540-550

Station	Main Studio	Freq	Power	Date
NEW	Vancouver, BC	540	50/10 kW	3/21/83
NEW	Vancouver, BC	540	50/5 kW	5/4/82
NEW	Otawa, ON	540	50/10 kW/DA-2	8/29/80
CBEF	Windsor, ON	540	2.5/5 kW/DA-2	6/28/68
CBGA	New Carlisle, QU	540	10 kW/DA-2	5/30/79
CBK	Watrous, Sask.	540	50 kW	5/10/49
CBT	Grand Falls, NF	540	10 kW	11/30/61
CBT	Grand Falls, NF	540	1 kW	10/18/60
CKCY	Sault Ste. Marie, ON	540	20/3 kW	9/23/82
CKCY	Sault Ste. Marie, ON	540	2.5/15 kW	5/5/81
NEW	Las Vegas, NV	540	5 kW/DA-D	7/10/80
KNOE	Monroe, LA	540	1/5 kW/DA-2	6/22/62
KWMT	Fort Doge, IA	540	5 kW/DA-D	9/28/79
WARO	Canonsburg, PA	540	0.25 kW/DA-D	8/31/56
WDAK	Columbus, GA	540	0.5/5 kW/DA-N	2/2/59
WETC	Wendell-Zebulon, NC	540	5 kW/DA-D	9/26/68
WGTO	Cypress Gardens, FL	540	1/50 kW/DA-2	9/28/79
WGTO	Cypress Gardens, FL	540	50 kW/DA-D	8/9/57
WGTO	Cypress Gardens, FL	540	10/50 kW/DA-2	5/28/59
WYLO	Jackson, WI	540	0.25 kW/DA-D	3/30/64
CFJC	Kamloops, BC	550	10/5 kW/DA-2	6/7/77
CFJC	Kamloops, BC	550	25/5 kW/DA-2	3/28/79
CFNB	Fredericton, NB	550	50 kW/DA-2	10/30/58
CHLN	Three Rivers, QU	550	5/10 kW/DA-2	1/29/60
CHNO	Sudbury, ON	550	50/10 kW/DA-2	5/29/80
CHNO	Sudbury, ON	550	10/10 kW/DA-2	8/1/79
CJOK	Fort McMurray, AB	550	10/5 kW	11/8/82

540-550

Station	Main Studio	Freq	Power	Date
CKPG	Prince George, BC	550	10 kW/DA-N	8/28/64
CMW	Hanava, CU	550	10 kW	1/26/53
KAFY	Bakersfield, CA	550	1 kW/DA-1	12/27/49
KARI	Blaine, WA	550	2.5/5 kW/DA-2	8/30/78
KARI	Blaine, WA	550	1/5 kW/DA-2	5/27/60
KBOW	Butte, MT	550	1 kW/DA-N	12/28/62
KCRS	Midland, TX	550	1/5 kW/DA-2	3/26/65
KFRM	Kansas City, MO	550	5 kW/DA-D	3/47
KFYR	Bismarck, ND	550	5 kW	7/41
KOAC	Corvallis, OR	550	5 kW	
KRAI	Craig, CO	550	0.5/1 kW/DA-N	9/8/55
KSD	St. Louis, MO	550	5 kW/DA-N	9/14/49
KTSA	Dallas, TX	550	5 kW/DA-N	7/12/49
WCBI	Columbus, MS	550	0.5/1 kW/DA-2	7/22/54
WDLV	Pinehurst, NC	550	1 kW/DA-D	5/16/80
WDEV	Waterbury, VT	550	1/5 kW/DA-2	11/29/57
WGGA	Gainesville, GA	550	0.5/5 kW/DA-N	1/11/51
WGNG	Pawtucket, RI	550	0.5/1 kW/DA-N	5/28/59
WXTR	Pawtucket, RI	550	0.5/1 kW/DA-N	2/26/60
WGR	Buffalo, NY	550	5 kW/DA-N	9/77
WHLM	Bloomsburg, PA	550	1 kW/DA-2	6/20/58
WKRC	Cincinnati, OH	550	1/5 kW/DA-2	7/2/75
WSAU	Wausau, WI	550	5 kW/DA-2	3/27/70
WSVA	Harrisonburg, VA	550	1 kW/DA-N	4/26/49
XEQW	Merida, Yuc.	550	5 kW/DA-N	8/28/52
XETNC	Tepic, Nayarit	550	0.15/10 kW/DA-D	11/30/76

NEW

IFRB Serial No. 1 2 4 5 1

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz 540

PART I GENERAL INFORMATION

(α) Administration: CANADA — Sheet No.: 417 — Date: 830321

Assigned frequency (kHz)		02	5 4 0
Transmitting station	Name of the station	03	VAN COUVER B.C
	Call sign	04	
	Additional Identification	05	
	Station class	06	B
	Operational Status	07	P
Country		08	CAN
Geographical coordinates of the transmitting station		09	1 2 2W 3 8 00 4 9 N 1 5 2 0

(11) a) New assignment [ ] b) Modification of characteristic of an assignment recorded in the plan [X] c) Cancellation of an assignment [ ]

(12) Modification under Section 4.2.14 Yes [ ] No [X]

(13) Date of bringing into service or cessation of operation: Year Month Day

STATION PARAMETERS	DAYTIME OPERATION		NIGHT-TIME OPERATION	
Station power (kW)	21	5 0 .	31	1 0 .
r.m.s. value of radiation for station power (mV/m at 1 km)	25	.	35	.
Antenna type	26	B	36	B
Simple vertical antenna electrical height (degrees)	27	.	37	.

(44) Remarks

COORDINATION UNDER ARTICLE 4:

COUNTRY	USA							
IN PROGRESS	X							
ACCEPTANCE OBTAINED								

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

IFRB Serial No. 12451

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 417

Date 830321

(01) Name of transmitting station: VANCOUVER BC

(02) Country: CAN

(03) Hours of operation: HJ

(04) Total number of towers: 03

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	.704	-58.6	150.	353.	0	71.1	0
2	1.0	0.	0.	0.	0	71.1	0
3	.449	62.4	150.	173.	0	71.1	0
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(14) r.m.s value of radiation	(15) Type of pattern	(16) Special quadrature factor
2001.6 mV/m at 1 km	E	. mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

NEW 540

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

IFRB Serial No. 12451

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 417

Date 830321

(01) Name of transmitting station: VANCOUVER BC

(02) Country: CAN

(03) Hours of operation: HN

(04) Total number of towers: 05

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	0.	0.	0	71.1	0
2	.2371	102.	240.	289.	0	71.1	0
3	.7265	-128.5	120.	289.	0	71.1	0
4	.7265	128.5	120.	109.	0	71.1	0
5	.2371	-102.	240.	109.	0	71.1	0
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(14) r.m.s value of radiation: 890.4 mV/m at 1 km

(15) Type of pattern: E

(16) Special quadrature factor: . mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

NEW 540

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT 12451

OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

NEW 540

PART I GENERAL INFORMATION

(01) Administration: CANADA | Sheet No. 412 | Date 820504

Assigned frequency (kHz)	(02)	540
Transmitting station — Name of the station	(03)	VANCOUVER BC
Call sign	(04)	
Additional Identification	(05)	
Station class	(06)	
Operational Status	(07)	
Country	(08)	CAN
Geographical coordinates of the transmitting station	(09)	122W4540 49N0820

(11) a) New assignment ☐ b) Modification of characteristic of an assignment recorded in the plan ☒ c) Cancellation of an assignment ☐

(12) Modification under Section 4.2.14 Yes ☐ No ☐

(13) Date of bringing into service or cessation of operation: 82 12 01 (Year Month Day)

STATION PARAMETERS		DAYTIME OPERATION		NIGHT-TIME OPERATION
Station power (kW)	(21)	50.	(31)	5.
r.m.s. value of radiation for station power (mV/m at 1 km)	(25)	.	(35)	.
Antenna type	(26)	B	(36)	B
Simple vertical antenna electrical height (degrees)	(27)	.	(37)	.

(44) Remarks

COORDINATION UNDER ARTICLE 4								
COUNTRY	USA							
IN PROGRESS	X							
ACCEPTANCE OBTAINED								

F... FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

Notice serial No. 1 2 4 / 1

PART II Section 1

Description of a directional antenna consisting of vertical conductors

Sheet No. 4/2

Date 820504

(01) V A N C O U V E R B C
Name of transmitting station

(02) C A N
Country

(03) H J
Hours of operation

(04) 3
Total number of towers

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	0.	0.		70.	
2	.56	-115.	104.7	353.5		70.	
3	.56	115.	104.7	173.5		70.	
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(14) r.m.s. value of radiation	(15) Type of pattern	(16) Special quadrature factor
229. mV/m at 1 km	E	. mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

NEW 540

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

[illegible] 12 31

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 412

Date 820504

(01) VANCOUVER BC
Name of transmitting station

(02) CAN
Country

(03) HN
Hours of operation

(04) 5
Total number of towers

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	0.	0.		70.	
2	3.375	-128.43	108.	284.		70.	
3	4.8	-257.	216.	284.		70.	
4	3.375	-25.57	324.	284.		70.	
5	1.	-154.	432.	284.		70.	

(14) r.m.s. value of radiation
647.6 mV/m at 1 km

(15) Type of pattern
E

(16) Special quadrature factor
. mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

NEW
540

NEW-C 540 kHz

DESCRIPTION SHEET

Station:	New	Main Studio:	Ottawa, Ontario
Frequency:	540 kHz	Power: 50 kW day:	10 kW night
Time:	Unlimited	Class:	II
Notification List No. 398		Date: August 29, 1980	
Geographic Location:		North Lat.	45° 11' 21"
		West Long.	75° 46' 46"

Antenna System:

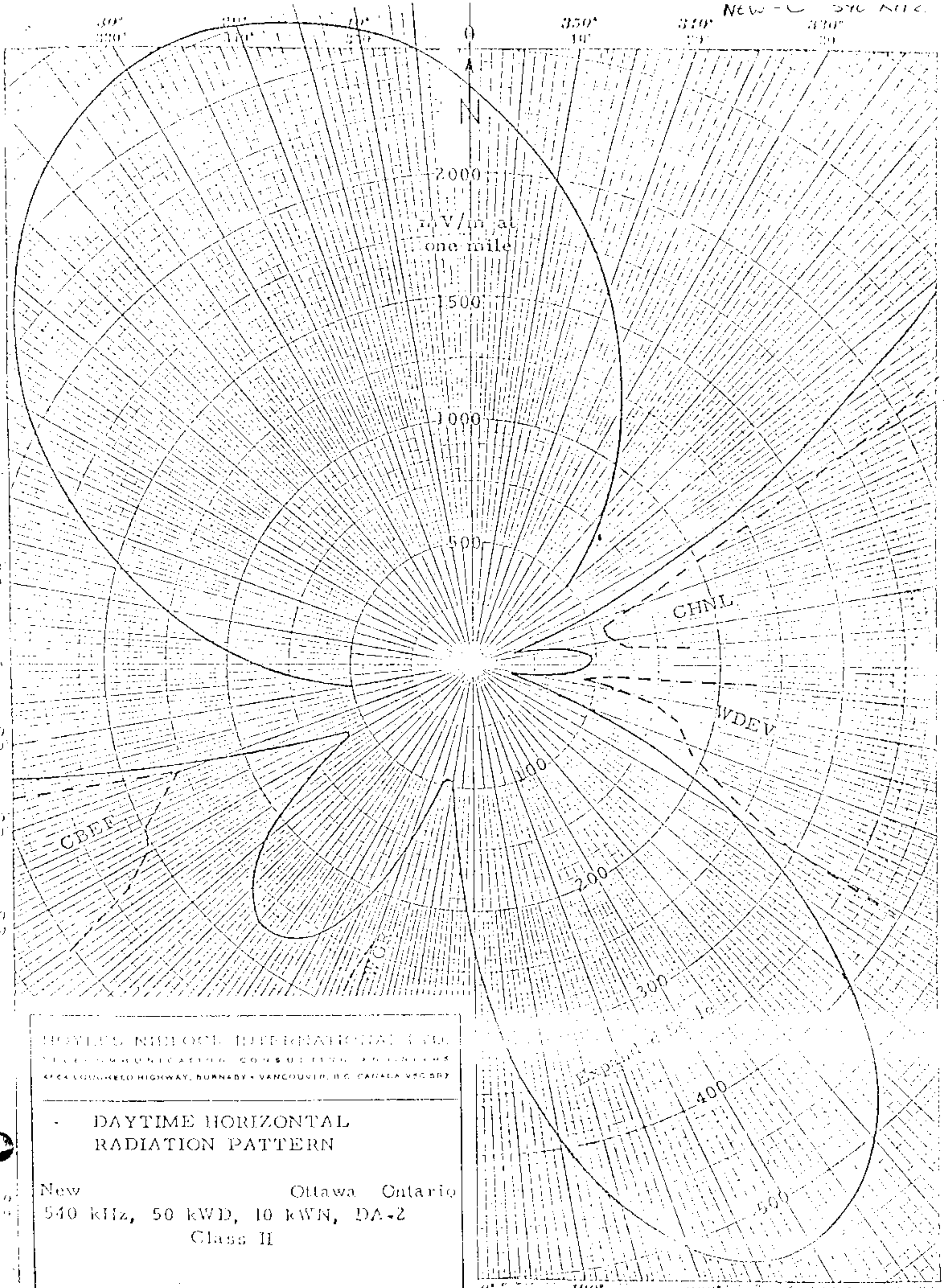
Mode of Operation: DA-2

Elements: Six uniform cross-section, guyed steel towers, base insulated and series fed.

Towers:	1	2	3	4	5	6
Height above insulators:	355'(70°)	355'(70°)	355'(70°)	355'(70°)	355'(70°)	355'(70°)
Overall Height:	360'	360'	360'	360'	360'	360'
Spacing:	188.7°	ref.	195.3	90°	77.49°	90°
Phasing: Day	-	0	-	93°	- 168.5°	98.4°
Night	23.7	0	-16.3	-	-	-
Current Ratio: Day	-	0.92	-	0.94	1.00	0.98
Night:	1.0	1.89	1.0	-	-	-
Orientation:	276.6°	ref.	97.4	88°	152.5°	217°

Ground Systems: The ground system shall consist of 120, No. 10 copper wire radials buried approximately 8 inches below grade. [illegible] equivalent to a 0.4 [illegible]

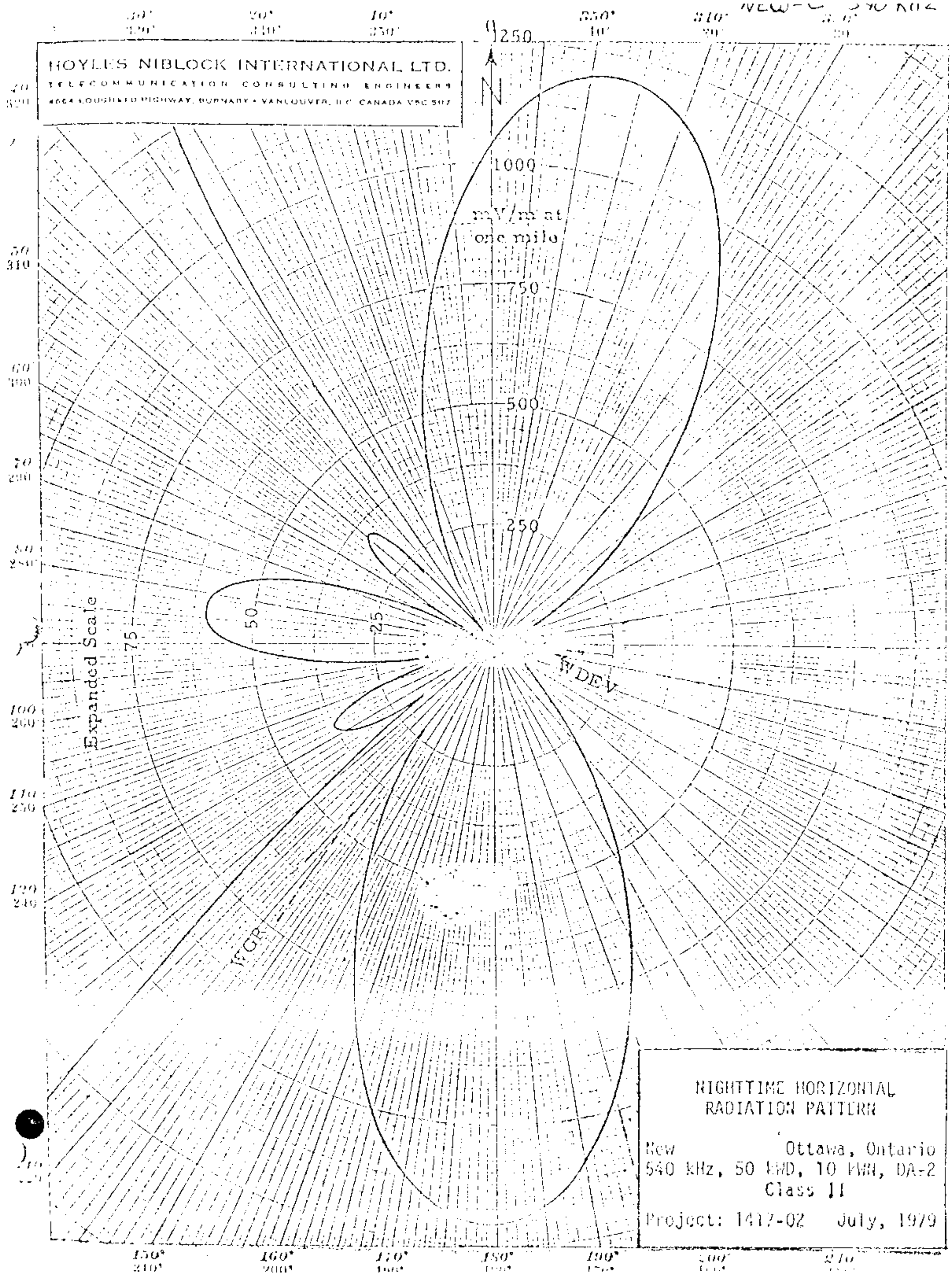
Predicted Effective Field: [illegible] mV/m for 10 kW nighttime
1300 mV/m for 50 kW daytime

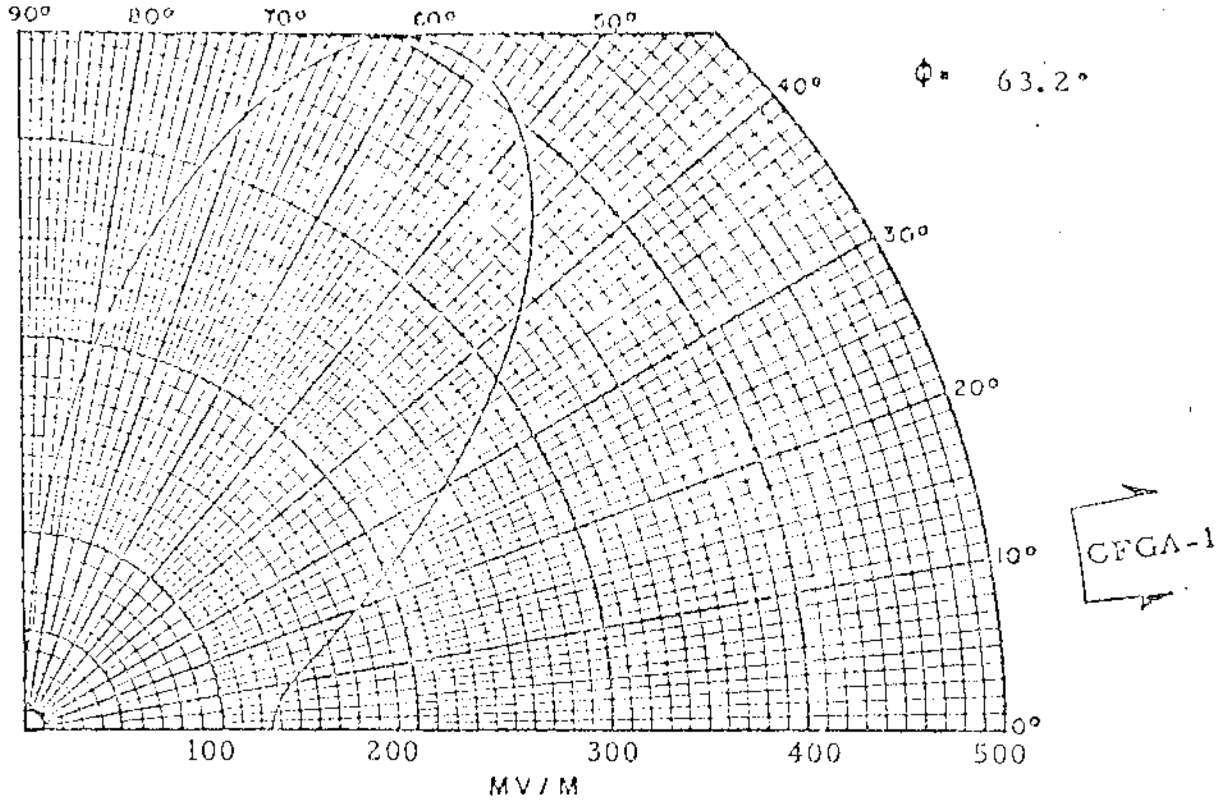


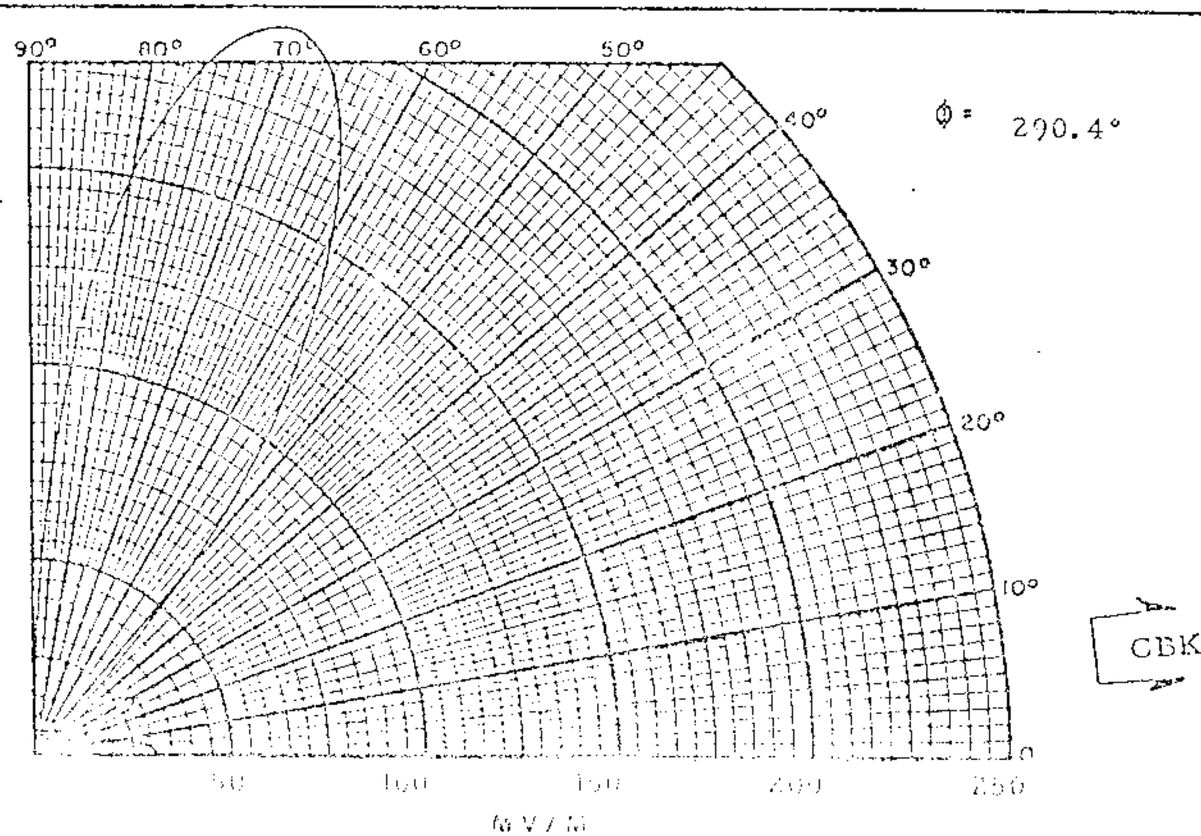
HOYLES, NIBLOCK INTERNATIONAL LTD.
TELECOMMUNICATION CONSULTING ENGINEERS

DAYTIME HORIZONTAL
RADIATION PATTERN

New Ottawa Ontario
540 kHz, 50 kWD, 10 kWN, DA-2
Class II


HOYLES NIBLOCK INTERNATIONAL LTD.
TELECOMMUNICATION CONSULTING ENGINEERS
N
1000
mV/m at
one mile
750
500
250
Expanded Scale
75
50
25
WDEV
WGR
NIGHTTIME HORIZONTAL
RADIATION PATTERN
New Ottawa, Ontario
540 kHz, 50 KWD, 10 KWN, DA-2
Class II
Project: 1417-02 July, 1979

