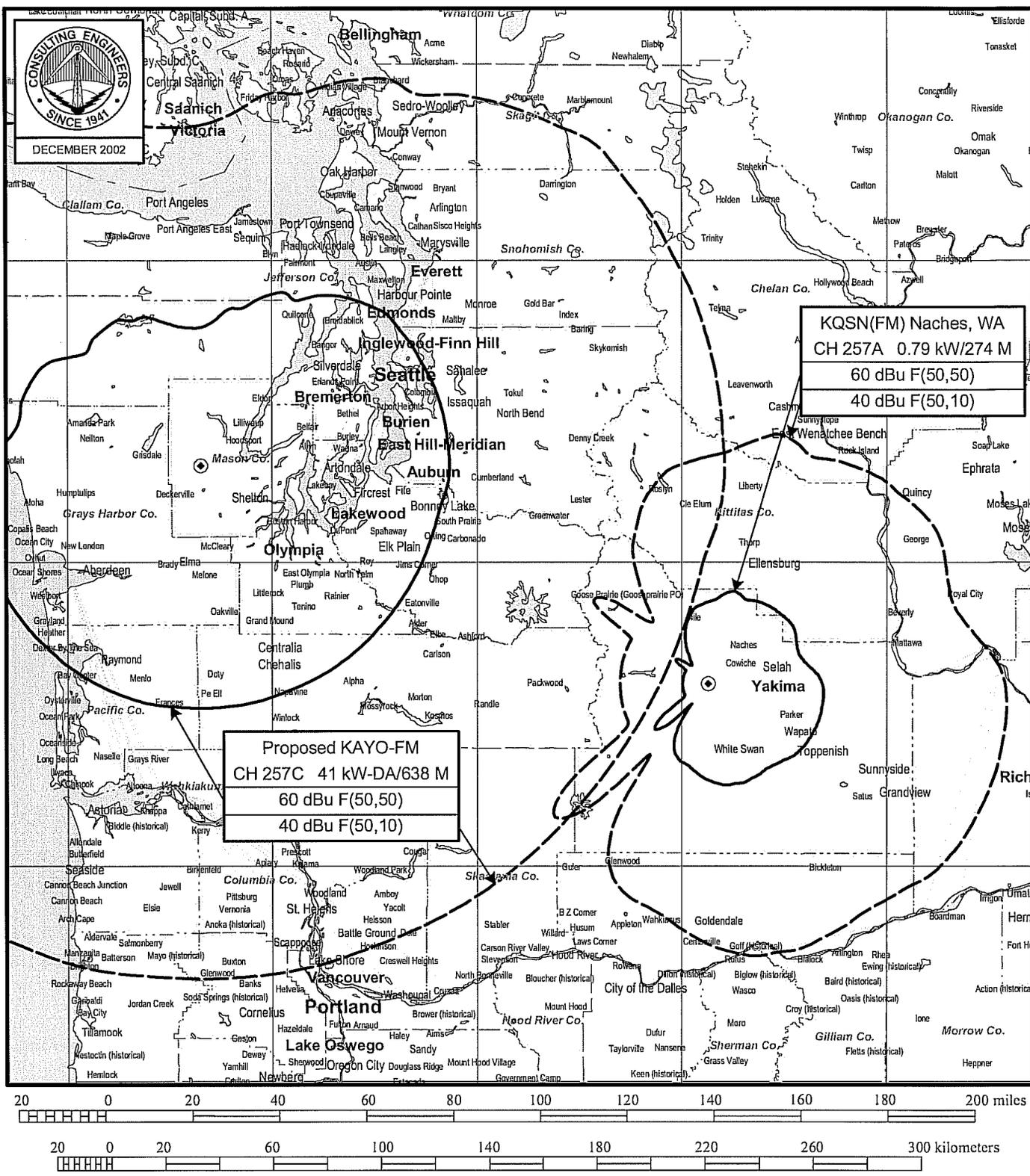
CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida

