DATE: October 14, 1994

CIRCULARLY POLARIZED DIRECTIONAL FM ANTENNA FOR:

ANTENNA GAIN	H-pol	V-pol
relative	4.86	4.86
(dBd)	(6.87)	(6.87)

STATION: **KYFS-FM**
LOCATION: **San Antonio, TX**
MODEL NUMBER: **JHPC-6 DA**
FREQUENCY & ERP: **90 .9 MHz,100 KW**
ANTENNA INPUT POWER: **20.6 KW**
ANTENNA BOOM HEADING: **235 DEGREES TRUE NORTH**

RMS OF THE AZIMUTH PATTERNS:	H-pol	V-pol
	.78	.78

CERTIFICATION

THIS CERTIFICATION, ALONG WITH THE ACCOMPANYING TECHNICAL SPECIFICATION SHEET, ANTENNA MOUNTING SKETCHES, AZIMUTH AND ELEVATION PATTERNS, CERTIFY THE CONSTRUCTION AND MEASUREMENT OF THE JAMPRO FM CP ANTENNA; TO THE STATION'S REQUIREMENTS, AS MEASURED AT THE JAMPRO ANTENNA SITE IN SACRAMENTO, CALIFORNIA. THE FOLLOWING IS AN OUTLINE OF CONSTRUCTION METHODS, PATTERN MEASUREMENTS, INSTALLATION REQUIREMENTS, RECOMMENDED MAINTENANCE AND EQUIPMENT USED.

CONSTRUCTION

A STANDARD CP FM ANTENNA MODEL WAS USED AND PARASITIC REFLECTORS WERE ADDED TO EACH BAY, TO CREATE THE REQUIRED DIRECTIONAL PATTERNS. FROM EXPERIENCE AND BY REPEATED MEASUREMENTS, THESE ELEMENTS WERE ADJUSTED AS TO POSITION AND LENGTH, UNTIL THE FINAL CONFIGURATION WAS DETERMINED AND THE PATTERN REQUIREMENTS WERE MET.

THESE ADDITIONAL ELEMENTS ARE STEEL, HOT DIPPED GALVANIZED AND EITHER BOLTED OR WELDED IN PLACE. MEASUREMENTS TO ESTABLISH THEIR EXACT LOCATION ARE SHOWN ON THE ANTENNA MOUNTING SKETCHES.

MEASUREMENT

THE FULL SCALE ANTENNA WAS MOUNTED ON AN EXACT DUPLICATE OF IT'S FINAL SUPPORT AT THE STATION. WE WERE CAREFUL TO DUPLICATE CONDUITS, CABLES AND ANYTHING PECULIAR TO THIS MOUNTING. THIS WAS THEN PLACED ON A TURNTABLE AT THE JAMPRO ANTENNA RANGE. THIS DIRECTIONAL ANTENNA WAS USED FOR RECEIVING THE RADIATION FROM A TRANSMITTING ANTENNA THAT IS ELEVATED 25 FEET ABOVE GROUND AND LOCATED AT A DISTANCE OF 7,000 FEET. THIS TRANSMITTING ANTENNA IS CAPABLE OF TRANSMITTING EITHER HORIZONTAL OR VERTICAL POLARIZATION.

THE FREQUENCY OF THE SIGNAL GENERATOR WAS ACCURATELY SET TO STATION FREQUENCY BY USE OF A FREQUENCY COUNTER. A SPECTRUM ANALYZER WAS USED TO CONTINUOUSLY MEASURE FIELD STRENGTH AS THE ANTENNA UNDER TEST WAS ROTATED. FIELD STRENGTH AT EACH AZIMUTH WAS THEN PLOTTED.

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INSTALLATION

THE ANTENNA MUST BE INSTALLED IN EXACTLY THE MANNER IN WHICH IT WAS MEASURED AT THE FACTORY. THIS IS SHOWN IN DETAIL ON THE ANTENNA MOUNTING SKETCH; INCLUDING THE AZIMUTH BEARING OF THE MAIN BOOM OF THE ELEMENTS. THIS BOOM MUST BE VERIFIED BY A SURVEYOR AT THE SITE WHEN INSTALLATION IS BEING COMPLETED. GOOD ENGINEERING PRACTICES SHOULD BE FOLLOWED IN ANY DETAILS NOT COVERED BY SPECIFIC INSTRUCTIONS.