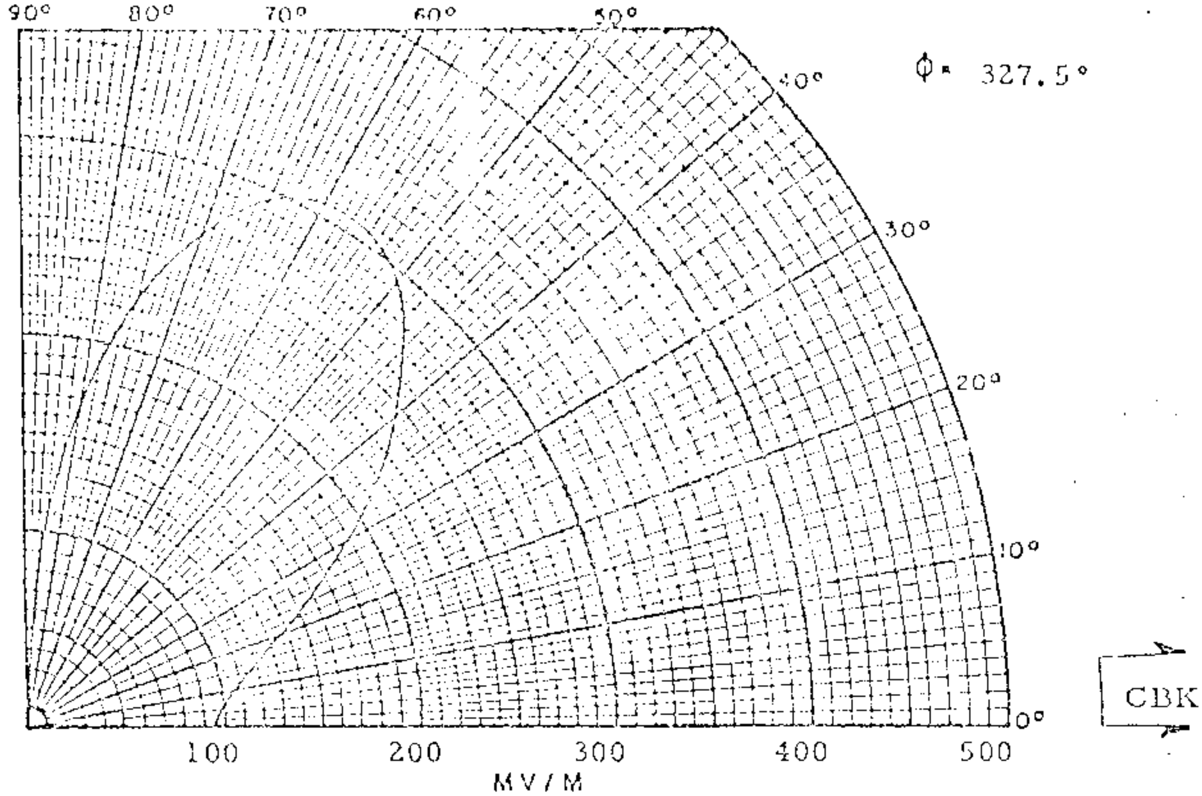


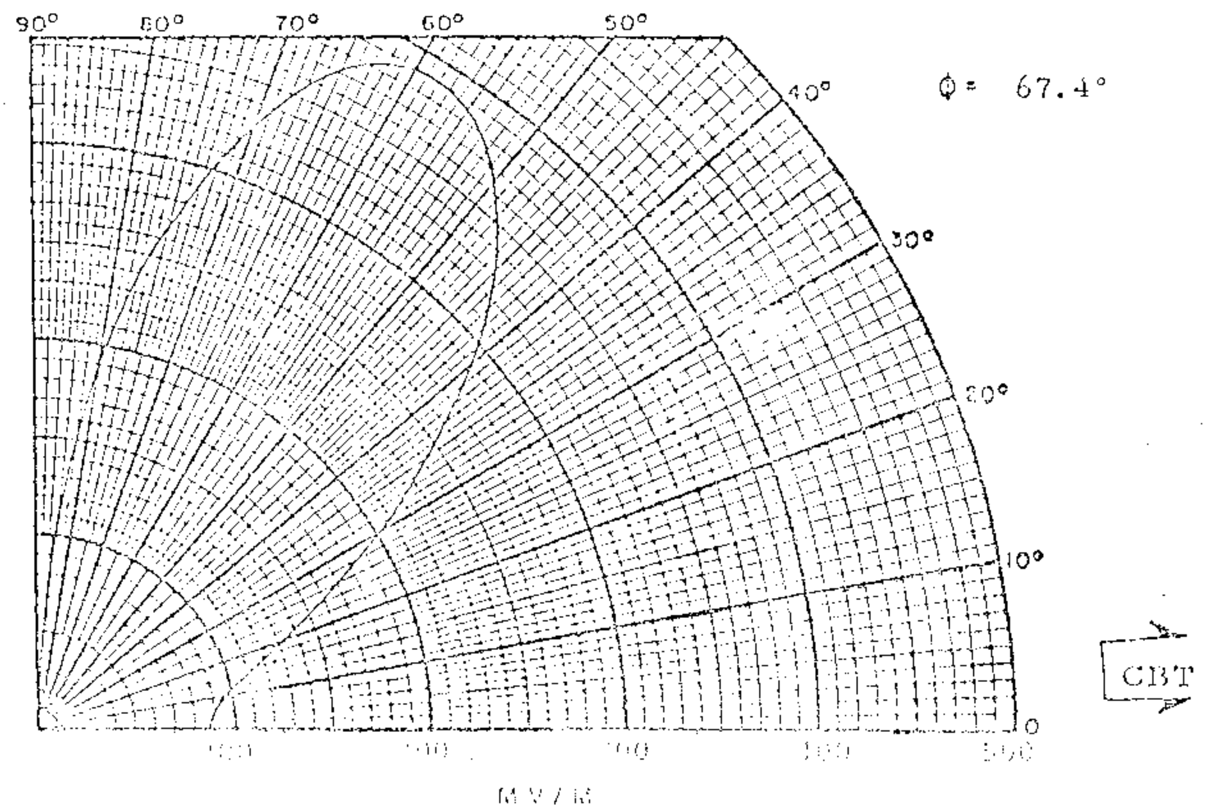


VERTICAL RADIATION PATTERNS

New Ottawa Ontario
540 kHz , 50 kWD , 10 kWN , DA-2 Class II

Project 1417-02 July 1979



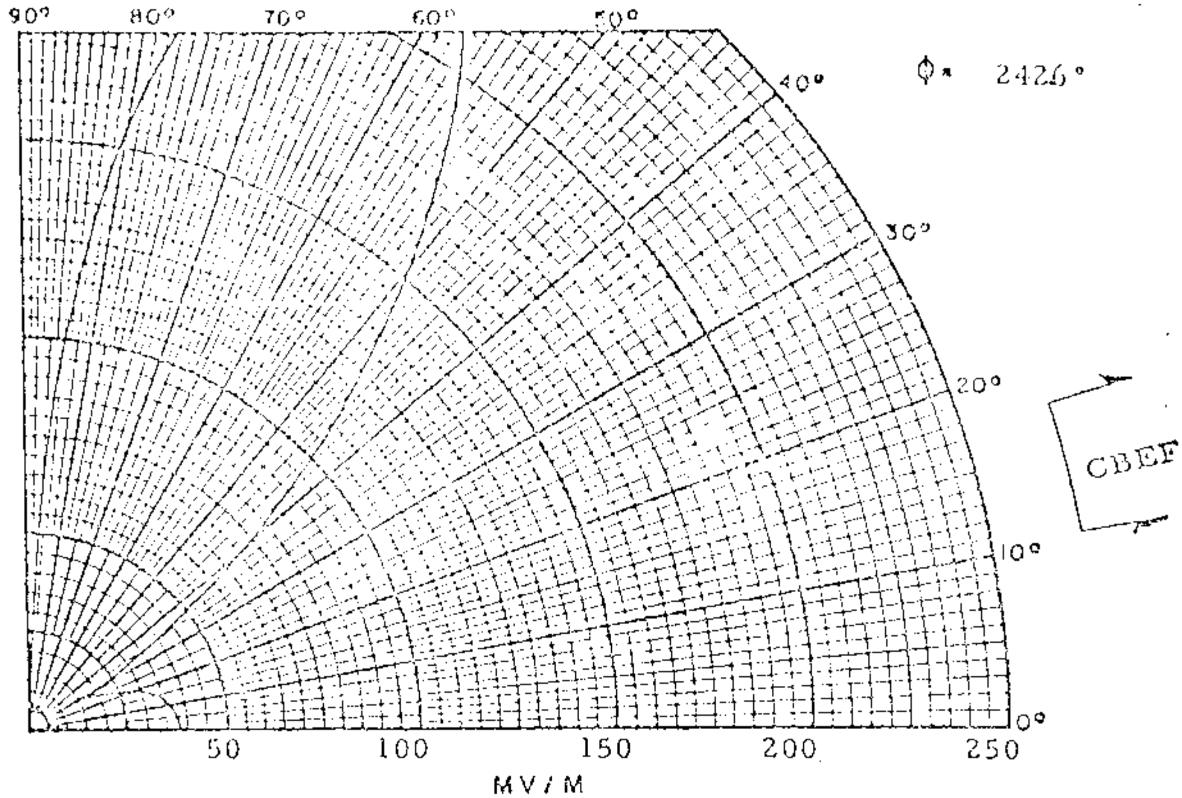


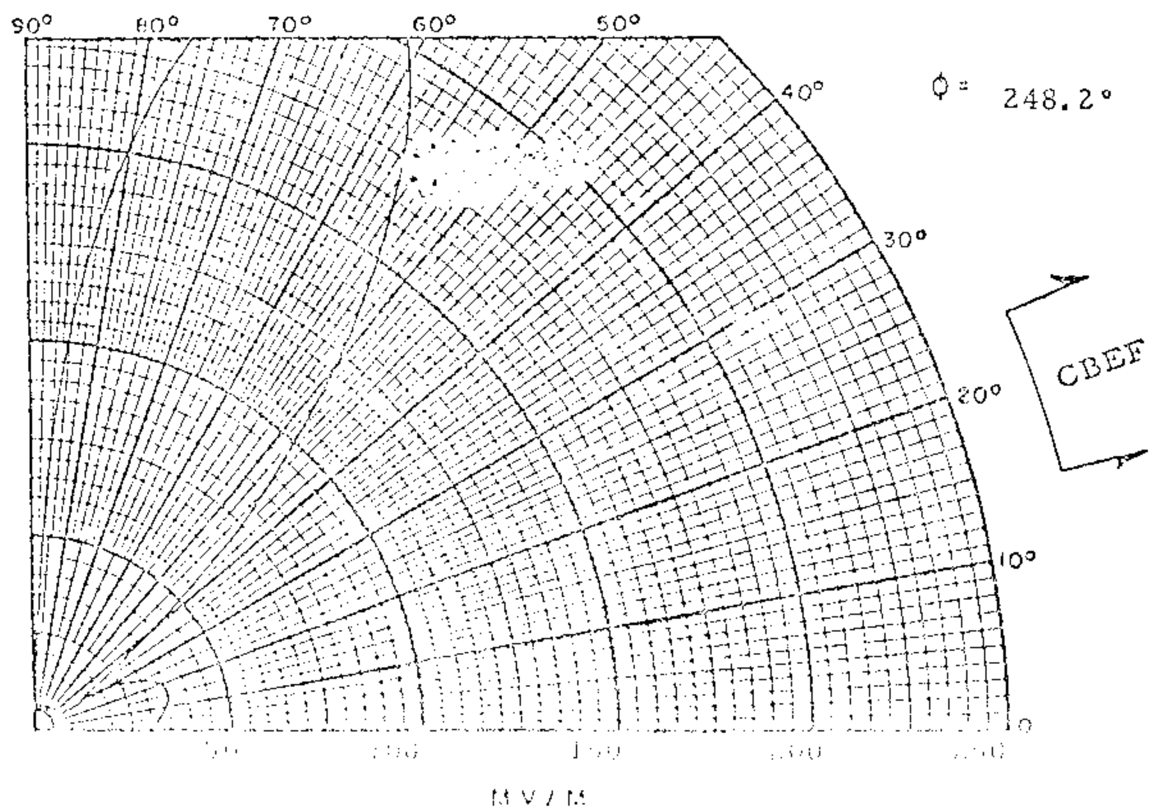
VERTICAL RADIATION PATTERNS

New Ottawa Ontario
540 kHz , 50 kWD , 10 kWN , DA-2 Class II

Project 1417-02 July 1979

NEW 540 KHZ



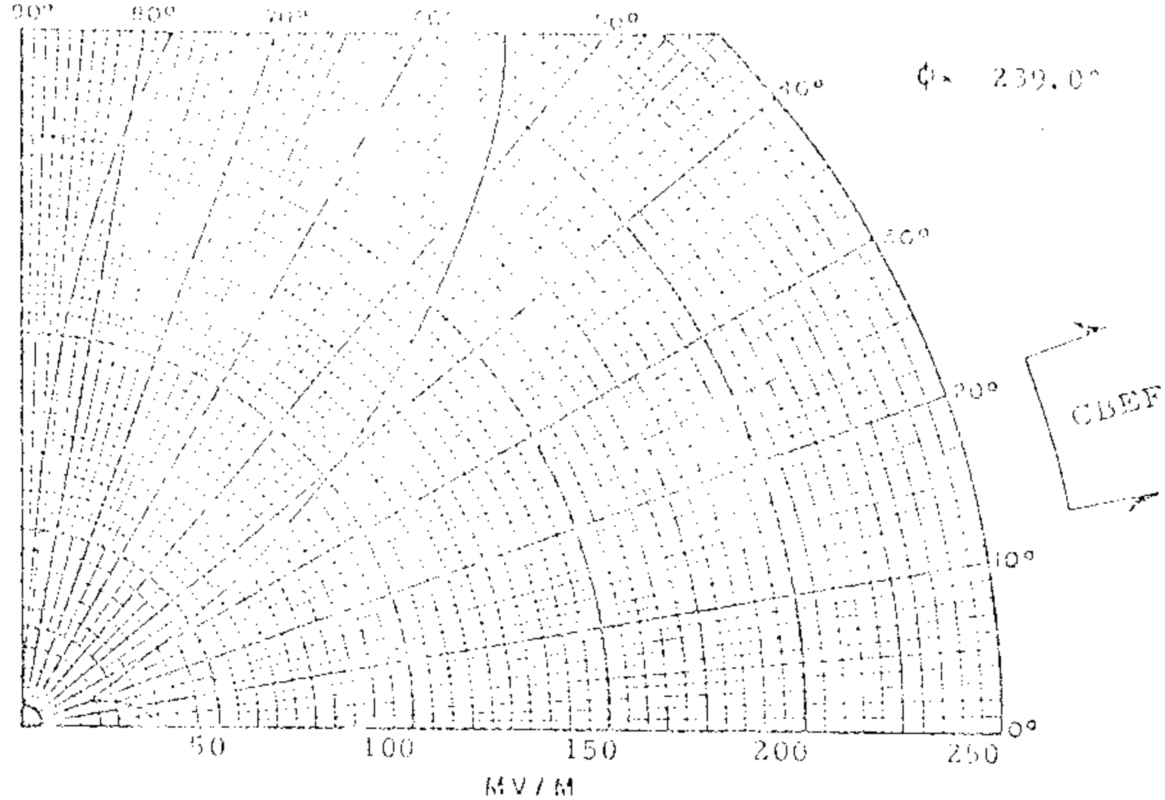


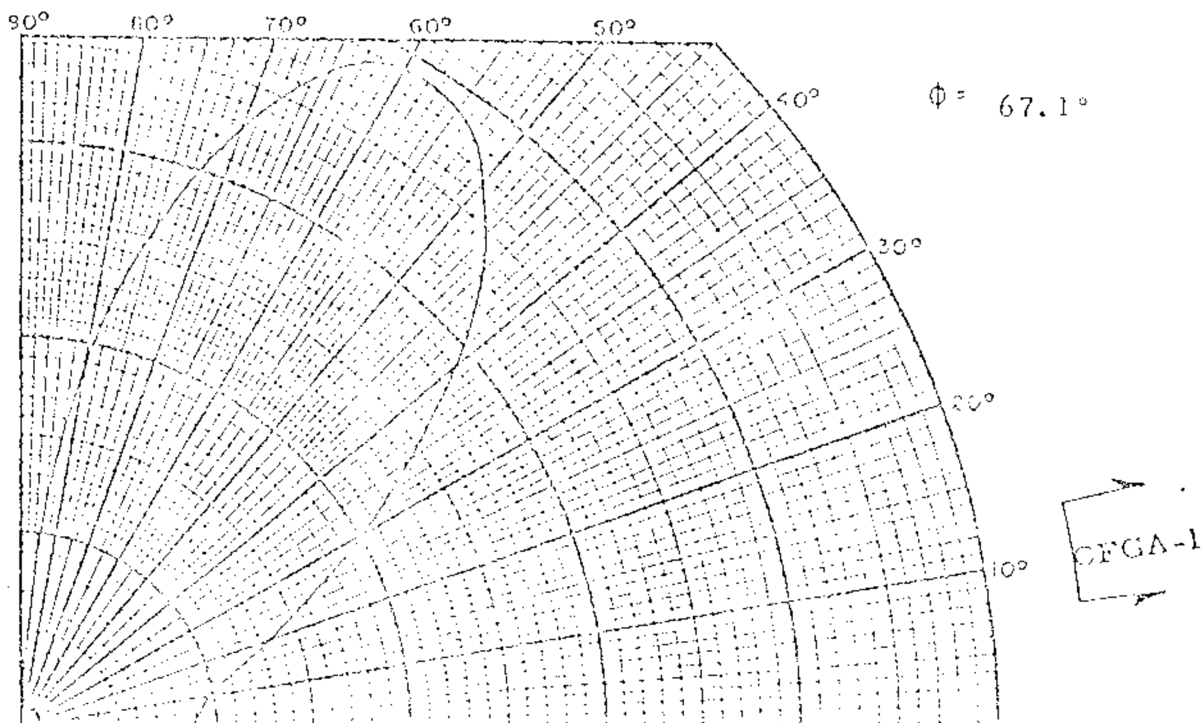
VERTICAL RADIATION PATTERNS

New Ottawa Ontario
540 kHz , 50 KWD , 10 kWN , DA-2 Class II

Project 1417-02 July 1979

NEW-C 540 KHZ



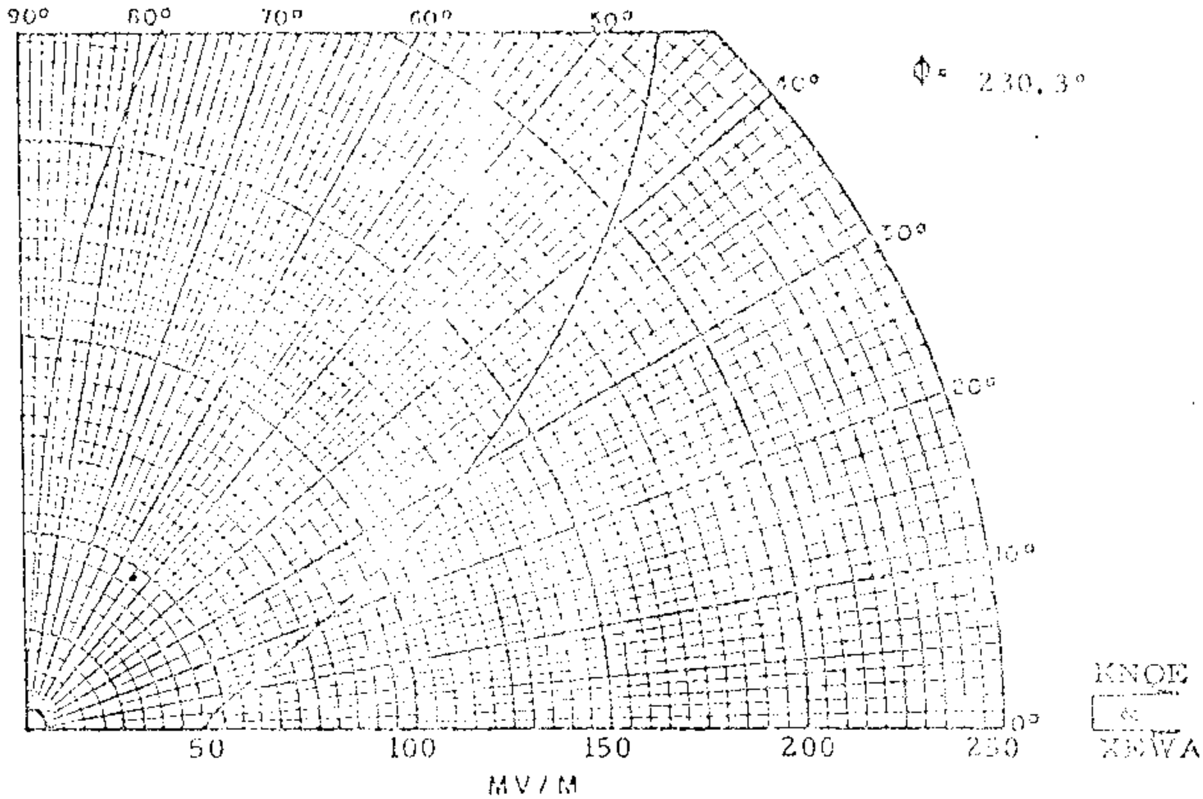


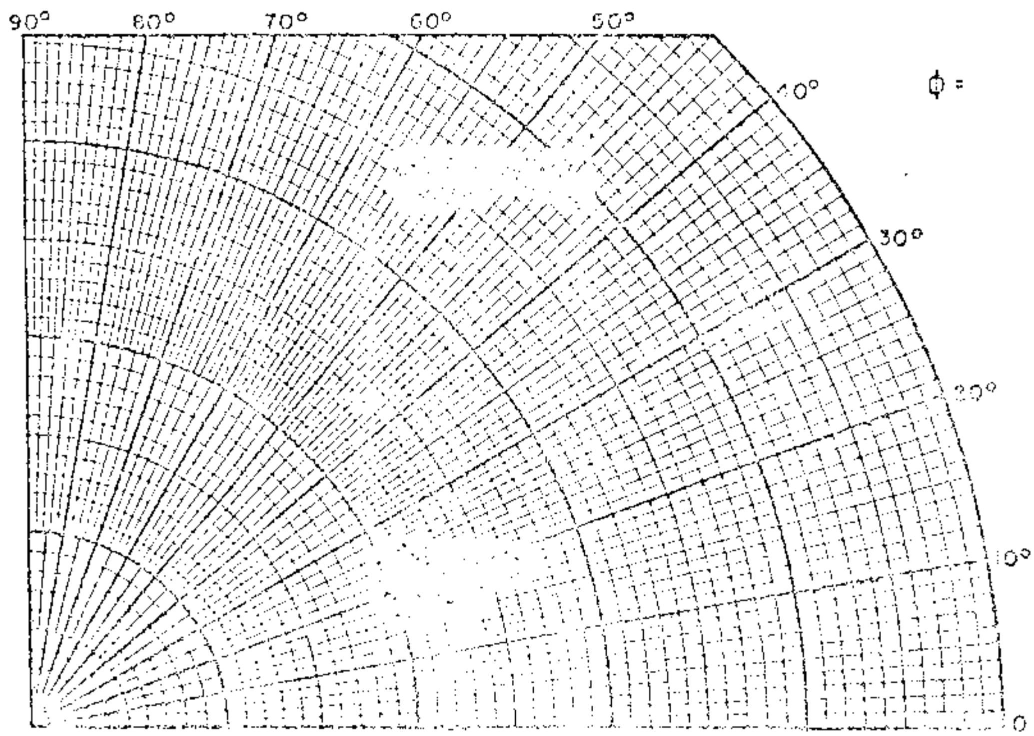
VERTICAL RADIATION PATTERNS

New — Ottawa — Ontario

540 kHz , 50 kWD, 10 kWN , DA-2 Class II

Project 3417-02 — July 1979



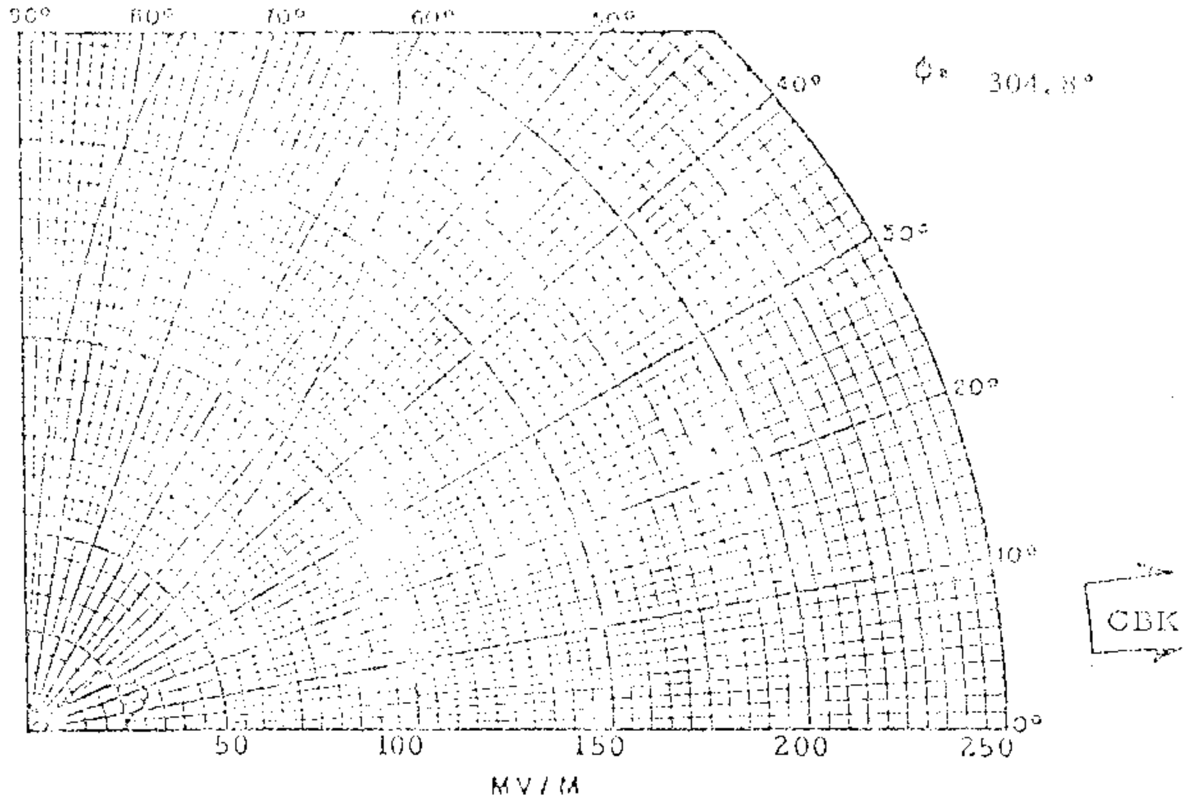


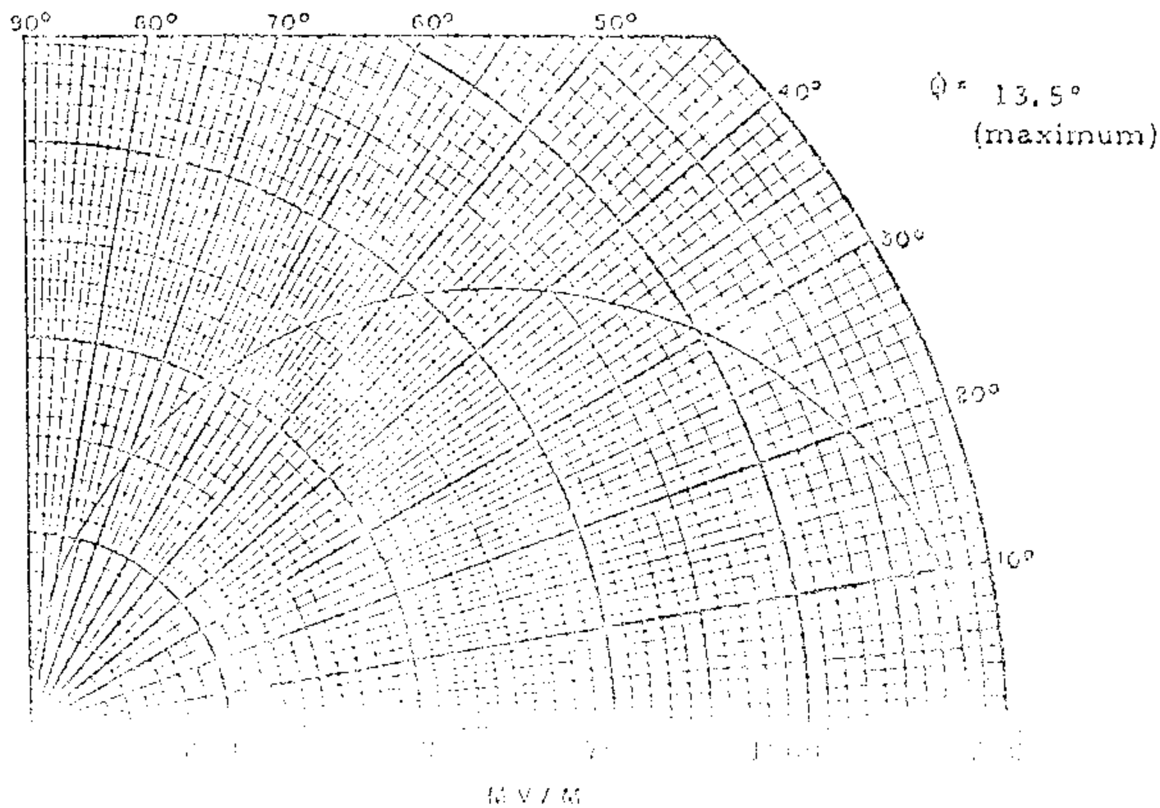
VERTICAL RADIATION PATTERNS

New Ottawa Ontario
540 kHz , 50 KWD , 10 KWN , DA-2 Class II

Project 1417-03 July 1979

NEW-C 540 KHZ





VERTICAL RADIATION PATTERNS

New Ottawa Ontario
540 kHz , 50 KWD , 10 KWN , DA-2 Class II

Project 1417-02 July 1979

HOYLES NIBLOCK ASSOCIATES LTD.

Description Sheet
(6-28-68ct)

Station CBEF
Windsor, Ontario

2.5kw,5kw-LS,DA-2,U,Class II
540 kc

DESCRIPTION SHEET

Station Call:	CBEF
Main Studio:	Windsor, Ontario
Frequency:	540 kHz
Power:	2.5 KW D/5 KW N
Mode:	DA-1
Class:	II
Time:	Day and night
Notification List No: 243	Date: June 18, 1968.
Geographical Location:	

Latitude - 42° 08' 50" N
Longitude - 83° 05' 33" W

Tower:	1 (West)	2 (North)	3 (South)	4 (East)
Height of Radiating Element:	450'	350'	450'	350'
Physical Height:	88.9°	69.1°	88.9°	69.1°
Overall Height:	460'	360'	460'	360'
Field Ratio:	1	0.91	0.91	0.8281
Phasing:	0°	-120°	0°	-120°

Spacing and Orientation:

Towers are at the vertices of a rectangle, whose short sides (towers 1 -2 and 3-4) are 319.0 ft. (63°) long at an azimuth of 36°, and whose long sides (towers 2-4 and 1-3) are 956.9 ft. (189°) long at an azimuth of 126°.

Type of Elements:

Four guyed, base insulated, series fed, steel towers of constant cross section. They will meet the requirements of Broadcast Procedure 1, Rule 1.

Ground System:

Each tower will have 120 radials, of length at least 525 feet except where limited by the bisectors between towers, the whole being equivalent in area to a 0.4λ system. Radials will be no. 10 B&S gauge, buried at least 8 inches deep.

Expected Efficiency:

405 mV/m at 1 mile for 5 KW
286 mV/m at 1 mile for 2.5 KW
181 mV/m at 1 mile for 1 KW

In calculating these values a base series loss resistance of 2.4 ohms was assumed.

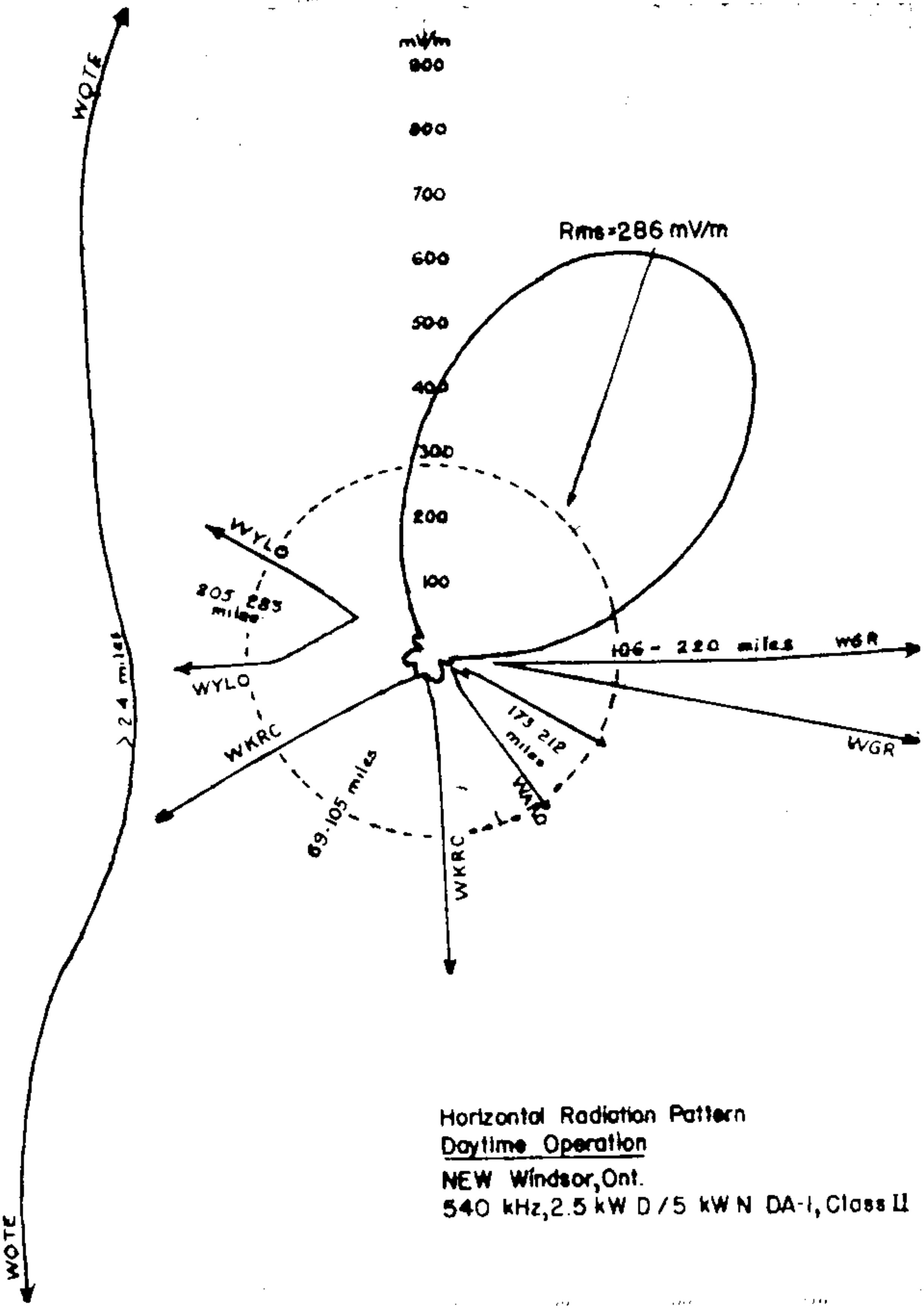
Note:

Attach this Description Sheet together with vertical radiation patterns to the horizontal radiation patterns relative to the operation notified in list #232 dated September 28, 1967.

Proposed Day
(10-28-67ct)

New Station
Windsor, Ontario

~~250w,~~5kw-LS,DA-1,U,Class II
2.5kw D/5kw N 540 kc

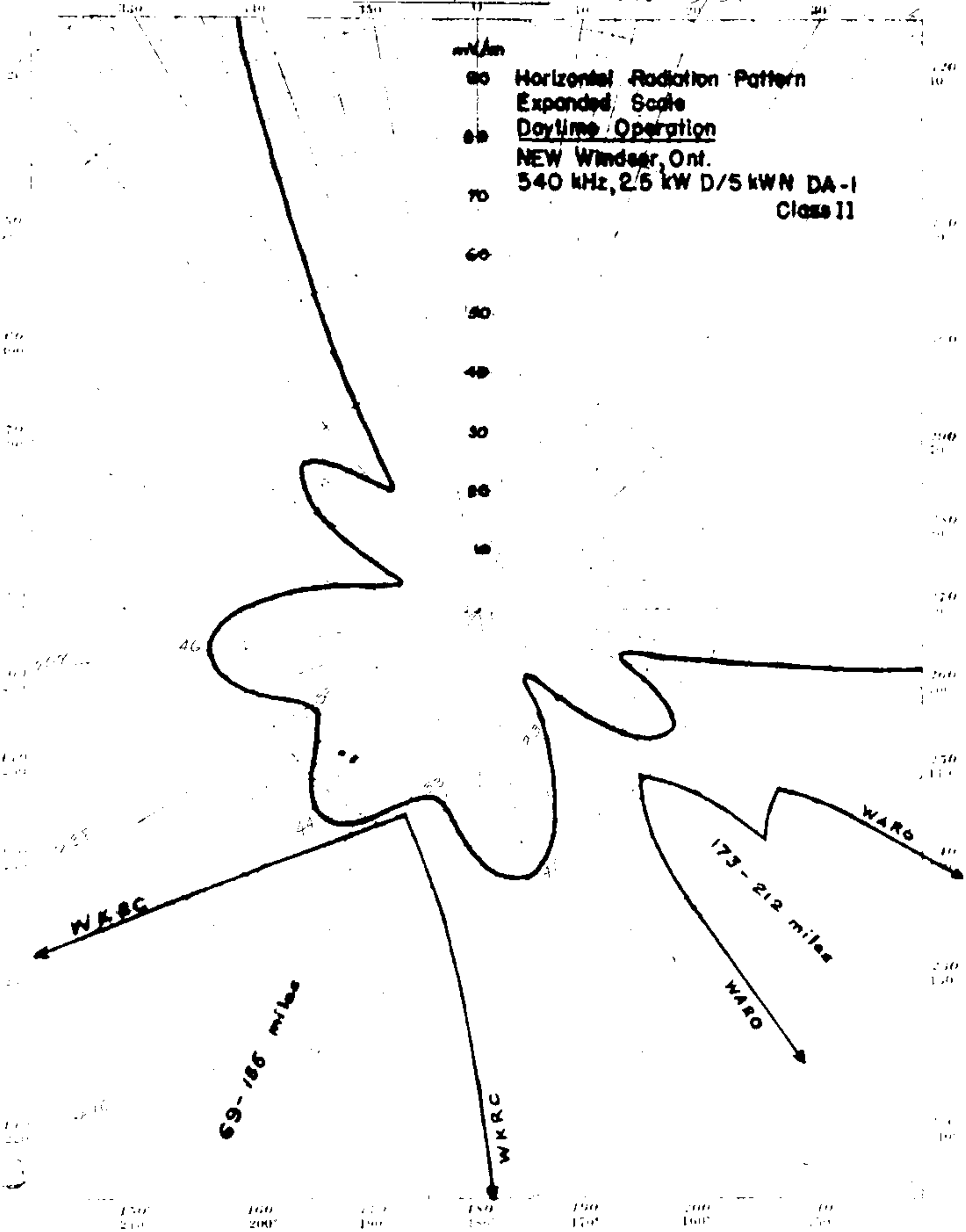


Horizontal Radiation Pattern
Daytime Operation
NEW Windsor, Ont.
540 kHz, 2.5 kW D / 5 kW N DA-1, Class II

Proposed Day Nulls
(10-28-67ct)

New Station
Windsor, Ontario

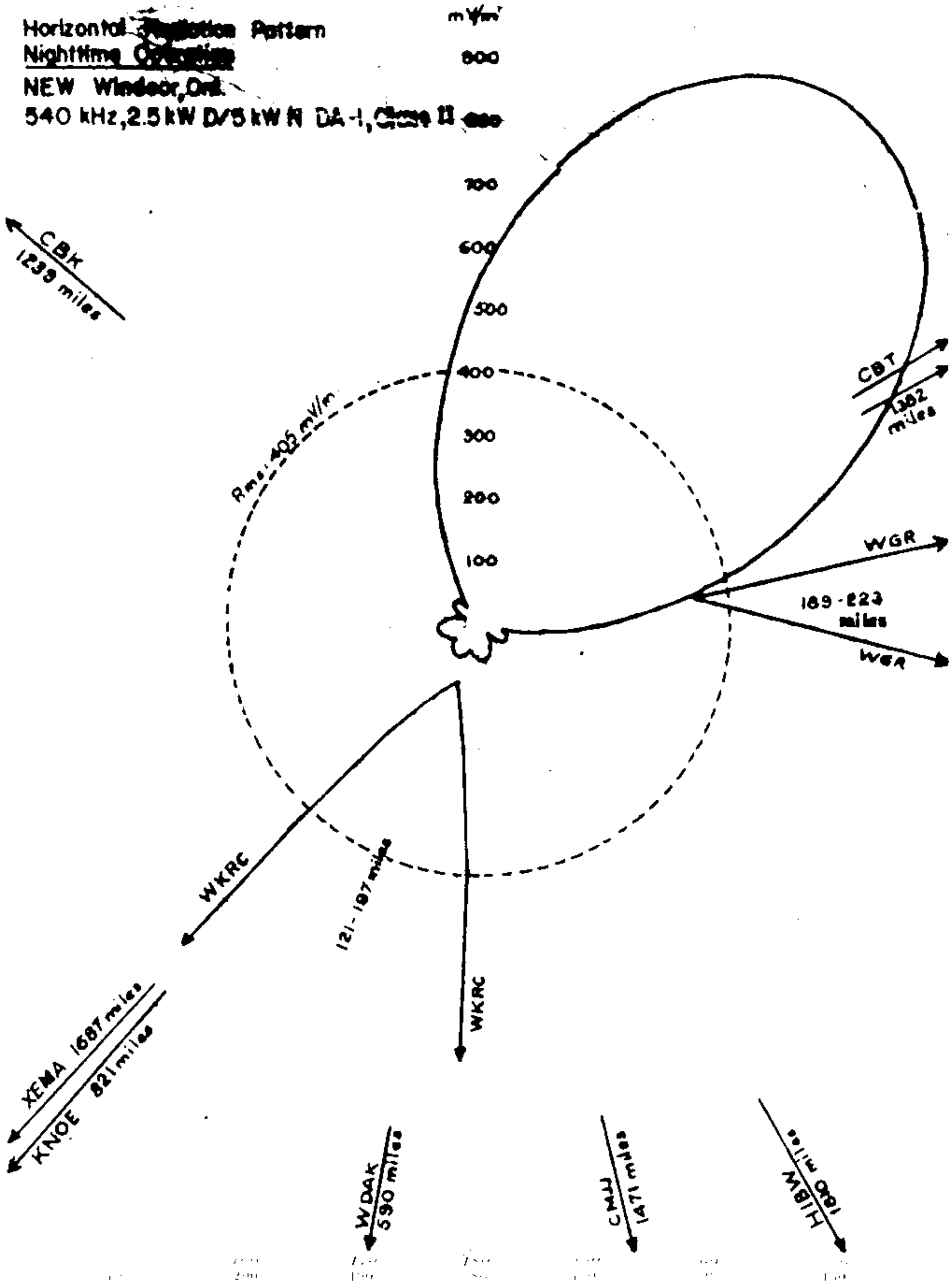
~~250w, 5kw-LS~~, DA-1, U, Class II
2.5KW D/5KW N 540 kc



Proposed Night
(10-28-67ct)

New Station
Windsor, Ontario

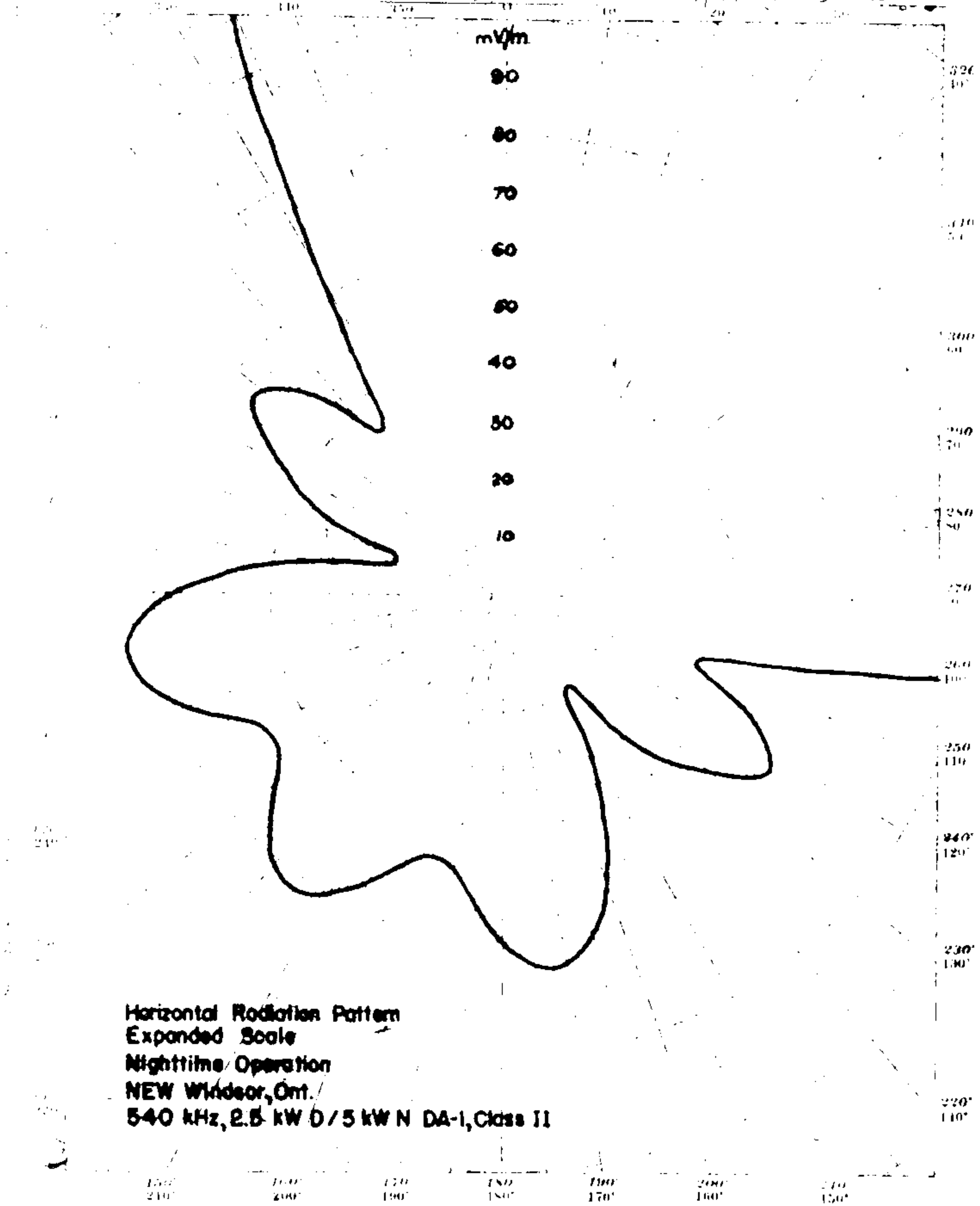
~~250w, 5kw-LS~~, DA-1, U, Class II
540 kc
2.5KW D/5KW N



Proposed Night Nulls
(10-28-67ct)

New Station
Windsor, Ontario

250w,5kw-LS,DA-1,U,Class II
2.5kwD/5kwN 540 kc



ANTENNA DESCRIPTION

Station: CBGA-1

Location: New Carlisle, Quebec

Frequency: 540 KHz

Power: 10 Kw.

Notification List: 385

Date: May 30, 1979

Geographical Location:

Latitude: 47° 49' 26" N

Longitude: 65° 06' 02" W

ANTENNA CHARACTERISTICS

Mode of Operation: DA-2

Number of Elements: 3 (Three)

Type of Elements: Guyed steel towers, uniform triangular cross-section, base insulated for series feed.

