

TECHNICAL EXHIBIT  
MINOR CHANGE APPLICATION FOR  
MODIFICATION OF CONSTRUCTION PERMIT  
STATION KAYU-DT (FACILITY ID 58684)  
SPOKANE, WASHINGTON

APRIL 11, 2005

CH 30    335 KW (MAX-DA)    564 M

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Technical Narrative

This Technical Exhibit supports a minor change application for modification of construction permit (CP) for digital television (DTV) station KAYU-DT at Spokane, Washington (Facility ID 58684).

Station KAYU was allotted DTV channel 30 at its analog site coordinates of 47-34-44, 117-17-46. The FCC assigned the channel 30 DTV allotment a maximum effective radiated power (ERP) of 95.4 kilowatts (kW) and antenna height above average terrain (HAAT) of 601 meters.

Station KAYU-DT is currently authorized to operate on channel 30 (BPCDT-19991027ABB). Station KAYU-DT is authorized to use a directional antenna (DA) system. The maximum ERP is 1000 kW and the antenna HAAT is 586 meters. The FCC antenna structure registration number is 1033566 and the transmitter site coordinates are 47-34-44, 117-17-46 (NAD-27).

Proposed DTV Facilities

This minor change application to modify the CP proposes to change the KAYU-DT directional antenna system, decrease the antenna HAAT, and decrease the ERP. There is no proposed change in channel (30), supporting structure (1033566), site coordinates

(47-34-44, 117-17-46), and city of assignment (Spokane, WA). It is proposed to install an Andrew (ERI) model ALP16M3-HSOC-30 directional antenna (DA) system. The antenna pattern is omnioid shaped and the major lobe will be oriented toward 290 degrees True. The antenna system has an electrical beam tilt of 0.75 degree. The antenna will be installed with the center of radiation 195 meters above ground level (AGL), and 1285 meters above mean sea level (AMSL). The proposed antenna HAAT is 564 meters. The proposed maximum DTV ERP is 335 kW.

Figure 1 is a sketch of the proposed antenna and supporting structure.

Figure 2 shows the proposed antenna's azimuth and vertical radiation patterns.

Figure 3 is a map showing the predicted 48 dBu and 41 dBu contours for the proposed KAYU-DT operation. The city limits of Spokane, Washington are indicated. The estimated population (2000 Census) and land area within the predicted 41 contour are 675,009 people and 32,993 square kilometers, respectively.

Figure 4 is a map showing the predicted 41 dBu F(50,90) contours for the KAYU-DT CP operation (1000 kW-DA, 586 m) and the proposed KAYU-DT operation (335 kW-DA, 564 m). The predicted 41 dBu contour for the proposed KAYU-DT operation is completely within the 41 dBu contour for the CP operation. Therefore, it is believed the proposed KAYU-DT operation complies with the FCC's freeze exemption for a minor change application.

#### Allocation Study

The proposed KAYU-DT operation meets the FCC's interference standards to pertinent analog (NTSC) and DTV assignments using the procedures outlined in the FCC's OET-69 Bulletin and a 2 kilometers grid. The proposed KAYU-DT operation complies with the FCC's "de minimis" interference policy with respect to pertinent Class A TV assignments. If necessary, a waiver of the FCC rules is requested with respect to use of the OET-69 interference procedures.

In addition to the commonly owned and co-located antenna for KAYU-TV on channel 28, there are no other TV or DTV stations on the supporting structure. Except for the co-located FM operation of KZBD(FM) on channel 289C at Spokane, Washington there are no other FM stations on the supporting structure. There are no AM stations located within 5 kilometers (3.1 miles) of the KAYU-DT site. Although no adverse electromagnetic interaction is expected from KAYU-DT's proposed operation, the applicant recognizes its responsibility to correct prohibited interference problems that its proposed operation may create.

The KAYU-DT site is 158 kilometers south from the closest point of the Canadian border. It is believed that coordination with Canada is not required since the proposed KAYU-DT operation is contained within that already authorized for the KAYU-DT construction permit operation (BPCDT-19991027ABB). The KAYU-DT site is more than 1600 kilometers from the Mexican border. The closest FCC monitoring station is at Ferndale, Washington, approximately 418 kilometers to the west-northwest. The closest point of the National Radio Quiet Zone (VA/WVA) is 3079 kilometers to the east. The closest point of the Table Mountain Radio Quiet Zone (CO) is more than 1200 kilometers to the southeast. The closest radio astronomy site using channel 37 is at Brewster, Washington, approximately 188 kilometers to the west-northwest. These separations are considered sufficient to avoid coordination problems.

