

ENGINEERING REPORT

PROPOSED KQUP-DT  
CHANNEL 24  
PULLMAN, WASHINGTON  
[MODIFICATION OF BPCT-19991008AAJ]

DECEMBER, 2002

C O N T E N T S

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EXHIBIT B	Antenna Pattern Data
EXHIBIT C	Predicted Service Contours
EXHIBIT D	Interference Study

**SMITH AND FISHER** . BROADCASTING AND TELECOMMUNICATIONS CONSULTANTS

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SUITE A . 2237 TACKETT'S MILL DRIVE . LAKE RIDGE, VIRGINIA 22192 . PHONE: (703) 494-2101 . FAX: (703) 494-2132

## ENGINEERING STATEMENT

The engineering data contained herein have been prepared on behalf of PULLMAN BROADCASTING, INC., permittee of KQUP(TV), Channel 24 in Pullman, Washington, in support of its Application for Modification of Construction Permit BPCT-19991008AAJ, to specify a change in transmitter site and operating as a digital television facility.

Exhibit B provides antenna pattern data, and the digital service contours appear as Exhibit C. An interference study, included as Exhibit D, concludes that the proposed facility can be granted under the FCC's *de minimis* interference Rules. It is not expected that operation of the proposed facility would cause objectionable interference to any authorized or proposed broadcast stations operating at the Krell Mountain antenna farm, but the owner of KQUP-DT recognizes its obligation to correct any such interference that may occur.

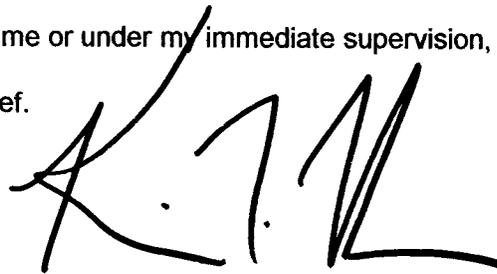
Pullman, Washington, is located in the Spokane television market. Accordingly, the proposed KQUP facility cannot exceed the facilities of the largest DTV facility in the Spokane market. KREM-DT is authorized to operate with an effective radiated power of 979 kw at an effective height of 671 meters above average terrain. The facility proposed herein specifies an effective radiated power of 1000 kw at an effective height of 569 meters above average terrain. Clearly the proposed KQUP-DT facility is not as large as that authorized to KREM-DT.

We have studied the RF transmissions of this facility with regard to their environmental effect. Employing the methods set forth in *OST Bulletin No. 65* and considering the vertical pattern of the proposed Andrew antenna, we calculate maximum power density two

EXHIBIT A

meters above ground from the proposed facility to be  $0.00089 \text{ mw/cm}^2$ , at locations 40 meters from the tower base. This value represents only 0.2 percent of the  $0.36 \text{ mw/cm}^2$  reference at this frequency for uncontrolled areas (areas with access to the public). Further, the owners of KQUP-DT will take whatever preventive steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive RF energy. On this basis, a grant of this application would clearly be a minor environmental action with respect to public and occupational exposure to non-ionizing electromagnetic radiation.

I declare under penalty of perjury that the foregoing statements and the attached Engineering Report, which was prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in black ink, appearing to read 'K. T. Fisher', with a stylized, overlapping structure.