TOWER ELEMENTS

		No. 1 (N)	No. 2 (C)	No. 3 (S)
Height:		80°	80°	80°
- above base insulator		(405 ft.)		
- overall height		(415 ft.)		
Spacing:		Ref.	90° (455.6 ft.)	180° (911.2 ft.)
Orientation:		Ref.	169.0°	171.7°
Field Ratio:	Day	1.00	1.00	0.50
	Night	1.00	1.073	0.734
Phasing:	Day	0.0°	130.0°	-80.0°
	Night	0.0	143.5°	-62.0°

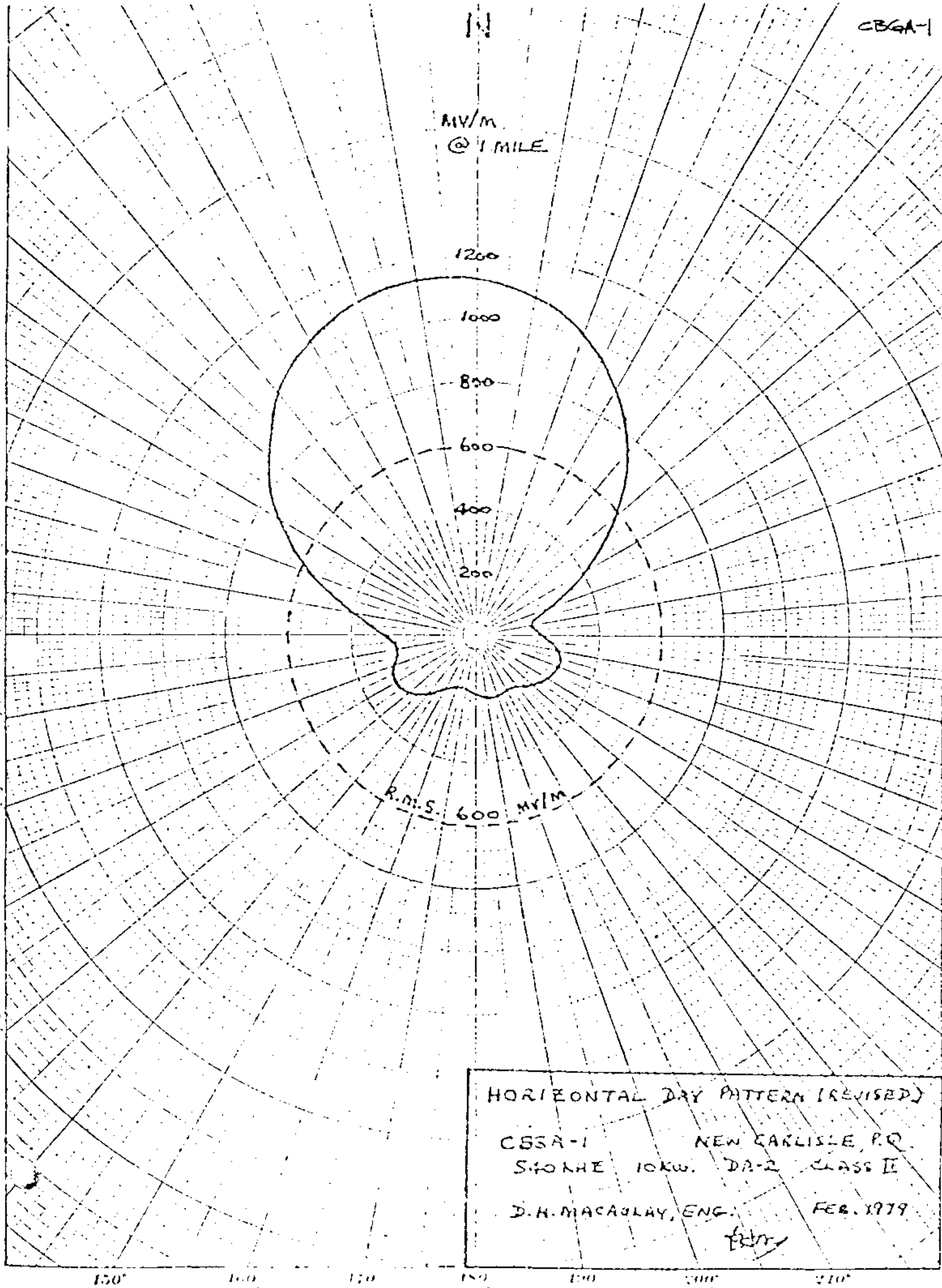
GROUND SYSTEM

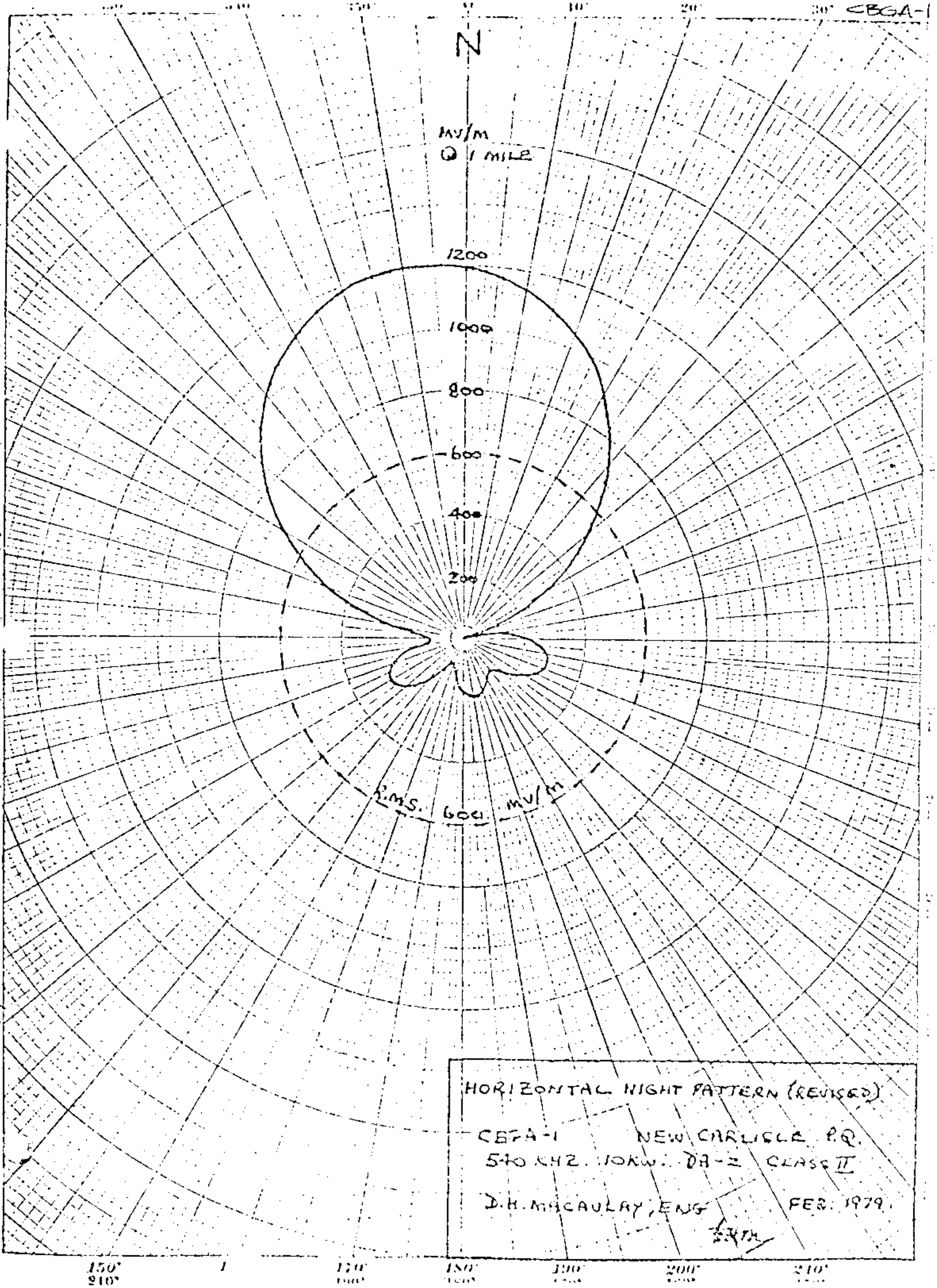
120 copper wire radials (No. 10 AWG) equispaced about each tower and buried 6 to 12 inches deep. Radial lengths average 0.4 wavelengths (750 feet) except where bonded to the common chords.

PREDICTED RADIATION FIELD

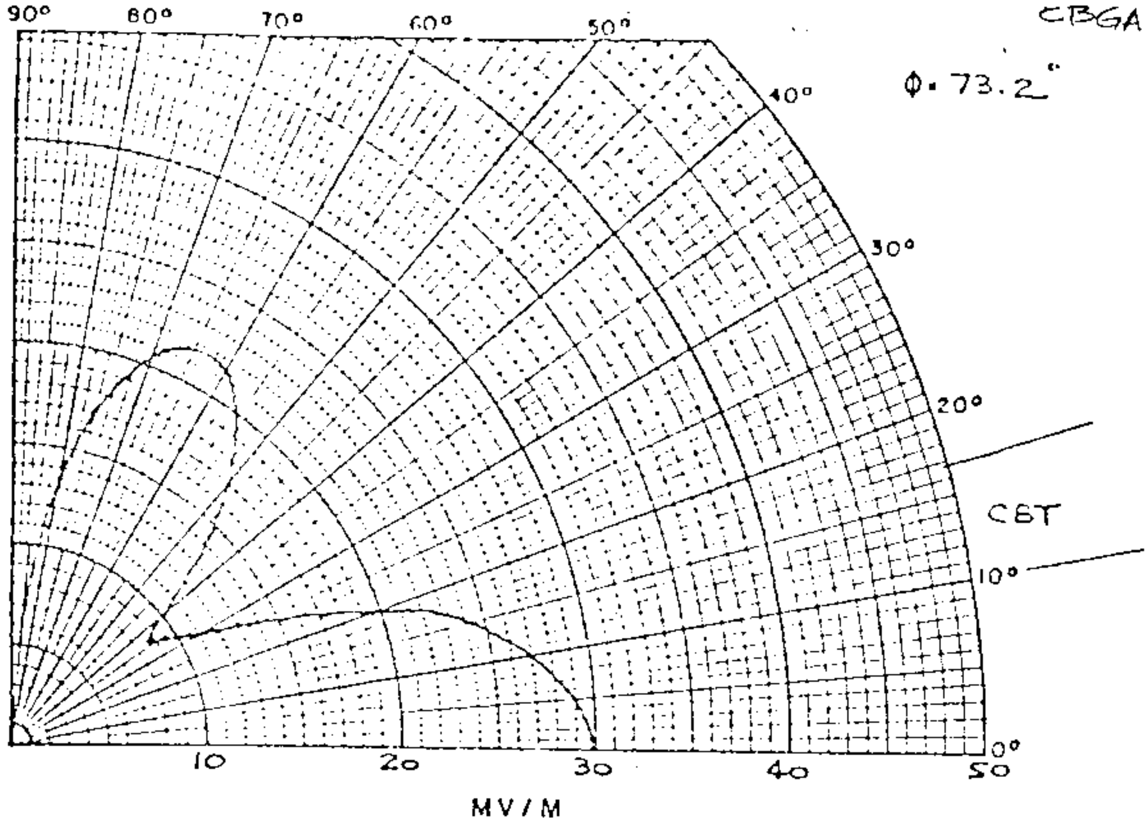
Day: 600 mv/m (190 mv/m at 1 mile for 1 Kw.)

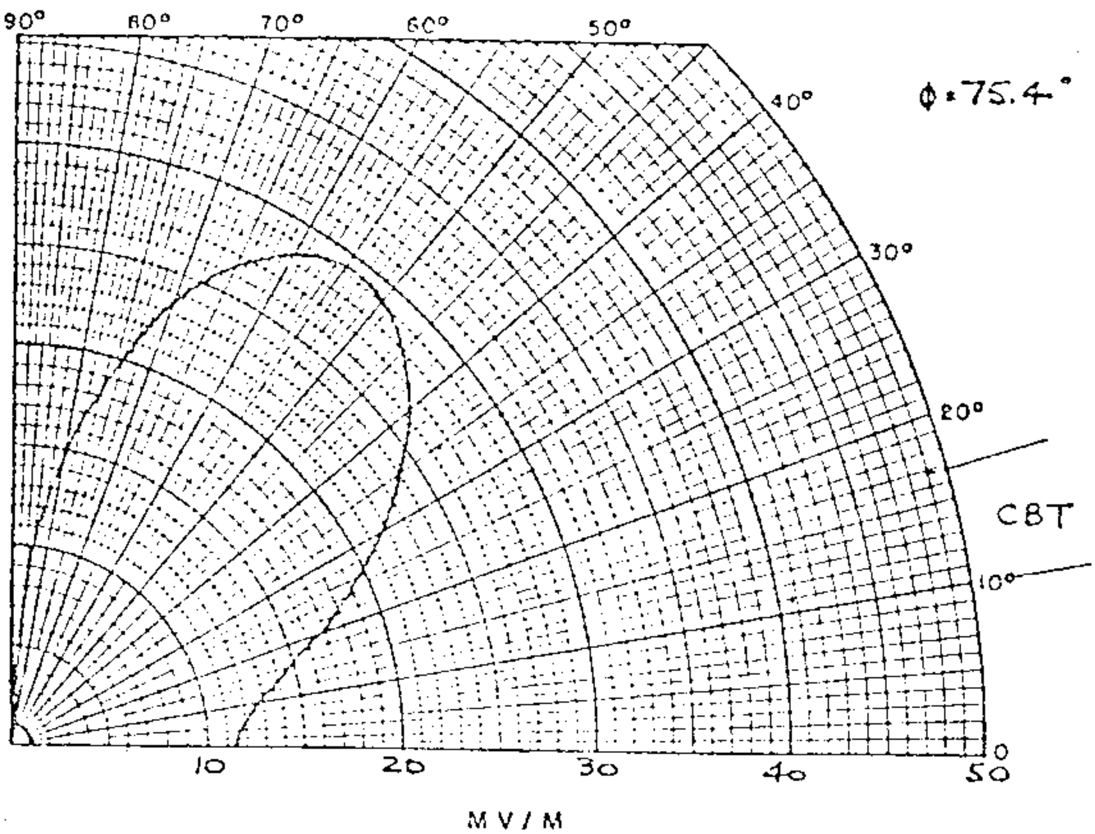
Night: 600 mv/m (190 mv/m at 1 mile for 1 Kw.)


CBGA-1
MV/M
@ 1 MILE
1200
1000
800
600
400
200
R.M.S. 600 MV/M
HORIZONTAL DAY PATTERN (REVISED)
CBSA-1 NEW CARLISLE, P.Q.
540 KHZ 10KW. DA-2 CLASS II
D.H. MACAULAY, ENG. FEB. 1979
150°
210°
200°
190°
180°
180°
170°
160°
210°
150°


CBGA-1
N
MV/M
@ 1 MILE
1200
1000
800
600
400
200
R.M.S. 600 MV/M
HORIZONTAL NIGHT PATTERN (REVISED)
CBGA-1 NEW CARLISLE P.Q.
540 KHZ. 10KW. DA-2 CLASS II
D.H. MACAULAY, ENG. FEB. 1979

CBGA-1



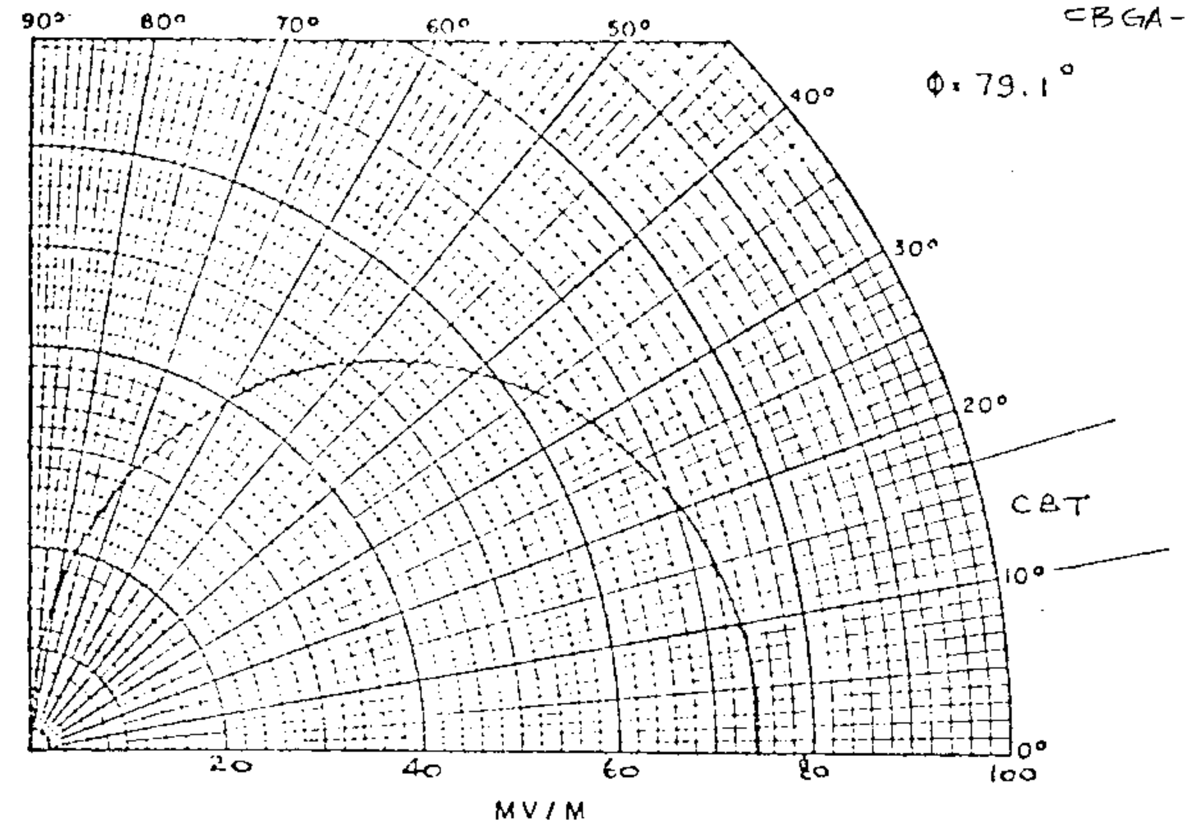


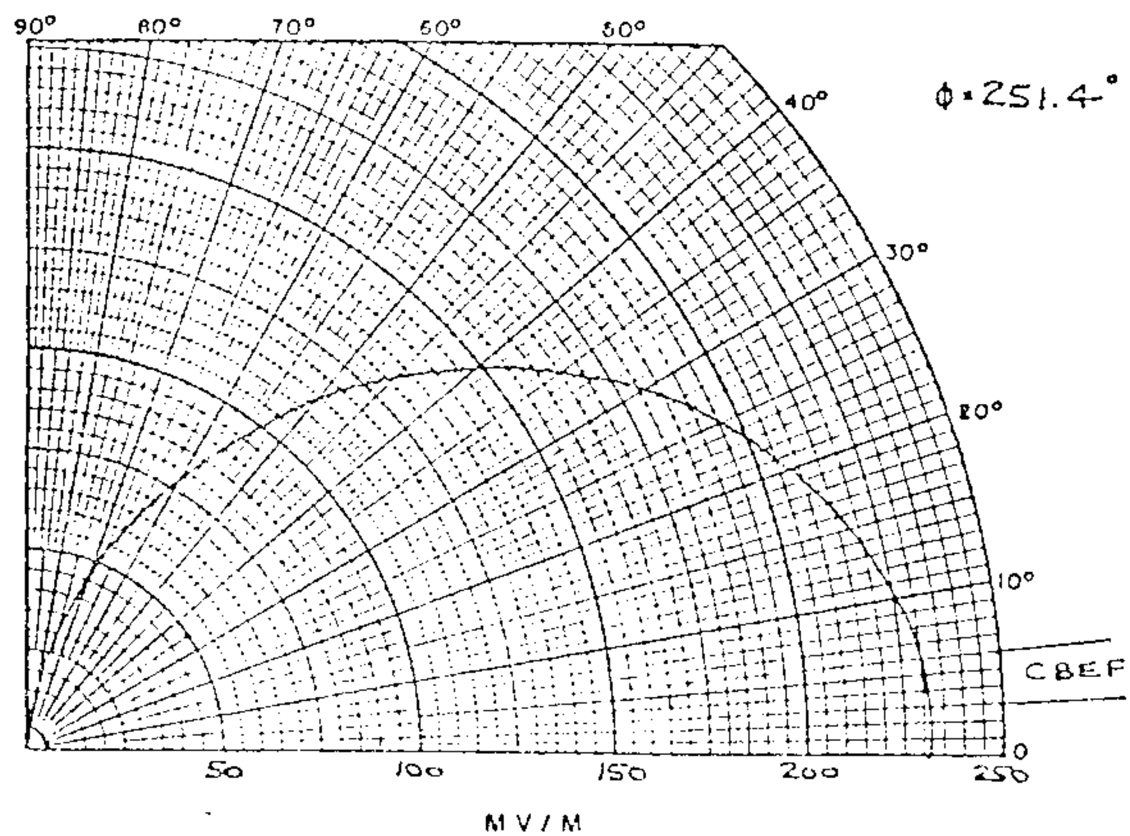
VERTICAL RADIATION PATTERNS

CBGA-1 NEW CARLISLE, P.Q.

540 KHZ. 10KW. DA-2 CLASS II

D.H. MACAJLA, ENG. FEB. 1975





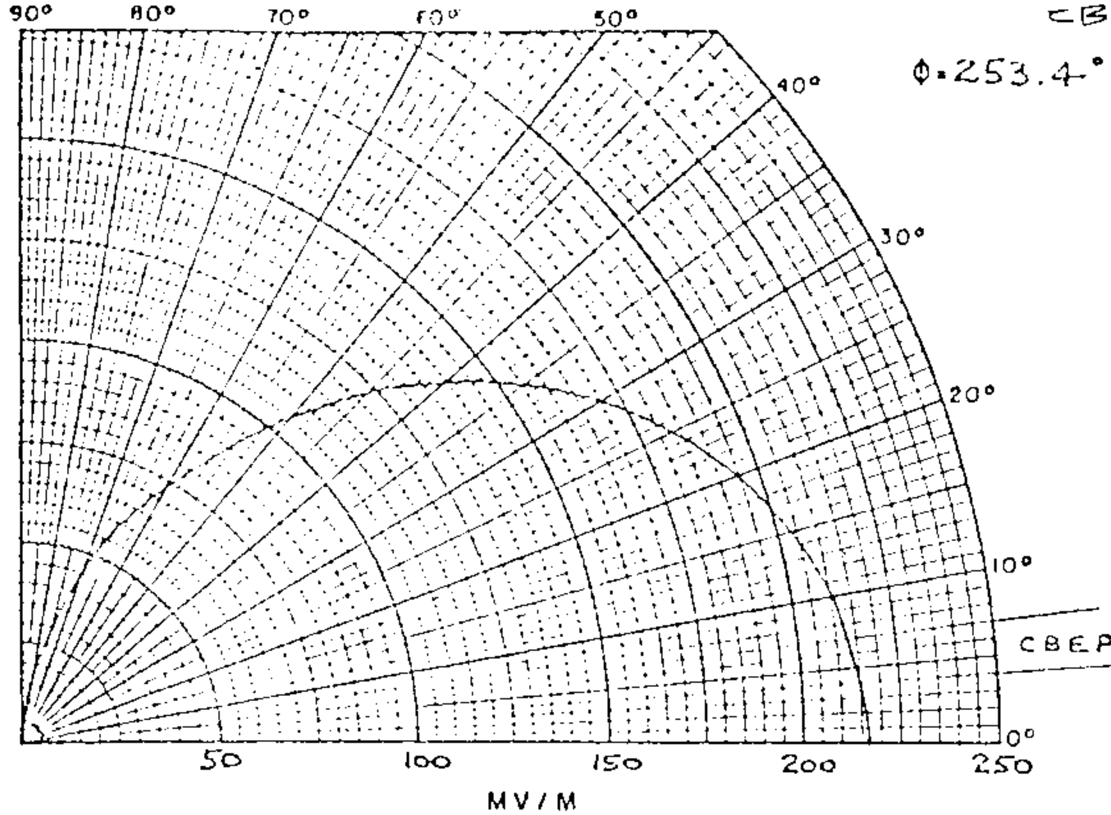
VERTICAL RADIATION PATTERNS

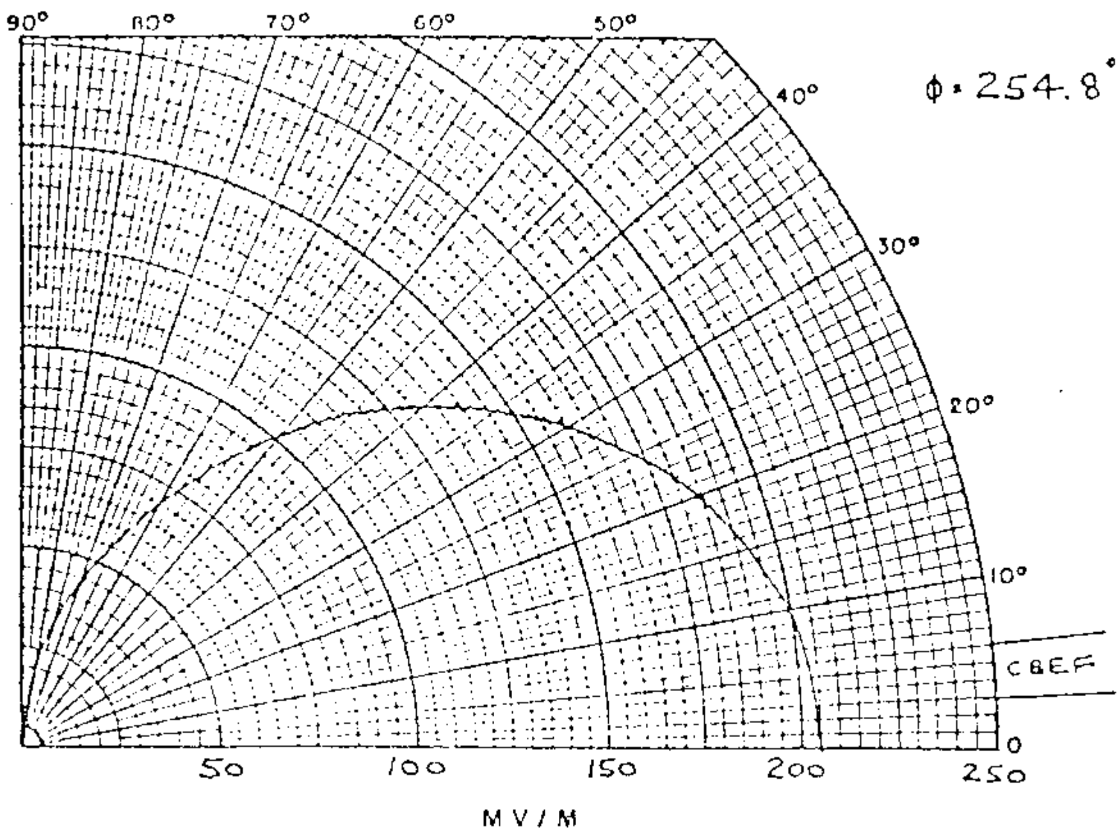
CBGA-1 NEW CARLISLE, P.Q.

540 KHZ. 10 KW. DA-2 CLASS II

[illegible] ENG. FEB. 1979

CBGA-1





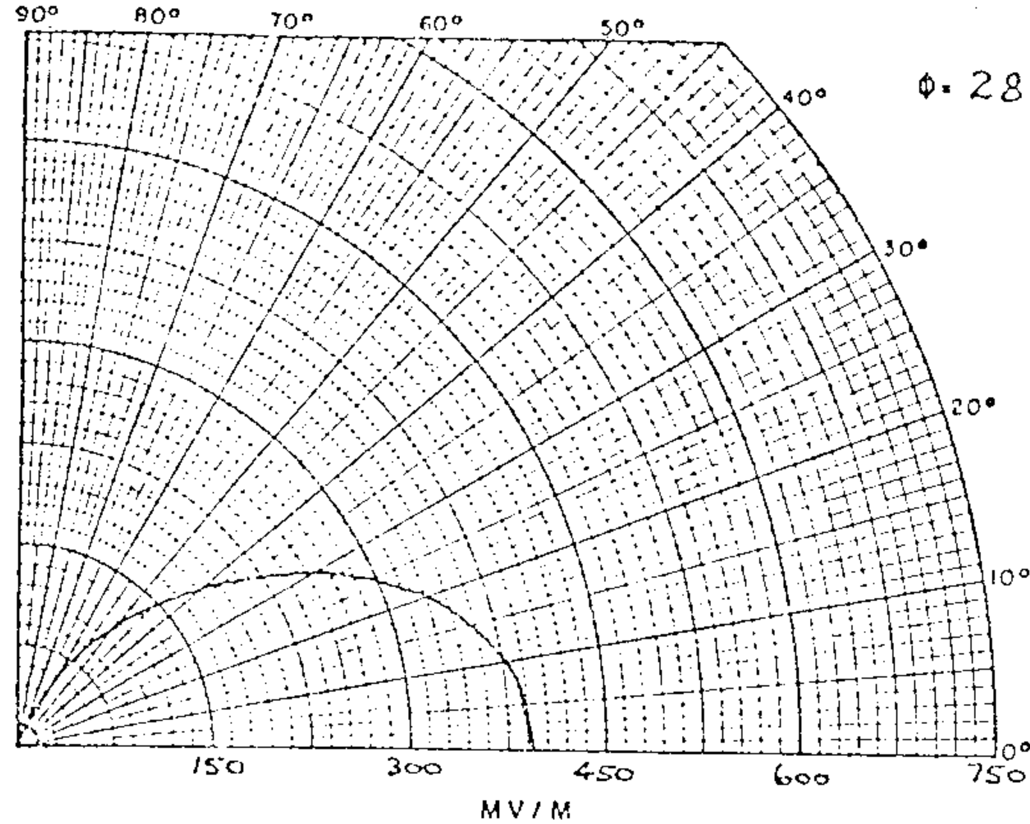
VERTICAL RADIATION PATTERNS

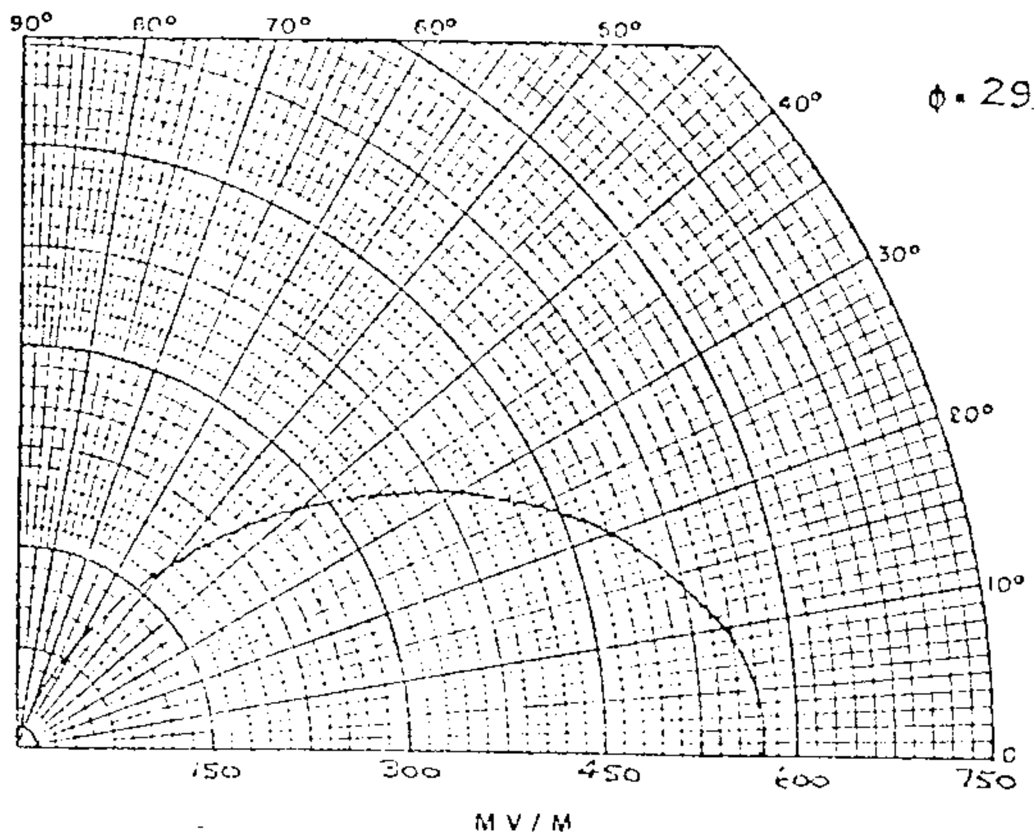
CBGA-1 NEW CARLISLE P.Q.

540 KHZ. 10 KW. DA-2 CLASS II

D.A. MACAULAY, ENG. FEB. 1979

CBGA-1





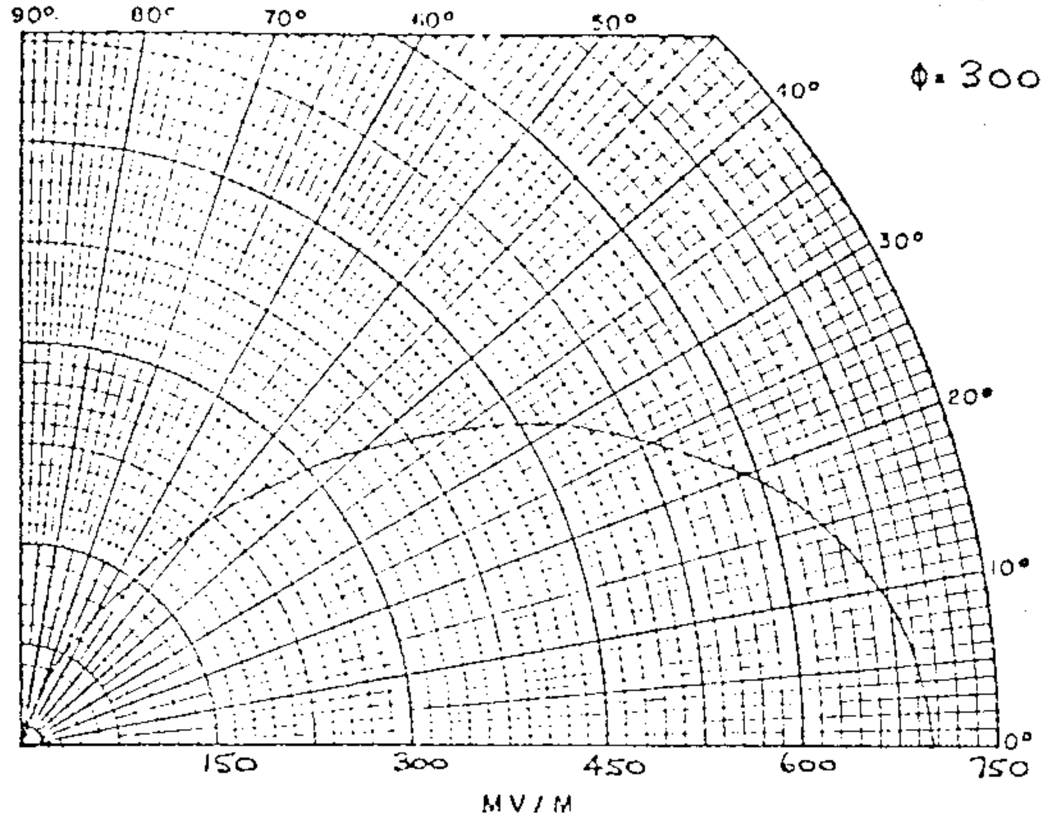
VERTICAL RADIATION PATTERNS

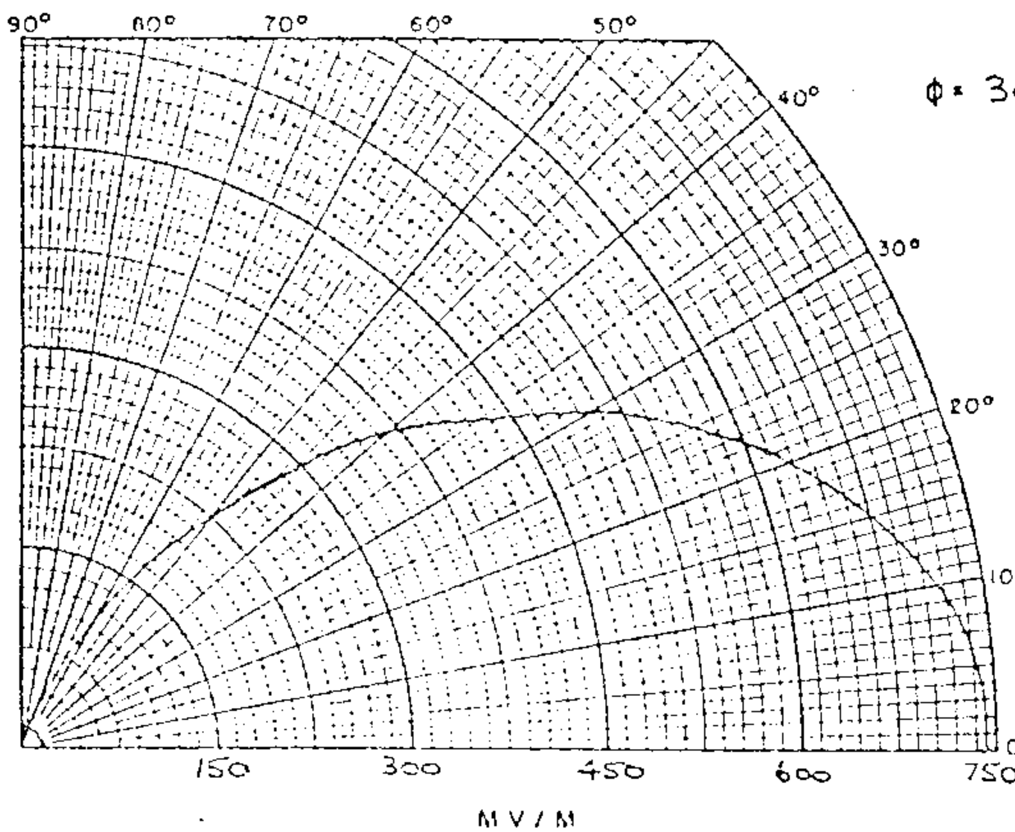
CBGA-1 NEW CARLISLE P.Q.

540 KHZ. 10 KW. DA-2 CLASS II

D.H. MACAULAY ENG. [illegible] FEB. 19[illegible]

CBGA-1



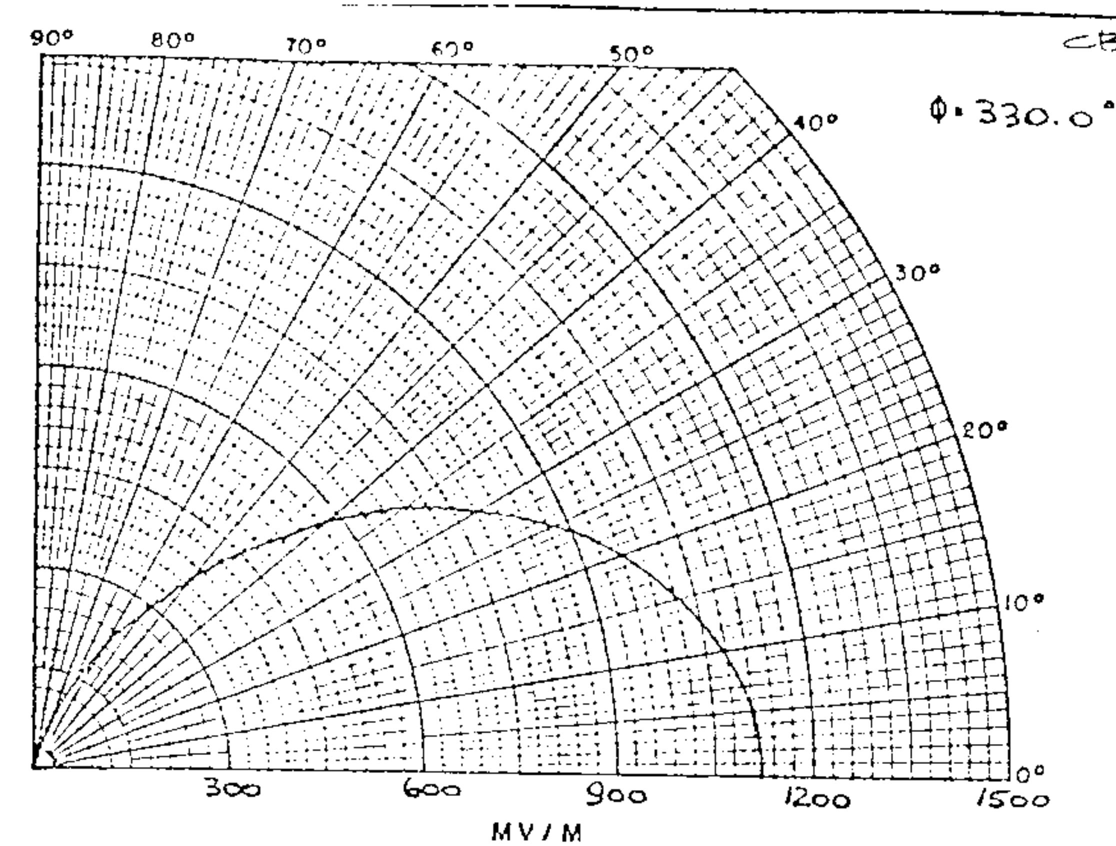


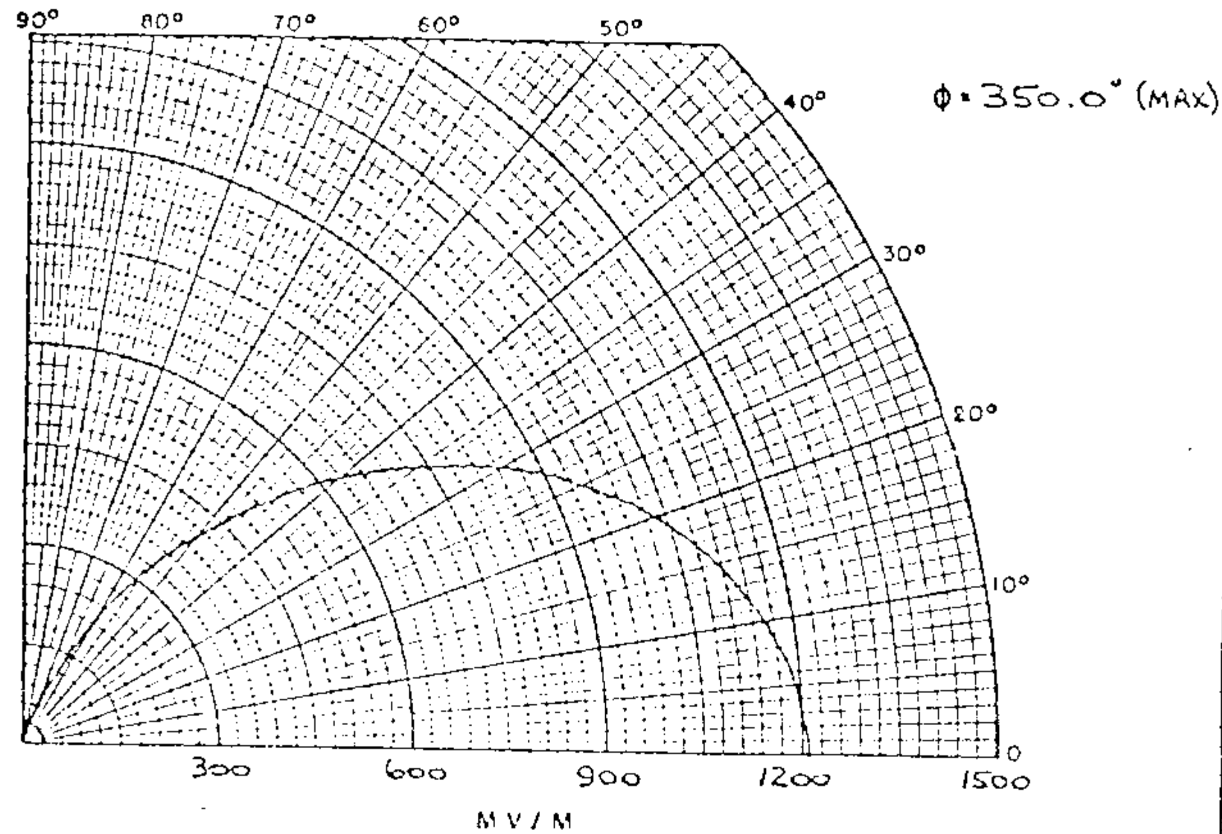
VERTICAL RADIATION PATTERNS

CBGA-1 NEW CARLISLE, P.Q.