MAINTENANCE

ANNUAL OR REGULAR INSPECTION SHOULD BE MADE ON THE ANTENNA SYSTEM. AT THIS TIME, TIGHTNESS OF U-BOLTS, OR OTHER FASTENINGS, SHOULD BE ROUTINELY CHECKED. ANY DETERIORATION OF THE ANTENNA DUE TO LIGHTNING, OR OTHER CAUSES SHOULD BE PROMPTLY REPAIRED.

EQUIPMENT

MODEL: -3000 WAVETEC SIGNAL GENERATOR, SERIAL #66479
-8555B H.P. SPECTRUM ANALYZER, SERIAL #1829AO4558, CALIBRATED 2/88
-TUNED CAVITY DIPOLE

CONCLUSION

IN THE DEVELOPMENT OF THIS PATTERN, JAMPRO ANTENNAS, INC. OBSERVED KNOWN REQUIREMENTS OF THE FCC, AS STATED ON THE STATION CONSTRUCTION PERMIT.

GAIN FIGURES AND REQUIRED INPUT POWER TO ACHIEVE STATION ERP, AS WELL AS OTHER DETAILS, ARE TO BE FOUND ON THE ACCOMPANYING PAGES.

THIS CERTIFICATION, WITH ITS CALCULATIONS WERE PERFORMED BY ERIC DYE, B.S.E.E., ELECTRICAL ENGINEER, JAMPRO ANTENNAS, INC.

EXECUTED THIS 14th DAY OF October, 19 94

BY: Eric Dye
ERIC DYE, B.S.E.E.

1-18-90/em

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KYFS-FM COMPOSITE PATTERN ENVELOPE (H+V)
JHPC-6 DA ERP = 100.00 KW
October 15, 1994

AZIMUTH	FIELD	dB	ERP	dBK
0	0.79	-2.05	62.41	17.95
10	0.71	-2.97	50.41	17.03
20	0.66	-3.61	43.56	16.39
30	0.65	-3.74	42.25	16.26
40	0.66	-3.61	43.56	16.39
50	0.67	-3.48	44.89	16.52
60	0.66	-3.61	43.56	16.39
70	0.63	-4.01	39.69	15.99
80	0.61	-4.29	37.21	15.71
90	0.67	-3.48	44.89	16.52
100	0.77	-2.27	59.29	17.73
110	0.89	-1.01	79.21	18.99
120	0.98	-0.18	96.04	19.82
130	1.00	0.00	100.00	20.00
140	0.93	-0.63	86.49	19.37
150	0.99	-0.09	98.01	19.91
160	1.00	0.00	100.00	20.00
170	0.98	-0.18	96.04	19.82
180	0.95	-0.45	90.25	19.55
190	0.93	-0.63	86.49	19.37
200	0.94	-0.54	88.36	19.46
210	0.97	-0.26	94.09	19.74
220	0.97	-0.26	94.09	19.74
230	1.00	0.00	100.00	20.00
240	1.00	0.00	100.00	20.00
250	1.00	0.00	100.00	20.00
260	1.00	0.00	100.00	20.00
270	1.00	0.00	100.00	20.00
280	1.00	0.00	100.00	20.00
290	1.00	0.00	100.00	20.00
300	0.99	-0.09	98.01	19.91
310	0.96	-0.35	92.16	19.65
320	0.90	-0.92	81.00	19.08
330	0.93	-0.63	86.49	19.37
340	0.89	-1.01	79.21	18.99
350	0.78	-2.16	60.84	17.84