CDBS FM SEPARATION STUDY - PROPOSED SITE

Channel: 257C Separation Buffer: 65 km
Coordinates: 47-19-11 N 123-20-42 W

Call Id	City St	File Status	Channel Num	ERP Freq	DA HAAT	Latitude Longitude	73 215	Bear	Dist. (km)	Req. (km)	73.215	73.207
KPLU-FM 51199	TACOMA WA	BLIC C	19890925KA	203C 88.5	58.0 714	Y 14009	47-30-14 121-58-29	N	78.3	105.43	0.0	48.0
KWJZ 57843	SEATTLE WA	BLIC C	19970317KB	255C 98.9	58.0 714	Y 15000	47-30-14 121-58-29	N	78.3	105.43	99.0	105.0
KAYO-FM 33622	ELMA WA	BLIC C	20020614AAH	257C1 99.3	12.0 650	Y 39954	46-58-31 123-08-21	Y	157.8	41.35		
KQSN 88006	NACHES WA	BLIC C	20000210ABI	257A 99.3	0.79 274	N	46-36-02 120-52-06	Y	112.1	204.76	203.0	226.0
<i>Contour overlap provisions of Section 73.215 used. See Technical Narrative</i>												
CFOXFM 96554	VANCOUVER BC	C		257C 99.3	72.0 686	Y	49-21-29 122-57-09	N	7.1	228.52		306.0
<i>Contour overlap provisions of U.S./Canada FM Agreement used. See Technical Narrative</i>												
95032	SOOKE BC	C		258A 99.5		N	48-21-28 123-41-10	N	347.7	118.21		182.0
<i>Contour overlap provisions of U.S./Canada FM Agreement used. See Technical Narrative</i>												
	METCHOSIN BC	E RM C		258A 99.5		N	48-24-09 123-34-20	N	352.1	121.59		182.0
<i>Contour overlap provisions of U.S./Canada FM Agreement used. See Technical Narrative</i>												
KWJJ-FM 13738	PORTLAND OR	BLIC C	19911106KG	258C1 99.5	52.0 386	N	45-29-20 122-41-40	N	166.0	209.57	188.0	209.0
	ILWACO WA	RM ADD C	bg-21	259A 99.7			46-18-33 124-02-31		205.5	124.30	89.0	95.0
KISW 47750	SEATTLE WA	BLIC C	20000204AAG	260C 99.9	58.0 714	Y 15848	47-30-14 121-58-29	Y	78.3	105.43	99.0	105.0