540 KHZ 10 KW. DA-2 CLASS II

[illegible] FEB. 197[illegible]





VERTICAL RADIATION PATTERNS

CBGA-1 NEW CARLISLE, P.Q.

540 KHZ. 10 KW. DA-2 CLASS II

D.H. MACAULAY ENG. FEB. 1979.

CBK

REFER TO FILE NUMBER

Air Services
Telecommunications Division
(5-10-49)

CANADA

DEPARTMENT OF TRANSPORT
OTTAWA

DESCRIPTIVE SHEET - OMNIDIRECTIONAL ANTENNA

Station Call: CBK

Main Studio: Watrous, Saskatchewan.

Frequency: 540 Kc/s.

Power: 50 Kw.

Class: I-A.

Time: U

Notification Reference: NARBA Annex 3

Geographical Location:

North Latitude: 51° 40' 36"

West Longitude: 105° 26' 89" 47? 49" is correct

Antenna Characteristics:

Height: 460 ft. 95.8 degrees

Expected Efficiency: 1394 mv/m at 1 mi. for 50 Kw.

or: 197 mv/m at 1 mi. for 1 Kw.

Ground System:

120 radials 0.27 wavelengths long.

Type of Element:

Uniform triangular cross-section, guyed, series fed.

November 20, 1952

CBT

Description Sheet (11-30-61ct) | Station CBT, Grand Falls, Newfoundland | 10kw, U, Class II, 540 kc

CANADIAN BROADCASTING CORPORATION

ENGINEERING DIVISION MONTREAL

TITLE CBT Grand Falls
540 kc/s, 10 kw.

DWG. No. P.P. 2492
DATE 8/9/61 ISS. 1
ENG. W.G.Fox APP. R.E.S.

DESCRIPTION SHEET - OMNIDIRECTIONAL ANTENNA

Station Call:	CBT
Main Studio:	Grand Falls, Newfoundland
Frequency:	540 kc/s
Power:	10 kw
Class:	II
Time:	Day and Night Operation
Geographical Location of Antenna System:	North Lat: 48° 57' 02" West Long: 55° 37' 38"
Antenna Characteristics:	Height 304 feet (60 degrees). (Effective radiating section)
Type of Element:	Guyed, uniform cross-section steel tower. Base insulated for series feed.
Ground System:	120 radials extending to property boundaries. Minimum length 450 feet (1/4 wavelength).
Expected Efficiency:	569 mv/m at 1 mile for 10 kw 180 mv/m at 1 mile for 1 kw

Notification List No. 1[illegible] Date: October 30, 1961

Transmission & Development Department

CBT

DESCRIPTION SHEET (10-18-60g)

Station CBT 1kw, U, Class II
Grand Falls, Newfoundland, Canada 540 KC

ENGINEERING DIVISION MONTREAL

TITLE CBT - Grand Falls, Nfld.
1 kw - 540 kc/s - OD

DWG. No.
DATE July 21/60
ENG. R.E.S. APP. R.E.S.

Description Sheet - Omnidirectional Antenna

Station Calls:	CBT
Main Studio:	Grand Falls, Nfld.
Frequency:	540 kc/s
Power:	1 kw
Class:	II
Time:	U
Notification List No. 150:	Dated: August 31, 1960.
Geographical Location:	North Latitude 48° 56' 55" West Longitude 55° 37' 31"

Antenna Characteristics:

Overall Height:	310 feet above ground
Height of Element:	300 feet 62.5 electrical degrees
Antenna Efficiency:	180 mv/m at one mile for 1 kw
Ground System:	120 radials, each 500 feet
Type of Element:	Guyed, constant cross-section, base insulated for series feed.
Antenna:	The antenna to be painted and lighted in accordance with Department of Transport specification number 16 and 17.

Transmission & Development Department

C.B.C.-252A

CKCY
540

IFRB Serial No. 1 2 4 7 4

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART I GENERAL INFORMATION

(01) Administration: CANADA | Sheet No. 413 | Date 82-09-23

Assigned frequency (kHz)		(02)	540
Transmitting station	Name of the station	(03)	SAULT STE MARI
	Call sign	(04)	CKCY
	Additional Identification	(05)	
	Station class	(06)	
	Operational Status	(07)	
Country		(08)	CAN
Geographical coordinates of the transmitting station		(09)	W N

(11) a) New assignment [ ] b) Modification of characteristic of an assignment recorded in the plan [X] c) Cancellation of an assignment [ ]

(12) Modification under Section 4.2.14 Yes [ ] No [X]

(13) Date of bringing into service or cessation of operation: Year Month Day

STATION PARAMETERS	DAYTIME OPERATION		NIGHT-TIME OPERATION	
Station power (kW)	(21)	20.	(31)	3. No change to night directional pattern
r.m.s. value of radiation for station power (mV/m at 1 km)	(25)		(35)	
Antenna type	(26)	B	(36)	
Simple vertical antenna electrical height (degrees)	(27)		(37)	

(44) Remarks

COORDINATION UNDER ARTICLE 4:

COUNTRY	USA							
IN PROGRESS	X							
ACCEPTANCE OBTAINED								

CKCY 540

IFRB Serial No. 12474

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 413

Date:

(01) Name of transmitting station: SAULT STE MARIE

(02) Country: CAN

(03) Hours of operation: HJ

(04) Total number of towers: 3

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	0.	0.	–	65.	
2	.77	-76.	140.	0.		65.	
3	.377	76.	140.	180.		65.	

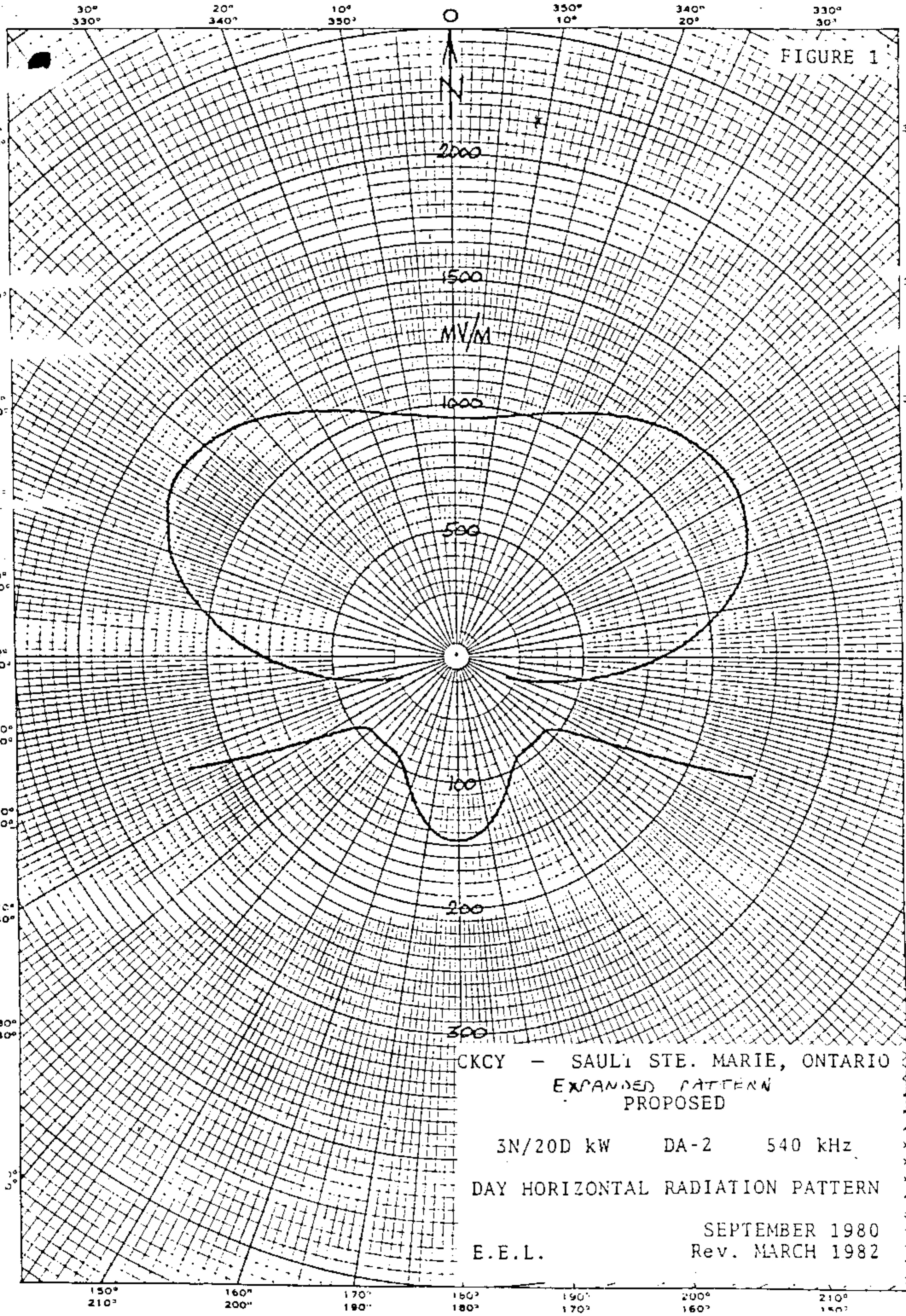
(14) r.m.s value of radiation: 1259.2 mV/m at 1 km

(15) Type of pattern: E

(16) Special quadrature factor: mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

CKCY
540



CKCY — SAULT STE. MARIE, ONTARIO
EXPANDED PATTERN
PROPOSED

3N/20D kW DA-2 540 kHz

DAY HORIZONTAL RADIATION PATTERN

SEPTEMBER 1980
Rev. MARCH 1982

E.E.L.

CKCY
540KHZ

TABLE 1

ANTENNA DESCRIPTION SHEET

STATION CALL: CKCY
STUDIO LOCATION: SAULT STE. MARIE, ONTARIO
FREQUENCY: 540 kHz
POWER: 2.5N/15D kW
CLASS: II
MODE: DA-2
TIME: UNLIMITED

NOTIFICATION LIST NO.: 404 .... DATE May 5, 1981 ....

GEOGRAPHICAL LOCATION: Latitude 46° 32' 20" N
Longitude: 84° 27' 40" W

ARRAY CHARACTERISTICS: six guyed steel towers of uniform cross section; height 330' (65°) above base insulator; overall height 335' above grade; no top loading

TOWER NUMBER	SPACING FEET	SPACING DEGREES	BEARING DEGREES	DAY FIELD RATIO	DAY PHASE DEGREES	NIGHT FIELD RATIO	NIGHT PHASE DEGREES
1	1218.0	240	65	-	-	0.392	87.2
2	609.0	120	65	-	-	1.000	-136.6
3	0	0	0	1.000	0.0	1.000	0.0
4	609.0	120	245	-	-	0.392	136.2
5	710.5	140	0	0.821	-74.5	-	-
6	710.5	140	180	0.347	74.5	-	-

GROUND SYSTEM: 120 equally spaced radials of 10 AWG soft copper per tower, of length 728' (0.4λ) where possible, 455' (0.25λ) minimum effective length, except those along common chords.

PREDICTED EFFECTIVE FIELD:
677.8 mV/m for 15 kW
175 mV/m for 1 kW } DAY

306 mV/m for 2.5 kW
193.5 mV/m for 1 kW } NIGHT

Revised March 1981

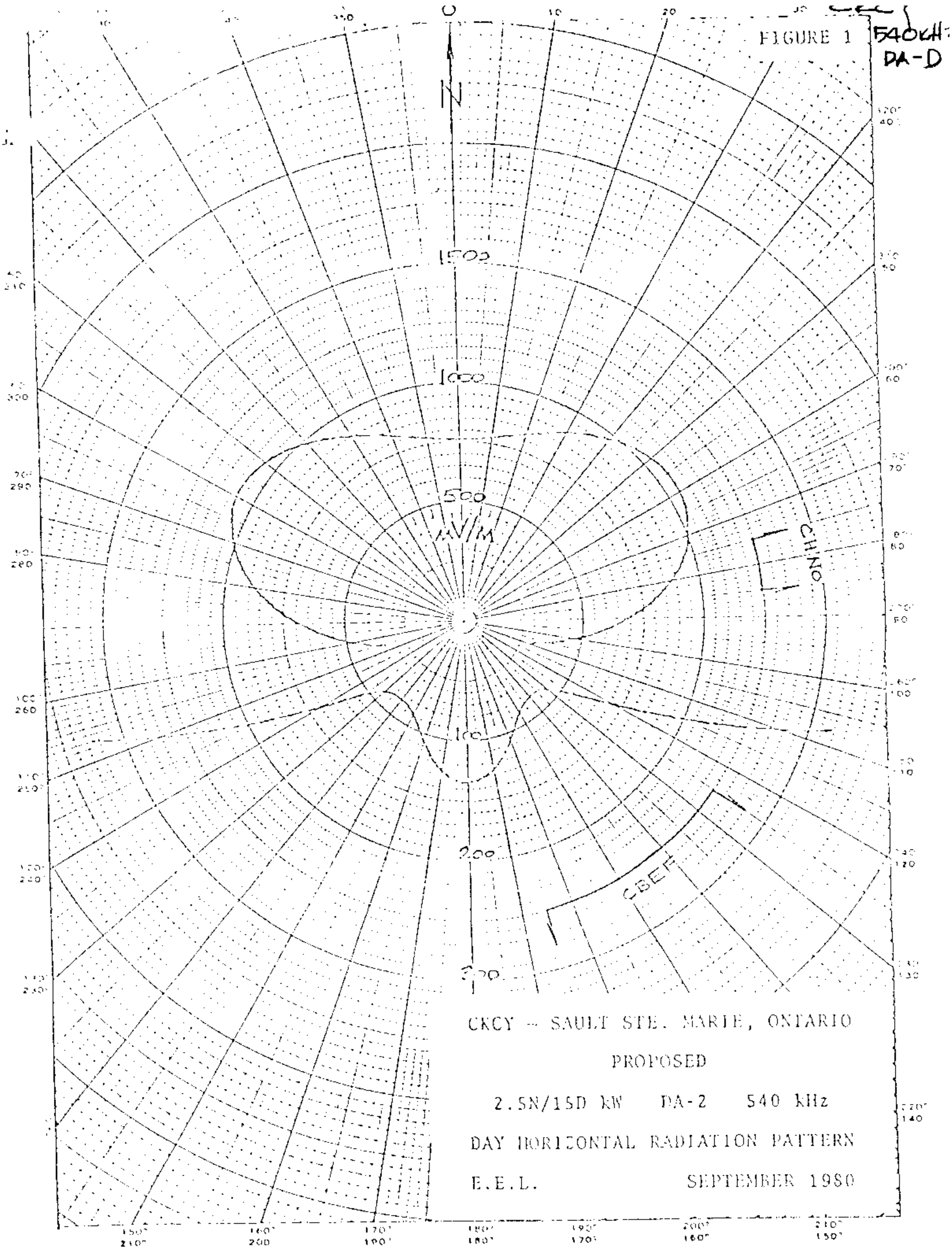
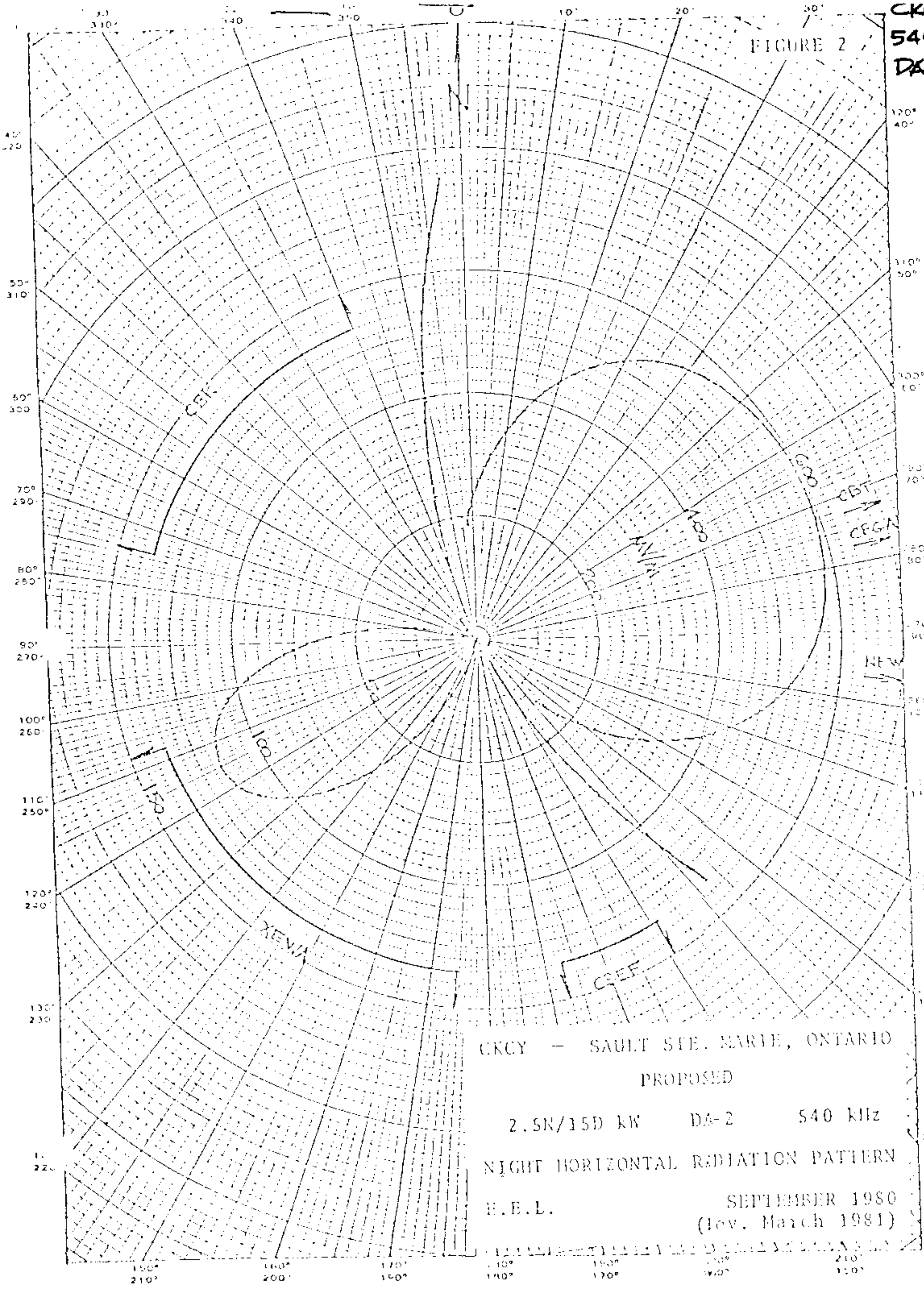


FIGURE 1
540KH
DA-D
N
1500
1000
500
MV/M
100
200
300
CHNO
CBEF
CKCY - SAULT STE. MARIE, ONTARIO
PROPOSED
2.5N/15D kW DA-2 540 kHz
DAY HORIZONTAL RADIATION PATTERN
E.E.L.
SEPTEMBER 1980

CKCY
540 kHz
DA-N



NEW
540kHz
Las Vegas,
New Mexico

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: NEW

Main Studio: Las Vegas, New Mexico

Frequency: 540 kHz

Power: 5 kw Day

Notification List No. 1787

Date: July 10, 1980 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 34' 25"
West Longitude: 105° 10' 17"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-d)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	#1(N)	#2(S)
HEIGHT ABOVE INSULATORS:	455.5'	455.5' (90°)
DAY PHASING:	0°	+110°
DAY FIELD RATIO:	1.0	0.95

SPACING AND ORIENTATION: Adjacent towers are spaced 455.5' (90°) on a line bearing 161° true.

GROUND SYSTEM: 120 - 456' equally spaced copper radials plus 120 - 50' interspaced radials about each tower. Radials are shortened and bonded to a transverse strap.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL		STANDARD
	RMS	RSS	RMS
Day	407.0 mv/m	444.4 mv/m	427.5 mv/m

NEW
540kHz

STANDARD HORIZONTAL RADIATION PATTERN

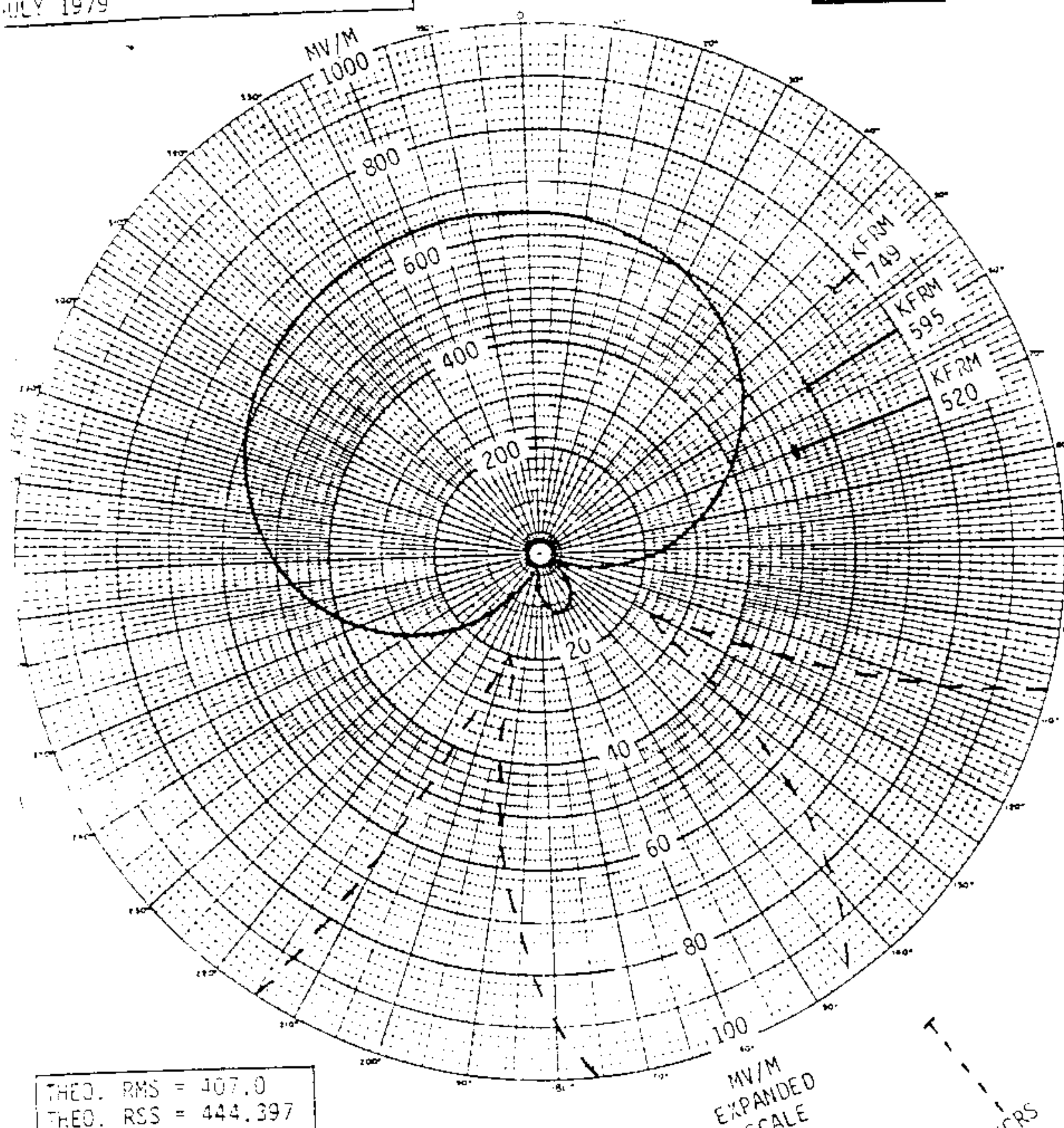
EXHIBIT 270
AMENDED

ROPOSED AM
AN MIGUEL BROADCASTING COMPANY
540 KHz 5000 WATTS DA-D
AS VEGAS, NEW MEXICO
ULY 1979

1/0° —— 90° —— .95/110° → 161° T

N

DAYTIME



THEO. RMS = 407.0
THEO. RSS = 444.397
STD. RMS = 427.552
= 13.4164
ACTOR = 322.187
EIGHT = 90°

PROPOSED SITE:
N. Lat. 35° 34' 25.0"
W. Long. 105° 10' 17.0"

Larry D. Ellis, P.E.
TELECOMMUNICATIONS CONSULTING ENGINEER
BOX 22635 • DENVER COLORADO 80222 • 303/759 1327
OFFICE 2055 SOUTH ONEIDA • SUITE 190

KNOE

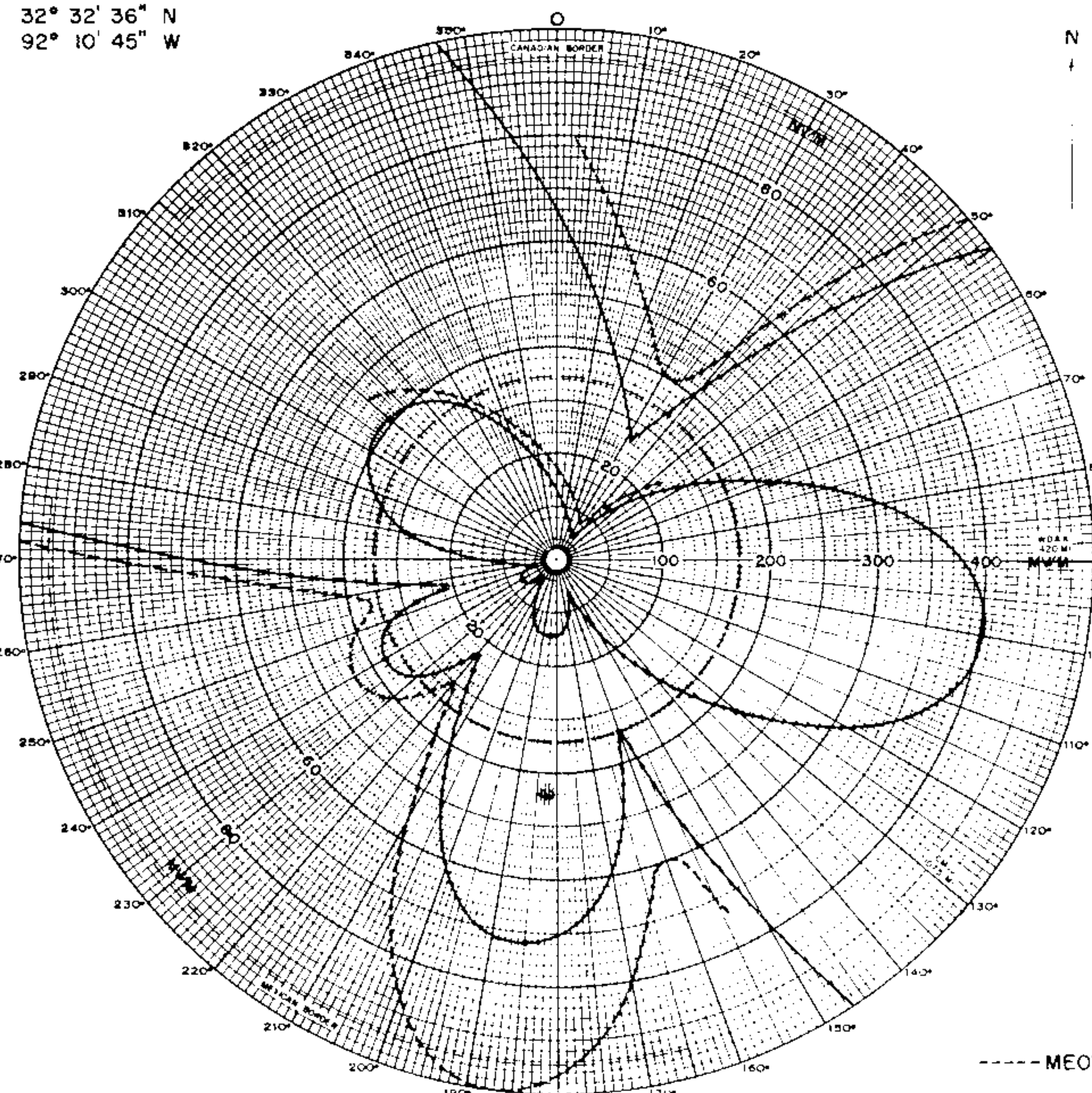
Measured Night (6-22-62ct)

Station KNOE
Monroe, Louisiana

1kw,5kw-LS,DA-2,U
540 kc

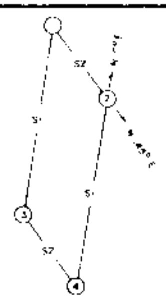
25-63 granted L. a change in reg. power to 1A 2

32° 32' 36" N
92° 10' 45" W



RMS = 172 MV/M

NIGHTTIME DIRECTIONAL PATTERN



S1 = 170° = 860'
S2 = 80° = 405'
G1 = G2 = G3 = G4 = 63° = 320'

DIRECTIONAL ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	INDICATED FIELD	INDICATED PHASE
1	1.00	0.0°	1.000	0.0°
2	0.90	-150.0°	0.902	-152.0°
3	0.90	33.0°	0.902	35.0°
4	0.81	117.0°	0.813	-117.0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KNOE
540 KC 1 KW 5 KW-LS DA-2
620315 FIGURE 4C

FCC File No.BL-9325
Accepted 6-4-62

Station KNOE
Monroe, Louisiana

540 kc

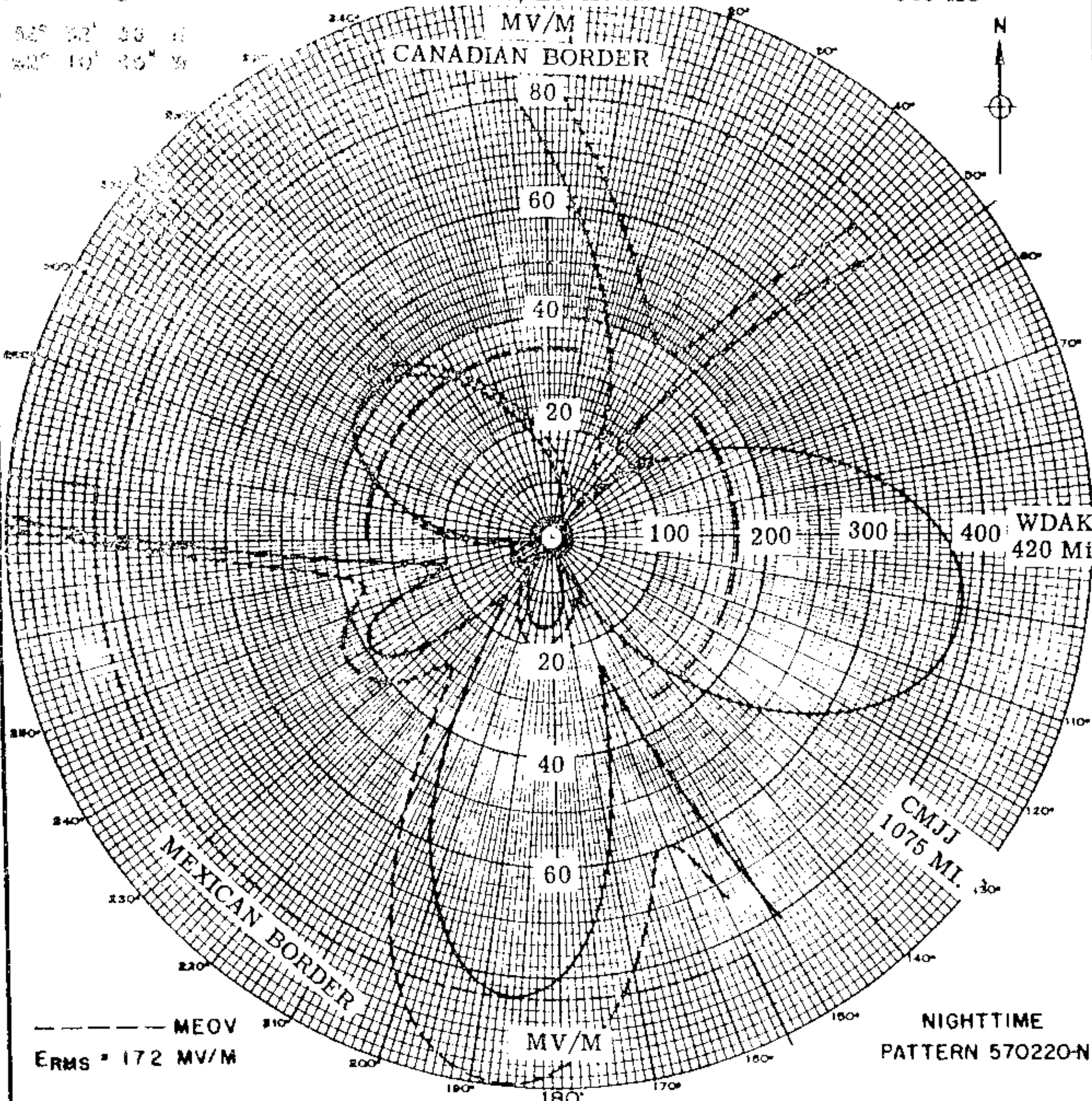
KNOE

1-12-61 painted up & changes from 340KC, DA-N to 540KC, DA-2

PROPOSED NIGHT
(4/16/57g)