FIELD STRENGTH OF THE OTHER RADIALS

45	0.67	225	0.99
135	0.97	315	0.94

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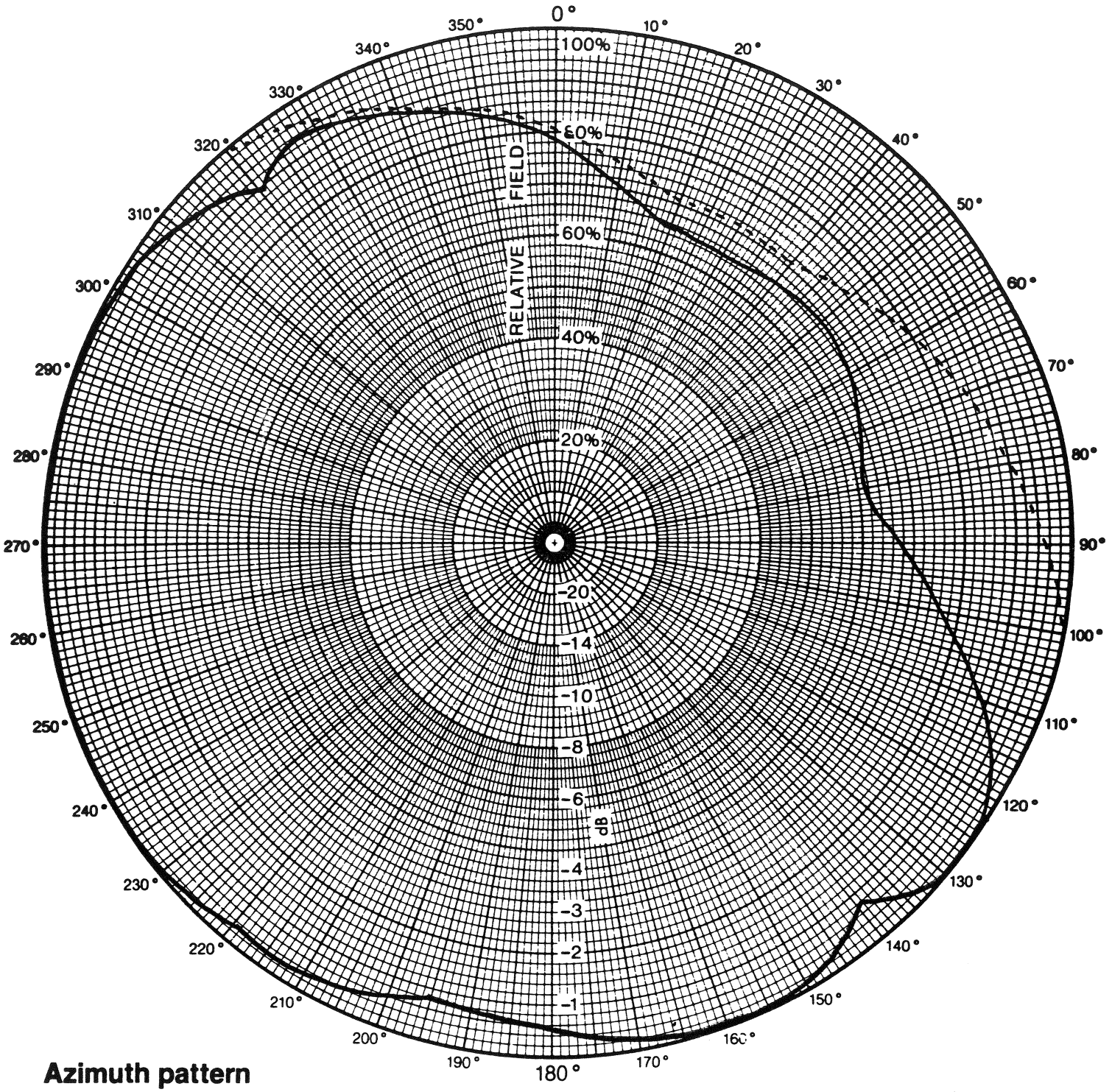

Azimuth pattern

Customer: KYFS Date: 10/15/94

Frequency: 90.9 MHz Type Number: JHPC-6DA

Elevation Gain: Azimuth Directivity: Major Lobe Gain:

Notes: Composite Pattern Envelope (Hpol + Vpol)