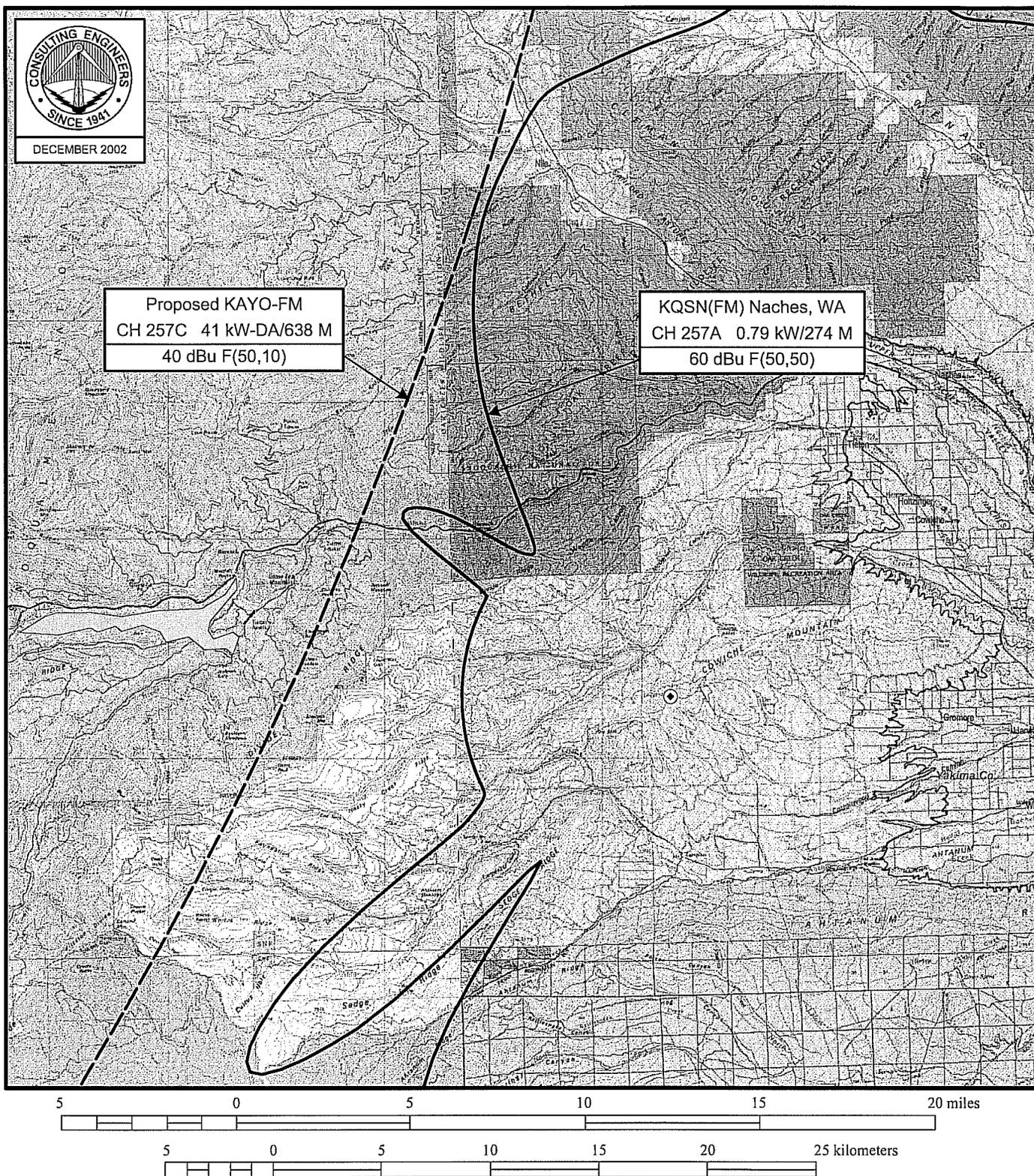


SECTION 73.215 CONTOUR MAP

STATION KAYO-FM
ELMA, WASHINGTON

CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida



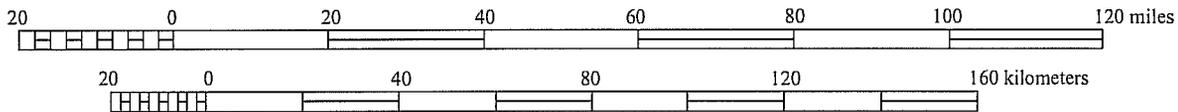
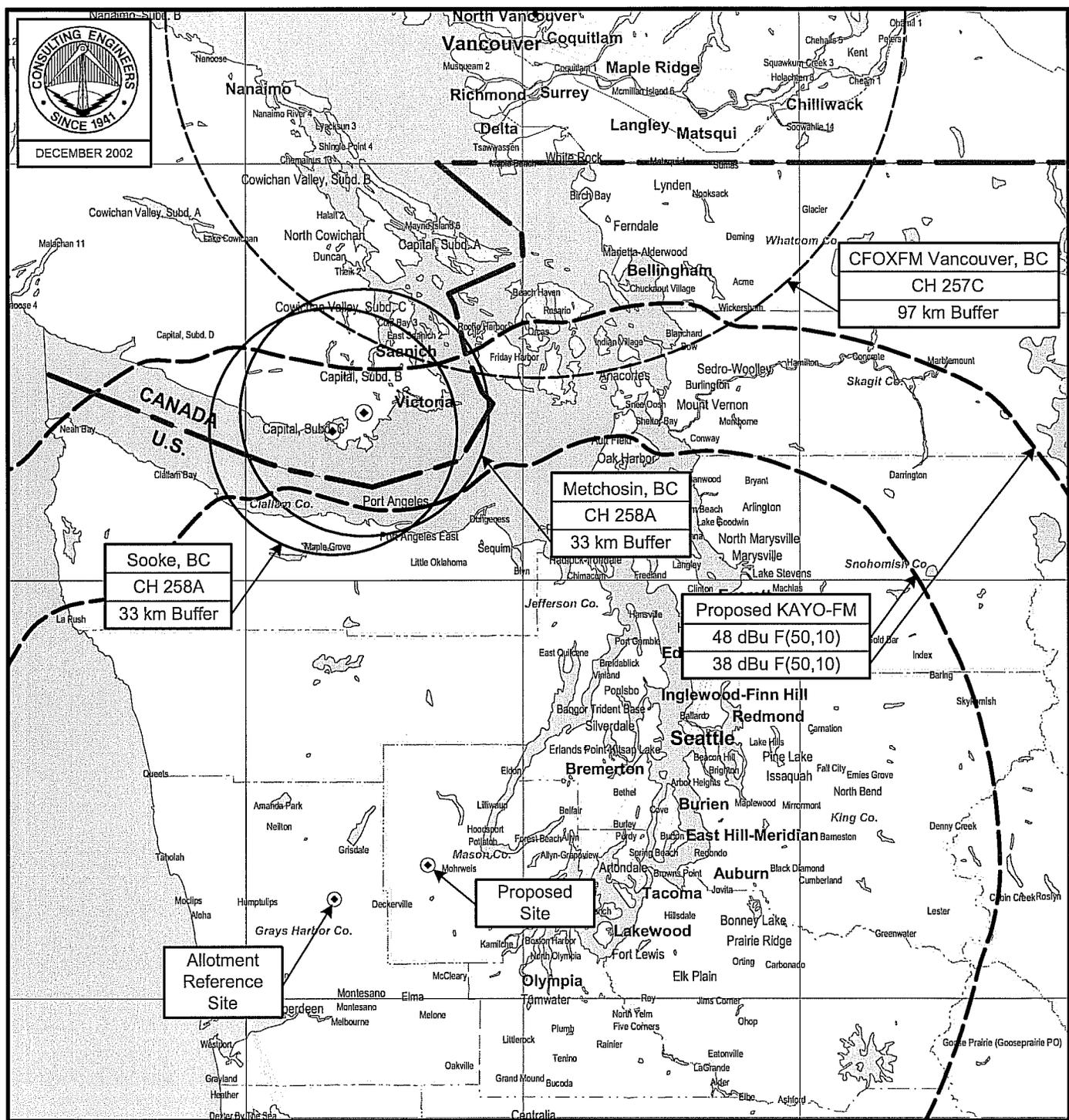
SECTION 73.215 CONTOUR MAP (ZOOM)