Station KNOE
Monroe, Louisiana

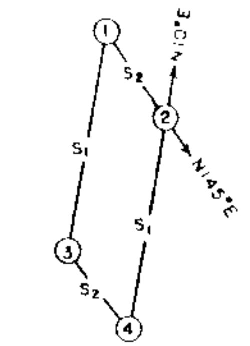
1kw,5kw-LS, DA-2,U
540 KC



------ MEOV

E_{RMS} = 172 MV/M

NIGHTTIME
PATTERN 570220-N



S = 170° OR 860 FT
S = 80° OR 405 FT
G = 63° OR 320 FT

TOWER	I	Ψ
1	1.0	0.0
2	0.9	-150.0
3	0.9	33.0
4	0.81	-117.0

RADIO STATION KNOE
MONROE, LOUISIANA
540KC 1KW 5KW-LS DA-2

A. EARL CULLUM, JR.
CONSULTING ENGINEERS

570220 FIGURE 7A

FCC File No. BP-9161 (Ammended) KNOE
Accepted 4/3/57 Monroe, Louisiana 540 KC

KNOE
BL 9325

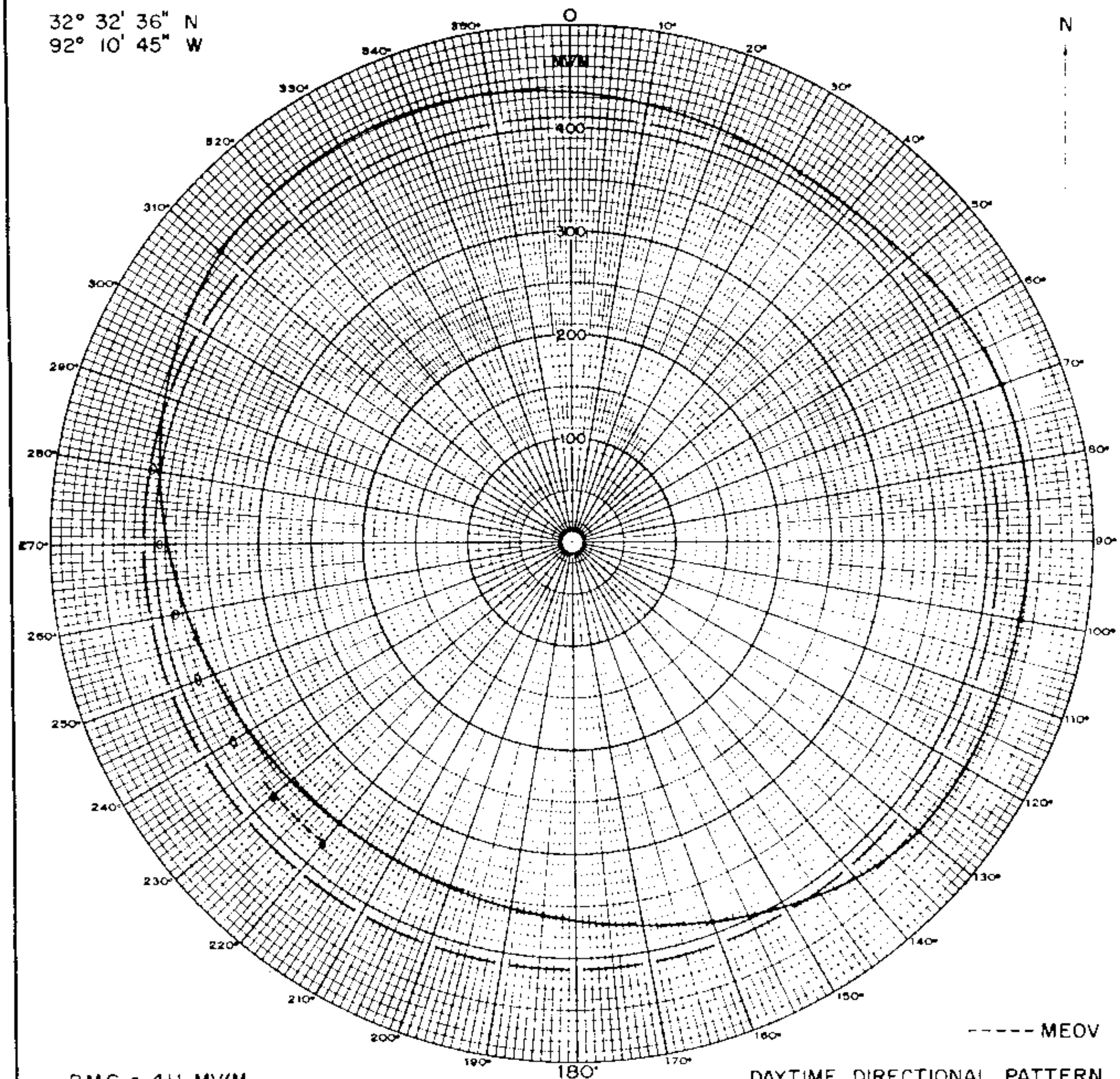
Measured Day (6-22-62ct)

Station KNOE
Monroe, Louisiana

1kw,5kw-LS,DA-2,U
540 kc

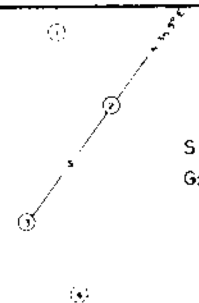
-25-63
granted L
change in
reg. power
DA-2

32° 32' 36" N
92° 10' 45" W



RMS = 411 MV/M

DAYTIME DIRECTIONAL PATTERN



S = 126.8° = 641'
G2 = G3 = 63° = 320'

DIRECTIONAL ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	INDICATED FIELD	INDICATED PHASE
1	–	–	–	–
2	1.00	0.0°	1.000	0.0°
3	0.10	50.0°	0.112	50.0°
4	–	–	–	–

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KNOE
540 KC 1 KW 5 KW-LS DA-2
620315 FIGURE 4B

FCC File No.BL-9325
Accepted 6-4-62

Station KNOE
Monroe, Louisiana

540 kc

KNOE over

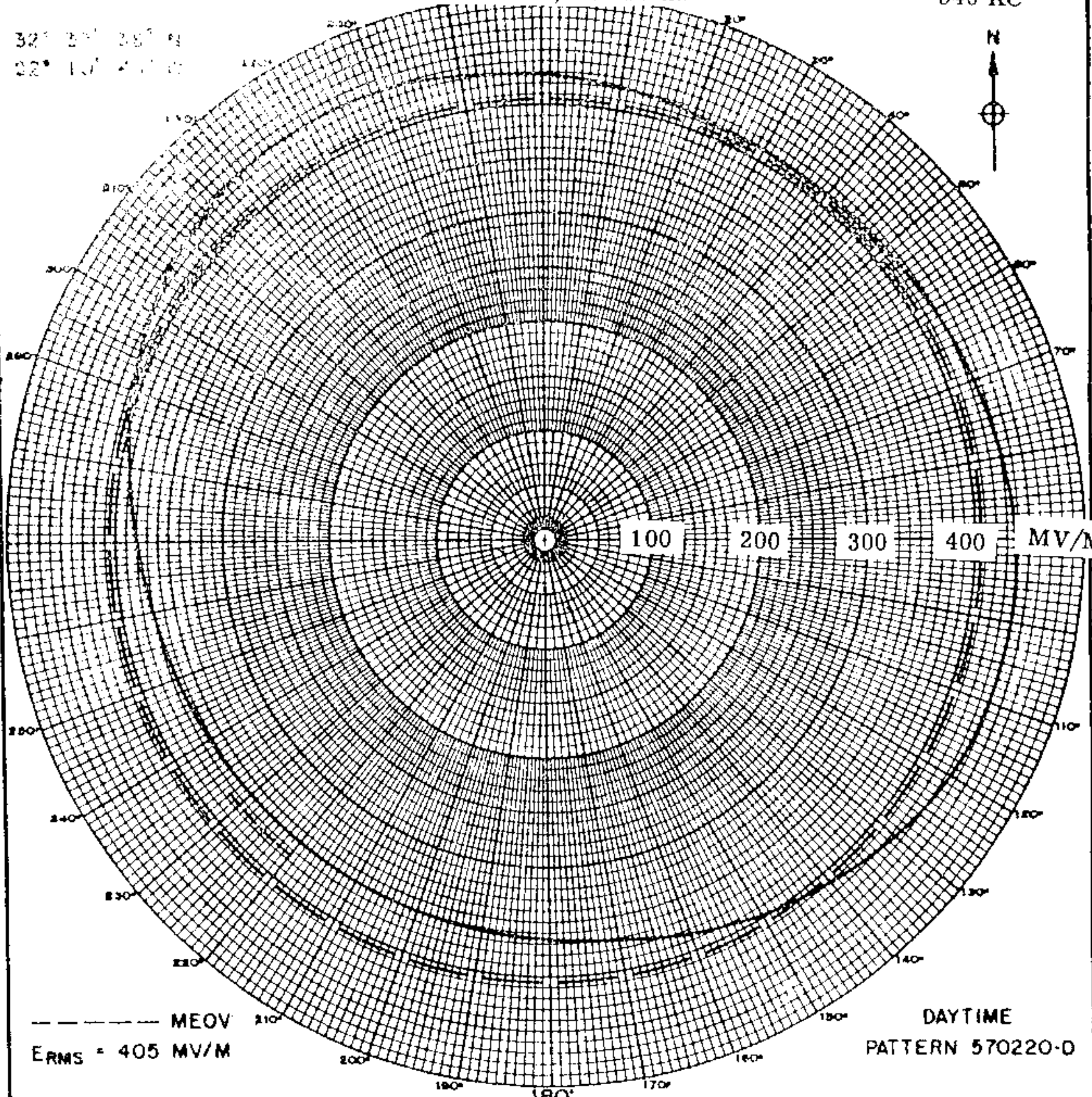
3-22-61 granted CP to change from 1290 kc, DA-N to 540KC-DA-2

PROPOSED DAY
(4/16/57g)

Station KNOE
Monroe, Louisiana

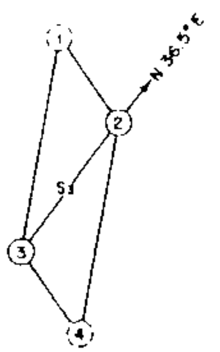
1kw,5kw-LS, DA-2,U
540 KC

32° [illegible] N
[illegible]° [illegible]



- - - - - - MEOV
E_{RMS} = 405 MV/M

DAYTIME
PATTERN 570220-D



S_3 = 126.8° OR 641 FT
G = 63.0° OR 320 FT

TOWER	I	Ψ
1	0.0	---
2	1.0	0.0
3	0.1	50.0
4	0.0	---

RADIO STATION KNOE
MONROE, LOUISIANA
540 KC 1KW 5KW-LS DA-2

A. EARL CULLUM, JR.
CONSULTING ENGINEERS

570220 FIGURE 6A

FCC File No. BP-9161 (Ammended) KNOE
Accepted 4/3/57
Monroe, Louisiana 540 KC

KNOE

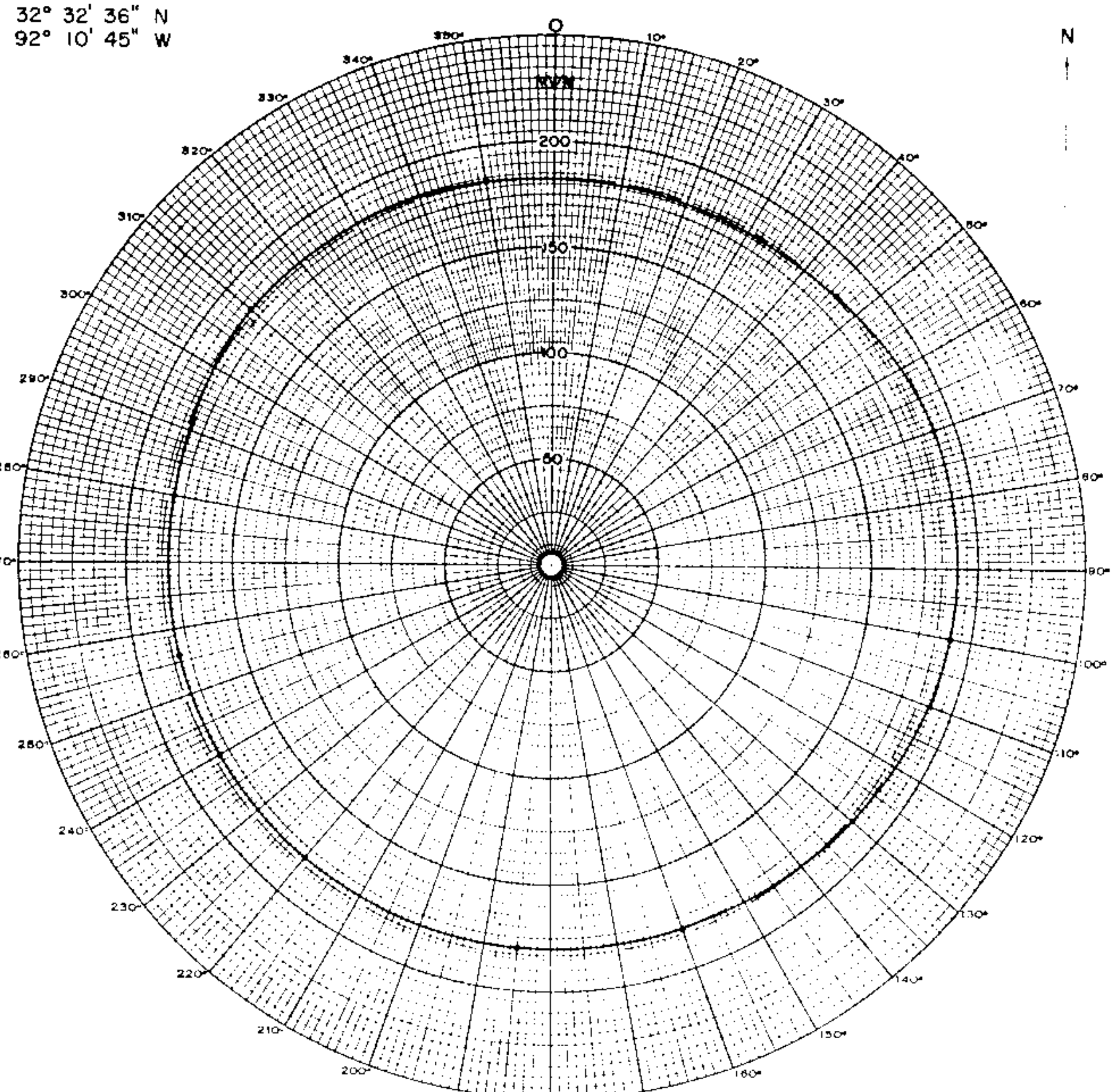
Measured Non-DA
(6-22-62ct)

Station KNOE
Monroe, Louisiana

1kw,5kw-LS,DA-2,U
540 kc

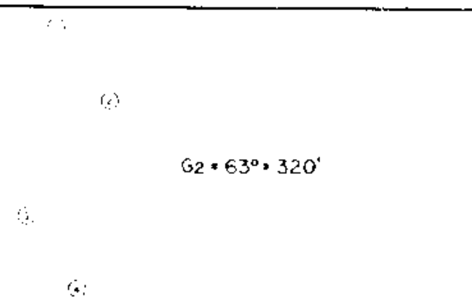
32° 32' 36" N
92° 10' 45" W

N



RMS = 183 MV/M

TEST PATTERN



NONDIRECTIONAL ANTENNA SYSTEM

TOWER	OPERATION
1	DETUNED
2	SERIES FED
3	DETUNED
4	DETUNED

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KNOE
540 KC   1 KW   5 KW-LS   DA-2
620315   FIGURE 4A

FCC File No.BL-9325
Accepted 6-4-62

Station KNOE
Monroe, Louisiana

540 kc

KWMT

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station	: KWMT	Main Studio:	Fort Dodge, Iowa
Frequency	: 540 KHz	Power :	Night 5 kW Day
Notification	: 1780	Date :	Sept. 28, 1979 Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	42	29	45
West Longitude:	94	12	33

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements : Series excited, uniform cross-section, guyed, vertical steel towers.
*North tower top loaded to 83°

TOWER	:	N(#1)	S(#2)				
HEIGHT ABOVE INSULATORS	:	*320'(63.2°)	632'(124.9°)				
PHASING	:	0°	-108°				
FIELD RATIO	:	1.0	0.9				

SPACING AND ORIENTATION : Tower in a row are spaced 405' (80°) on a line bearing 2° true.

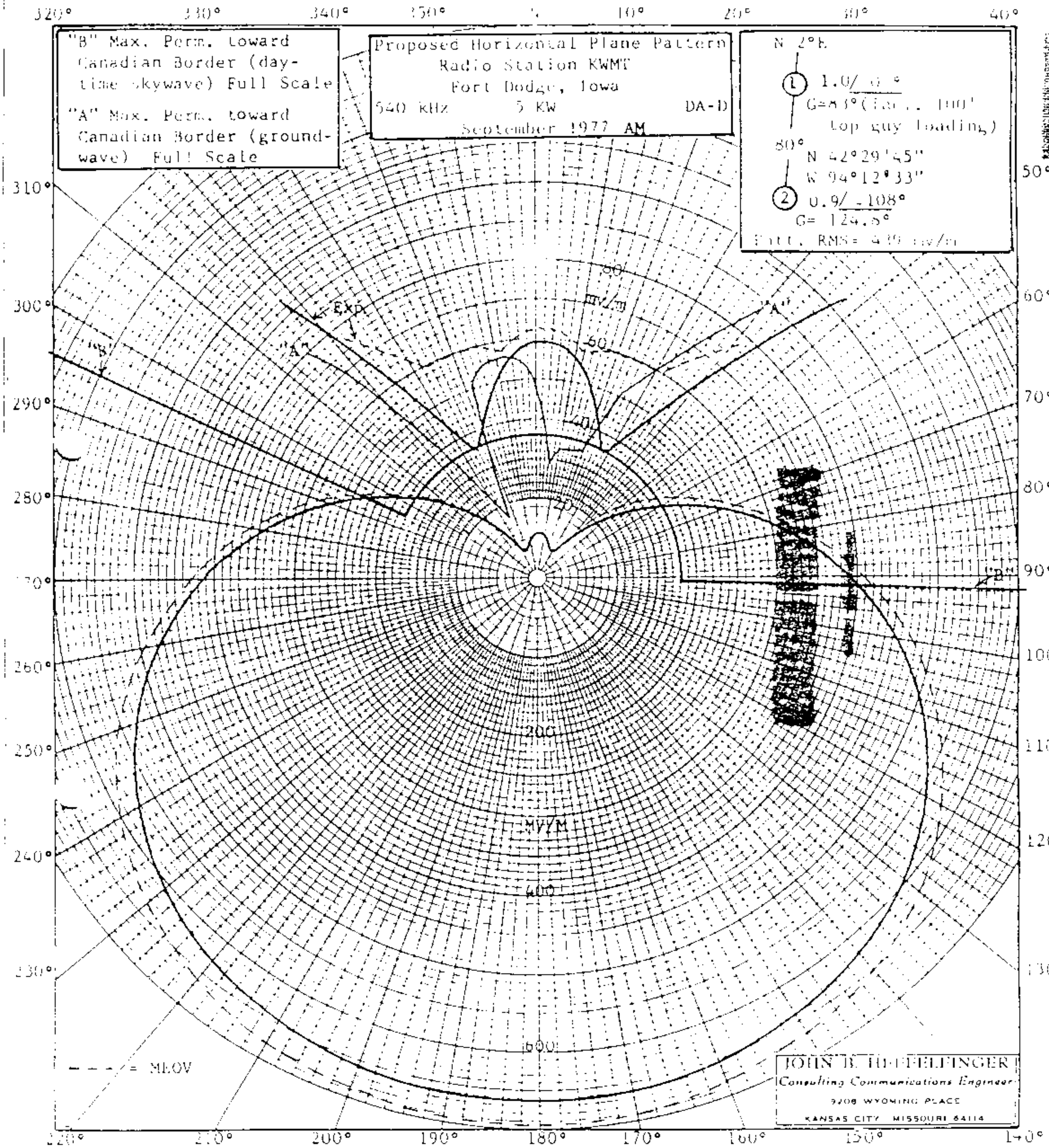
GROUND SYSTEM : 120 - 456' equally spaced copper radials plus a 48' square ground screen about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers.

KWMT

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	439 mV/m	____ mV/m	____ mV/m

KWMT


"B" Max. Perm. toward Canadian Border (daytime skywave) Full Scale
"A" Max. Perm. toward Canadian Border (groundwave) Full Scale
Proposed Horizontal Plane Pattern
Radio Station KWMT
Fort Dodge, Iowa
540 KHz 5 KW DA-D
September 1977 AM
N 2°E
1 1.0/0°
top guy loading)
80°
N 42°29'45"
W 94°12'33"
2 0.9/-108°
G= 124.5°
Eff. RMS=
80
mV/m
60
40
20
Exp.
"A"
"B"
200
MV/M
400
600
- - - - = MEOV
JOHN B. HEFFELFINGER
Consulting Communications Engineer
9208 WYOMING PLACE
KANSAS CITY, MISSOURI 64114
320°
330°
340°
350°
10°
20°
30°
40°
50°
60°
70°
80°
90°
100
110
120
130
140°
150°
160°
170°
180°
190°
200°
210°
220°
230°
240°
250°
260°
280°
290°
300°
310°

KWMT

BL-[illegible]

MEASURED DAY
(8-22-61ct)

Station KWMT
Fort Dodge, Iowa

5kw, DA-D,D
540 KC

8/10/61 granted
for increase in
day power

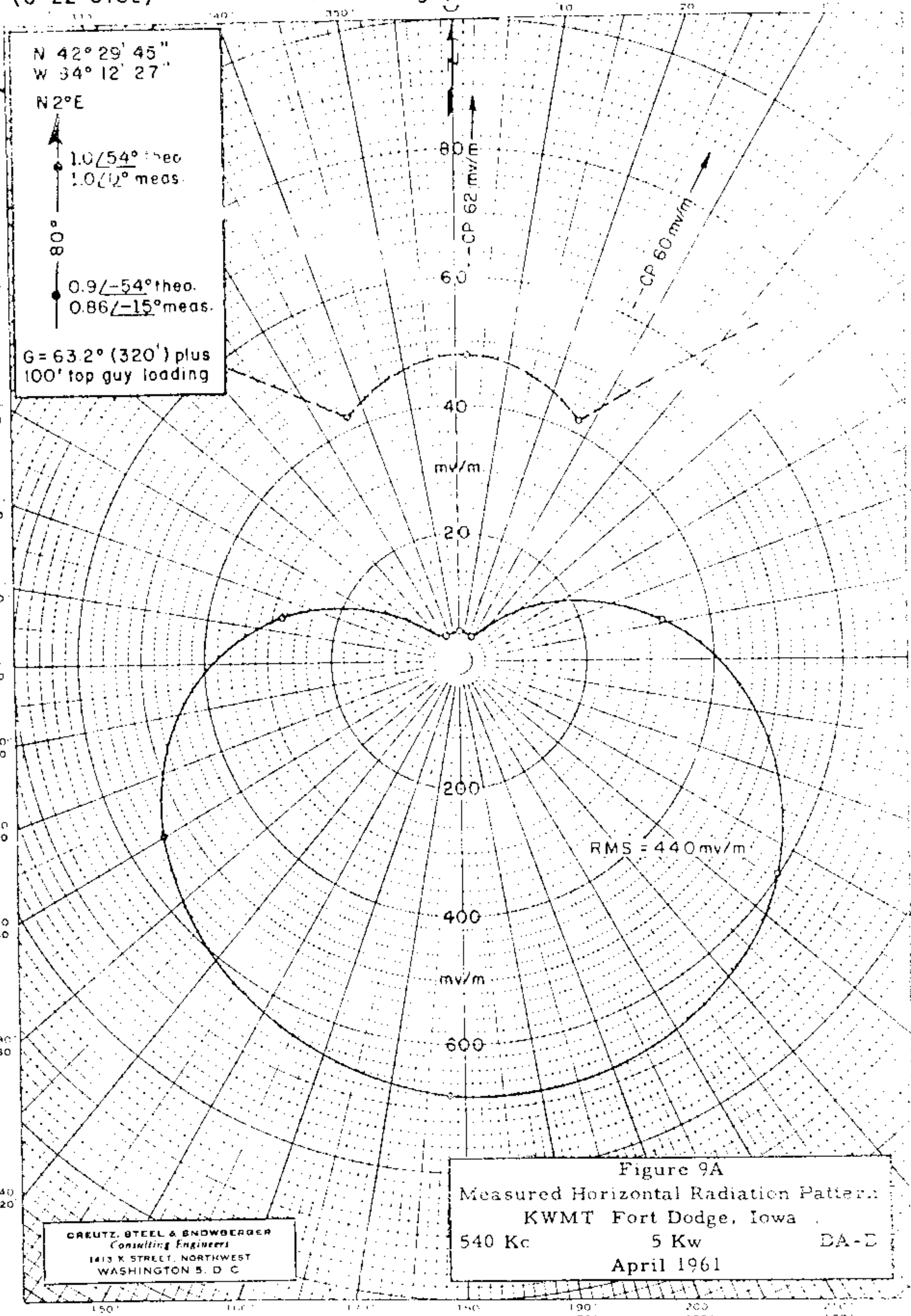


Figure 9A
Measured Horizontal Radiation Pattern
KWMT Fort Dodge, Iowa
540 Kc 5 Kw DA-D
April 1961

CREUTZ, STEEL & SNOWBERGER
Consulting Engineers
1413 K STREET, NORTHWEST
WASHINGTON 5, D. C.

FCC File No. BL-8489
Accepted 7-25-61

Station KWMT
Fort Dodge, Iowa

540 KC

KWMT

MEASURED NON-DA
(8-22-61ct)

Station KWMT
Fort Dodge, Iowa

5kw, DA-D,D
540 KC

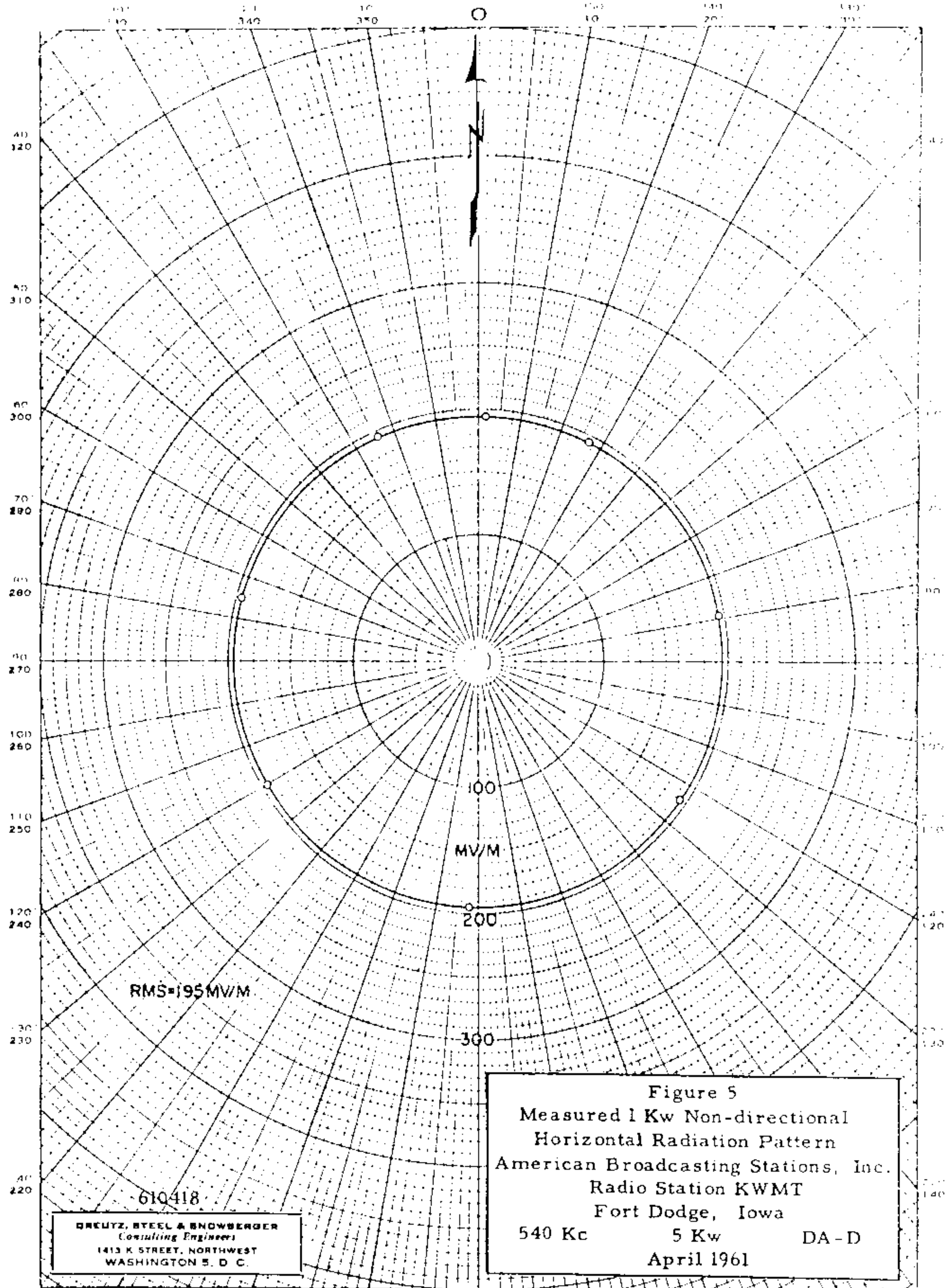


Figure 5
Measured 1 Kw Non-directional
Horizontal Radiation Pattern
American Broadcasting Stations, Inc.
Radio Station KWMT
Fort Dodge, Iowa
540 Kc 5 Kw DA-D
April 1961

KREUTZ, STEEL & SNOWBERGER
Consulting Engineers
1413 K STREET, NORTHWEST
WASHINGTON 5, D. C.

FCC File No. BL-8489
Accepted 7-26-61

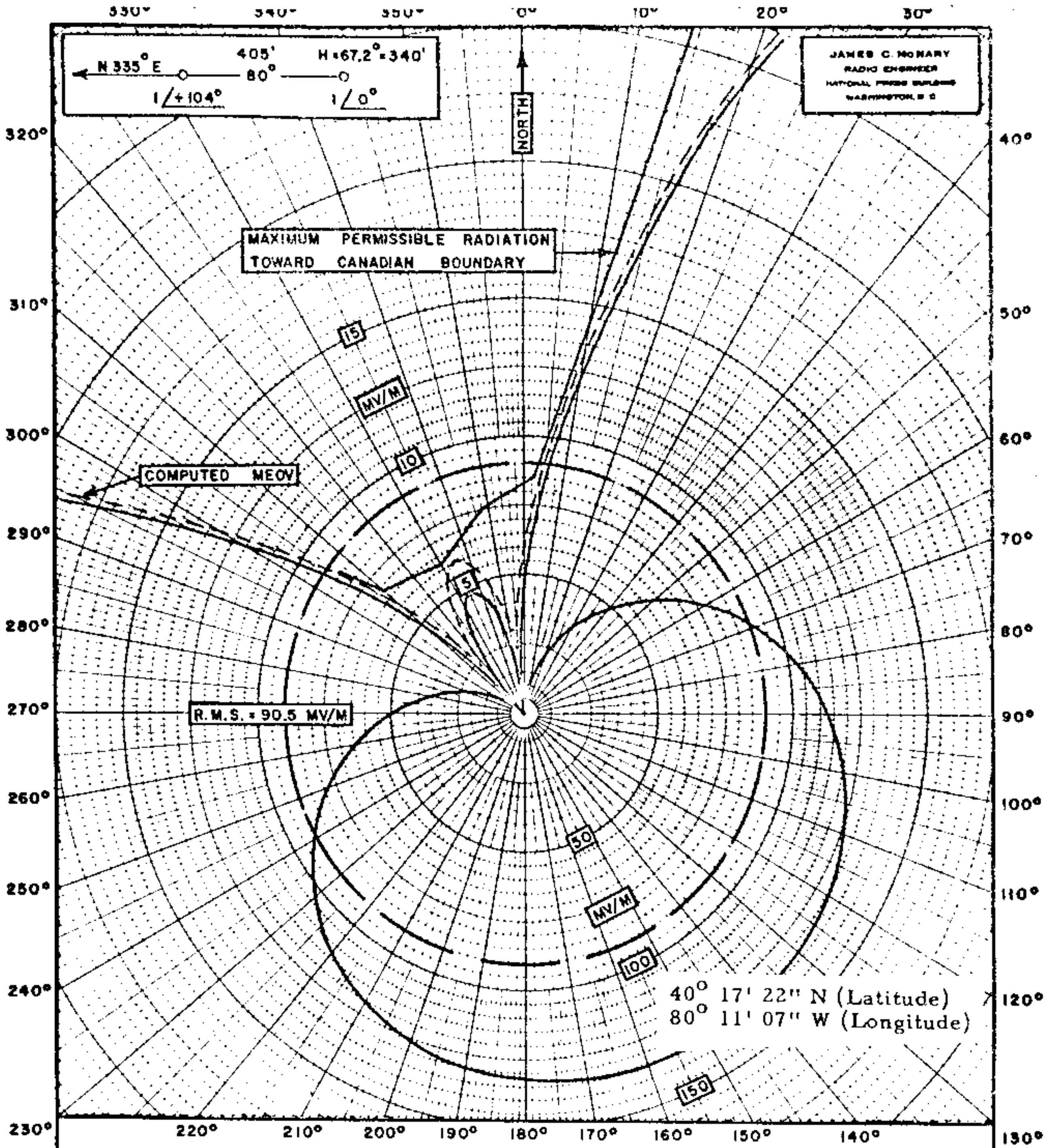
Station KWMT
Fort Dodge, Iowa

540 KC

WARO

PROPOSED DAY (8-31-56g) Douglas & Associates, Inc. Canonsburg, Pa. DA-D, D 250 W 540 KC 540 KC

Granted C.P. 1/17/57



HORIZONTAL PLANE PATTERN

DOUGLAS & ASSOCIATES, INC.

540 KC - 250 WATTS - DA-D

CANONSBURG, PENNSYLVANIA

JULY, 1956

FCC FILE NO. BP-10,736 Accepted 8-24-56 Douglas & Assoc., Inc. Canonsburg, Pa. 540KC

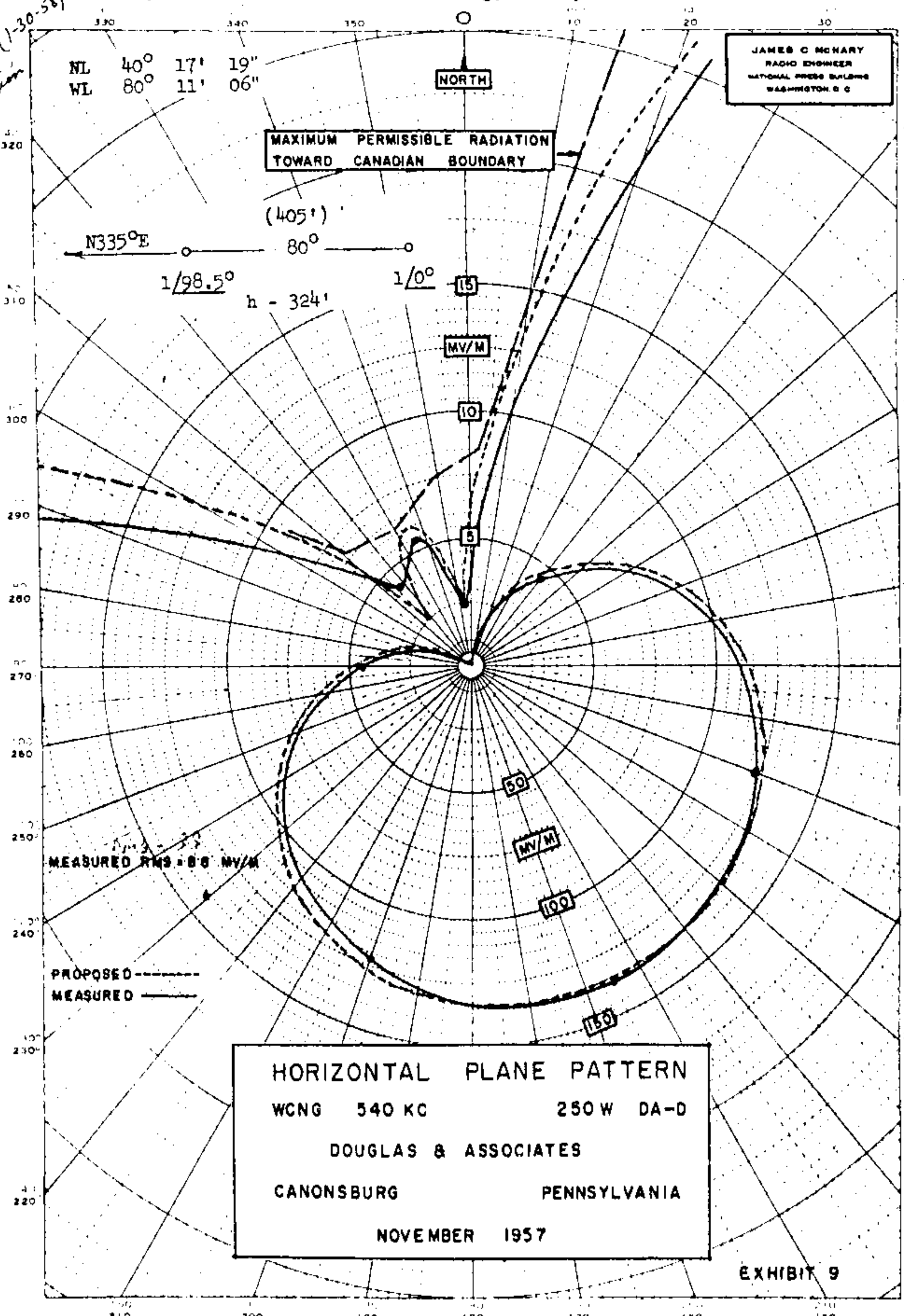
WARO

MEASURED DAY
(2-11-58g)

Station WCNG
Canonsburg, Pennsylvania

250w, DA-D,D
540 KC BL 6946

Granted license (1-30-58) for an AM station



FCC File No. BL-6946
Accepted 1-20-58

WCNG
Canonsburg, Pennsylvania

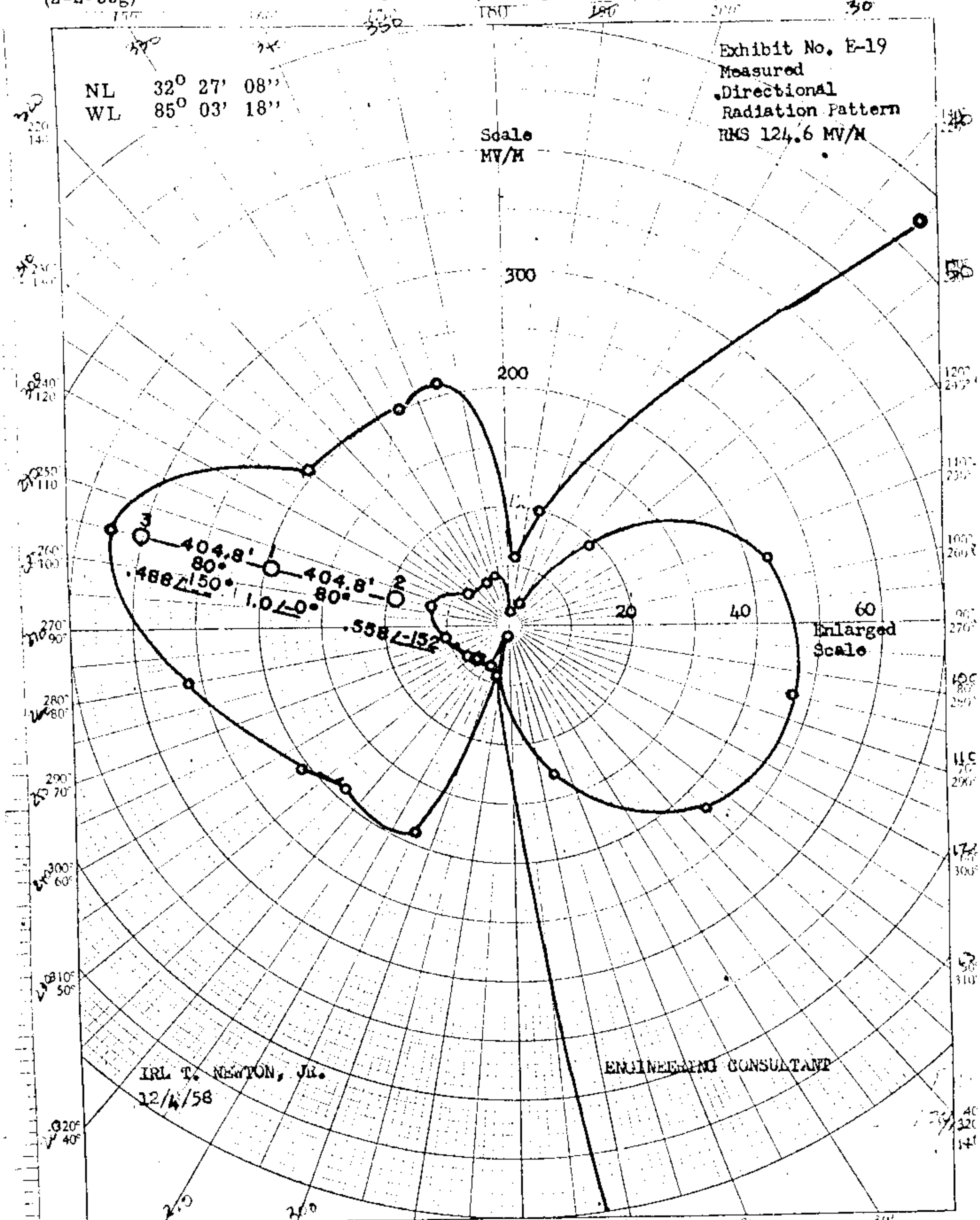
540 KC

WDAK BL-7348

MEASURED NIGHT
(2-2-59g)