#### Radiofrequency Electromagnetic Field Exposure

The proposed KAYU-DT 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 antenna is located 195 meters above ground level. The maximum ERP of 1000 kW is assumed. A conservative relative field value of 0.27 was assumed for the antenna's downward radiation (see Figure 2). The calculated power density at a point 2 meters (6.6 feet) above ground level is  $0.0219 \text{ mW/cm}^2$ . This is less than 6% of the FCC's recommended limit of  $0.38 \text{ mW/cm}^2$  for channel 30 for an "uncontrolled" environment.

The calculated power density is less than 2% of the FCC's recommended limit for a "controlled" environment.

Access to the transmitting equipment 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.

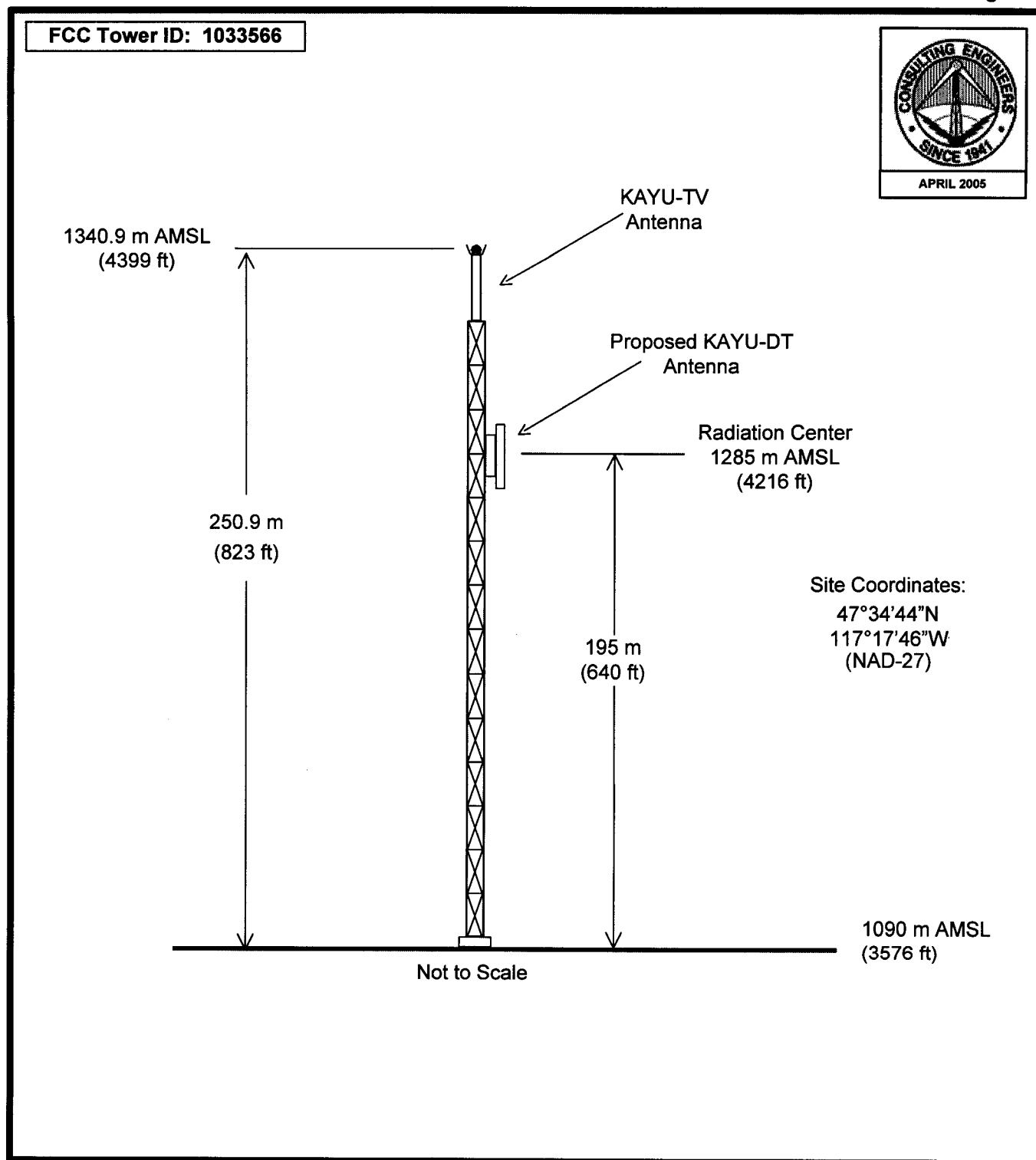
If there are questions concerning the technical portion of this application, please contact the office of the undersigned.