STATION KAYO-FM

ELMA, WASHINGTON

CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida



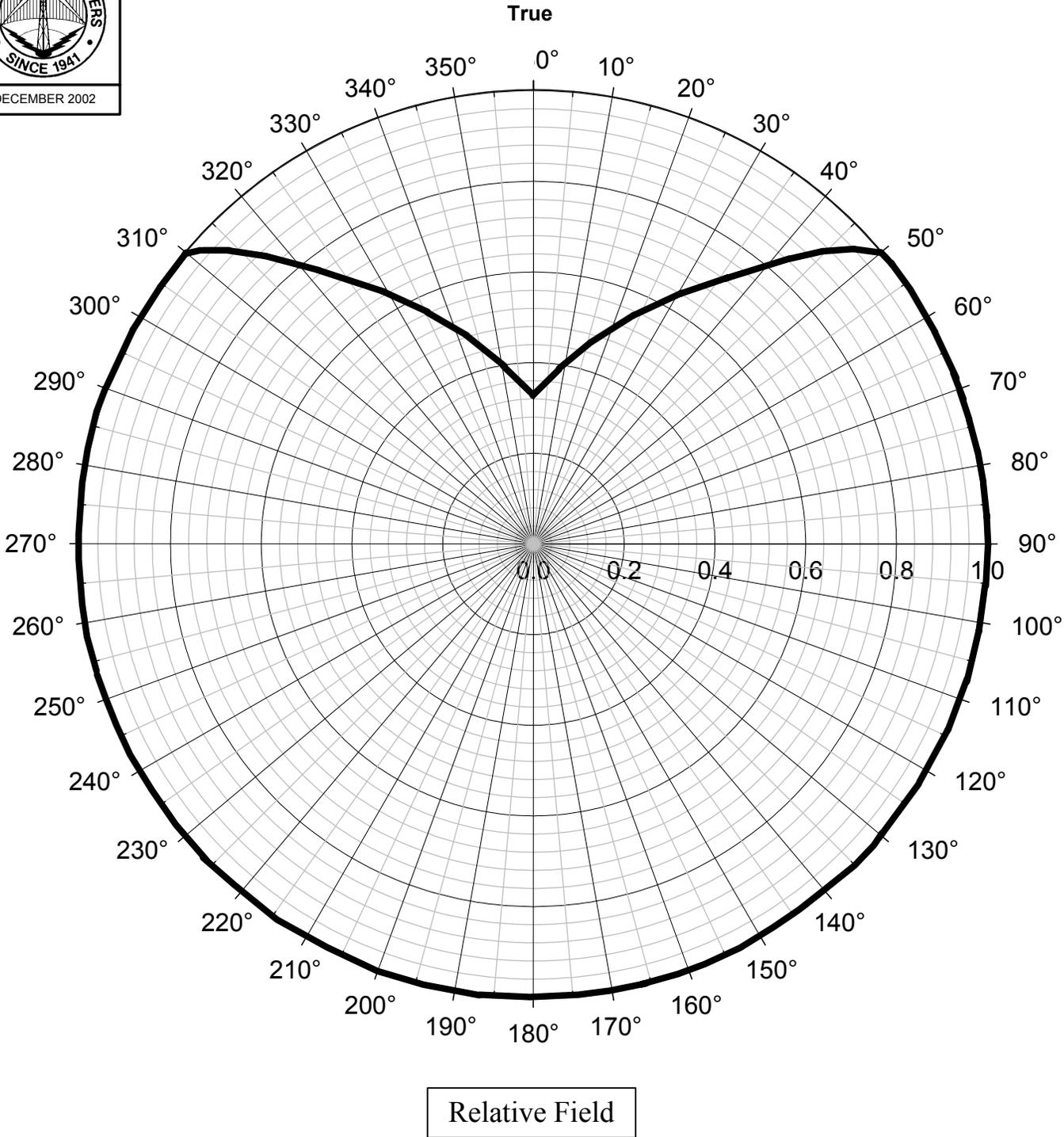
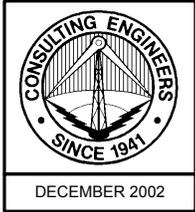
CANADIAN ALLOCATION MAP