Station WDAK
Columbus, Georgia

500w,5kw-LS, DA-N,U
540 KC



FCC File No. BL-7348
Accepted 1-28-59

WDAK
Columbus, Georgia

540 KC

WDAK

PROPOSED NIGHT (2/7/57g) | Station WDAK Columbus, Georgia | 500w,5kw-LS, DA-N,U 540 KC

Granted CP 7-9-58) for change in freq. for DA system

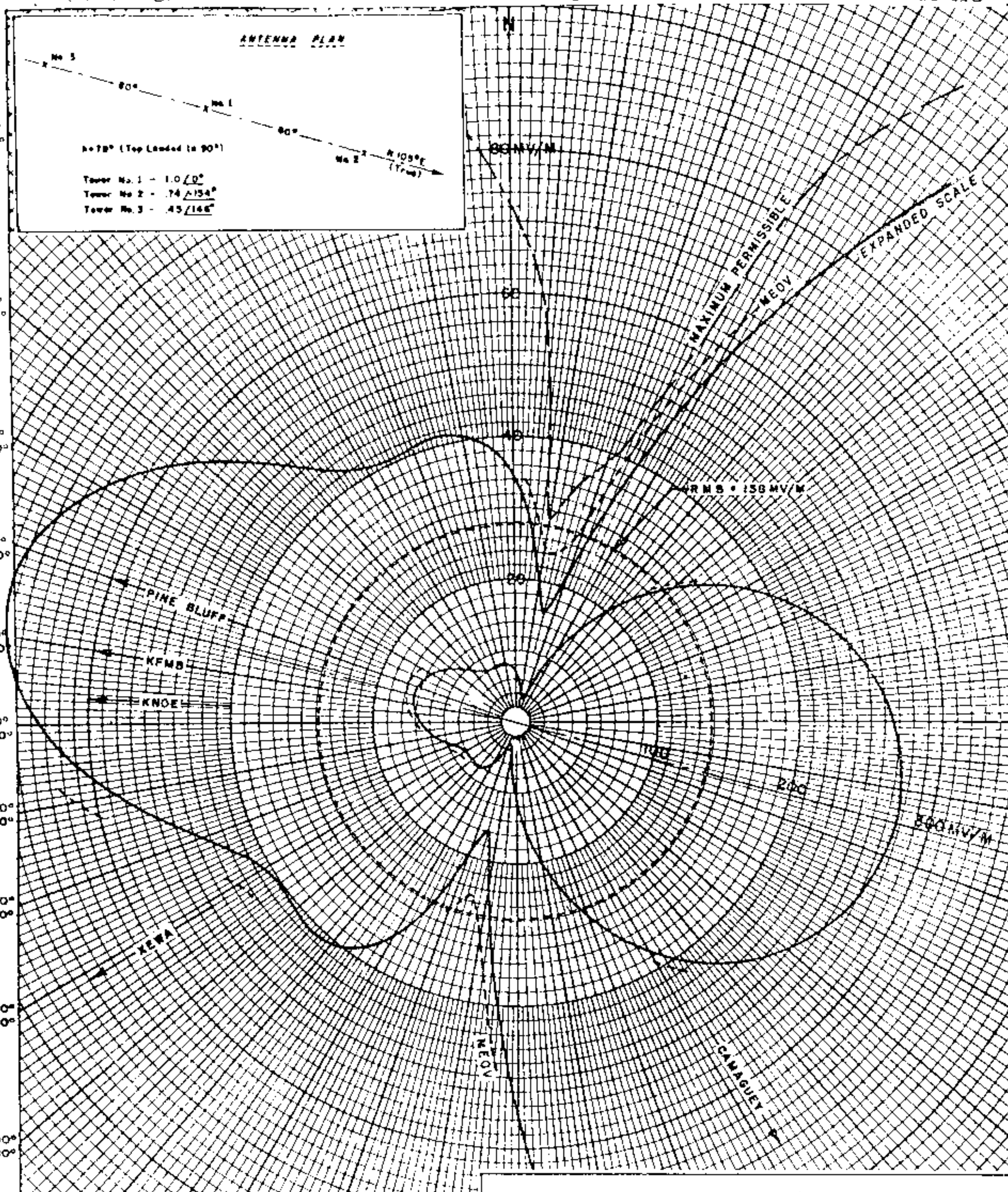


FIGURE 5

HORIZONTAL PLANE RADIATION PATTERN

RADIO COLUMBUS, INC., WDAK

500 W, 5 KW-LS, DA-N 540 KC

COLUMBUS, GEORGIA

Prepared by

Craven, Lohnes & Culver Washington 4, D. C.

March 1956

FCC File No. BP-9260 (Ammended) Accepted 3/26/56 Docket # 11328

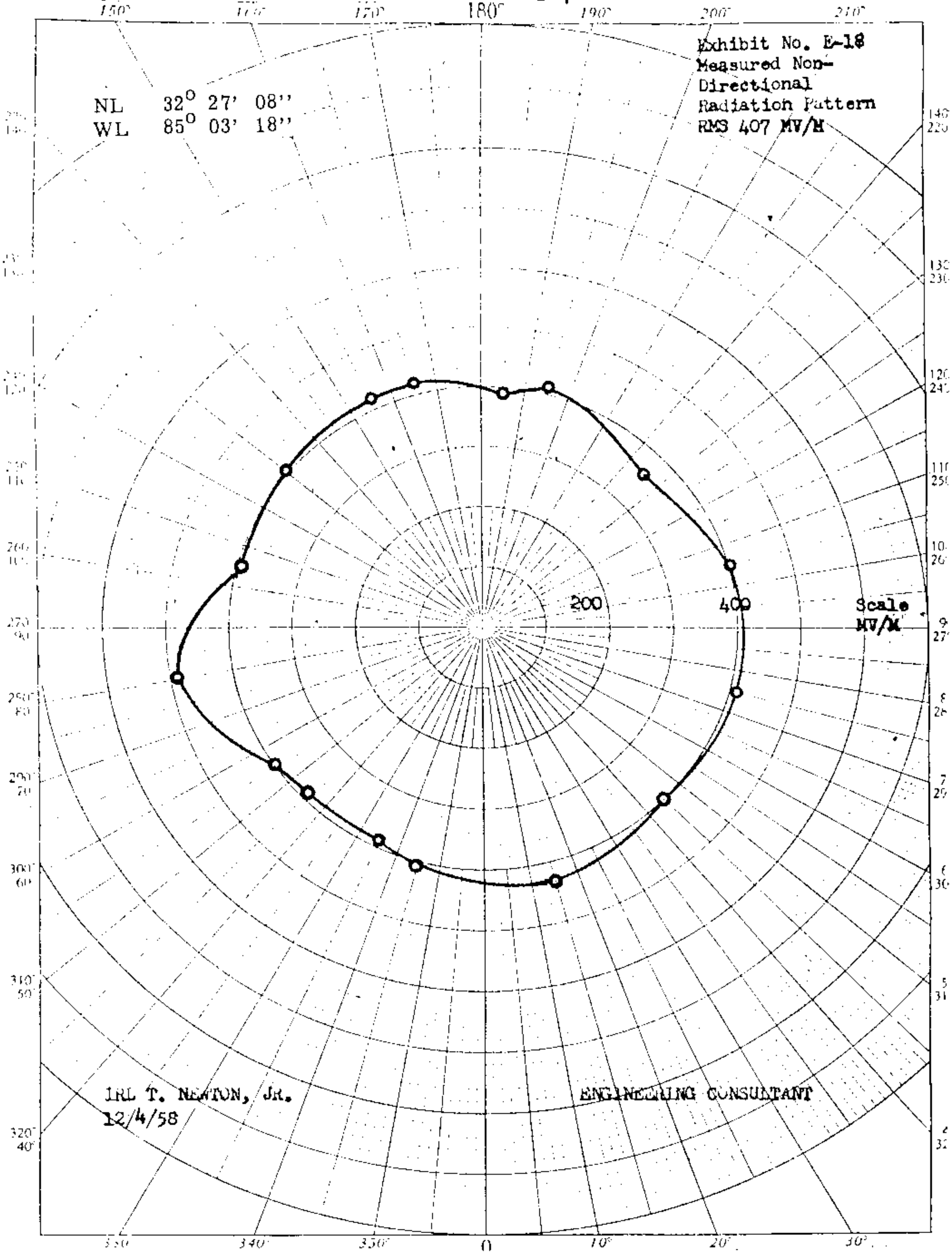
WDAK Columbus, Georgia 540 KC

WDAK

MEASURED NON-DA
(2-2-59g)

Station WDAK
Columbus, Georgia

500w, 5kw-LS, DA-N,U
540 KC



FCC File No. BL-7348
Accepted 1-28-59

WDAK
Columbus, Georgia

540 KC

WETC

DESCRIPTION OF ANTENNA SYSTEM

Number of elements:	Four
Type of elements:	Uniform, cross-section, guyed vertical steel radiator, base insulated.
Top Loading:	250', top three guys on all towers (See Figure 1)
Height of elements above insulators:	400'
Overall height of elements above mean sea level:	757'
Orientation and spacing of array:	Four towers located on a line bearing 131° true, and spaced 455' (90°) between adjacent towers.
Details of Ground System:	120 copper wire radials equally spaced, buried approximately 6 inches deep and extending 455' in length from each tower and bonded to a 2" copper ground strap at perpendicular bisector between towers, plus a 24' X 24' copper ground screen about the base of each tower. Plus 150 #10 copper wire radials 100' in length around the two center towers.

TOWER

	North	North Center
Computed Field Ratio	1.0	2.21
Computed Phase	0°	192.3°
Measured Base Current Ratio	1.0	2.18
Measured Loop Current Ratio	1.0	2.18
* Measured Phase Current	166.5°	0°

	South	South Center
Computed Field Ratio	2.59	1.61
Computed Phase	39.3°	236°
Measured Base Current Ratio	2.36	1.55
Measured Loop Current Ratio	2.36	1.55
* Measured Phase Current	-155°	40°

* As indicated on Nems-Clark Phase Monitor

LOCATION: North Latitude 35° 52' 06"
West Longitude 78° 25' 56"

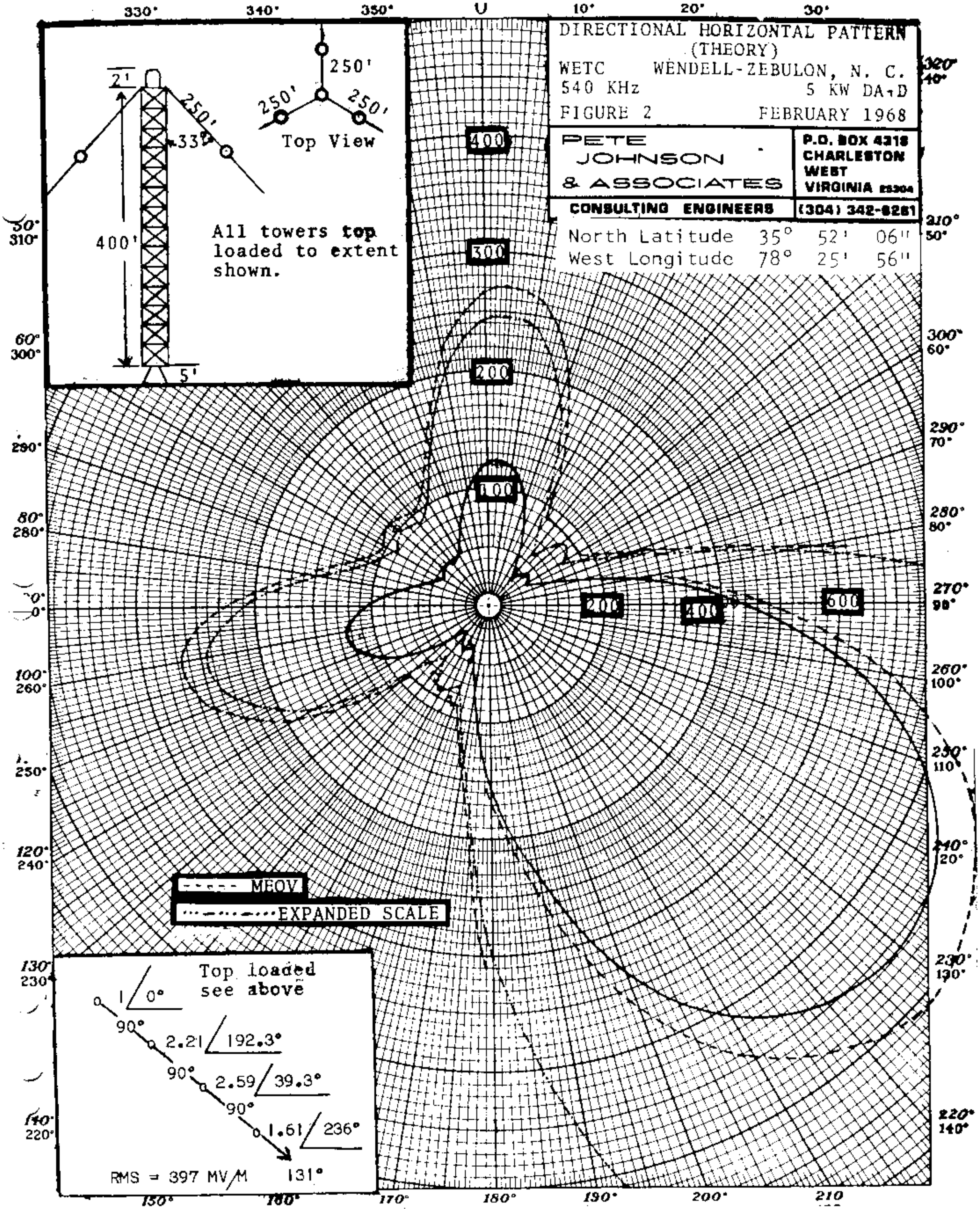
Note: Phase monitor pick up is shielded loops.

WETC

Proposed Day
(5-28-68ct)

Station WETC
Wendell- Zebulon, North Carolina

5kw,DA-D,D
540 kc



FCC File No. BMP-12386
Accepted 5-3-68

Station WETC
Wendell-Zebulon, North Carolina 540 kc

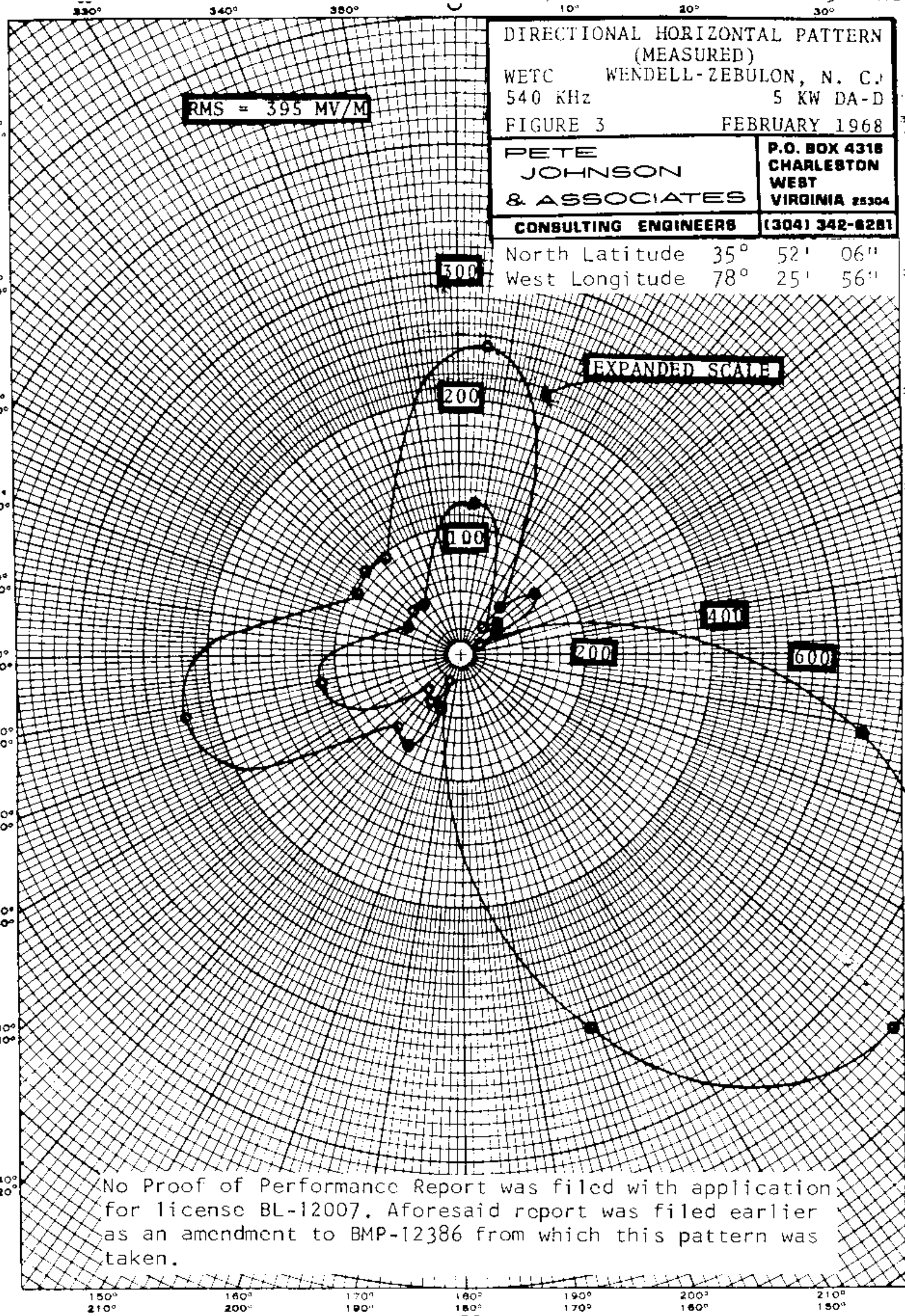
WETC

Measured Day
(9-26-68ct)

Station WETC
Wendell-Zebulon, North Carolina

5kw,DA-D,U
540 kc

BL12007



No Proof of Performance Report was filed with application for license BL-12007. Aforesaid report was filed earlier as an amendment to BMP-12386 from which this pattern was taken.

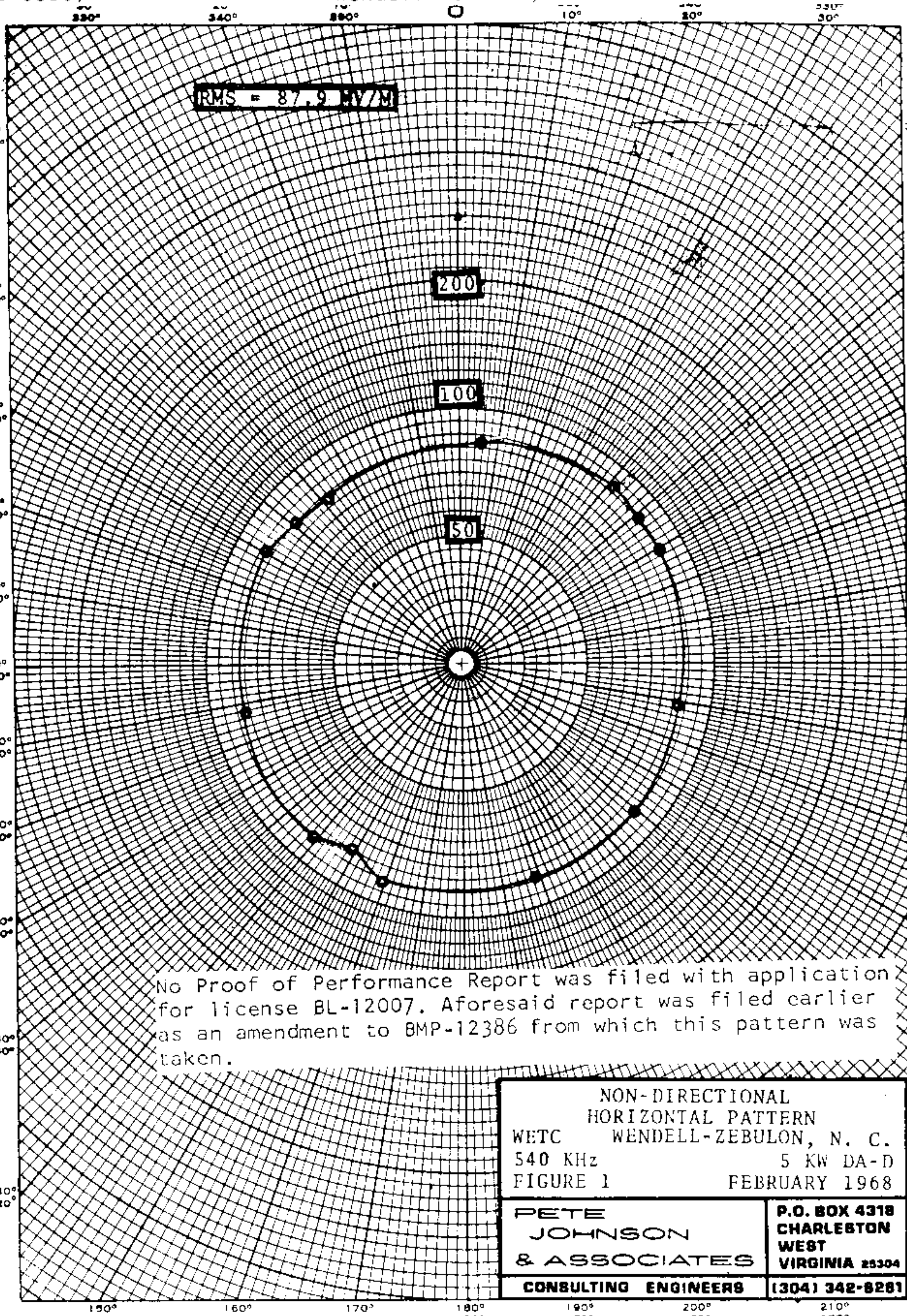
FCC File No.BL-12007
Accepted 7-3-68

Station WETC
Wendell-Zebulon, North Carolina 540 kc

Measured Non-DA
(9-26-68ct)

Station WETC
Wendell-Zebulon, North Carolina

5kw,DA-D,U
540 kc



No Proof of Performance Report was filed with application for license BL-12007. Aforesaid report was filed earlier as an amendment to BMP-12386 from which this pattern was taken.

FCC File No.BL-12007
Accepted 7-3-68

Station WETC
Wendell-Zebulon, North Carolina

540 kc

WGTO

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station : WGTO   Main Studio: Cypress Gardens, Florida

Frequency : 540 KHz   Power : 1 kW Night 50 kW Day

Notification : 1780   Date : Sept. 28, 1979   Class: II

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 28 07 57
West Longitude: 81 43 16

ANTENNA CHARACTERISTICS

Authorized for Nighttime and Daytime operation. (DA-2)
Number of elements: 4
Type of elements : Series excited, uniform cross-section, gued, vertical steel towers.

TOWER :	NW(#1)	SW(#2)	NE(#3)	SE(#4)		
HEIGHT ABOVE INSULATORS :	350'	350'	350'	350'	(69.2)	
NIGHT PHASING :	0°	-28°	-135.5°	-163.5°		
NIGHT FIELD RATIO:	1.0	1.0	0.9	0.9		
DAY PHASING :	0°	+30°	-145°	-115°		
DAY FIELD RATIO :	1.0	1.0	0.6	0.6		

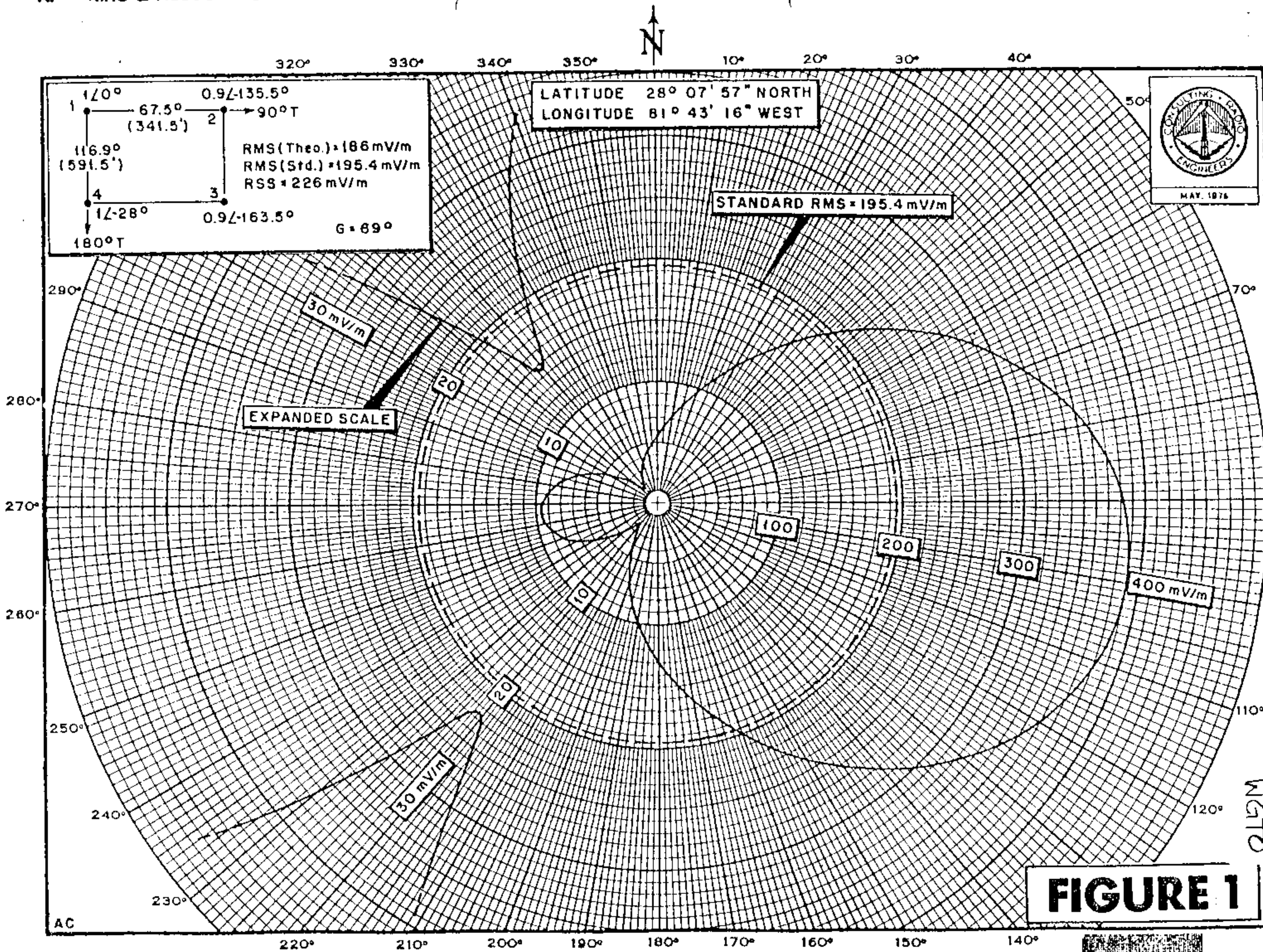
SPACING AND ORIENTATION : The towers are located at the vertices of a parallelogram the long sides of which are 591.5' (116.9°) in length on a line bearing 0° true. The shourt sides are 341.5' (67.5°) in length on a line bearing 90° true.

GROUND SYSTEM : 120 - 455 equally spaced copper radials plus 240 - 70' interspaced radials about each tower. Radials are shortened and bonded to a transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	1285 mV/m	___ mV/m	___ mV/m
Night	186 mV/m	226 mV/m	195.4 mV/m

Note: Please retain the Daytime directional antenna radiation pattern notified for Station WGTO in United States Change List Number 729 dated October, 1957 and attach to this Revised Description. Sheet and Nighttime pattern. This notification concerns only a correction of geographical coordiantes of the center of the antenna system and a change in the Nighttime operation of the station with Daytime operation continued as previously notified.



1∠0°
67.5°
(341.5')
0.9∠-135.5°
90°T
116.9°
(591.5')
1∠-28°
0.9∠-163.5°
180°T
RMS(Theo.)=186 mV/m
RMS(Std.)=195.4 mV/m
RSS=226 mV/m
G=69°
LATITUDE 28° 07' 57" NORTH
LONGITUDE 81° 43' 16" WEST
STANDARD RMS=195.4 mV/m
EXPANDED SCALE
30 mV/m
10
20
100
200
300
400 mV/m
N
CONSULTING RADIO ENGINEERS
MAY, 1976
WGTO
AC

FIGURE 1

Cypress Gardens, Fla.
WGTO

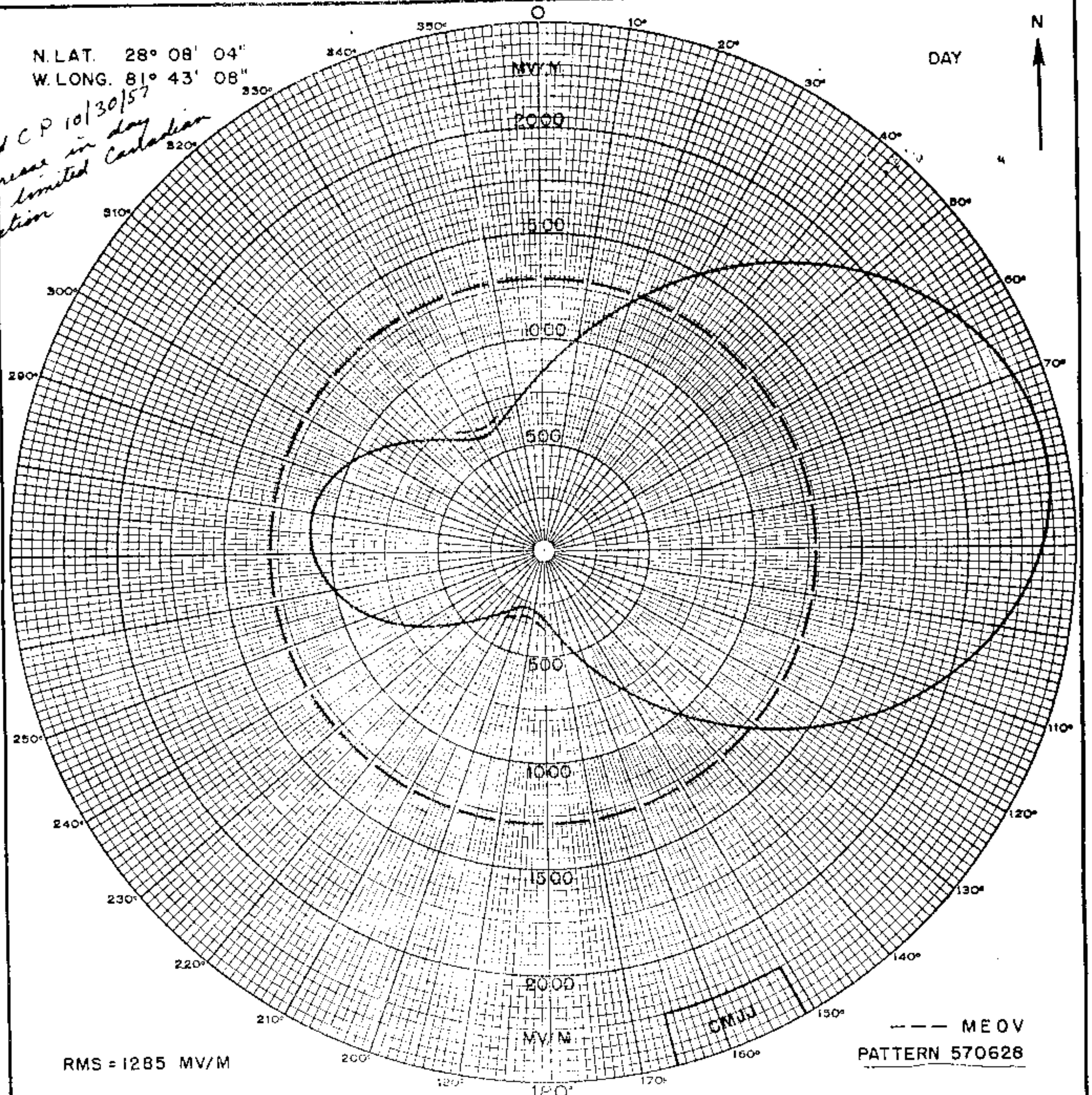
PROPOSED DAY
(8/9/57g)

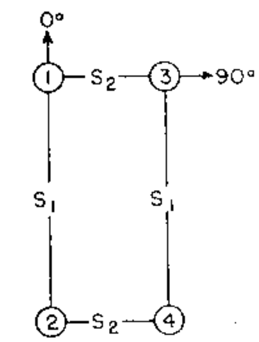
Station WGTO
Cypress Gardens, Florida

50kw, DA-D,D

540 KC

Granted CP 10/30/57 for increase in day power limited Canadian restriction





S_1 = 591.5' = 116.9°
S_2 = 341.5' = 67.5°
G = 350.0' = 69.2°

TOWER	FIELD	PHASE
1	1.0	0°
2	1.0	30°
3	0.6	-145°
4	0.6	-115°

RADIO STATION WGTO
CYPRESS GARDENS, FLORIDA
540 KC 50 KW DA - D

A. EARL CULLUM, JR.
CONSULTING ENGINEERS
570628.2 FIGURE 6A

FCC File No. BP-10,477 (Amended)
Accepted 8/2/57

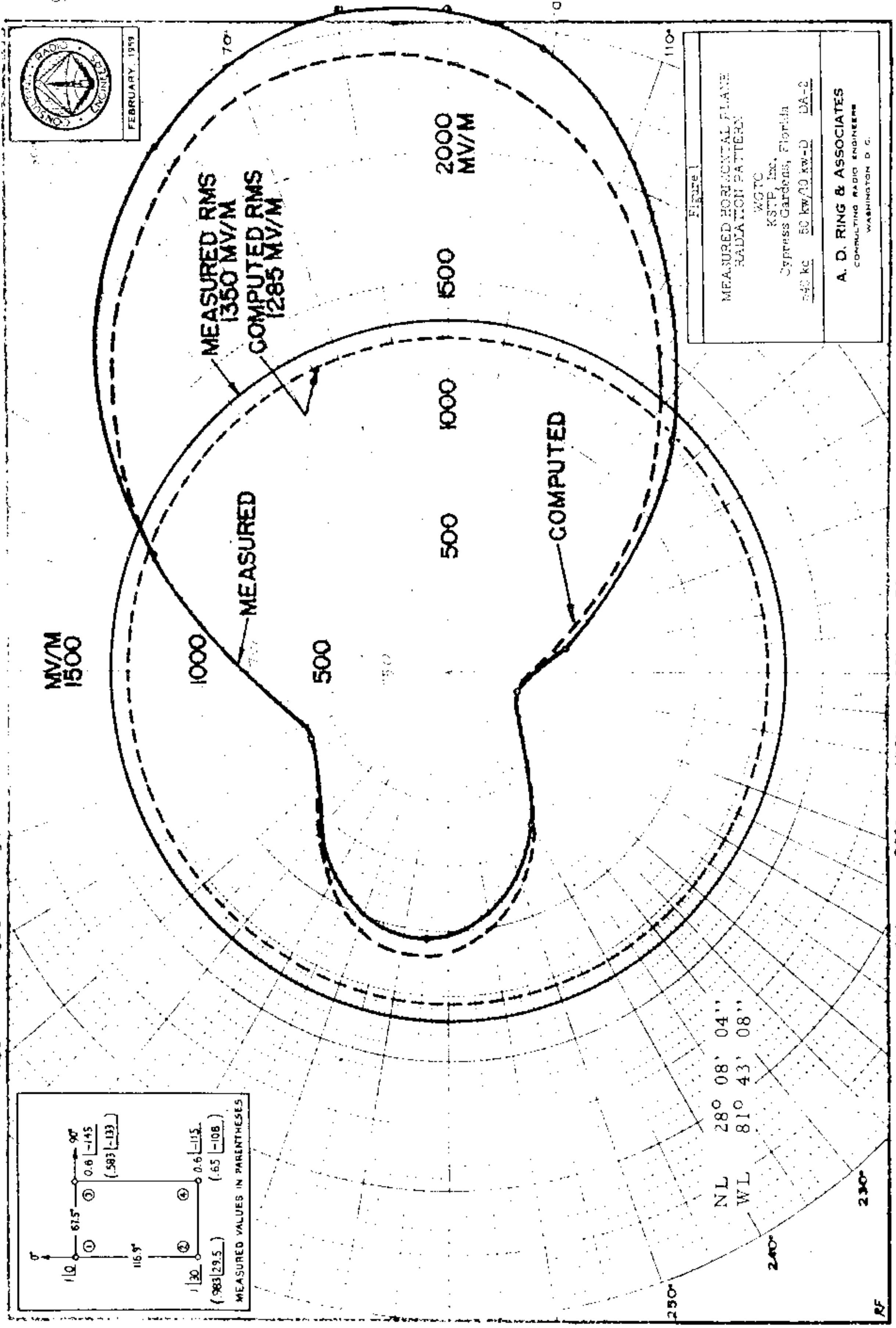
WGTO
Cypress Gardens, Florida **540 KC**

WGTO

MEASURED DAY
(5-28-59g)

Station WGTO
Cypress Gardens, Florida

10kw, 50kw-LS, DA-2,U D
540 KC



STARTS WITH 10 KW AT 7:15 AM
GOES TO 50 KW AT 7:15 AM
DOES NOT OPERATE AT NIGHT

Granted increase in power + changes in DA.