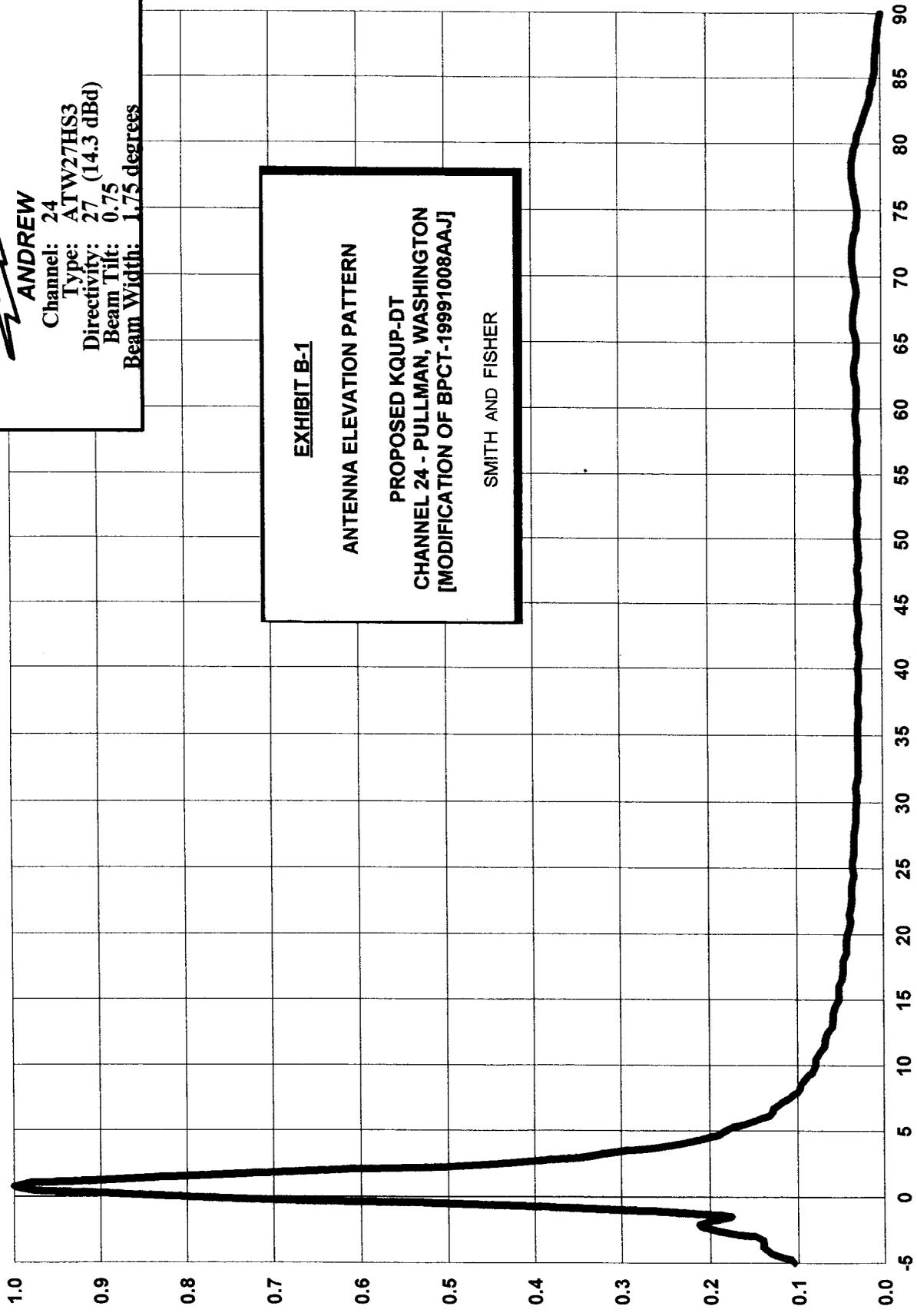
KEVIN T. FISHER

December 13, 2002



**ANDREW**

Channel: 24  
Type: ATW27HS3  
Directivity: 27 (14.3 dBd)  
Beam Tilt: 0.75  
Beam Width: 1.75 degrees



**EXHIBIT B-1**  
**ANTENNA ELEVATION PATTERN**  
**PROPOSED KQUP-DT**  
**CHANNEL 24 - PULLMAN, WASHINGTON**  
**[MODIFICATION OF BPCT-19991008AAJ]**  
**SMITH AND FISHER**

ANDREW CORPORATION  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A. 60462

Company:  
Site:  
Proposal Number:

Author:

Date: 12/9/2002



**ANDREW**

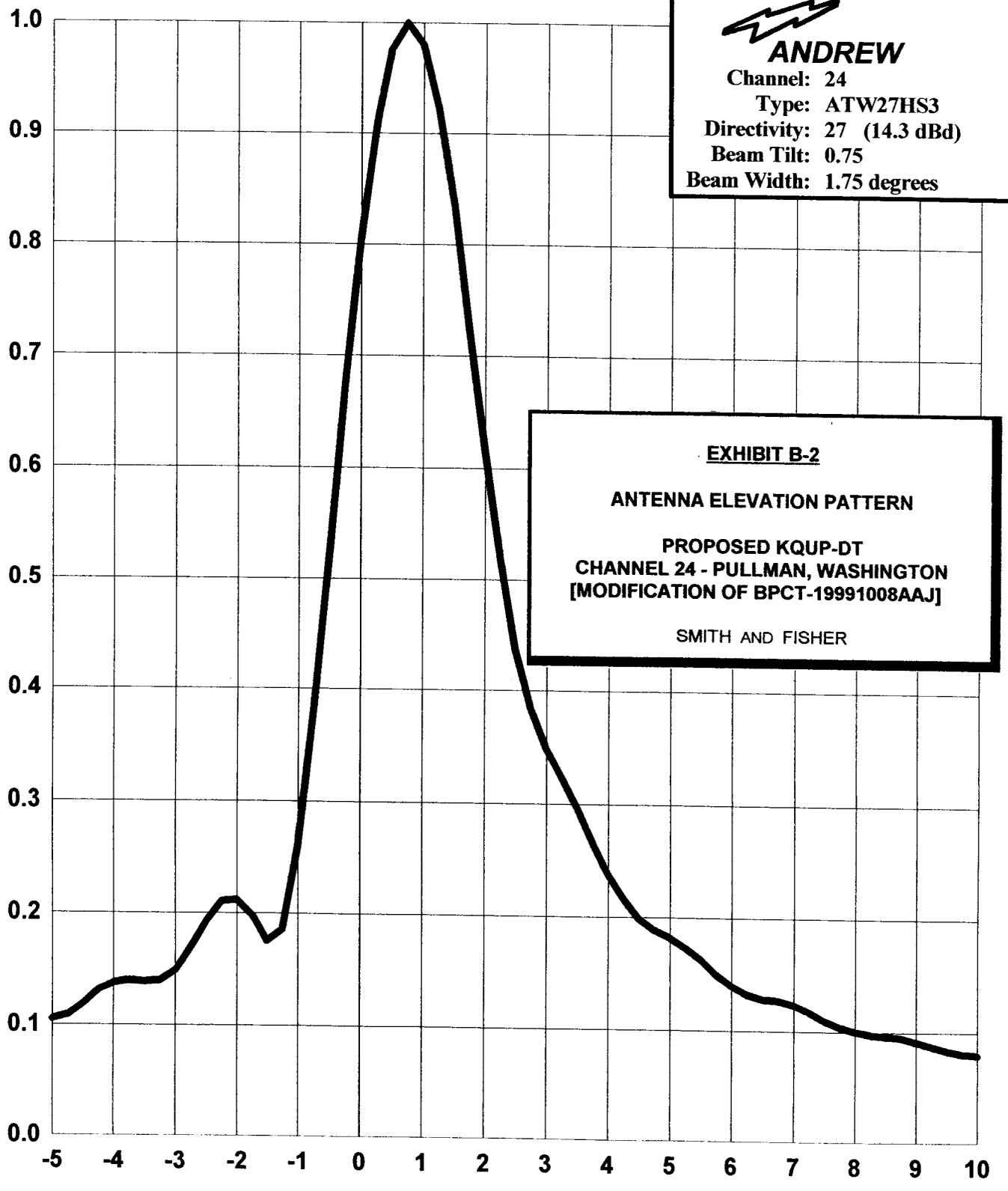
Channel: 24  
Type: ATW27HS3  
Directivity: 27 (14.3 dBd)  
Beam Tilt: 0.75  
Beam Width: 1.75 degrees

**EXHIBIT B-2**

**ANTENNA ELEVATION PATTERN**

**PROPOSED KQUP-DT  
CHANNEL 24 - PULLMAN, WASHINGTON  
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SMITH AND FISHER



**ANDREW CORPORATION**  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A. 60462

Company:  
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Date: 12/9/2002  
Author:

**EXHIBIT B-3**

**ANTENNA AZIMUTH PATTERN**

**PROPOSED KQUP-DT  
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SMITH AND FISHER



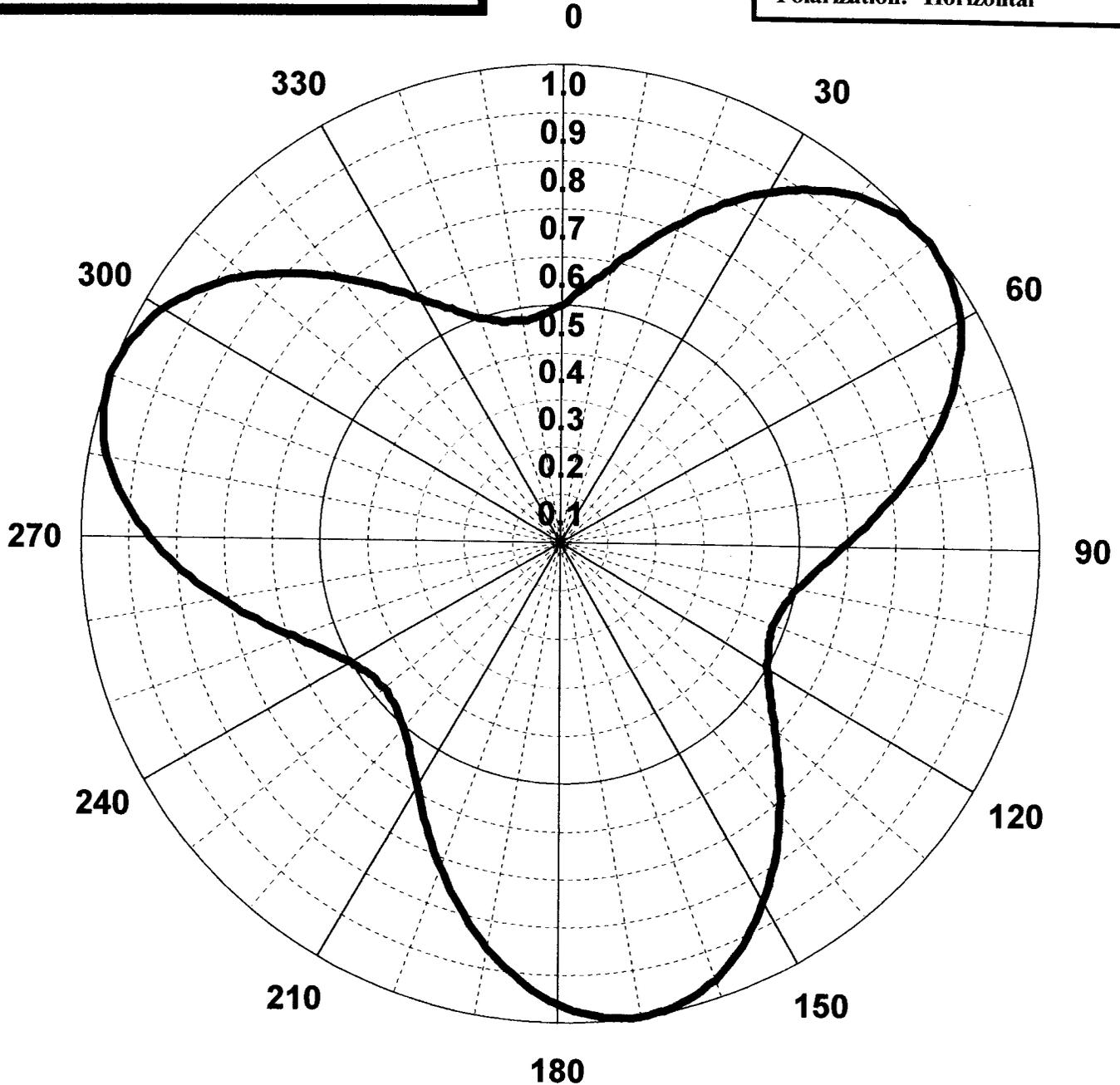
**ANDREW**

Channel: 24

Type: ATW-T1

Gain: 1.78 (2.5 dB)