John A. Lundin

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April 11, 2005

Figure 1



## **PROPOSED ANTENNA AND SUPPORTING STRUCTURE**

STATION KAYU-DT  
SPOKANE, WASHINGTON  
CH 30 335 KW-DA 564 M

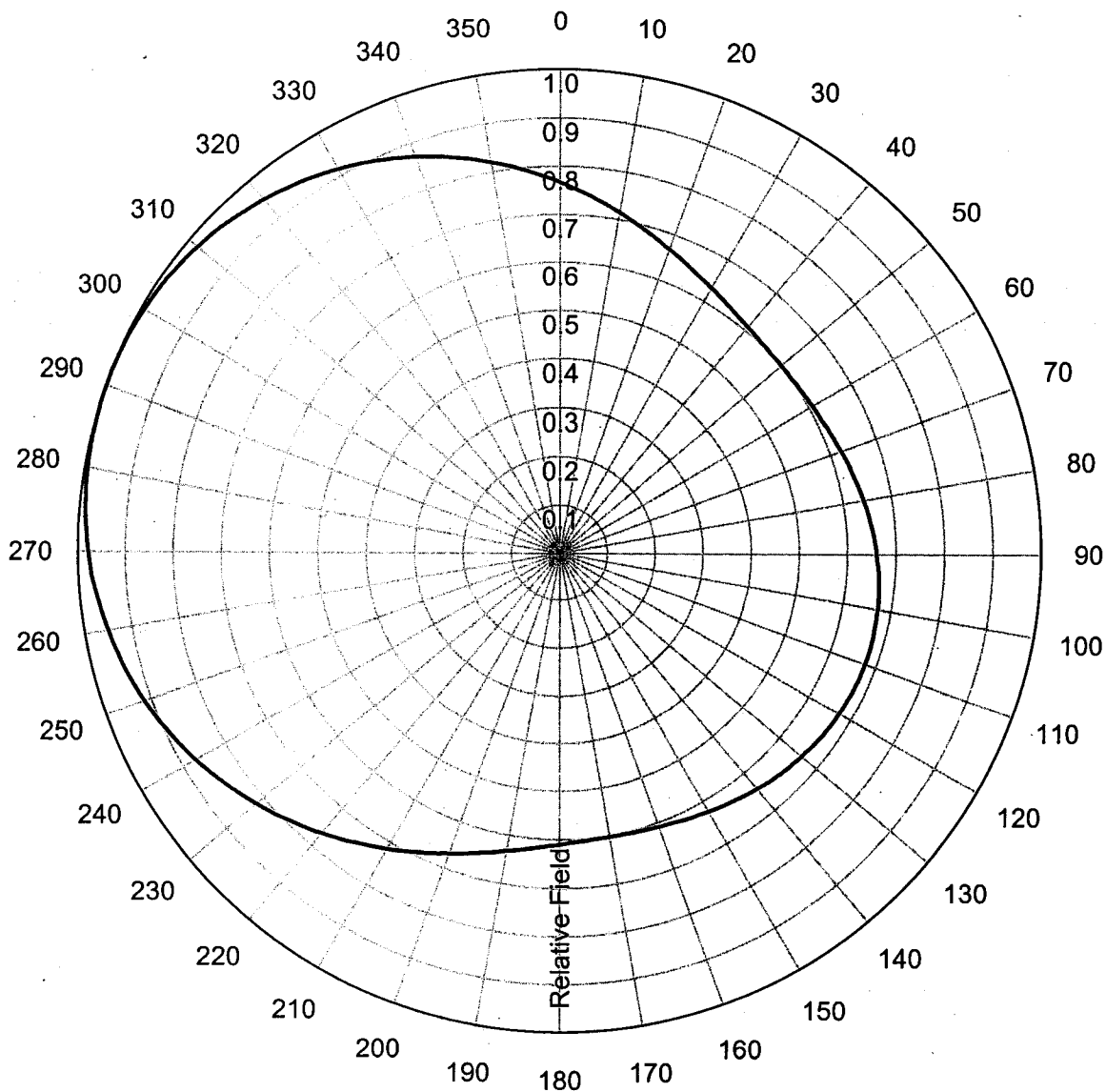
du Treil, Lundin & Rackley, Inc. Sarasota, Florida