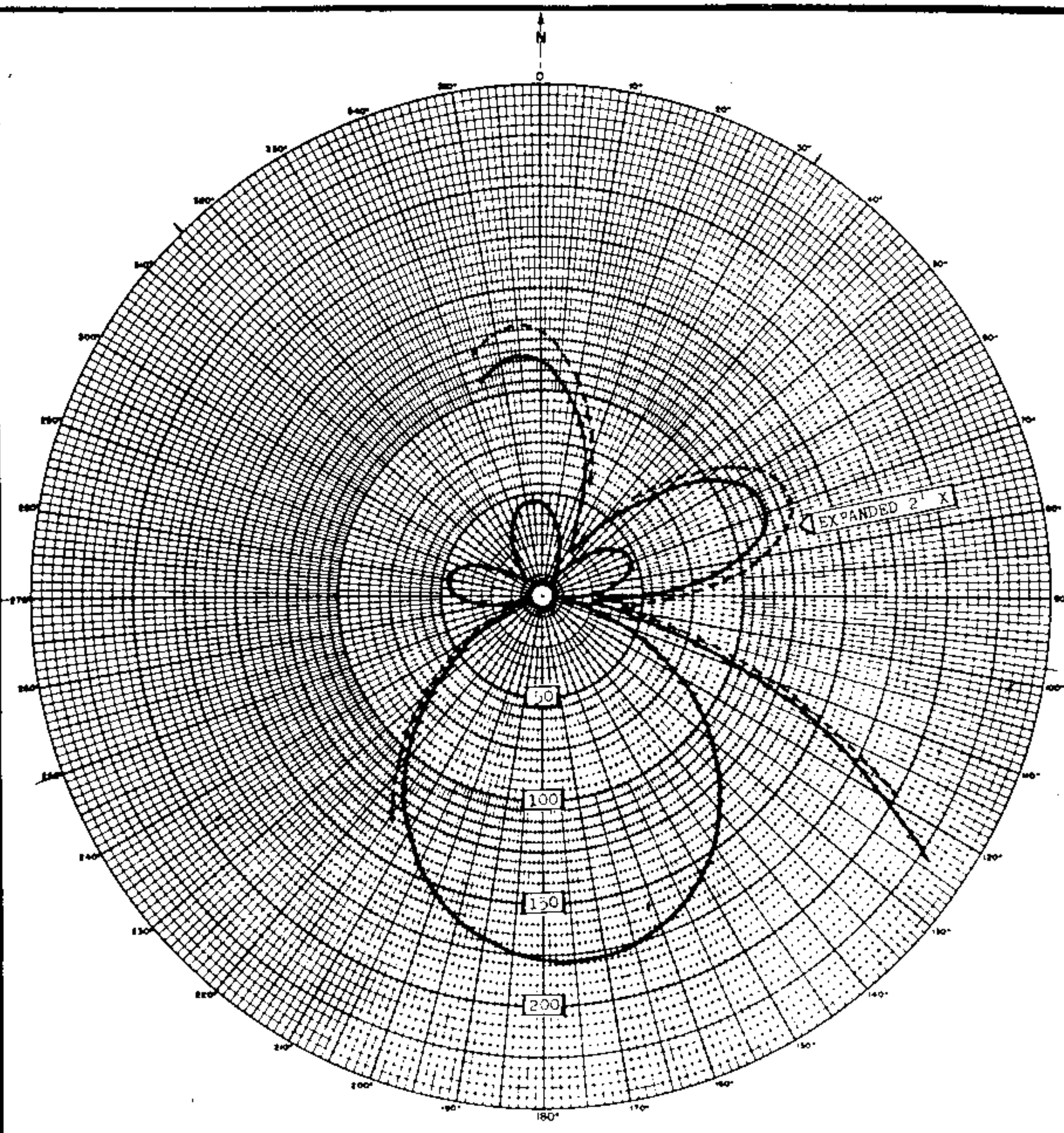
FCC File No. BL-7423
Accepted 4-15-59

WGTO
Cypress Gardens, Florida

540 KC

WYLO

BL-10586
LIC. 12-7-64



E_{RMS} = 66.4 MV/M (BY ADJUSTMENT OF POWER)

LOCATION OF MINIMA
32.4°T - 98.0°T
250°T - 315.6°T

LATITUDE: 43° 20' 00"
LONGITUDE: 88° 09' 11"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS

ALL G's = 63.6° + T.L. TO SIMULATE 74°

3 O 0.699/+155.75°

S = 88.93°

2 ● 1.0/+5°

S = 88.93°

1 O 0.699/-155.75°

174°T

640225 FIGURE 5

RADIO STATION WYLO
JACKSON, WISCONSIN

540 KC 250 DA-D

WYLO

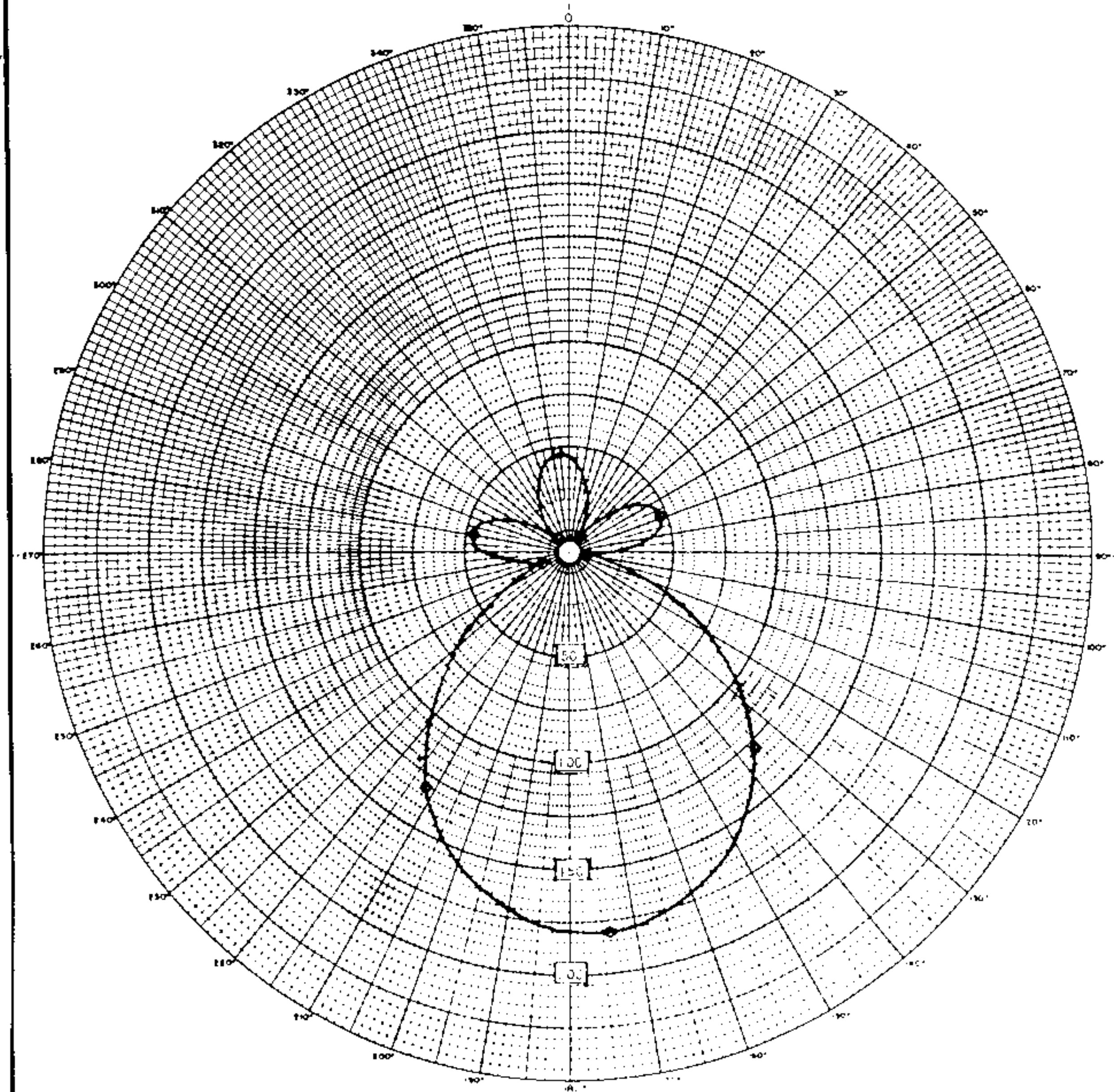
BL 10586

Measured Day
(6-29-64ct)

Station WYLO
Jackson, Wisconsin

250w,DA-D,D
540 kc

BL-10586
LIC. 12-7-64



E_{RMS} = 86.4 MV/M

LATITUDE 43° 20' 00"
LONGITUDE 88° 09' 11"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS

ALL [illegible] 74°

3 O 0.799/+155.75°

2 O 1.0/+0°

1 O 0.799/-155.75°

174°

64410 FIGURE 3

MEASURED DIRECTIONAL RADIATION

RADIO STATION WYLO

JACKSON, WISCONSIN

540 KC 250 DA-D

FCC File No.BL-10586
Accepted 5-25-64

Station WYLO
Jackson, Wisconsin

540 kc

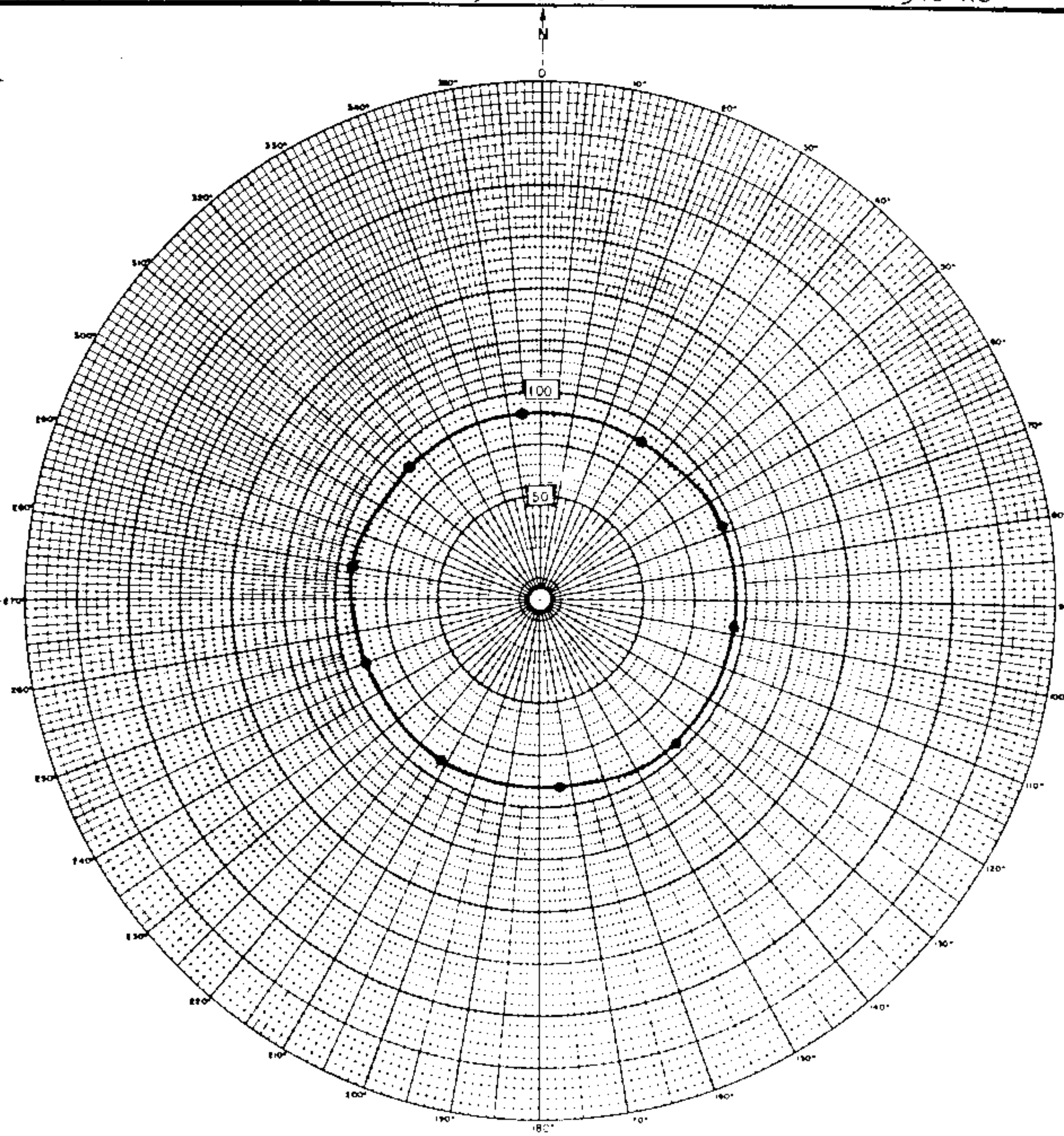
WYLO

Measured Non-DA
(6-29-64ct)

Station WYLO
Jackson, Wisconsin

250w,DA-D,D
540 kc

BL-10586
LIC. 12-7-64



E_{RMS} = 80 mV/m

LATITUDE: 43° 20' 00"

LONGITUDE: 88° 09' 11"

CHARLES E. BRENNAN
CONSULTING RADIO ENGINEERS
MILWAUKEE, WISCONSIN

ANTENNA PARAMETERS

G' = 65.5° + T.L. TO SIMULATE 74°

MEASUREMENTS WITH 250 WATTS TO TOWER 2

640410 FIGURE 2

MEASURED NON-DIRECTIONAL RADIATION

RADIO STATION WYLO
JACKSON, WISCONSIN

540 KC 250 DA-D

FCC File No.BL-10586
Accepted 5-25-64

Station WYLO
Jackson, Wisconsin

540 kc

CFJC

DESCRIPTION SHEET

STATION: CFJC

MAIN STUDIO: Kamloops, B. C.

FREQUENCY: 550 kHz

POWER: 10 kW Day
5 kW Night

TIME: Unlimited

CLASS: III

NOTIFICATION LIST NO.:

DATE:

GEOGRAPHIC LOCATION: 50° 38' 34" N. Lat.
120° 27' 28" W. Long.

ANTENNA SYSTEM: Mode of Operation: DA-2

Elements: Four (4) guyed towers Uniform cross section. Series fed top loaded to 70° using upper section of guys.

TOWERS:		1	2	3	4
Height Overall		298'	298'	298'	298'
Height above Insulators		292'	292'	292'	292'
Spacing (Degrees)		REF.	90°	92.821°	120°
(Feet)		REF.	447.22'	461.24'	596.3'
Orientation (Degrees)		REF.	141°	223.033°	271°
Field Ratios:	Day	1	1.40	1.71	1.22
	Night	1	1	1	1
Field Phase:	Day	0°	111°	236°	125°
	Night	0°	109°	246°	137°

GROUND SYSTEM: The ground system shall consist of 120, copper-wire radials per tower, buried approximately 8-10 inches below grade. The area covered is equivalent to a 0.4λ length system.

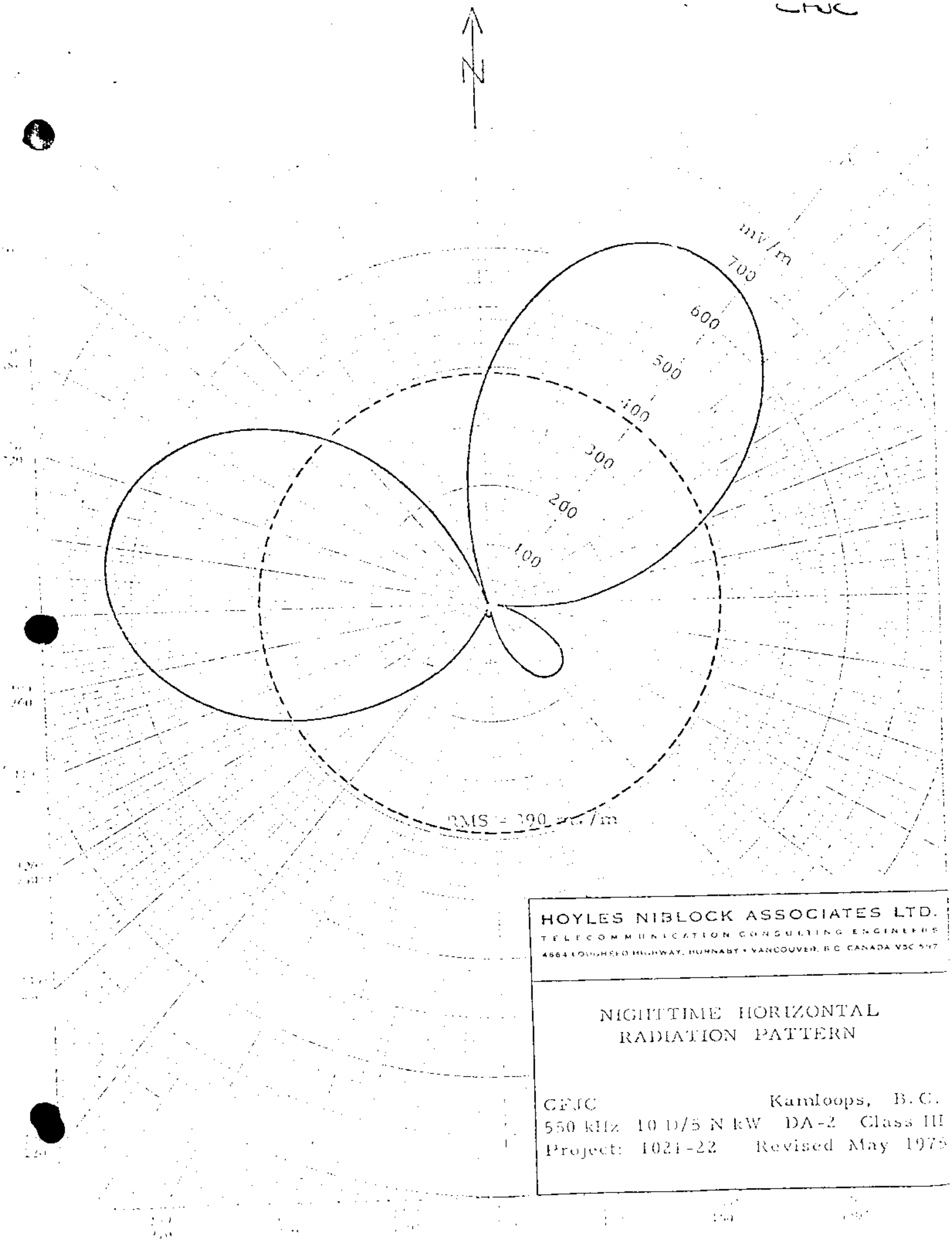
PREDICTED EFFECTIVE FIELD: Day Pattern 550 mV/m at 10 kW
Night Pattern 390 mV/m at 5 kW

Revised March 1977

7 1977

WASHINGTON, D.C.

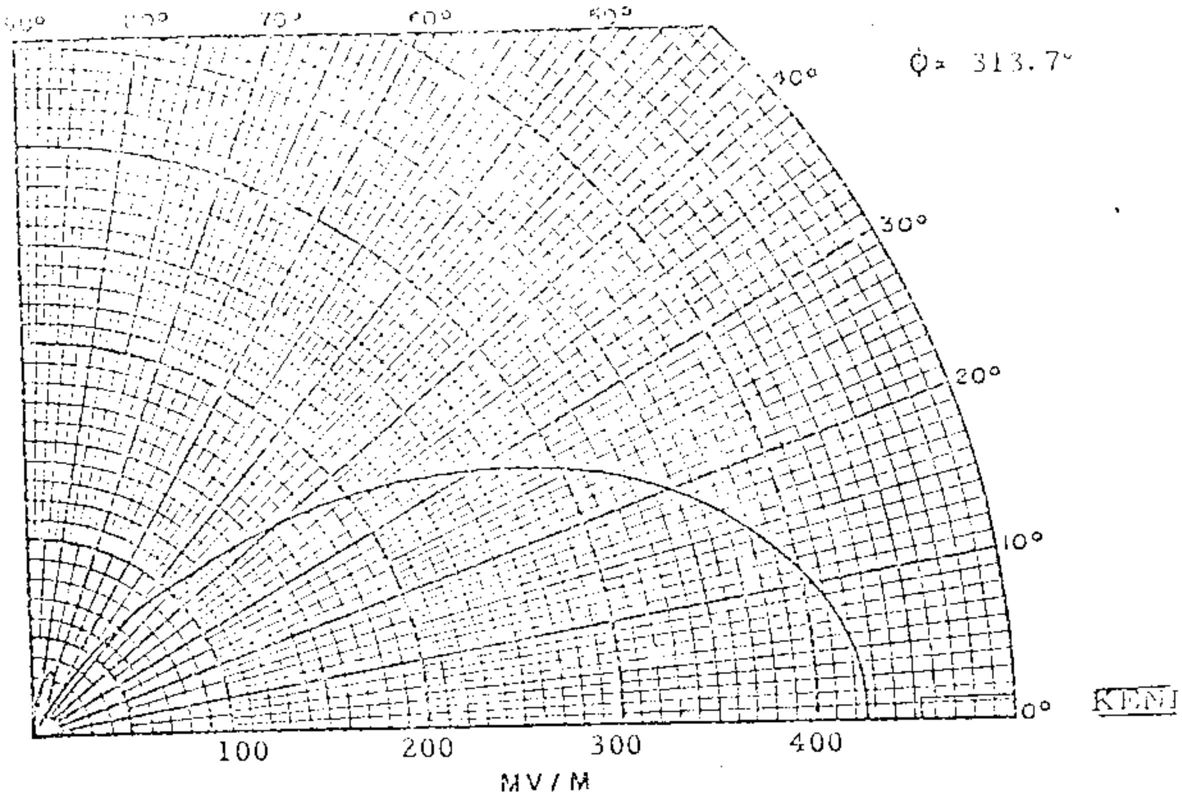
HOYLES NIBLOCK ASSOCIATES LTD. | CONSULTING ENGINEERS

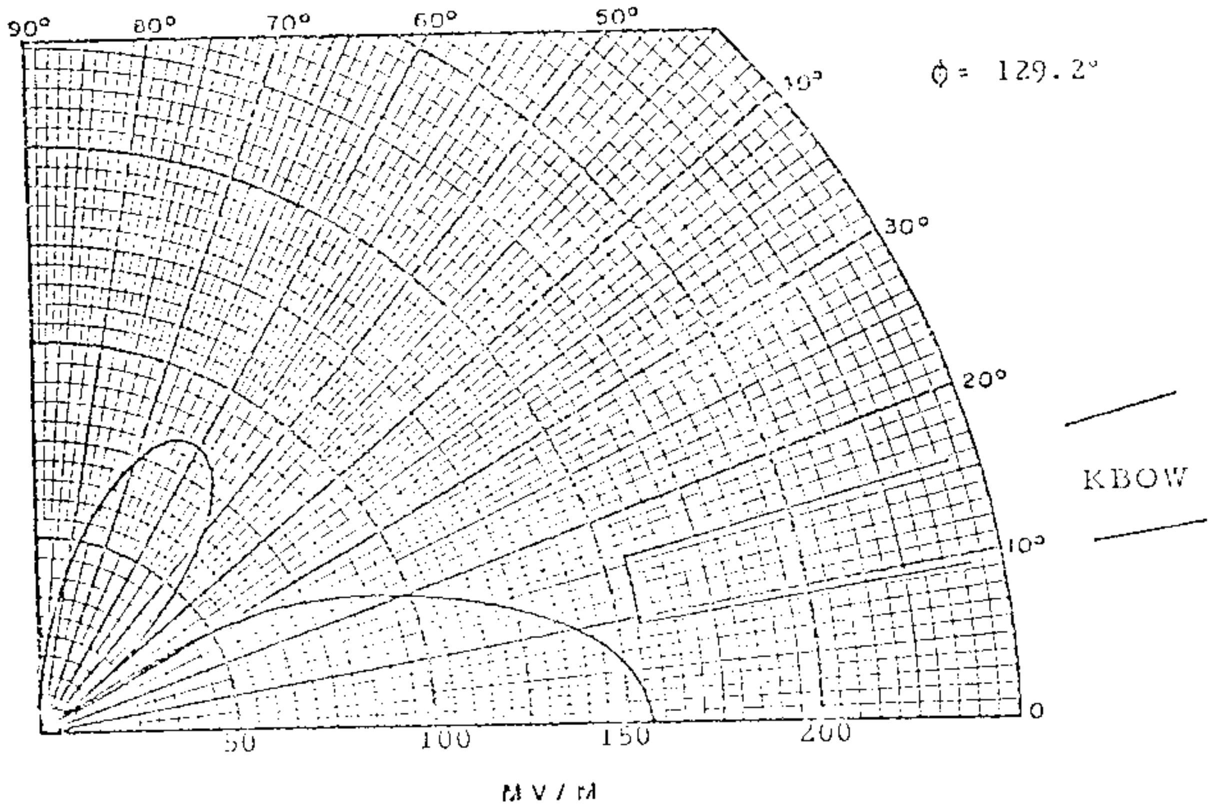


HOYLES NIBLOCK ASSOCIATES LTD.
TELECOMMUNICATION CONSULTING ENGINEERS
4664 LOUGHEED HIGHWAY, BURNABY • VANCOUVER, B.C. CANADA V5C 5T7

NIGHTTIME HORIZONTAL
RADIATION PATTERN

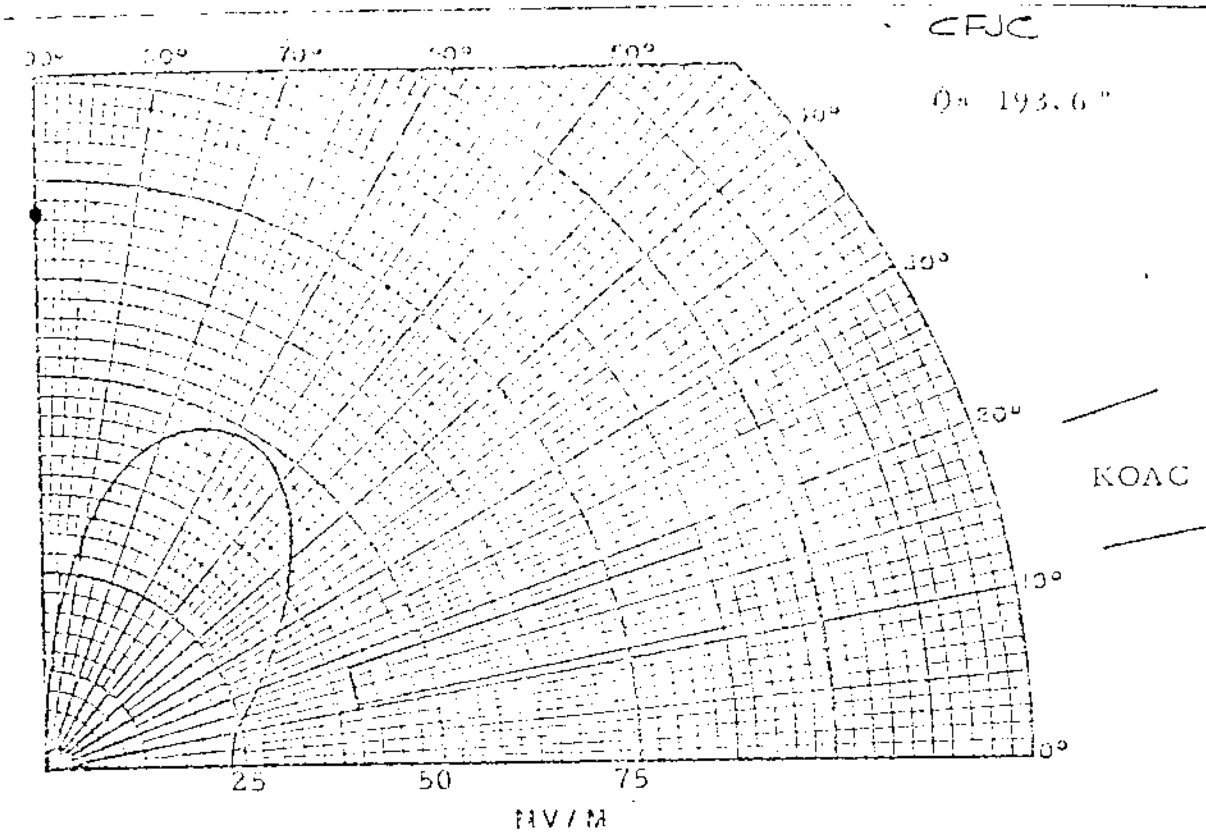
CFJC Kamloops, B.C.
550 kHz 10 D/5 N kW DA-2 Class III
Project: 1021-22 Revised May 1975

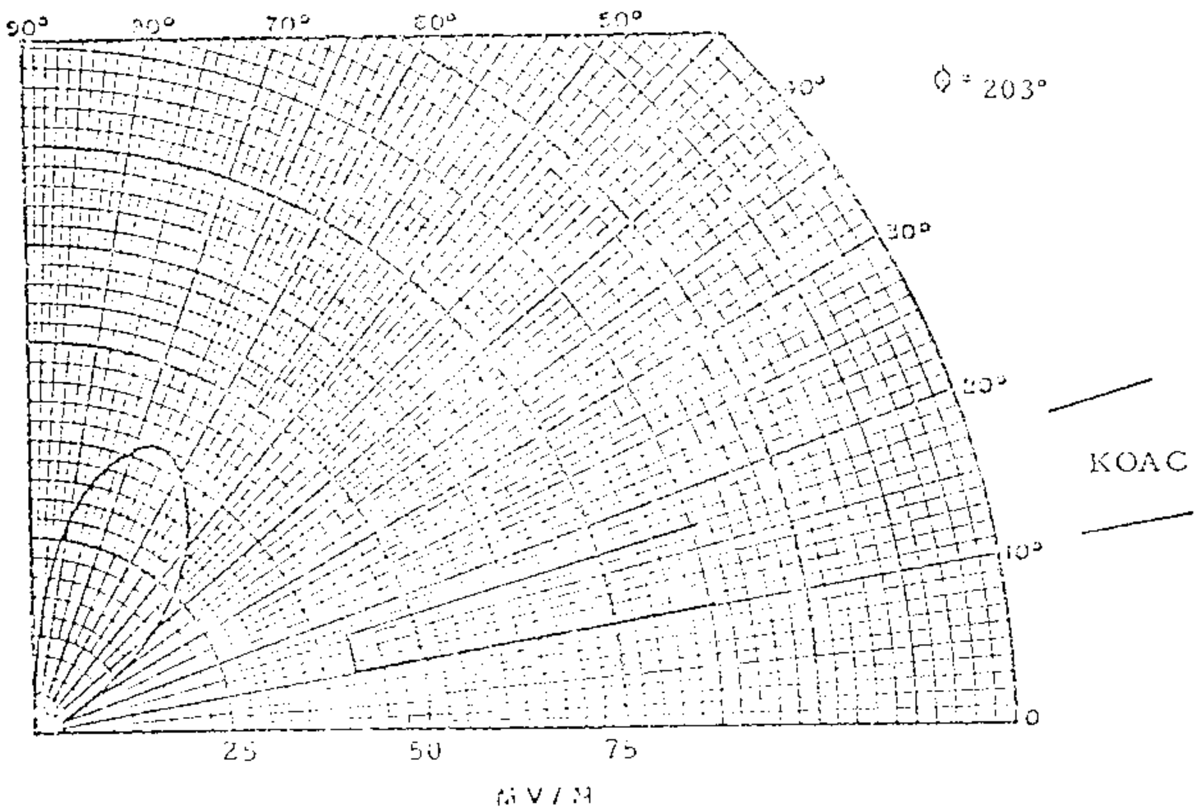




VERTICAL RADIATION PATTERNS

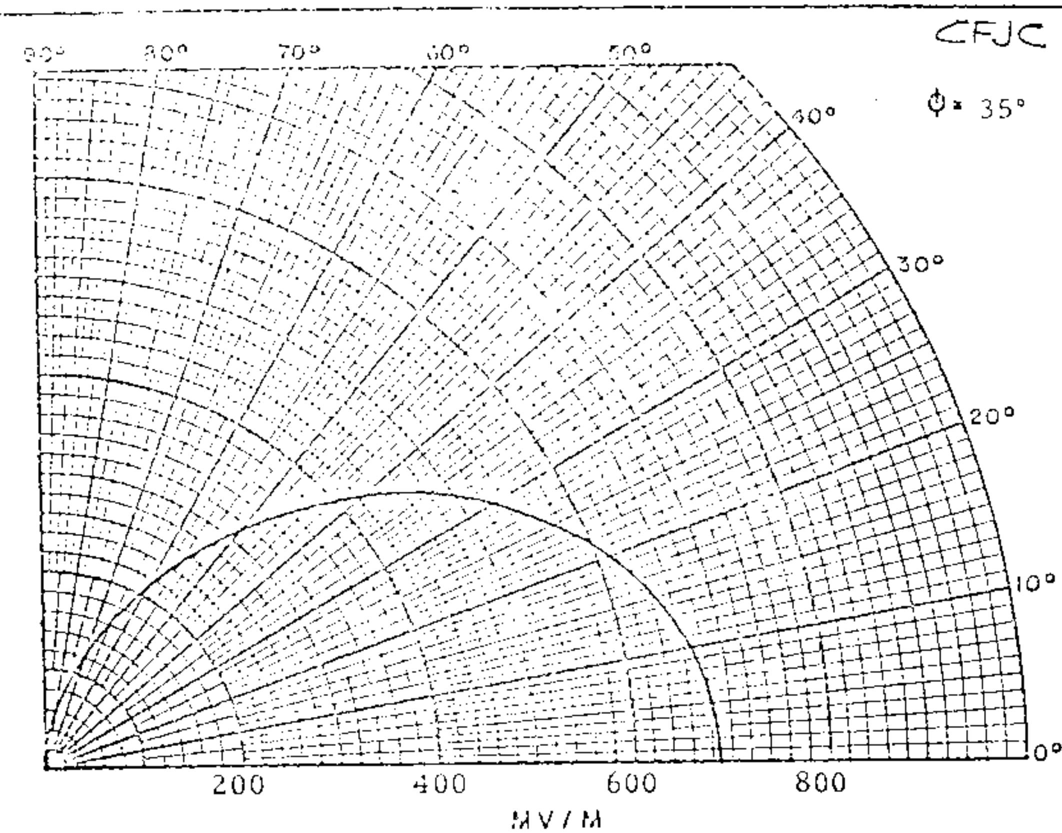
CFJC Kamloops, B.C.
550 kHz 10 D/5N kW DA-2 Class III
Project: 1021-22 Revised May 1975

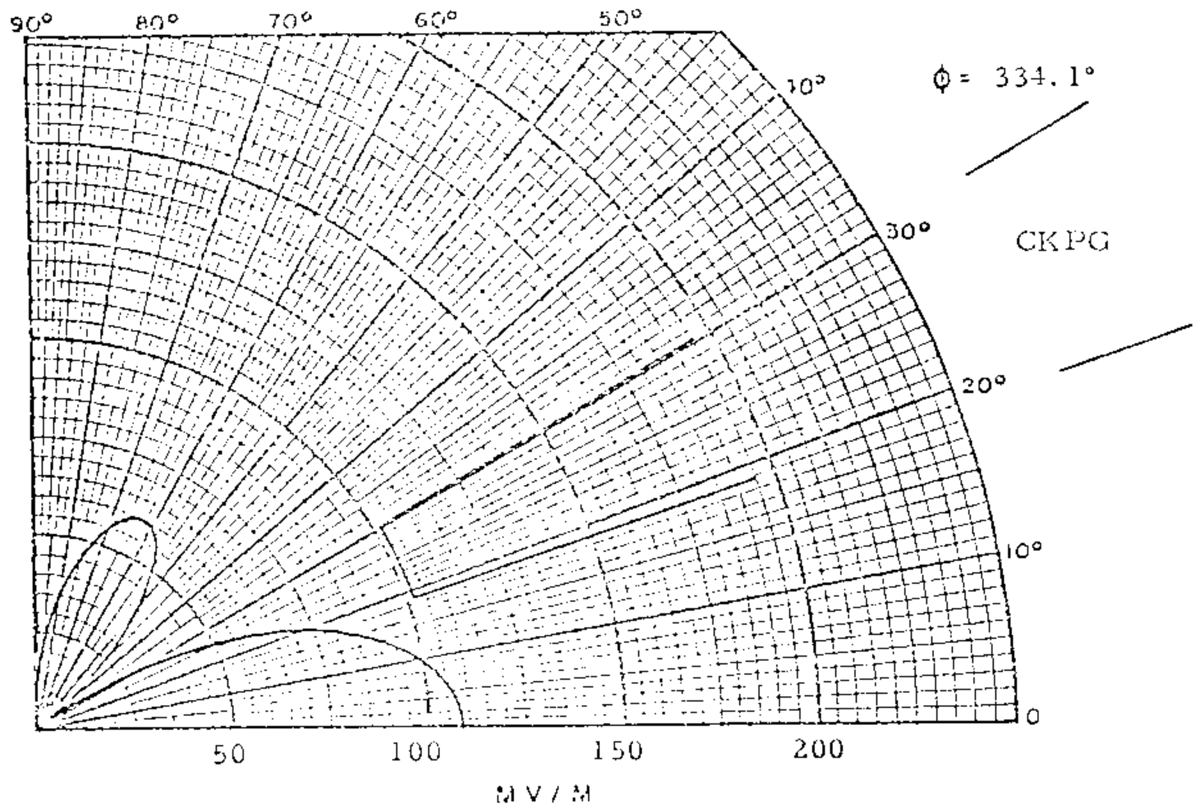




VERTICAL RADIATION PATTERNS

CFJC Kamloops, B.C.
550 kHz 10 D/5 N kW DA-2 Class III
Project: 1021-22 Revised May 1975

