miles) from the KREZ-TV transmitter. Hence, field strength predictions based upon FCC propagation methods for specific locations are unlikely to yield realistic results.[3] Radials drawn from KOAV's assumed Farmington site through the three cities, as shown in Figure 5, are not so obstructed. All three cities shown in Figure 1 lie wholly within the predicted 77 dBu (City Grade) contour of KOAV's assumed channel 3 operation at Farmington.

KREZ-TV Field Strength Measurements

Attached hereto as an Appendix to this exhibit is a Television Field Strength Measurement Report, prepared by the undersigned from raw measurement data taken by Pulitzer staff personnel, which demonstrates that the median field strength measured in accordance with FCC Rules in Farmington, Bloomfield and Aztec, is less than the value required for Grade B service to these cities. Hence, if authorized to operate at Farmington, KOAV would provide a second TV service of better than 77 dBu to Farmington, Bloomfield, and Aztec, which cities do not receive Grade B service from KREZ-TV, even though Grade B service would be predicted to exist when calculated pursuant to FCC Rules.

[3] The Commission has acknowledged this fact in the FCC Rules. Section 73.683(a) states in regard to prediction of field strength contours: "Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength charts were based." Again, in Section 73.684(f), the Commission warns: "In cases where terrain in one or more directions from the antenna site departs widely from the average elevation of the 3.2 to 16.1 kilometers (2 to 10 mile) sector, the prediction method may indicate contour distances that are different from what may be expected in practice. For example, a mountain ridge may indicate the practical limit of service although the prediction method may indicate otherwise."

As demonstrated in the Appendix to this engineering exhibit, measured median field strength from KREZ-TV is less than 38.7 dBu[4] in Farmington and in Bloomfield, and 45.8 dBu in Aztec. A median field strength of 47 dBu is required for Grade B service.

Population and Area Analysis

Figure 7 is a tabulation of area and population served by KOAV's authorized operation at Gallup, and by an assumed KOAV, channel 3, operation at Farmington, together with a summary of population and area which would be provided with a first or second TV service. It is impractical to determine actual location of the KREZ-TV Grade B contour in sparsely populated and often inaccessible rural areas based upon field strength measurements. Hence, population determination is based upon the predicted contour locations of KREZ-TV, KOBF, KKTO, and KOAV's assumed Farmington operation, except that the population of Farmington, Bloomfield, and Aztec have been added to the total for second service provided by KOAV based upon terrain profile studies and supported by field strength measurements.

Conclusions

Pulitzer seeks a change in the allotment of channel 3 from Gallup to Farmington, and modification of KOAV's construction permit to specify Farmington as its city of license, pursuant to the FCC's action in MM Docket 88-526. Channel 3 and two other VHF TV channels have been allotted to Gallup since 1952. Except for the KOAV construction permit, the same channels remain unassigned in Gallup today, nearly 40 years later. Farmington, on the other hand, has only one VHF TV channel allotment which is assigned to KOBF and is in operation. Relocation to

[4] The minimum field strength which could be measured with accuracy by Pulitzer, given the instrumentation employed and prevailing noise levels within the region wherein measurements were taken.

Farmington would enable KOAV to serve a significantly larger population base, and to provide a second TV service to a greater concentration of population.

Based upon evidence presented herein in the form of 1980[5] population and area studies, terrain profile analysis and field strength measurements, KOAV, if permitted to operate from Farmington instead of Gallup, would provide a new television service to 125,031 persons residing within an area of 24,038 square kilometers (9,285 square miles); a first service to 9,781 persons residing within an area of 2,610 square kilometers (1,008 square miles); and a second TV service to 79,759 persons residing within an area of 13,095 square kilometers (5,058 square miles). Although KOAV's authorized facility at Gallup would prove a first TV service to 53,694 persons within 8,620 square kilometers (3,330 square miles), growth rate at Farmington is shown to be greater than at Gallup.

William C. King, Jr.

William C. King, Jr., P.E.

November 20, 1991

[5] The most recent year for which detailed data have been published.

Figure 1

ENGINEERING EXHIBIT
IN SUPPORT OF PETITION FOR RULE MAKING TO AMEND
THE TELEVISION TABLE OF ALLOTMENTS
PREPARED ON BEHALF OF
PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

TV Allocation Study, Farmington, New Mexico

Reference coordinates: 36° 44′ 00″ North Latitude
108° 12′ 12″ West Longitude

Channel	Station/City[1]	Geographic Coordinates	Distance Actual (km)	Distance Required (km)
2+	KKTO, Santa Fe, NM	35°46′50″N 106°31′35″W	184.1	95.7
3z	KOAV, Gallup, NM (CP, BPCT-891010KG)	35°32′29″N 108°44′31″W	140.9[2]	304.9
3-	KREG-TV, Glenwood Springs, CO	39°25′05″N 107°22′01″W	306.9	304.9
4+	KOB-TV, Albuquerque, NM	35°12′42″N 106°26′57″W	231.4	95.7

[1] Closest full-service allotment or assignment.

[2] Demonstrates mutual exclusivity of proposed rule making with permittee's present assignment.

Figure 2

ENGINEERING EXHIBIT
IN SUPPORT OF PETITION FOR RULE MAKING TO AMEND
THE TELEVISION TABLE OF ALLOTMENTS
PREPARED ON BEHALF OF
PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

TV Translators and LPTV Stations
Proposed and Assigned to Farmington and Gallup

Farmington

Channel	Call Sign or File Number	Maximum ERP (kW)	Status
19	K19CM	1.21	Licensed[1]
21	K21AX	10.5	Licensed
23	K23BT	7.46	Licensed
25	BPTTL-910503BV	46.9	Application
43	K43AI	1.11	Licensed
47	K47DR	0.338	Licensed
50	K50BN	0.400	Licensed
55	K55DW	11.5	Licensed
60	K60DR	1.15	Licensed
62	K62CR	0.487	Licensed
70	K70CT	0.134	Licensed
83	K83AT	1.61	Licensed

Gallup

6	K06IS	0.318	Licensed
8	K08IJ	0.515	Licensed[1]
10	K10IR	0.356	Licensed
17	K17AK (BPTTL-820616QE)	1.27	CP
22	K22CR (BPTTL-830309H3)	0.889	CP
34	BPTTL-820430TQ	10.8	Application
42	BPTTL-820430TP	10.7	Application
49	BPTTL-820201TW	0.053	Application
63	K63BD	0.613	Licensed
65	K65BH	7.45	Licensed
66	K66BX	0.044	Licensed
67	K67BP	7.45	Licensed
69	K69BW	7.45	Licensed

[1] Operated by Pulitzer Broadcasting Company.