**ANDREW.**

**AZIMUTH PATTERN**

Type:	ALP-OC	
	Numeric	dBd
Directivity:	1.70	2.30
Peak(s) at:		
Polarization:	Horizontal	
Channel:	30	
Location:		
Note:		



**ANDREW.**

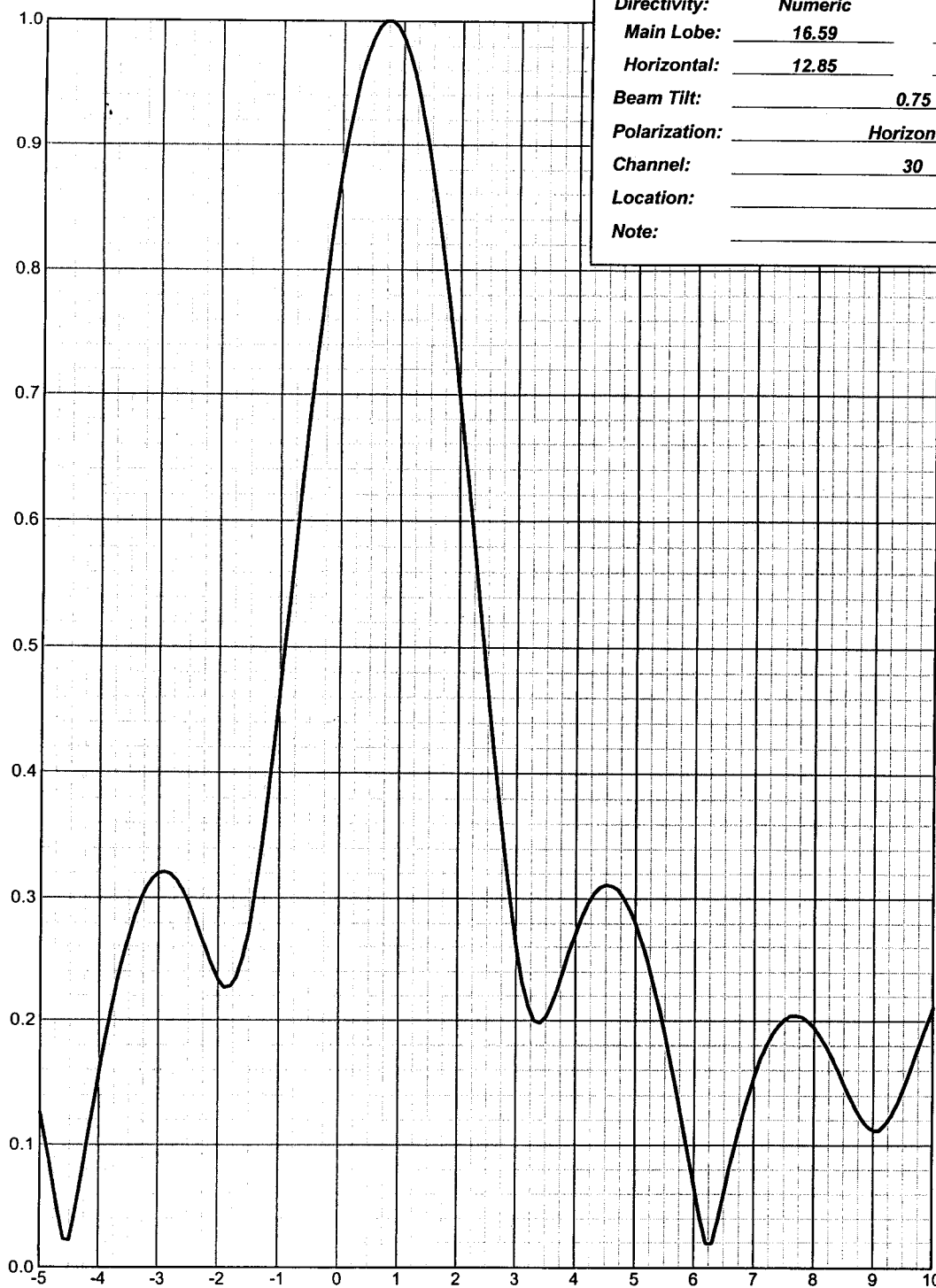
ANDREW CORPORATION  
10500 W. 153rd Street  
Orland Park, Illinois U.S.A 60462