STATION KAYO-FM

ELMA, WASHINGTON

CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida



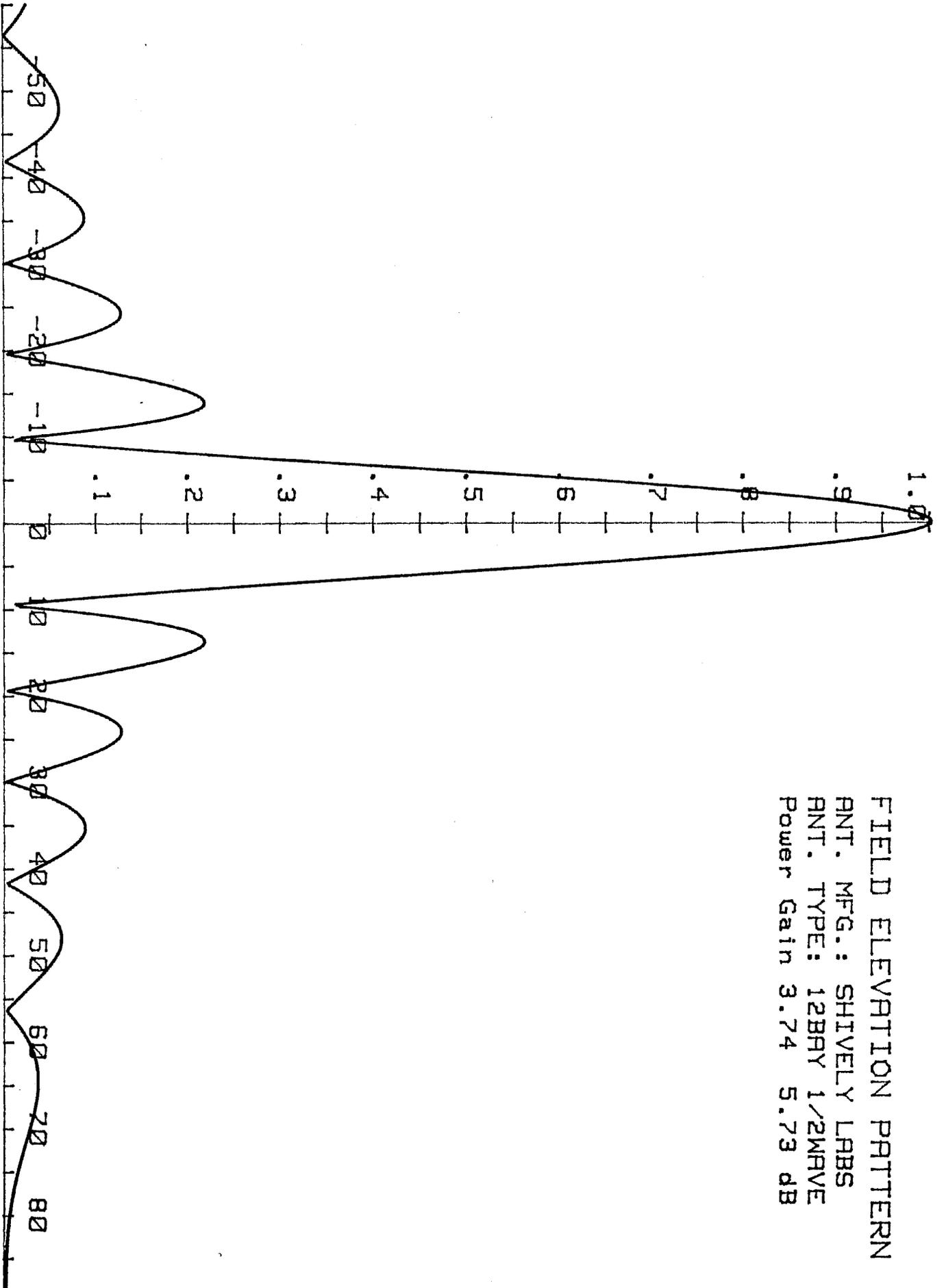
PROPOSED DIRECTIONAL ANTENNA ENVELOPE

STATION KAYO-FM
ELMA, WASHINGTON

CH 257C 41 KW (MAX-DA) 638 M

du Treil, Lundin & Rackley, Inc Sarasota, Florida

FIELD ELEVATION PATTERN
ANT. MFG.: SHIVELY LABS
ANT. TYPE: 12BRY 1/2WRVE
Power Gain 3.74 5.73 dB



Section III-B - FM Engineering

TECHNICAL SPECIFICATIONS

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

TECH BOX

1. Channel Number: 257

2. Class (select one):
 A B1 B C3 C2 C1 C0 C D

3. Antenna Location Coordinates: (NAD 27)
 Latitude:
 Degrees 47 Minutes 19 Seconds 11 North South
 Longitude:
 Degrees 123 Minutes 20 Seconds 42 West East

4. One Step Proposal Allotment Coordinates: (NAD 27) Not Applicable
 Latitude:
 Degrees 47 Minutes 14 Seconds 17 North South
 Longitude:
 Degrees 123 Minutes 40 Seconds 45 West East

5. Antenna Structure Registration Number:
 Not Applicable Notification filed with FAA

6. Overall Tower Height Above Ground Level:	70meters	
7. Height of Radiation Center Above Mean Sea Level:	922 meters(H)	922 meters(V)
8. Height of Radiation Center Above Ground Level:	60meters(H)	60meters(V)
9. Height of Radiation Center Above Average Terrain:	638meters(H)	638meters(V)
10. Effective Radiated Power:	41 kW(H)	41 kW(V)
11. Maximum Effective Radiated Power: <input checked="" type="checkbox"/> Not Applicable (Beam-Tilt Antenna ONLY)	kW(H)	kW(V)