Polarization: Horizontal



**ANDREW CORPORATION  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A. 60462**

Company:  
Site:  
Proposal Number:

Date: 12/9/2002  
Author:

## ANTENNA AZIMUTH PATTERN

PROPOSED KQUP-DT  
CHANNEL 24 – PULLMAN, WASHINGTON  
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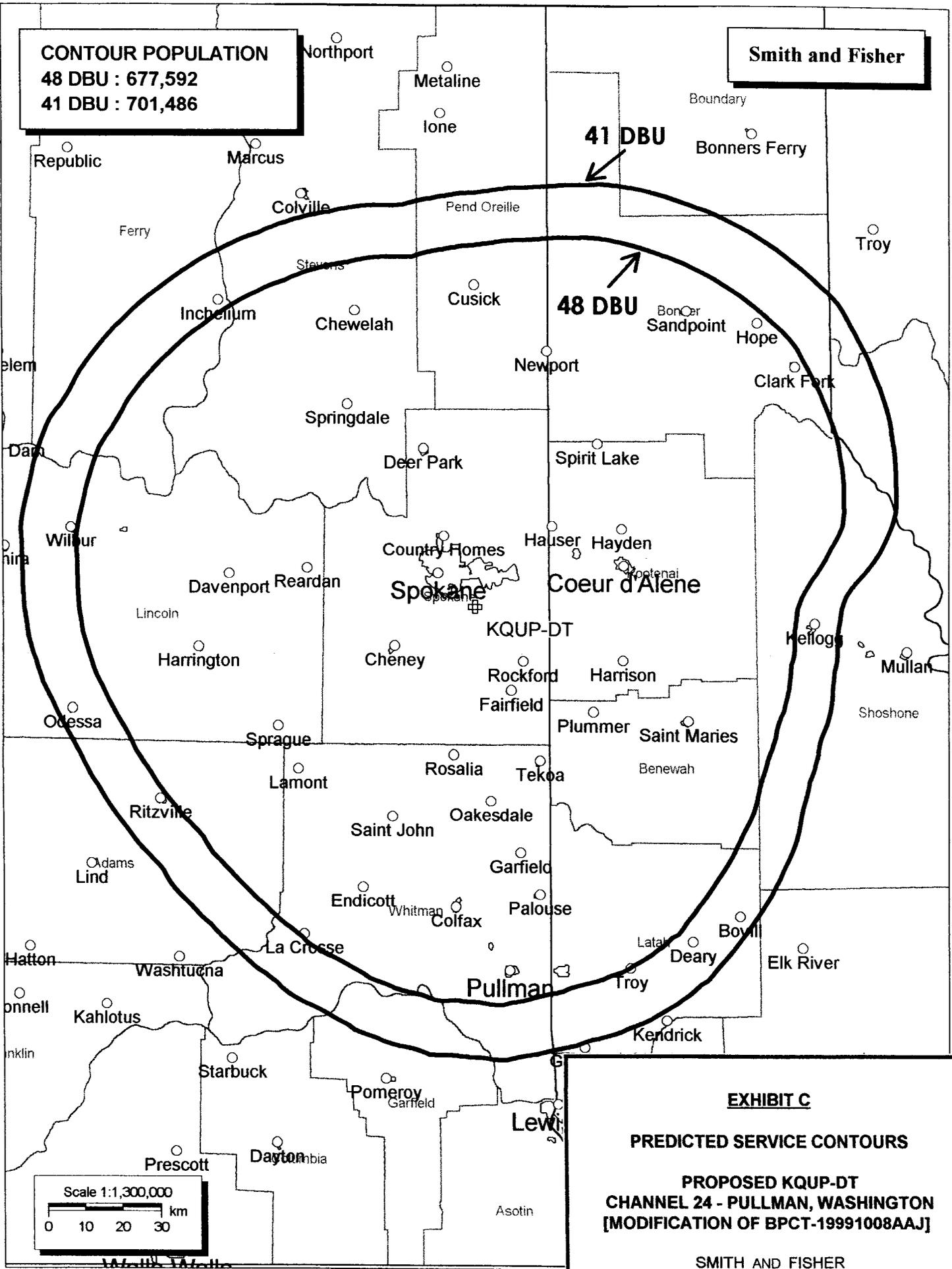
<u>Azimuth</u> <u>(° T)</u>	<u>Relative</u> <u>Field</u>	<u>ERP</u> <u>(dbk)</u>	<u>Azimuth</u> <u>(° T)</u>	<u>Relative</u> <u>Field</u>	<u>ERP</u> <u>(dbk)</u>
0	0.50	24.0	180	0.96	29.6
10	0.58	25.3	190	0.85	28.6
20	0.71	27.0	200	0.71	27.0
30	0.85	28.6	210	0.58	25.3
40	0.96	29.6	220	0.50	24.0
50	1.00	30.0	230	0.47	23.4
60	0.96	29.6	240	0.50	24.0
70	0.85	28.6	250	0.58	25.3
80	0.71	27.0	260	0.71	27.0
90	0.58	25.3	270	0.85	28.6
100	0.50	24.0	280	0.96	29.6
110	0.47	23.4	290	1.00	30.0
120	0.50	24.0	300	0.96	29.6
130	0.58	25.3	310	0.85	28.6
140	0.71	27.0	320	0.71	27.0
150	0.85	28.6	330	0.58	25.3
160	0.96	29.6	340	0.50	24.0
170	1.00	30.0	350	0.47	23.4