Figure 3

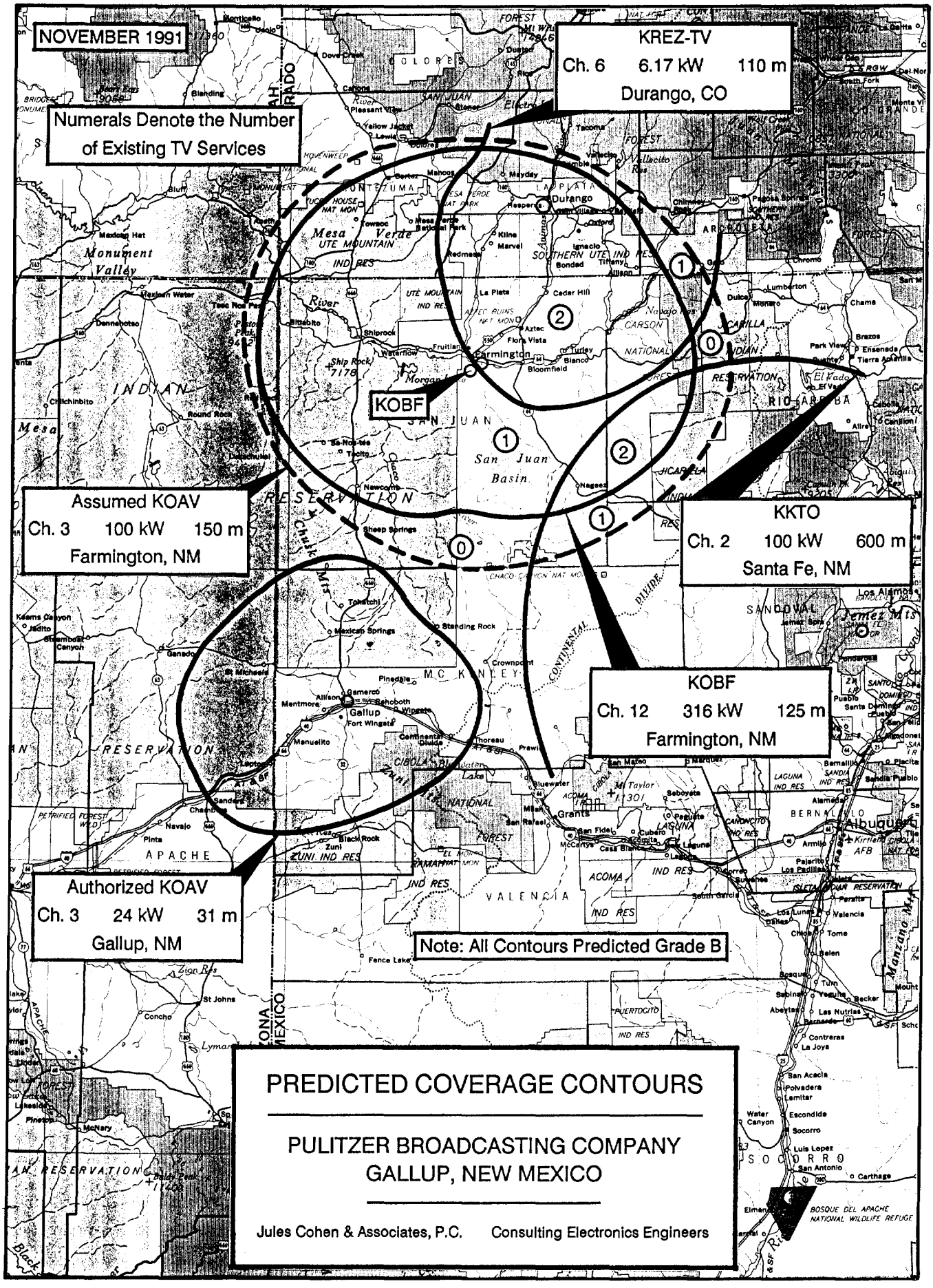
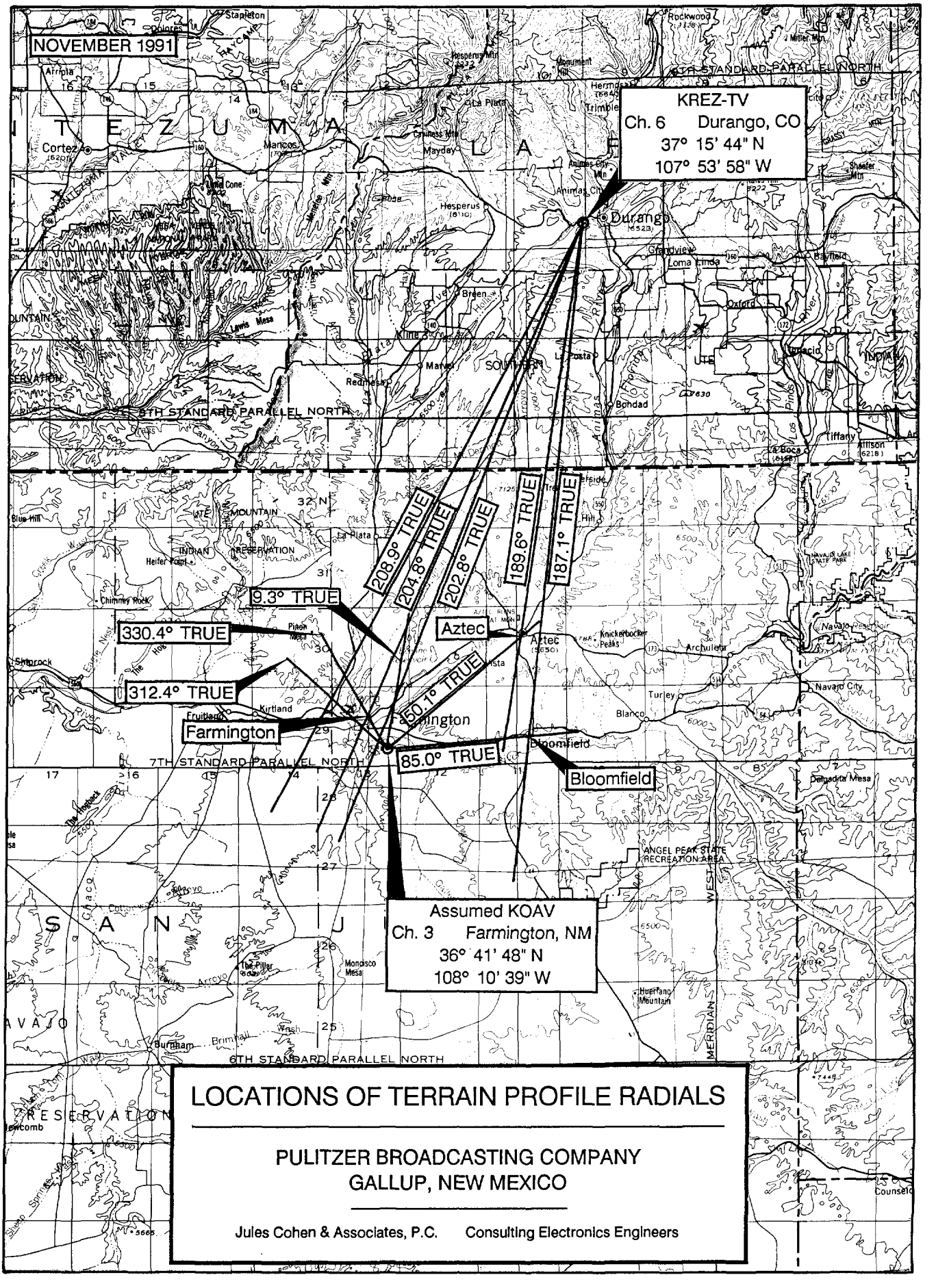
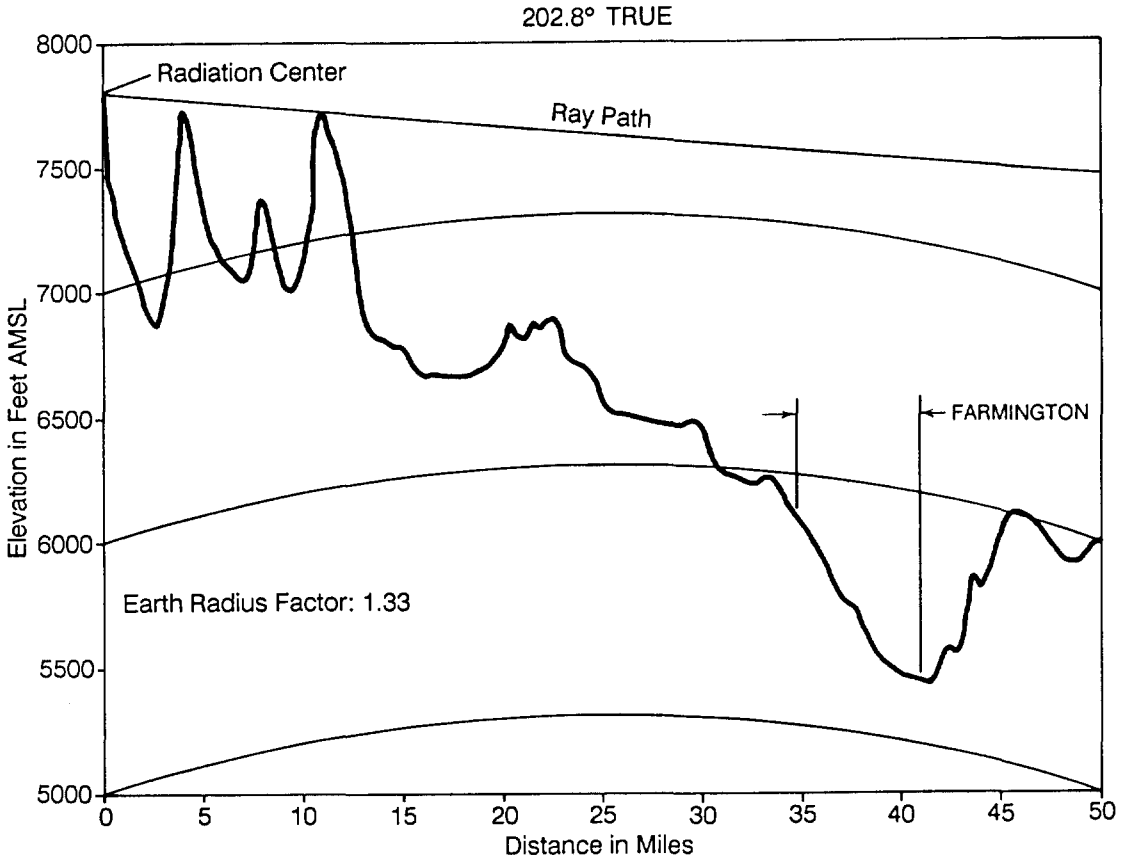