Dashed line = Maximum Permitted Field

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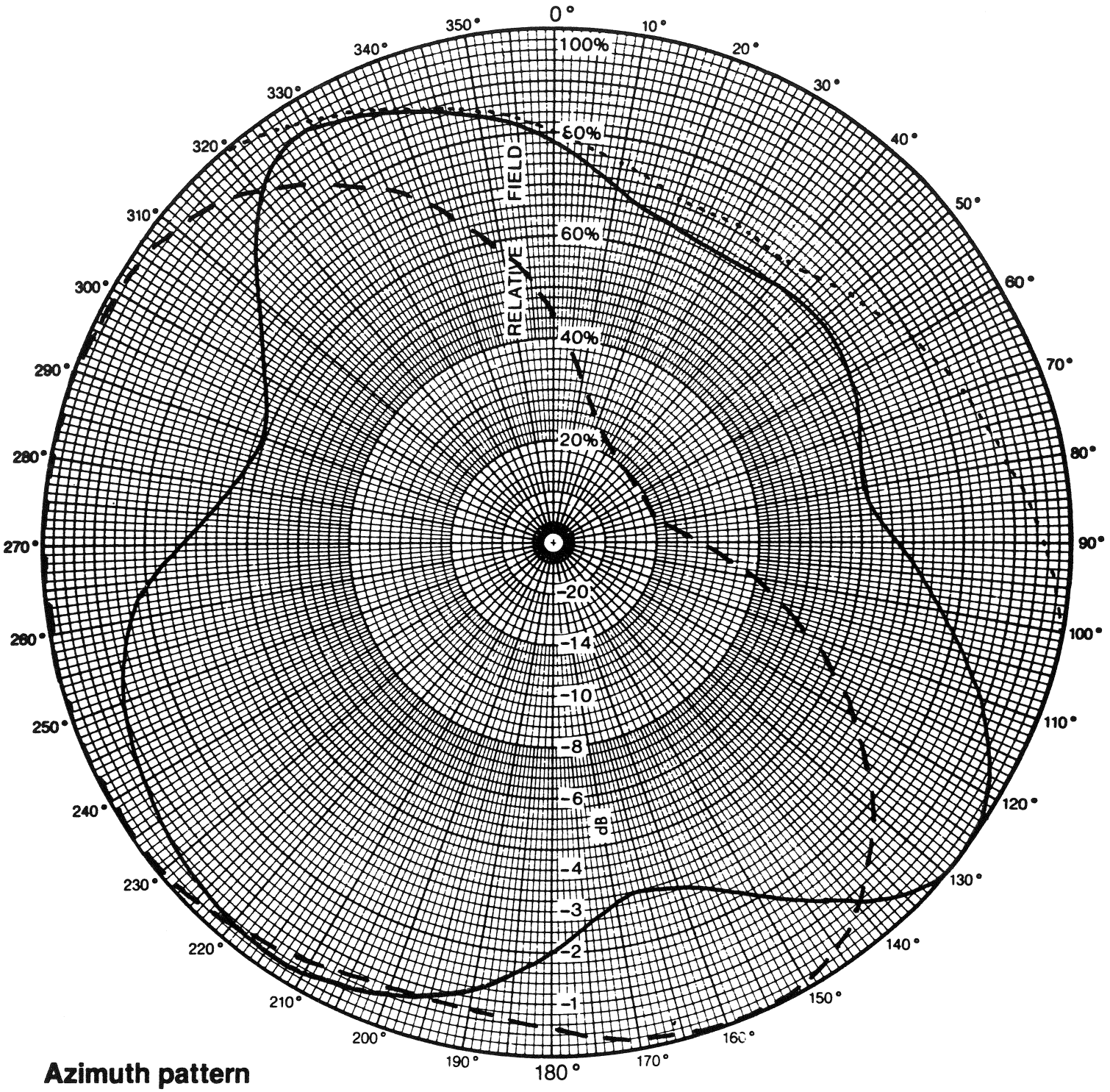

Azimuth pattern

KYFS-FM

Customer: | **Date:** 10/15/94

90.9 MHz | **Frequency:** | **Type Number:** JHPC-6DA

Elevation Gain: | **Azimuth Directivity:** | **Major Lobe Gain:**

Notes: Pattern measured in full scale

HPOL VPOL

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Frequency: <MHz> 90.90 File Name:KYFS.ELV JAMPRO ANTENNAS INC.
Bays : 6 ELEVATION PATTERN Spacing (Wavelength): 1.00
Model : SIDEMNT