**CONTOUR POPULATION**

**48 DBU : 677,592**

**41 DBU : 701,486**

**Smith and Fisher**



**41 DBU**

**48 DBU**

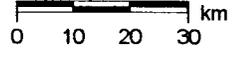
**EXHIBIT C**

**PREDICTED SERVICE CONTOURS**

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**SMITH AND FISHER**

Scale 1:1,300,000



ALLOCATION AND INTERFERENCE STUDY

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The instant application specifies an ERP of 1,000 kw (directional) at 569 meters, which is allowable under the FCC's *de minimis* standards with respect to various NTSC and DTV facilities.

In evaluating the interference effect of this proposal, we have relied upon the V-Soft Communications "Probe II" computer program, which has been found generally to mimic the FCC's program. Changes in interference caused by KQUP-DT to other pertinent stations are tabulated in Exhibit D-2.

As indicated, the proposed KQUP-DT facility would not contribute more than two percent DTV interference to the service population of any affected NTSC or DTV station. In addition, this proposal does not result in any NTSC or DTV station receiving more than ten percent total DTV interference to viewers living within its present service area.

Therefore, this proposal meets the FCC's *de minimis* interference standards for DTV operations.

EXHIBIT D-2

DE MINIMIS INTERFERENCE ANALYSIS  
 PROPOSED KQUP-DT  
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NTSC FACILITIES

Call Sign	City, State	Ch.	Grade B Population F(50.50)	INTERFERENCE LOSSES (POPULATION)								
				NTSC Only	NTSC & DTV Without KQUP-DT	Unmasked DTV	% <sup>1</sup>	NTSC & DTV With KQUP-DT	Unmasked DTV	% <sup>1</sup>	KQUP-DT Contribution % <sup>2</sup>	
KCDT	Coeur D'Alene, ID	26	413,945	79,747	79,747	0	0	81,550	1,803	0.4	1,803	0.4
KCDT (Appl.)	Coeur D'Alene, ID	26	399,379	72,188	72,188	0	0	73,991	1,803	0.5	1,803	0.5

DTV FACILITIES

Call Sign	City, State	Ch.	NTSC/DTV <sup>3</sup> Grade B Pop. Longley-Rice	INTERFERENCE LOSSES (POPULATION)								
				NTSC Only	NTSC & DTV Without KQUP-DT	Unmasked DTV	% <sup>1</sup>	NTSC & DTV With KQUP-DT	Unmasked DTV	% <sup>1</sup>	KQUP-DT Contribution % <sup>2</sup>	
- none -												

1 Cannot exceed 10%, under FCC de minimis interference standards.  
 2 Cannot exceed 2%, under FCC de minimis interference standards.  
 3 Larger of either NTSC Grade B population (with no DTV losses) or DTV Grade B population with all losses.