NOVEMBER 1991
Numerals Denote the Number of Existing TV Services
KREZ-TV
Ch. 6 6.17 kW 110 m
Durango, CO
KOBF
Assumed KOAV
Ch. 3 100 kW 150 m
Farmington, NM
KKTO
Ch. 2 100 kW 600 m
Santa Fe, NM
KOBF
Ch. 12 316 kW 125 m
Farmington, NM
Authorized KOAV
Ch. 3 24 kW 31 m
Gallup, NM
Note: All Contours Predicted Grade B
PREDICTED COVERAGE CONTOURS
PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO
Jules Cohen & Associates, P.C. Consulting Electronics Engineers
MILES
KILOMETRES

Figure 4


NOVEMBER 1991
KREZ-TV
Ch. 6 Durango, CO
37° 15' 44" N
107° 53' 58" W
Durango
208.9° TRUE
204.8° TRUE
202.8° TRUE
189.6° TRUE
187.1° TRUE
9.3° TRUE
330.4° TRUE
312.4° TRUE
50.1° TRUE
85.0° TRUE
Aztec
Farmington
Bloomfield
Assumed KOAV
Ch. 3 Farmington, NM
36° 41' 48" N
108° 10' 39" W
7TH STANDARD PARALLEL NORTH
6TH STANDARD PARALLEL NORTH
5TH STANDARD PARALLEL NORTH
LOCATIONS OF TERRAIN PROFILE RADIALS
PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO
Jules Cohen & Associates, P.C. Consulting Electronics Engineers
10 0 10 20 30 40 Miles
10 0 10 20 30 40 50 Kilometres

NOVEMBER 1991

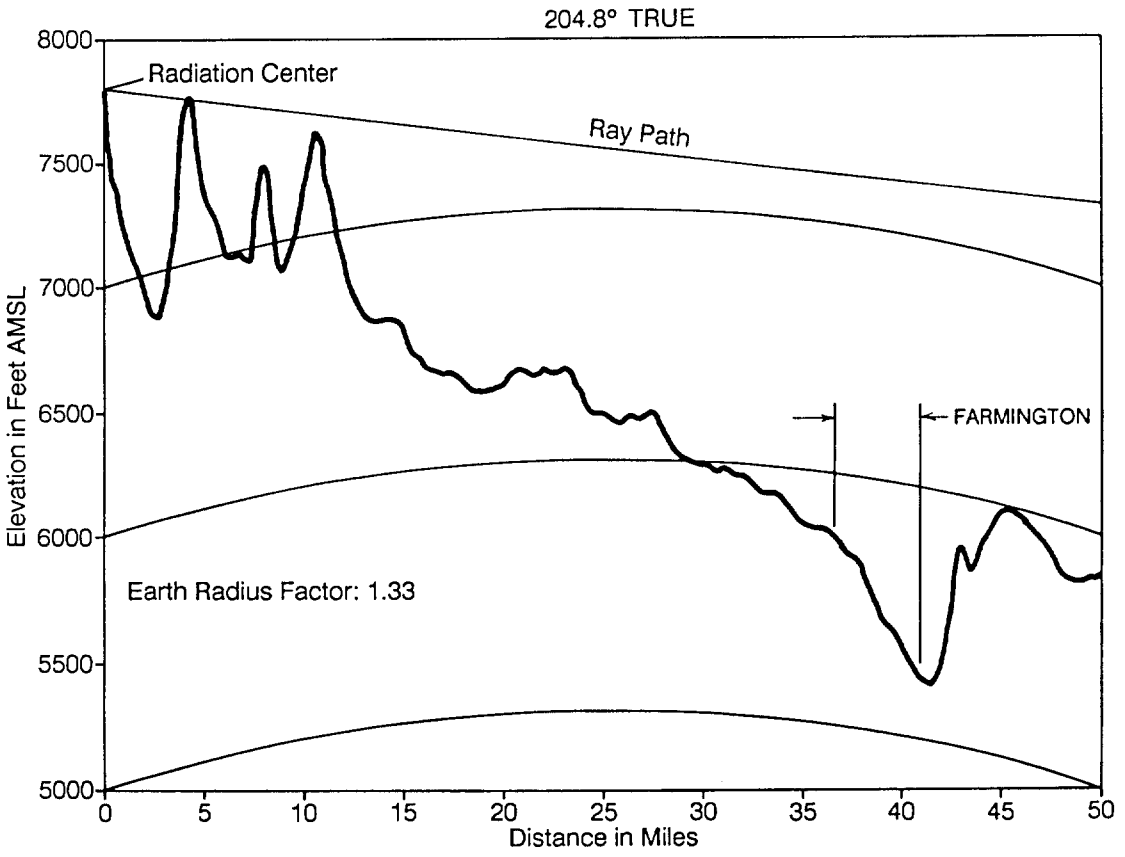


TERRAIN PROFILE FROM KREZ-TV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

Jules Cohen & Associates, P.C. Consulting Electronics Engineers

NOVEMBER 1991

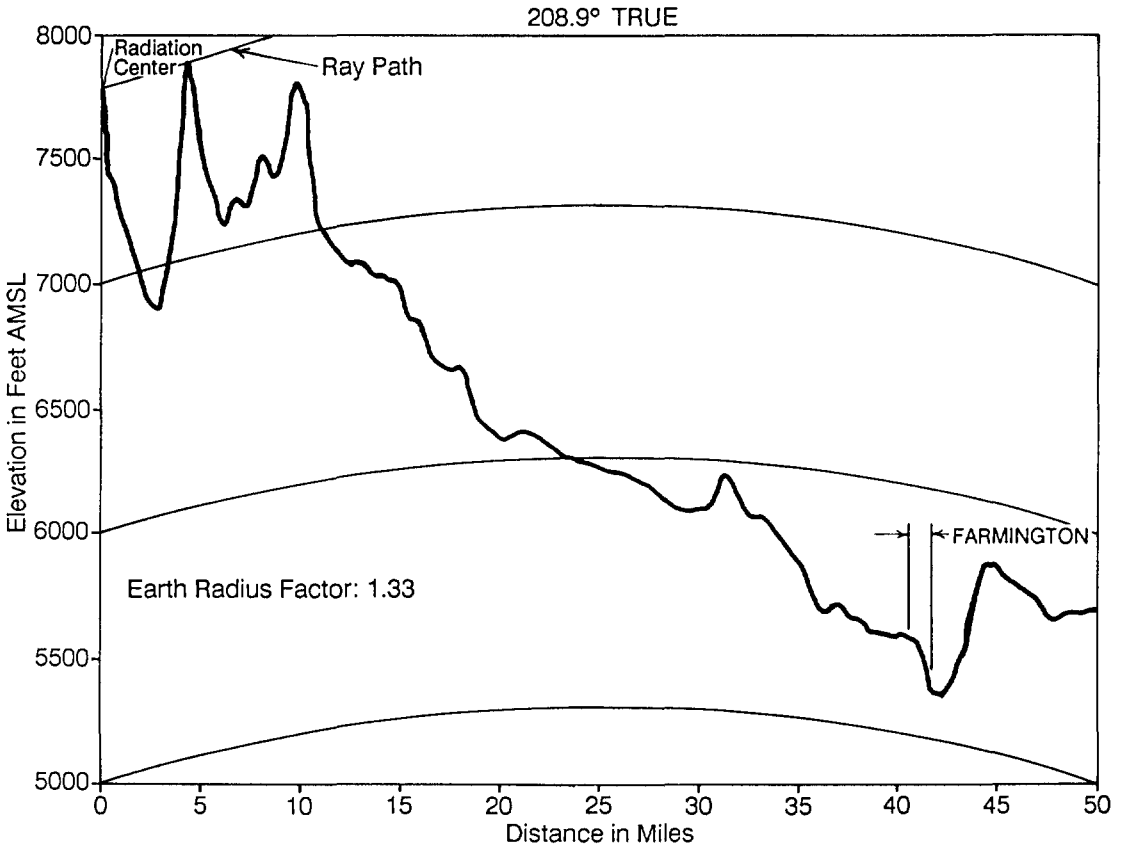


TERRAIN PROFILE FROM KREZ-TV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

Jules Cohen & Associates, P.C. Consulting Electronics Engineers

NOVEMBER 1991



TERRAIN PROFILE FROM KREZ-TV

PULITZER BROADCASTING COMPANY
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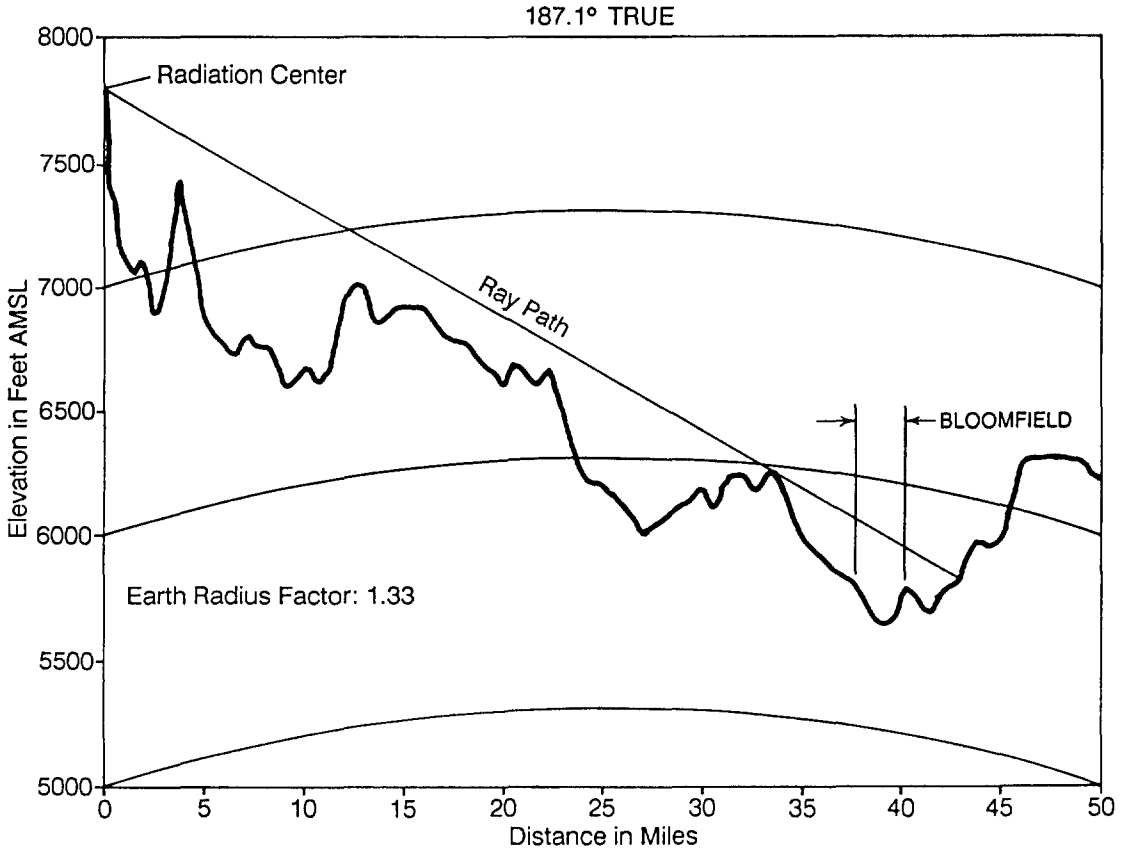
NOVEMBER 1991