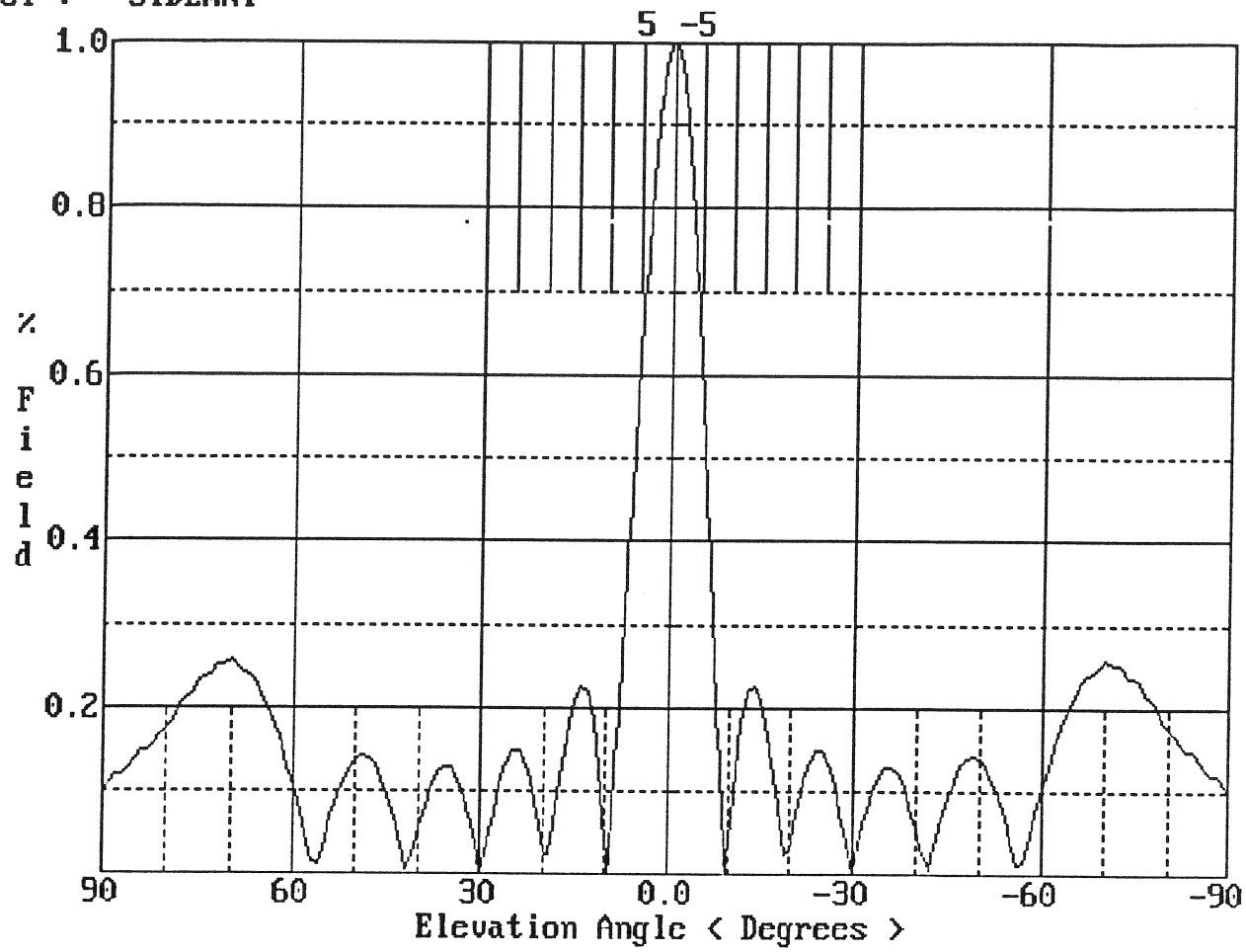

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TABLE OF FIELD STRENGTH FOR : KYFS.ELV

INCREMENTAL DEGREES

		0	1	2	3	4	5	6	7	8	9
	+	1.000	.983	.931	.841	.734	.609	.471	.327	.191	.066
	-	1.000	.983	.931	.841	.734	.609	.471	.327	.191	.066
D	-10	.041	.126	.185	.219	.227	.213	.182	.136	.083	.026
E	-20	.028	.076	.114	.139	.151	.150	.136	.110	.078	.040
G	-30	.000	.039	.072	.100	.120	.130	.131	.124	.107	.085
R	-40	.057	.026	.006	.038	.068	.094	.116	.132	.142	.145
E	-50	.142	.131	.116	.094	.071	.043	.013	.017	.048	.077
E	-60	.106	.131	.157	.180	.201	.214	.229	.242	.245	.252
S	-70	.257	.251	.252	.241	.238	.234	.218	.212	.204	.186
	-80	.178	.169	.159	.150	.150	.140	.130	.120	.120	.110
	-90	.100									

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