# **ANDREW.** **ELEVATION PATTERN**

Type:	ALP16M3	
Directivity:	Numeric	dBd
Main Lobe:	16.59	12.20
Horizontal:	12.85	11.09
Beam Tilt:	0.75	
Polarization:	Horizontal	
Channel:	30	
Location:		
Note:		

Relative Field



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

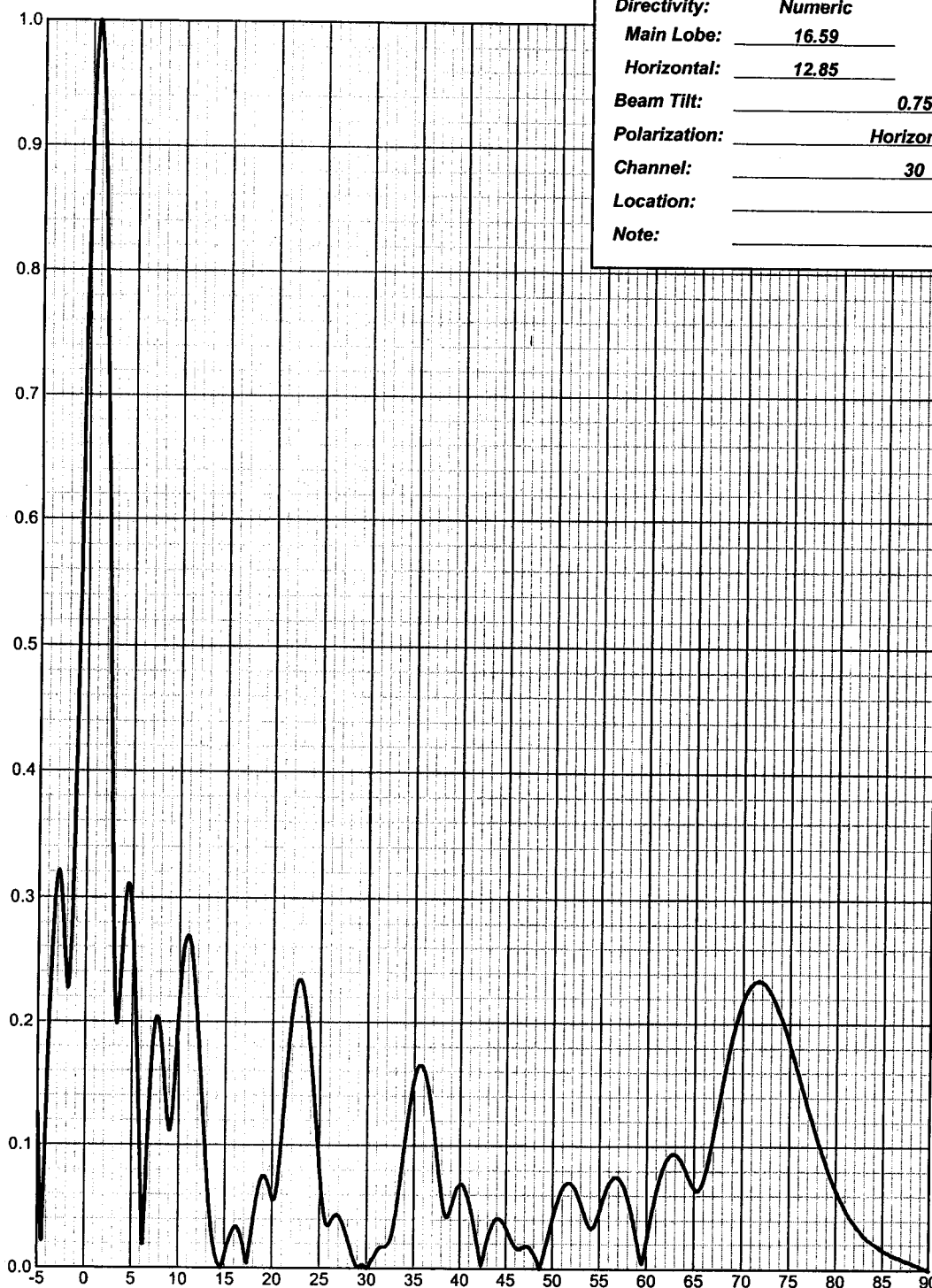


**ANDREW.**

# ELEVATION PATTERN

Type:	ALP16M3	
Directivity:	Numeric	dBd
Main Lobe:	16.59	12.20
Horizontal:	12.85	11.09
Beam Tilt:	0.75	
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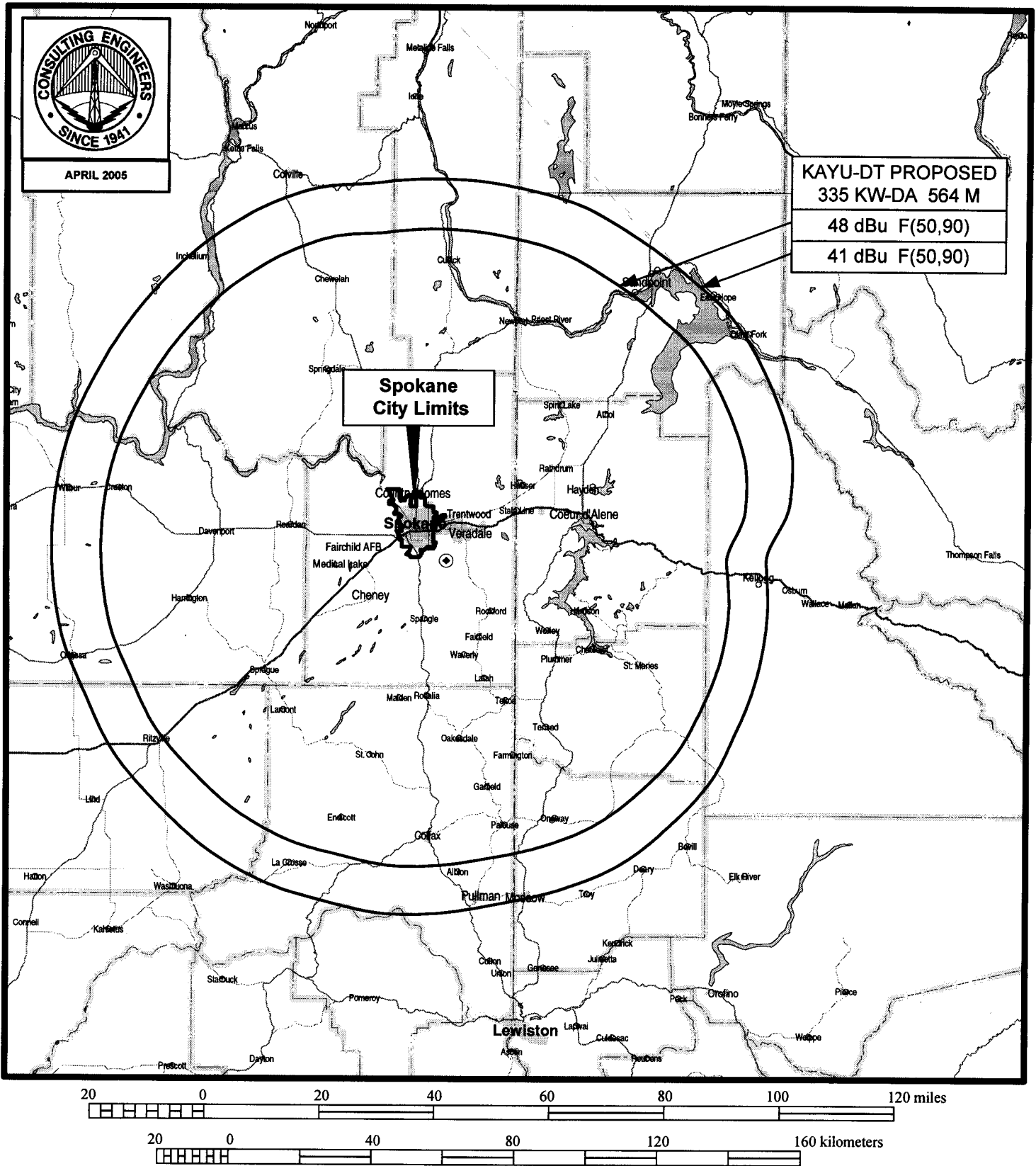
Relative Field