TERRAIN PROFILE FROM KREZ-TV

PULITZER BROADCASTING COMPANY
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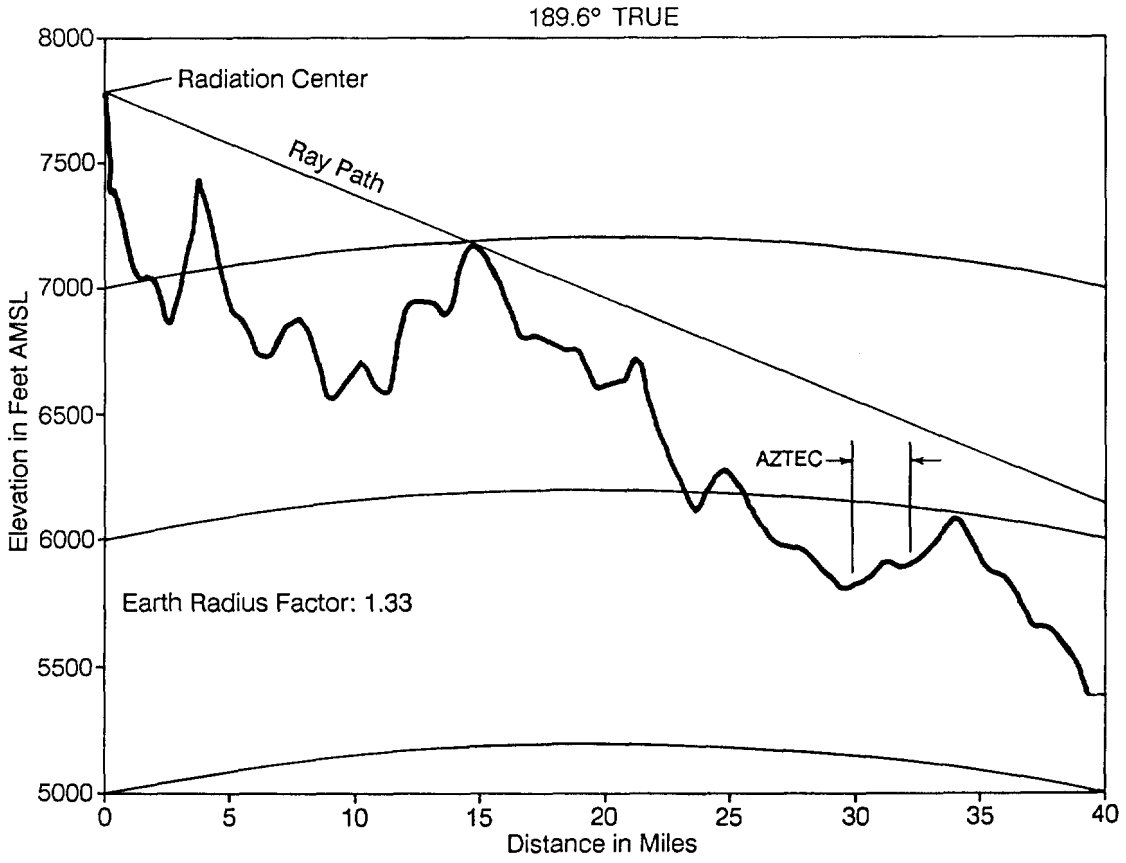
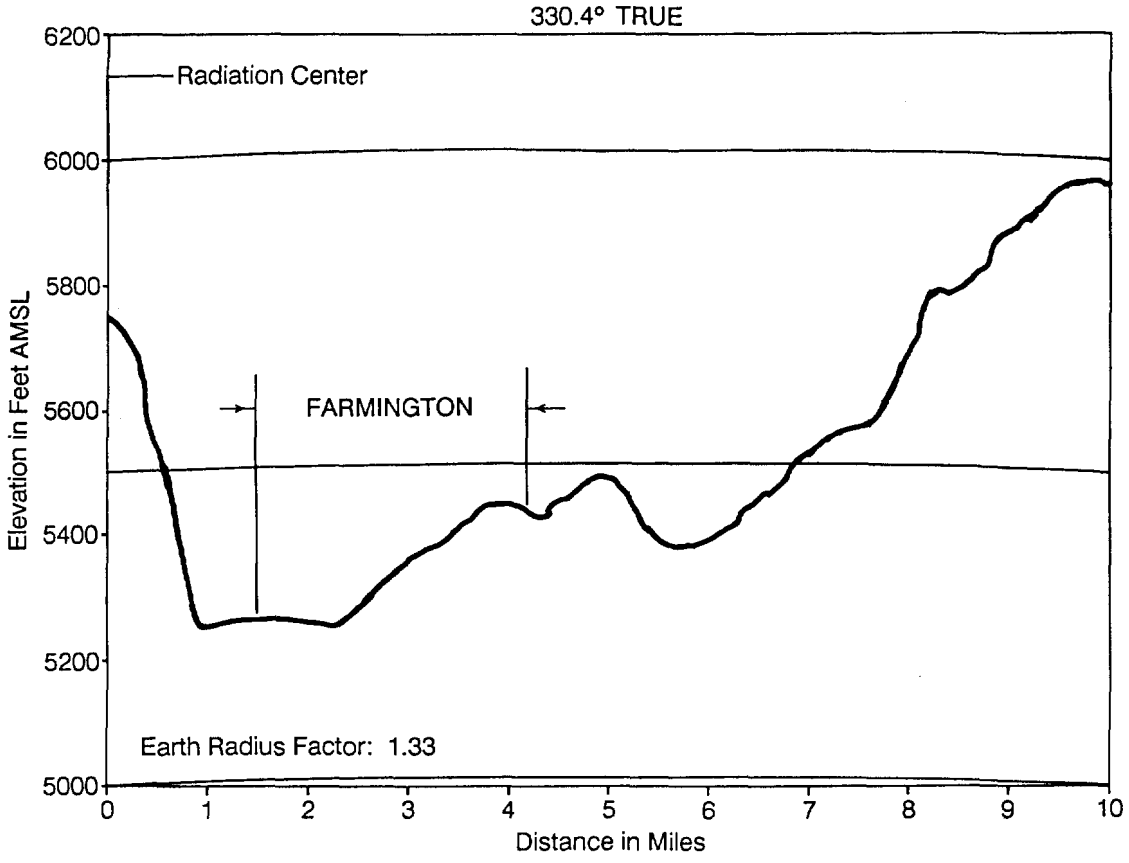


TERRAIN PROFILE FROM KREZ-TV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