12. Directional Antenna Relative Field Values: Not applicable (Nondirectional)
 Rotation (Degrees): 0 No Rotation

Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value	Degrees	Value
0	0.32	10	0.403	20	0.507	30	0.638	40	0.803	50	1
60	1	70	1	80	1	90	1	100	1	110	1
120	1	130	1	140	1	150	1	160	1	170	1
180	1	190	1	200	1	210	1	220	1	230	1
240	1	250	1	260	1	270	1	280	1	290	1
300	1	310	1	320	0.803	330	0.638	340	0.507	350	0.403
Additional Azimuths											

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

CERTIFICATION

AUXILIARY ANTENNA APPLICANTS ARE NOT REQUIRED TO RESPOND TO ITEMS 13-16. PROCEED TO ITEM 17.

<p>13. Allotment. The proposed facility complies with the allotment requirements of 47 C.F.R. Section 73.203.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 21]</p>
<p>14. Community Coverage. The proposed facility complies with 47 C.F.R. Section 73.315.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 22]</p>
<p>15. Main Studio Location. The proposed main studio location complies with 47 C.F.R. Section 73.1125.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 23]</p>
<p>16. Interference. The proposed facility complies with all of the following applicable rule sections: Check all those that apply:</p> <p>Separation Requirements. <input type="checkbox"/> a) 47 C.F.R. Section 73.207</p> <p>Grandfathered Short-Spaced. <input type="checkbox"/> b) 47 C.F.R. Section 73.213(a) with respect to station(s): [Exhibit 25] Exhibit required <input type="checkbox"/> c) 47 C.F.R. Section 73.213(b) with respect to station(s): [Exhibit 26] Exhibit required <input type="checkbox"/> d) 47 C.F.R. Section 73.213(c) with respect to station(s): [Exhibit 27] Exhibit required.</p> <p>Contour Protection <input checked="" type="checkbox"/> e) 47 C.F.R. Section 73.215 with respect to station(s): [Exhibit 28] Exhibit required.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 24]</p>
<p>17. Environmental Protection Act. The proposed facility is excluded from environmental processing under 47. C.F.R. Section 1.1306 (i.e., The facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine compliance through the use of the RF worksheets in Appendix A, an Exhibit is required.</p> <p>By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.</p>	<p><input checked="" type="radio"/> Yes <input type="radio"/> No See Explanation in [Exhibit 29]</p>

PREPARERS CERTIFICATION ON PAGE 3 MUST BE COMPLETED AND SIGNED.

Exhibits

Exhibit 28

Description: SECTION 73.215 PROCESSING REQUESTED

TOWARDS STATION KQSN(FM), NACHES, WA

Exhibit 29

Description: COMPREHENSIVE TECHNICAL EXHIBIT

TECHNICAL NARRATIVE

FIGURE 1 - REFERENCE SITE LOCATION MAP

FIGURE 2 - REFERENCE SITE ALLOCATION STUDY

FIGURE 3 - REFERENCE SITE COVERAGE MAP

FIGURE 4 - PROPOSED ANTENNA AND SUPPORTING STRUCTURE

FIGURE 5 - PROPOSED SITE LOCATION MAP

FIGURE 6 - PROPOSED SITE ALLOCATION STUDY

FIGURE 7 - ANTENNA PATTERNS

Attachment 29

Description	Type	Conversion	
		Status	File
COMPREHENSIVE TECHNICAL EXHIBIT	Adobe Acrobat File	not needed	PDF

SECTION III - PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name JONATHAN N. EDWARDS	Relationship to Applicant (e.g., Consulting Engineer) TECHNICAL CONSULTANT	
Signature	Date 12/18/2002	
Mailing Address DU TREIL, LUNDIN & RACKLEY, INC. 201 FLETCHER AVENUE		
City SARASOTA	State or Country (if foreign address) FL	Zip Code 34237 -
Telephone Number (include area code) 9413296000	E-Mail Address (if available) JON@DLR.COM	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).