**ANDREW.**

ANDREW CORPORATION  
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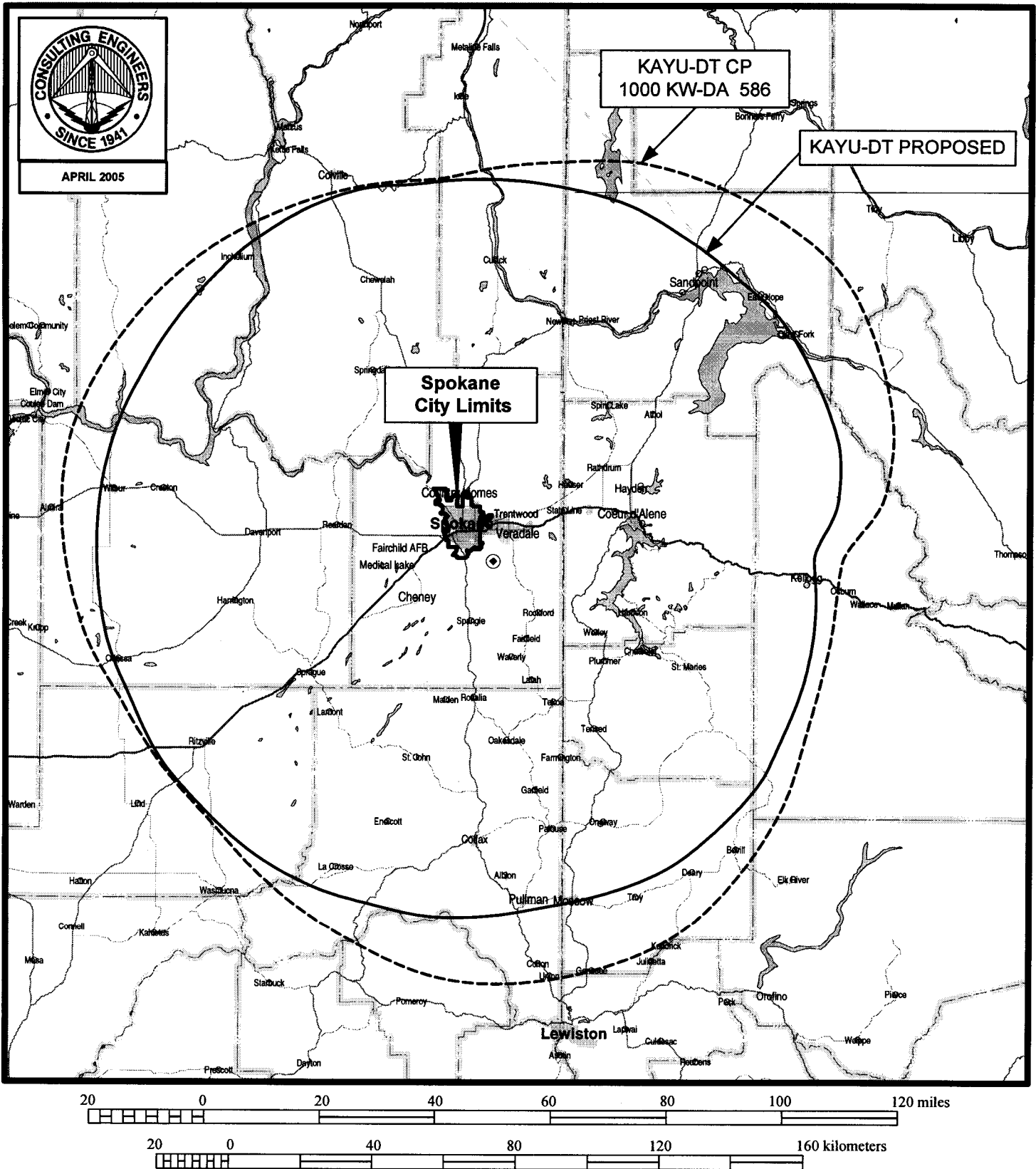
Figure 3



## PREDICTED DTV COVERAGE CONTOURS

STATION KAYU-DT  
SPOKANE, WASHINGTON  
CH 30 335 KW (MAX-DA) 564 M

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



## **PREDICTED 41 dBu COVERAGE CONTOURS**

STATION KAYU-DT  
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du Treil, Lundin & Rackley, Inc. Sarasota, Florida