. Jules Cohen & Associates, P.C. Consulting Electronics Engineers

NOVEMBER 1991

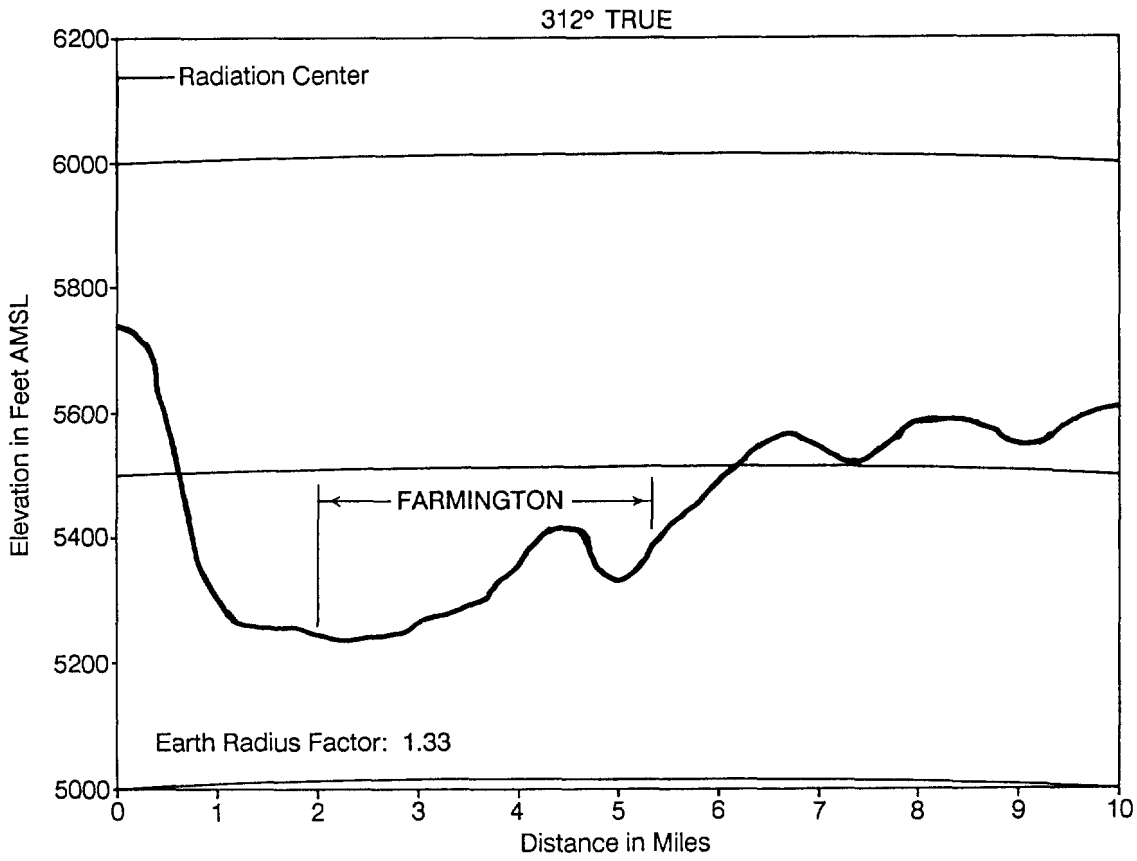


TERRAIN PROFILE FROM ASSUMED KOAV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

Jules Cohen & Associates, P.C. Consulting Electronics Engineers

NOVEMBER 1991

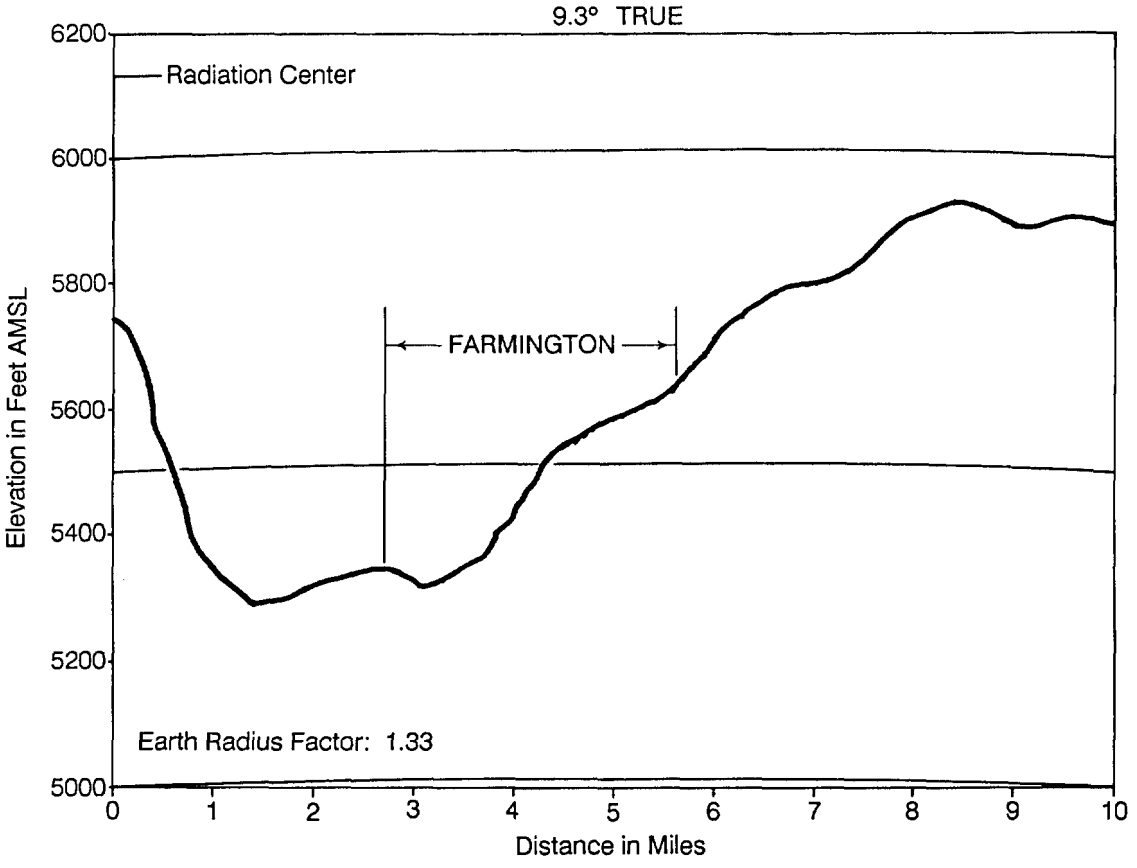


TERRAIN PROFILE FROM ASSUMED KOAV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

Jules Cohen & Associates, P.C. Consulting Electronics Engineers

NOVEMBER 1991

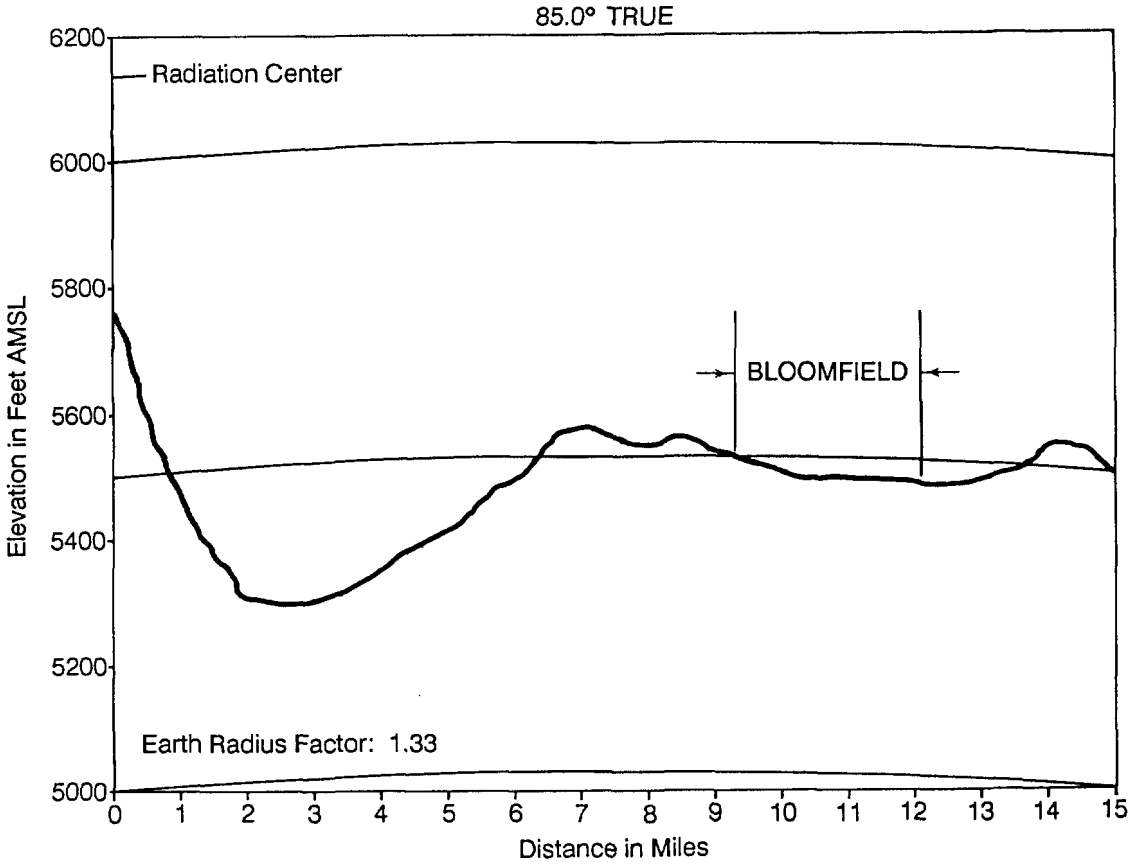


TERRAIN PROFILE FROM ASSUMED KOAV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

Jules Cohen & Associates, P.C. Consulting Electronics Engineers

NOVEMBER 1991



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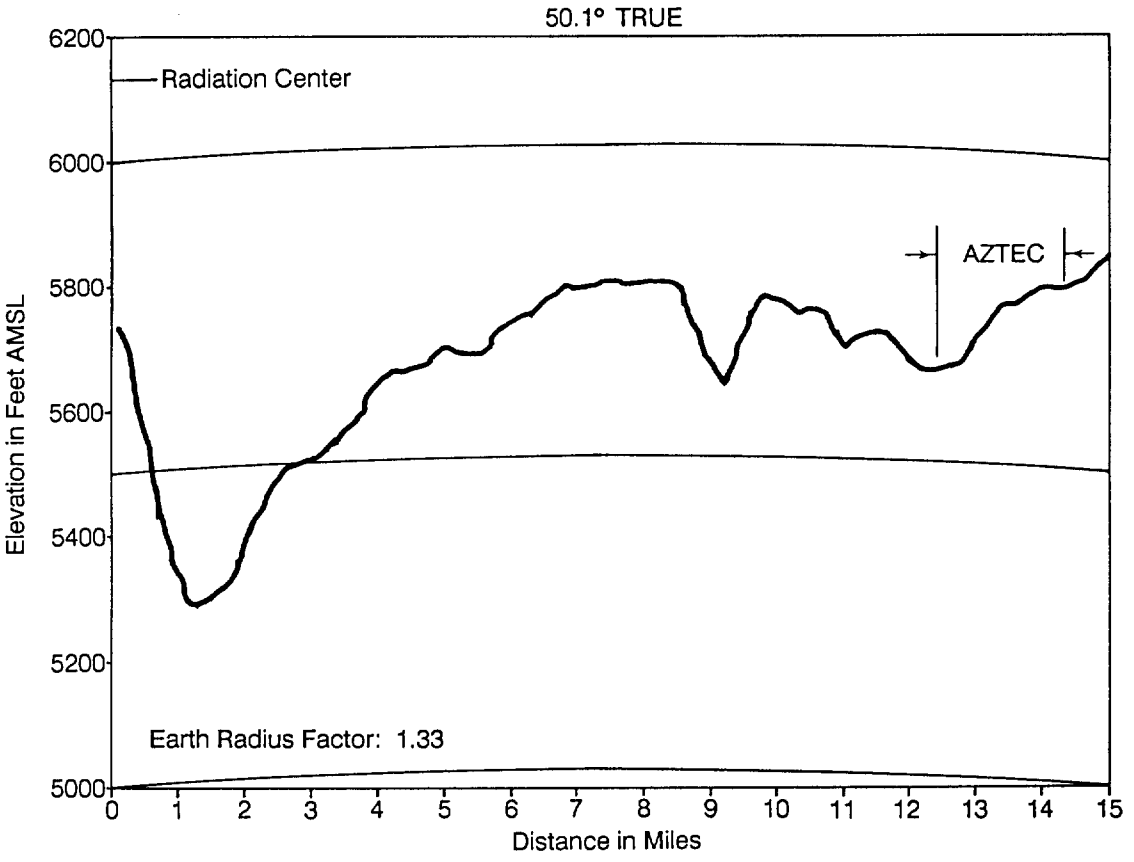

TERRAIN PROFILE FROM ASSUMED KOAV

PULITZER BROADCASTING COMPANY
GALLUP, NEW MEXICO

Jules Cohen & Associates, P.C. Consulting Electronics Engineers

ENGINEERING EXHIBIT
IN SUPPORT OF PETITION FOR RULE MAKING TO AMEND THE TELEVISION TABLE OF ALLOTMENTS PREPARED ON BEHALF OF PULITZER BROADCASTING COMPANY GALLUP, NEW MEXICO

Population and Areas Served

	Area		Population (U.S. Census)	
	(sq. km)	(sq. mi.)	1980	1986*
1. Within Grade B contour of authorized KOAV facility at Gallup, NM	8,620	3,330	53,694	62,195
2. Within Grade B contour of assumed KOAV facility at Farmington, NM	24,038	9,285	125,031	142,698
3. Region within which assumed KOAV facility at Farmington would provide the first TV service				
First TV service	2,610	1,008	9,781	11,232
Second TV service	13,095	5,058	79,759	90,462
Third TV service	8,333	3,219	35,491	41,004

* 1986 U.S. Census update.

JULES COHEN & ASSOCIATES, P.C.
CONSULTING ELECTRONICS ENGINEERS
WASHINGTON, D.C. 20036

ENGINEERING EXHIBIT IN SUPPORT OF PETITION FOR RULE MAKING TO AMEND THE TELEVISION TABLE OF ALLOTMENTS PREPARED ON BEHALF OF PULITZER BROADCASTING COMPANY GALLUP, NEW MEXICO

Affidavit

WASHINGTON)
) ss:
DISTRICT OF COLUMBIA)

William C. King, Jr., being first duly sworn, says that he is a consultant to the firm of Jules Cohen & Associates, P.C., consulting electronics engineers with offices in Washington, DC; that he is a professional engineer registered in the District of Columbia; that his qualifications as an expert in radio engineering are a matter of record with the Federal Communications Commission; that the foregoing exhibit was prepared by him and under his direction; and that the statements contained therein are true of his own personal knowledge except those stated to be on information and belief and, as to those statements, he verily believes them to be true and correct.

William C. King, Jr.

William C. King, Jr., P.E.

Subscribed and sworn to before me this 20th day of November, 1991.

Pamela A. Deem

Pamela A. Deem
Notary Public, DC

My commission expires
February 28, 1995

(SEAL)

JULES COHEN & ASSOCIATES, P.C.
CONSULTING ELECTRONICS ENGINEERS
WASHINGTON, D.C. 20036

ENGINEERING EXHIBIT IN SUPPORT OF PETITION FOR RULE MAKING TO AMEND THE TELEVISION TABLE OF ALLOTMENTS PREPARED ON BEHALF OF PULITZER BROADCASTING COMPANY GALLUP, NEW MEXICO

APPENDIX

Television Field Strength Measurement Report

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Engineering Statement

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Figure 2 Tabulations of Measured Field Strength

JULES COHEN & ASSOCIATES, P.C.
CONSULTING ELECTRONICS ENGINEERS
WASHINGTON, D.C. 20036

ENGINEERING EXHIBIT IN SUPPORT OF PETITION FOR RULE MAKING TO AMEND THE TELEVISION TABLE OF ALLOTMENTS PREPARED ON BEHALF OF PULITZER BROADCASTING COMPANY GALLUP, NEW MEXICO

APPENDIX

Engineering Statement

The television field strength measurements reported herein were made on Station KREZ-TV, channel 6, Durango, Colorado. Measurements were made by Messrs. William Mandich, and Billy Lee Johnson, longtime employees of Pulitzer Broadcasting Company's station KOAT-TV, channel 7, Albuquerque, New Mexico. Mr. Mandich has been for more than eight years translator maintenance engineer for KOAT-TV, and Mr. Johnson is the KOAT-TV transmitter supervisor. Messrs. Mandich and Johnson both hold FCC General Class Radiotelephone Operator licenses, and both are experienced in the taking of television field strength measurements.

The measurement project was coordinated with this firm. Maps were prepared by this office and forwarded to KOAT-TV for use in the field. Upon completion of the measurements, the original work maps, raw data and field notes were returned to this office, together with the antenna, cable and meter employed for the measurements. The KOAT-TV instrumentation was independently checked by the undersigned for calibration at channel 6, and the KREZ-TV measurements were analyzed to determine median field strengths existing in the communities of Farmington, Bloomfield and Aztec, New Mexico. The undersigned has had more

than 30 years of experience in the taking of television field strength measurements, and his qualifications are a matter of record with the FCC.

Measurement Point Locations

Figure 1 of this Appendix consists of copies of portions of U.S.G.S. 7.5-minute topographic maps depicting the cities of Farmington, Bloomfield and Aztec. Boundaries of the three cities have been enhanced by heavy lines, based upon U.S. Census maps and upon the most recent information available to this firm from local sources. Rectangular grids have been superimposed over the city boundaries, so as to provide at least the minimum number of potential measurement locations at grid intersections prescribed by Section 73.686(c)(1) of the FCC Rules.

The 1990 U.S. Census population of Farmington is 33,997. The 1990 population of Bloomfield is 5,214, and for Aztec the 1990 population is 5,479. A minimum of 18 measurement locations is required by Section 73.686(c)(1)(ii) of the Rules at Farmington. A minimum of 15 measurement locations is required at Bloomfield and at Aztec. Measurements were made at 20 locations in Farmington, 16 locations at Bloomfield and 16 locations at Aztec. Hence, the FCC-required minimum number of measurements is satisfied for each community. Measurements were taken as nearly as possible at the grid intersection points identified by location number on the maps of Figure 1.

Measurement Procedure

The measurement procedure specified in Section 73.686(c)(2) of the Rules was followed, except that the KOAT-TV vehicle was not equipped to record 30.5-meter (100-foot) mobile runs. Instead, five spot measurements (a "cluster") were

made and tabulated at each location within a horizontal distance of not more than 61 meters (200 feet) of the first measurement of each cluster.

All measurements were made with the receiving antenna raised to a height of 9.1 meters (30 feet) above ground. The horizontally polarized dipole antenna employed for the measurements was first oriented for maximum indicated KREZ-TV signal strength at each location. If receiving antenna orientation for maximum signal strength differed from the actual azimuth toward the station, that fact was noted in the measurement log, together with other pertinent site information. The field measurement log sheets containing raw measurement data, location descriptions, weather information and other field notes and comments, are not submitted with this report, but will be made available to the Commission upon request. Calibration of the antenna and measurement equipment is described in a later section of this report.

Field Strength Measurement and Analysis

Figure 2 of this Appendix consists of three sheets of field strength tabulations compiled from copies of the logs supplied to this office. Sheet 1 of Figure 2 lists values of field strengths in decibels above 1.0 microvolt per meter (dBu) as measured in Farmington. Each measurement location number is identified on the map of Farmington (Figure 1, Sheet 1). Sheets 2 and 3 of Figure 2 list field strength measurements for Bloomfield and Aztec, respectively, and also are keyed to locations identified in the corresponding maps of Figure 1.

Ground elevation of each measurement location was read from the topographic maps used in the field and recorded in Figure 2. Measurements were completed in three consecutive days, October 8, 9 and 10, 1991. Dates and local times of measurements are listed in the tabulation of Figure 2. For each location,

the five spot measurements of the cluster are listed under columns headed by alphabetic characters A, B, C, D and E, in the order in which the measurements were made.

Analysis of the measurements was performed by the undersigned. For each location, values for the five spot measurements were sorted and rearranged in order of descending magnitude to determine maximum and minimum field strength values at each location. The median value was obtained by choosing the middle value of the sorted cluster. The prevailing median field strength for each city was obtained by sorting median values obtained for all locations in the city in descending order of magnitude and choosing the middle value. Where (as in these cities) an even number of measurements existed, the two middle values of the sorted medians were converted to units of microvolts per meter, averaged, and the average value converted to dBu to obtain the median for the city.

As evidenced by the terrain profile graphs contained in Figure 5 of this engineering exhibit, many locations in Farmington, Bloomfield and Aztec are severely shadowed with respect to the KREZ-TV transmitting antenna, and the KOAT-TV engineers reported that was it difficult or impossible to obtain satisfactory direct off-air viewing of the KREZ-TV signal. Impulse noise from power lines, nearby strong FM signals and other urban noise sources prevailing in the three cities limited reliable channel 6 field strength measurements to about 38.7 dbu (8.7 dB below the level required for Grade B service). At locations where the KREZ-TV signal could not be detected, or could not be measured reliably in the presence of noise, the notation "<38.7" has been used to denote the fact that the KREZ-TV field strength was determined to be below 38.7 dBu. This was the case for median values of field strength at Farmington and Bloomfield. In Aztec, the median field strength

in the city, based upon measured medians at 16 grid point intersections, was found to be 45.8 dBu (1.2 dB below the value required for Grade B service). Hence, KREZ-TV does not provide Grade B service to Farmington, Bloomfield and Aztec, despite the fact that these cities are situated within the predicted KREZ-TV Grade B contour determined in accordance with FCC Rules.

Instrumentation and Calibration

Field strength measurements were made by Messrs. Mandich and Johnson, using a half-wavelength dipole antenna with balun (originally part of an RCA type BW-7A VHF television field strength meter), adjusted for reception of the visual carrier of channel 6 (83.25 MHz). A calibrated Wavetek model SAM III Digital Signal Analyzer (Serial Number 5063030), tuned to the KREZ-TV visual carrier, was used to measure received peak visual carrier amplitude. The antenna was coupled to the r-f input of the signal analyzer by means of a 30-foot length of 50-ohm coaxial cable and a calibrated minimum loss matching transformer. A calibrated oscillator within the Wavetek signal analyzer permitted calibration of the instrument so as to include the losses of the cable and matching transformer. Hence, it was necessary only to know the antenna factor in order to convert voltage readings obtained from the signal analyzer and logged in the field to values of field strength.

Upon completion of the field strength measurements, copies of the log sheets, the Wavetek analyzer, the dipole antenna, cable and matching transformer were shipped to this firm for verification of the calibration and determination of field strength values from voltage readings taken in the field. In shipping the antenna, the dipole elements were taped at the length settings employed to measure the KREZ-TV field strength, in order to insure that calibration performed by the undersigned would be done with exactly the same length settings used in the field.