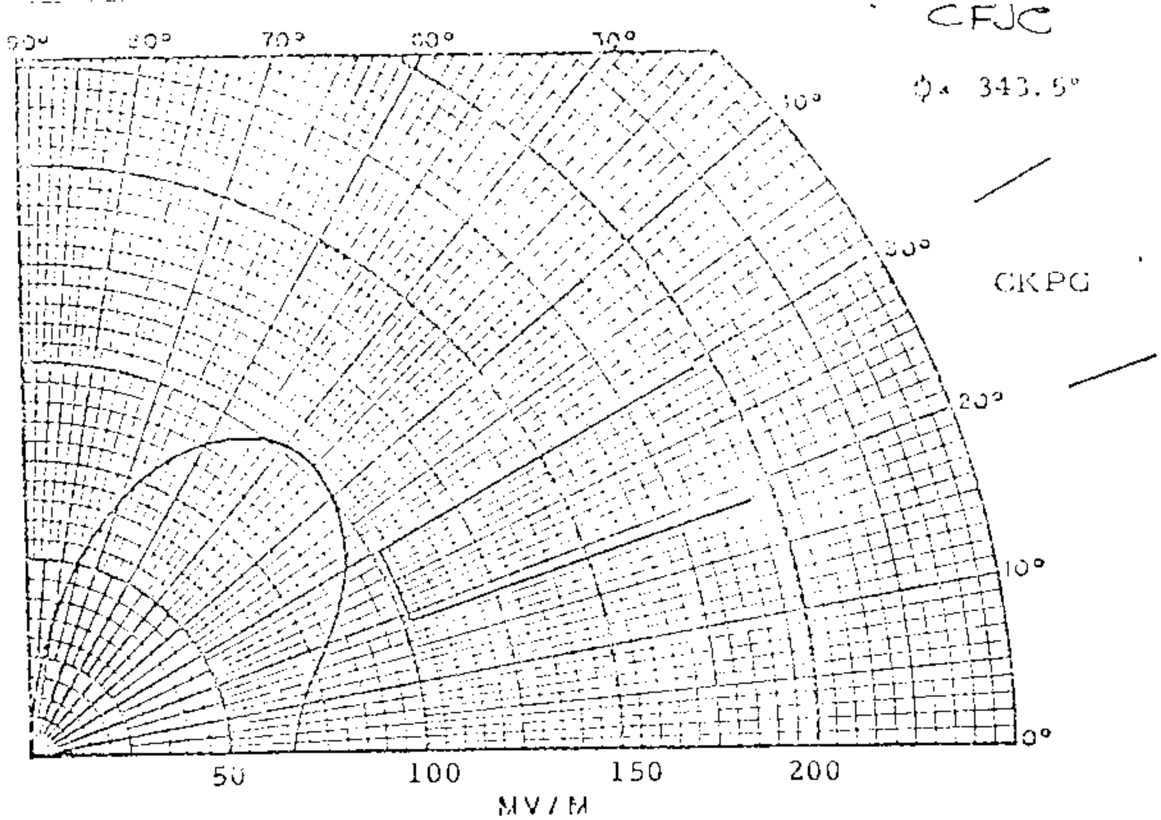


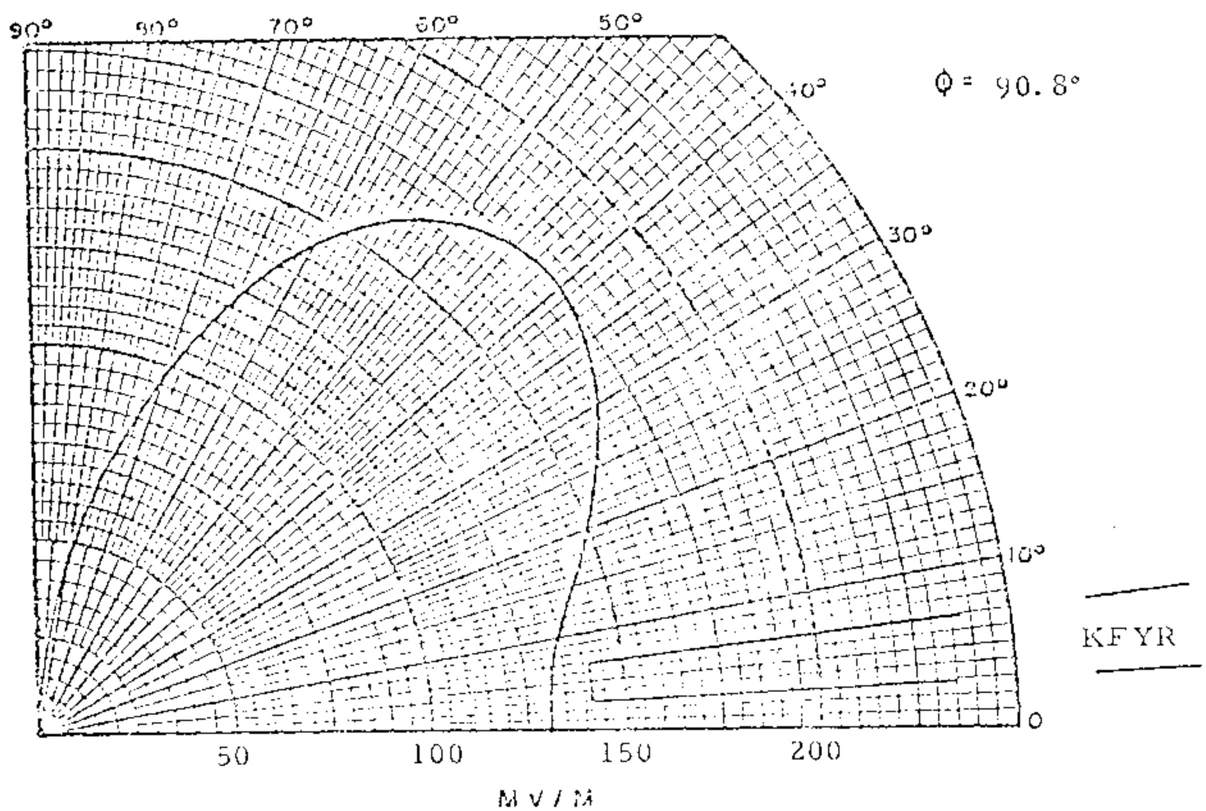


VERTICAL RADIATION PATTERNS

CFJC Kamloops, B.C.
550 kHz 10 D/5 N kW DA-2 Class III
Project: 1021-22 Revised May 1975

CFJC





VERTICAL RADIATION PATTERNS

CFJC Kamloops, B. C.
550 kHz 10 D/5 N kW DA-2 Class III
Project: 1021-22 Revised May 1975

DESCRIPTION SHEET

STATION:	CFJC	MAIN STUDIO:	Kamloops, B.C.
FREQUENCY:	550 kHz	POWER:	25 kW Day 5 kW Night
TIME:	Unlimited	CLASS:	III
NOTIFICATION LIST NO.:	383	DATE:	March 28, 1979
GEOGRAPHIC LOCATION:			50° 38' 34" N. Lat. 120° 27' 28" W. Long.
ANTENNA SYSTEM:			Mode of Operation: DA-2

Elements: Four (4) guyed towers Uniform cross section. Series fed top loaded to 70° using upper section of guys.

TOWERS:	1	2	3	4
Height Overall	298'	298'	298'	298'
Height Above Insulators	292'	292'	292'	292'
Spacing (Degrees)	REF.	90°	92.821°	120°
(Feet)	REF.	447.22'	461.24'	596.3'
Orientation (Degrees)	REF.	141°	223.033°	271°
Field Ratios: Day	1.14	1.50	2.48	1.50
Night	1	1	1	1
Field Phase: Day	0°	101°	234°	133°
Night	0°	109°	246°	137°

GROUND SYSTEM: The ground system consists of 120, copperwire radials per tower, buried approximately 8-10 inches below grade. The area covered is equivalent to a 0.4 length system.

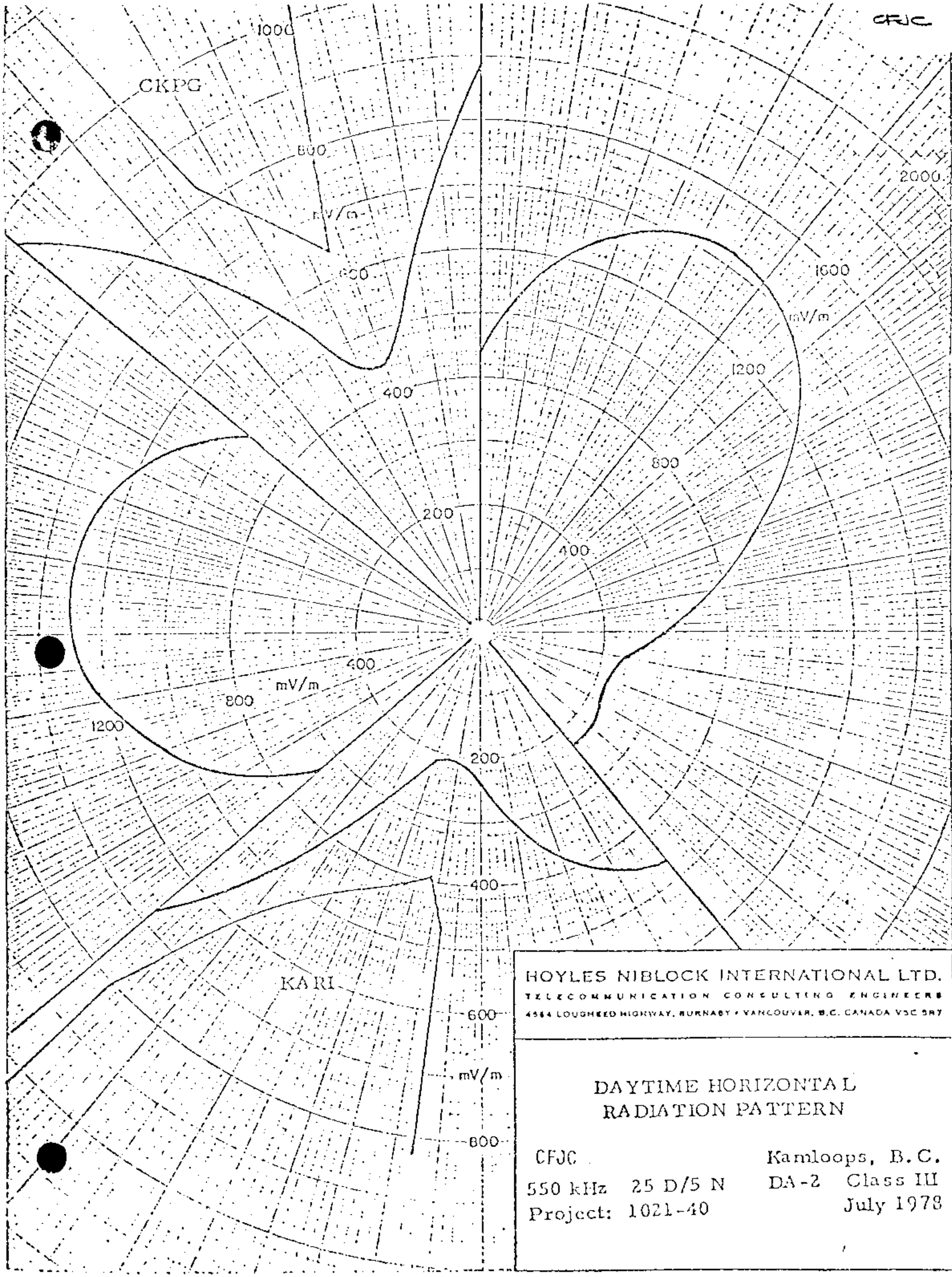
PREDICTED EFFECTIVE FIELD: Day Pattern 869 mV/m at 25 kW
Night Pattern 390 mV/m at 5 kW

July 1978

CFJC

This notification concerns a change in the day-time power and radiation pattern only for CFJC Kamloops, British Columbia. Please retain the night-time radiation patterns which were notified in Change List 358 dated August 20, 1976.

CFJC



HOYLES NIBLOCK INTERNATIONAL LTD.

TELECOMMUNICATION CONSULTING ENGINEERS

4564 LOUGHEED HIGHWAY, BURNABY • VANCOUVER, B.C. CANADA V5C 3R7

DAYTIME HORIZONTAL
RADIATION PATTERN

CFJC

550 kHz 25 D/5 N

Project: 1021-40

Kamloops, B.C.

DA-2 Class III

July 1978

CFNB

DESCRIPTION SHEET (1-8-59g)

Station CFNB 50kw, DA-2, U
Fredericton, New Brunswick, Canada 550 KC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: CFNB

Main Studio: Fredericton, N.B.

Frequency: 55' Kc/s

Power: 50,000 W Class: III

Notification List No.: 126

Date: October 30, 1958

GEOGRAPHICAL LOCATION OF THE ANTENNA SYSTEM: North Latitude: 45° 48' 08" N

West Longitude: 66° 54' 46" W

ANTENNA CHARACTERISTICS

Mode of Operation: DA-2
Number of Elements: Two
Type of elements: Guyed, uniform cross section, base insulated, series feed, no top loading.

TOWER:		#1 W	#2 E
HEIGHT ABOVE INSULATORS:		298'	298' (60°)
OVERALL HEIGHT:		303'	303'
SPACING:		197' (100°)	
PHASING:	Day:	0°	248.2°
	Night:	0°	269.5°
FIELD RATIO:	Day:	1.0	0.67
	Night:	1.0	1.0

ORIENTATION: Radiators on a line bearing 86.5° East of North.

GROUND SYSTEM: 120 radials per tower of maximum length 715' with 120 radials of maximum length 450' interspaced between them. Radials are #10 AWG bare soft copper wire buried approximately 8". Radials running between towers are bonded to a #4 AWG stranded copper wire.

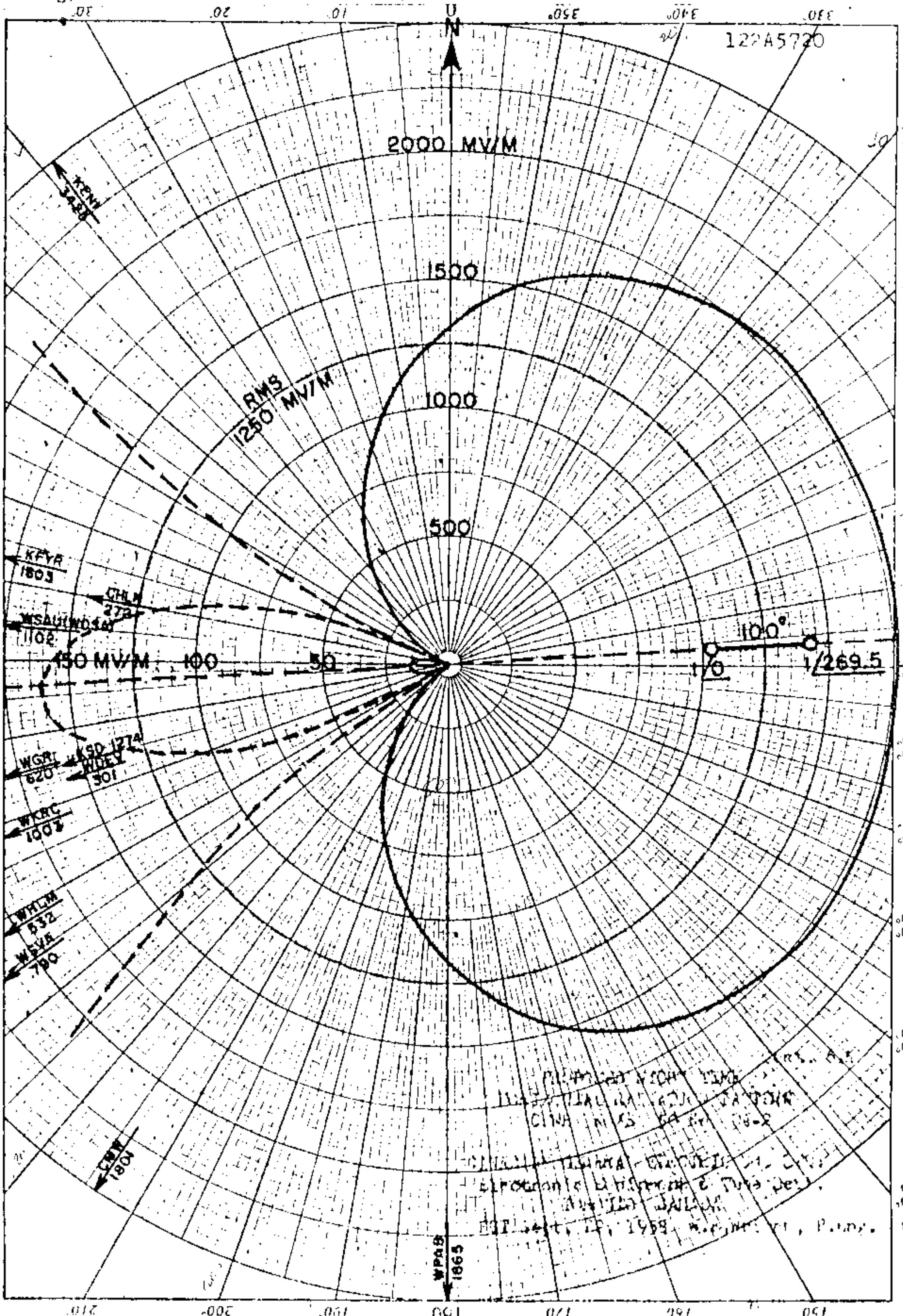
Predicted effective field Day RMS 1250 mv/m (177 mv/m for 1Kw)
Night: RMS 1250 mv/m (177 mv/m for 1 KW)

CFNB

PROPOSED NIGHT (1-8-59g)

Station CFNB
Fredericton, New Brunswick, Canada

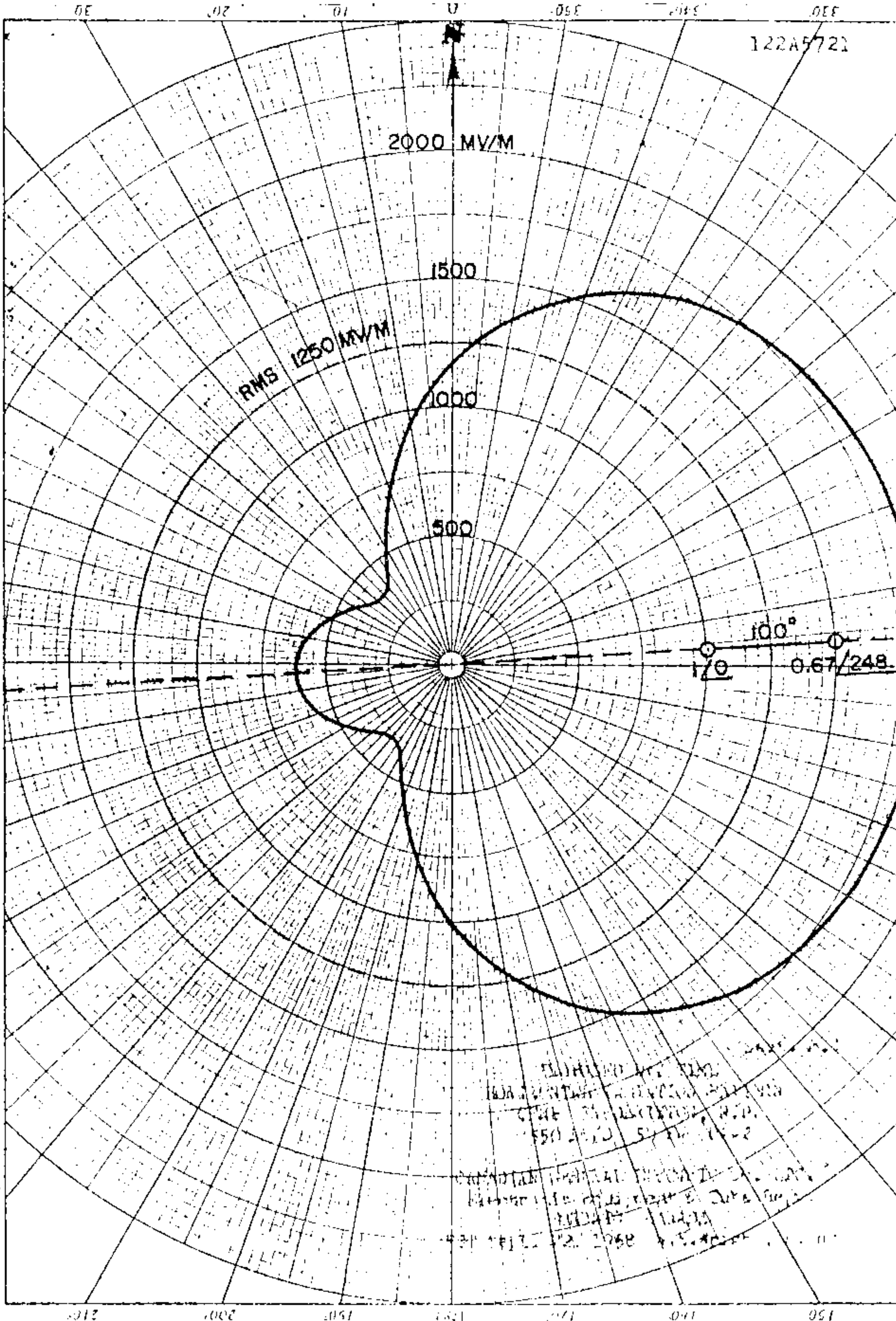
50kw, DA-2, U
550 KC



CFNB

PROPOSED DAY
(1-8-59g)

Station CFNB — 50kw, DA-2, U
Fredericton, New Brunswick, Canada — 550 KC



CHLN

Directional Antenna Description Sheet

Station : CHLN Main Studio : Three Rivers, Que.

Frequency : 550 kc Power : 10 kw D/5 kw N Class : III

Notification List No. : 142 Date : December 30, 1959

Geographical Location of Antenna System : North Latitude : 46° 14' 21"
West Longitude : 72° 35' 26"

Antenna Characteristics

Mode of Operation : DA-2
Number of Elements : 3
Type of Elements : guyed, uniform cross-section, no top loading

	North Tower	Centre Tower	South Tower
Height above Insulator	300' (60°)	300'	300'
Spacing	496' (100°)	496'	
Night Phasing	-110° lag	0°	+110° lead
Night Field Ratio	1.0	1.57	1.0
Day Phasing	85° lag	0°	85° lead
Day Field Ratio	1.0	2.0	1.0

Orientation Elements on a line bearing 166°

Ground System 120 radials 625' long about each tower

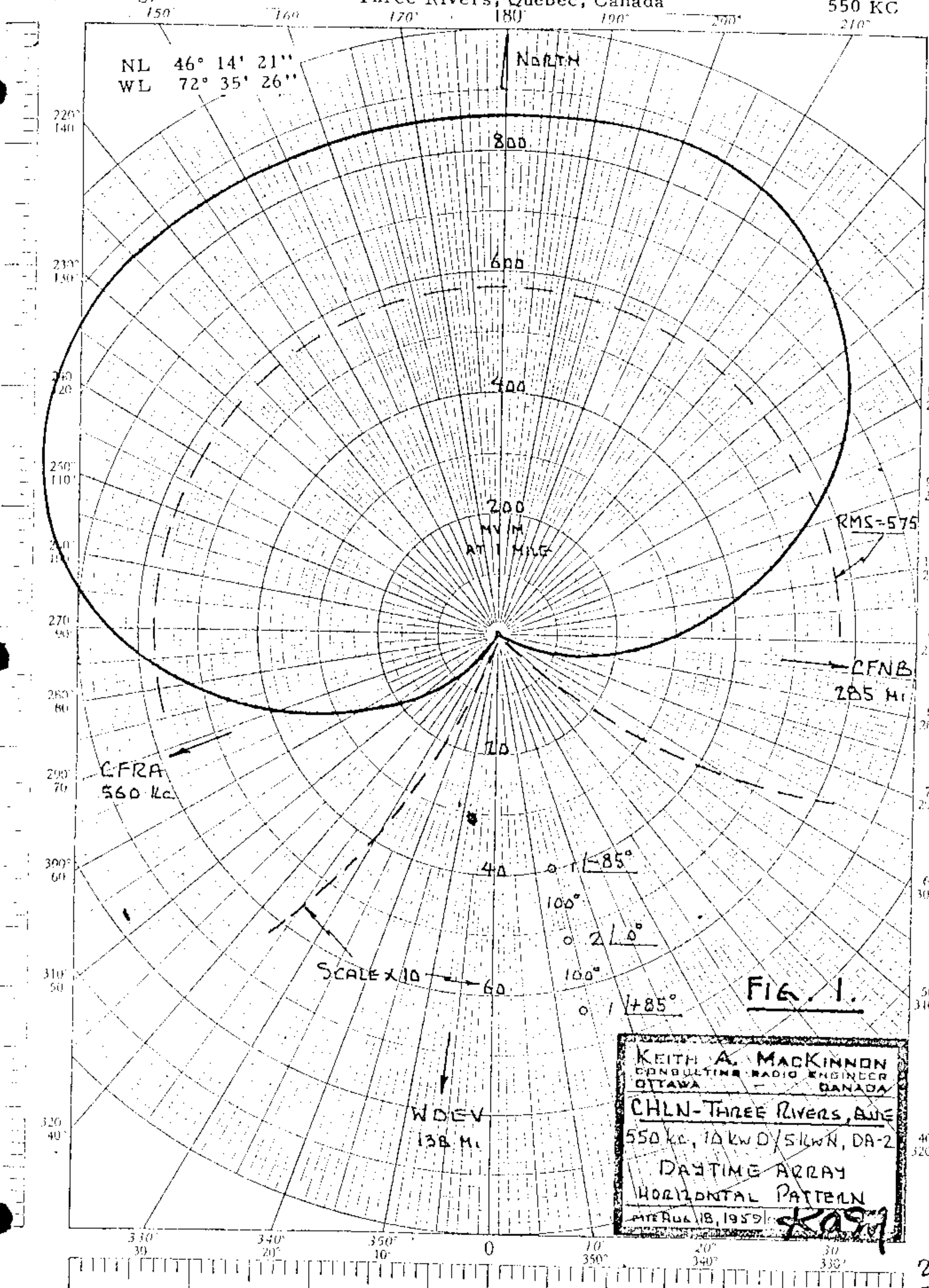
Predicted Effective Field Night : 417 mv/m at 1 mile (136.5 per kw)
Day : 575 mv/m at 1 mile (182 per kw)

CHLN

PROPOSED DAY
(1-29-60g)

Station CHLN
Three Rivers, Quebec, Canada

5kw,10kw-LS,DA-2,U,Class III
550 KC



2

CHLN

PROPOSED NIGHT (10/19/54G)

STATION CHLN THREE RIVERS, QUEBEC

5 KW DA-2, CLASS III

550 KC

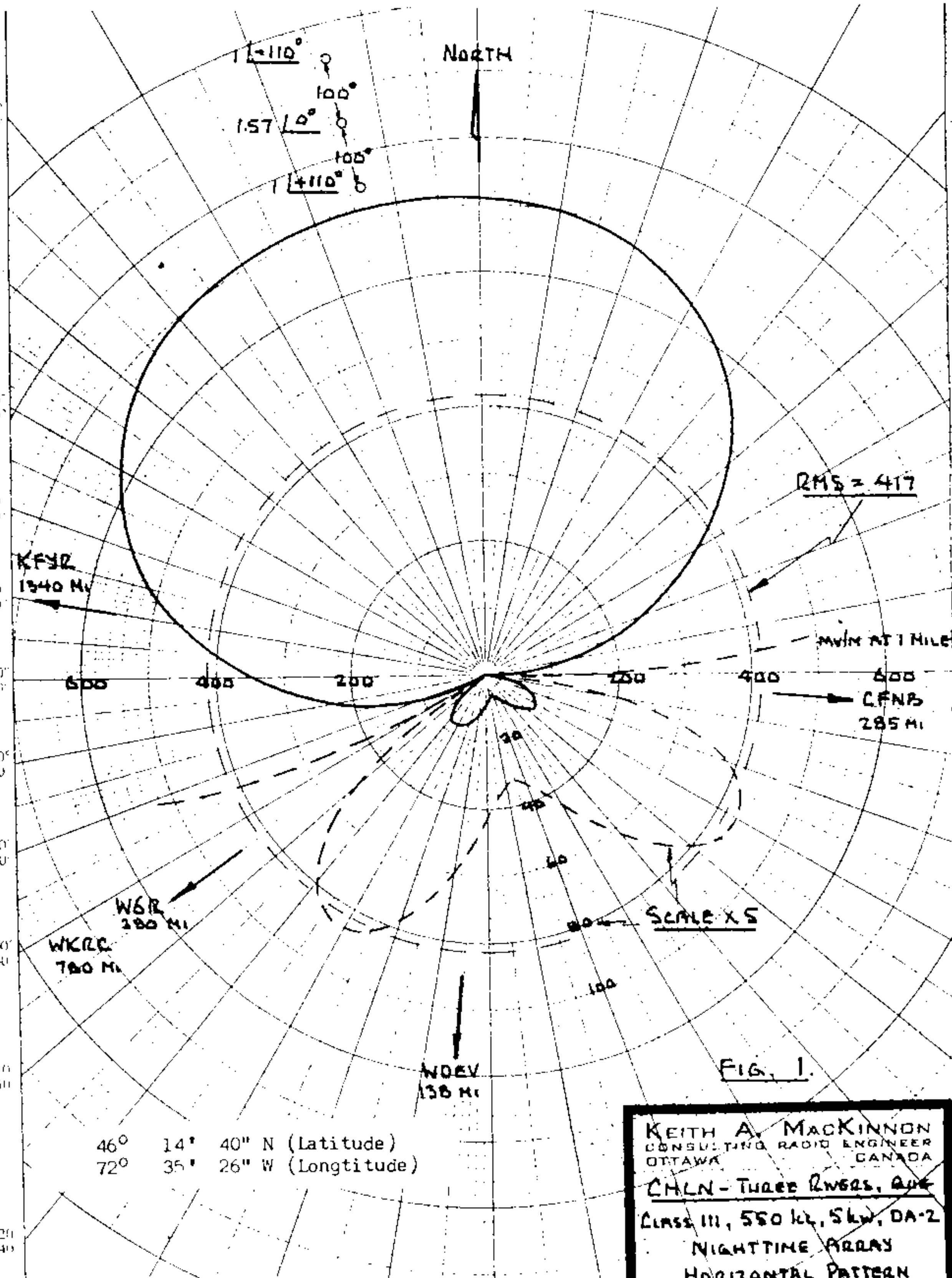


FIG. 1.

46° 14' 40" N (Latitude)
72° 35' 26" W (Longtitude)

KEITH A. MACKINNON
CONSULTING RADIO ENGINEER
OTTAWA CANADA
CHLN - THREE RIVERS, QUE
CLASS III, 550 KC, 5 KW, DA-2
NIGHTTIME ARRAY
HORIZONTAL PATTERN
DATE MAR. 10, 1954

CHNO
550kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION: CHNO
POWER : 50 KW D / 10 KW N
NOTIFICATION LIST NO.: 396

MAIN STUDIO: Sudbury, Ontario
FREQUENCY : 550 KHz, Class III
DATE : MAY 29, 1980

GEOGRAPHICAL LOCATIONS: 46^{o} 26' 10" N. Longitude
80^{o} 58' 30" W. Latitude

ANTENNA CHARACTERISTICS

MODE OF OPERATION: DA-2, Unlimited

ANTENNA CHARACTERISTICS: Uniform cross-section, guyed steel towers, base insulated for series feed, no top-loading.

HEIGHT ABOVE INSULATORS: All towers 325' (65.4^{o})

OVERALL HEIGHT: All towers 327'

FIELD RATIO, PHASING, SPACING AND ORIENTATION:

			NIGHT		DAY	
TOWER	SPACING	ORIENTATION	FIELD	PHASE	FIELD	PHASE
1	ref.	ref.	1.0	ref.	1.00	ref.
2	85.50	0.00^{o}	1.5	-149.36	.4	-4^{o}
3	128.20	328.00^{o}	1.0	- 97.14	.65	-168^{o}
4	160.10	0.00^{o}	1.0	51.40	1.0	-35^{o}
5	205.63	342.02^{o}	1.5	115.11	-	-
6	277.27	345.82^{o}	1.0	- 45.74	-	-

GROUND SYSTEM: 120 radials of No. 10 AWG copper wire per tower. Radials from each tower bonded to a No. 4 AWG bus along common chords and extending to property limits. Maximum radial length 1150'; minimum radial length 298'. Effective radial length 715' (.4 wavelength)

PREDICTED EFFECTIVE FIELD: 575 mV/m Night
1230 mV/m Day.

Nighttime operation remains as per Notification List Number 360.

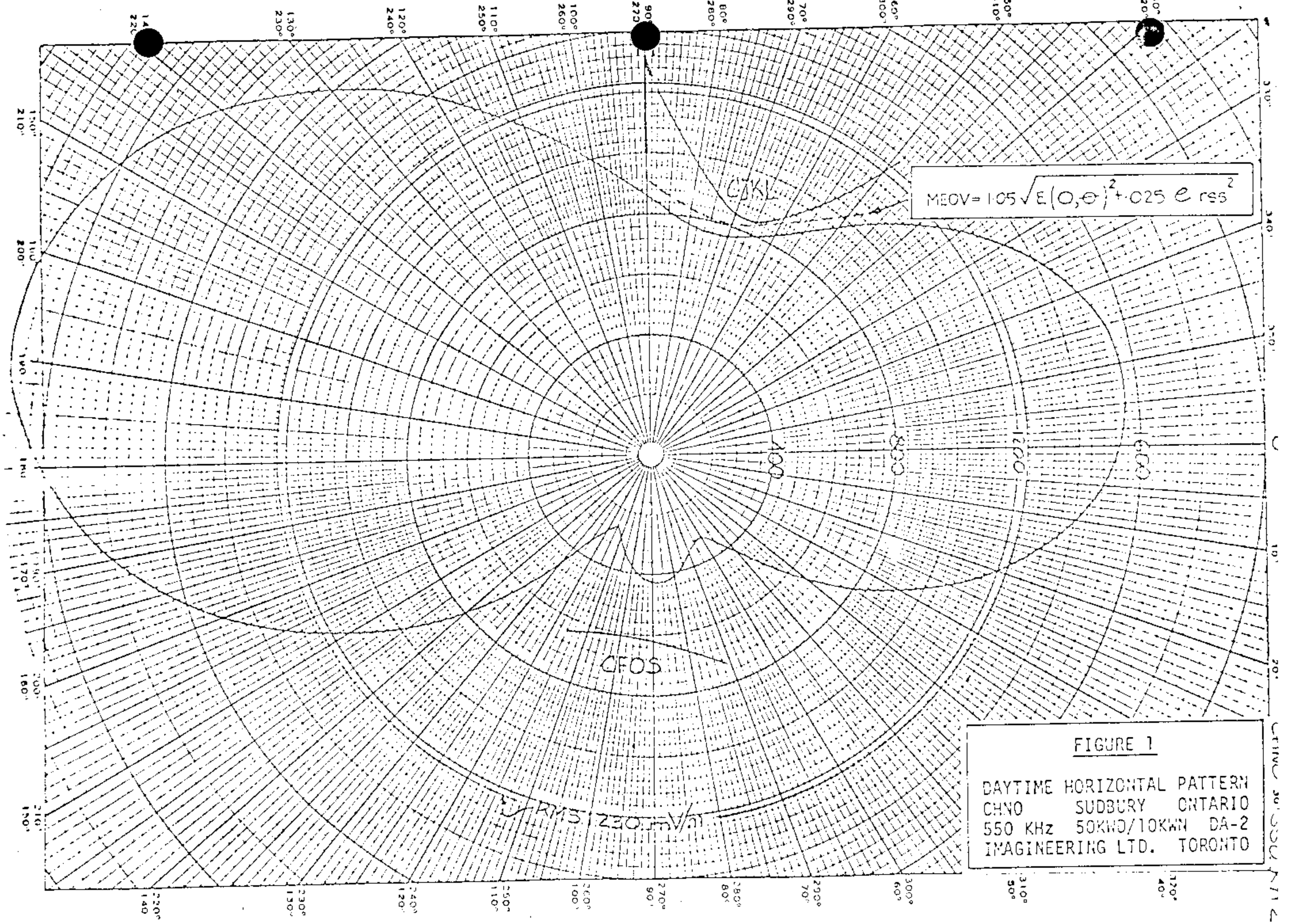


FIGURE 1

DAYTIME HORIZONTAL PATTERN
CHNO SUDBURY ONTARIO
550 KHz 50KWD/10KWN DA-2
IMAGINEERING LTD. TORONTO

SUPPLEMENTAL DIRECTIONAL

ANTENNA DESCRIPTION SHEET

Station: CBGA-1

Location: New Carlisle, Quebec

Frequency: 540 kHz

Power: 10 kW, Class II

Notification List No.: 396

Date: May 29, 1980

Mode of opertation: DA-2

Geographical Location of the Centre of the Antenna System:

North Latitude: 47° 48' 50"

West Longitude: 65° 08' 50"

NOTE: Please retain the description sheet and directional antenna radiation patterns notified for station CBGA-1 in Canadian Change List Number 385 dated May 30, 1979 and attach to this supplemental description sheet. This notification is for the purpose of indicating only a correction in the geographical coordinates.

STATION: CHNO | MAIN STUDIO: Sudbury, Ontario
CHNO

POWER: 10 KW D/10KW N | FREQUENCY: 550 KHz, Class III

NOTIFICATION LIST NO.: 388 | DATE: August 1, 1979

GEOGRAPHICAL LOCATIONS: North Latitude 46° 26' 10"
West Longitude 80° 58' 30"

ANTENNA CHARACTERISTICS

MODE OF OPERATION: DA-2, Unlimited

ANTENNA CHARACTERISTICS: Uniform cross-section, guyed steel towers, base insulated for series feed, no top-loading.

HEIGHT ABOVE INSULATORS: All Towers 325' (65.4°)

OVERALL HEIGHT: All Towers 327'

FIELD RATIO, PHASING, SPACING AND ORIENTATION:

			NIGHT		DAY	
TOWER	SPACING	ORIENTATION	FIELD	PHASE	FIELD	PHASE
1	ref.	ref.	1.0	ref.	1.00	ref.
2	85.50	0.00°	1.5	-149.36		
3	128.20	328.00°	1.0	- 97.14	-	-
4	160.10	0.00°	1.0	51.40	.75	-52°
5	205.63	342.02°	1.5	115.11	-	-
6	277.27	345.82°	1.0	- 45.74	-	-

GROUND SYSTEM: 120 radials of No. 10 AWG copper wire per tower. Radials from each tower bonded to a No. 4 AWG bus along common chords and extending to property limits. Maximum radial length 1150'; minimum radial length 298'. Effective radial length 715' (.4 wavelength)

PREDICTED EFFECTIVE FIELD: 575 Mv/M Night.
554 Mv/M Day.

Nighttime Oper- on remains as per Notification List number 360.

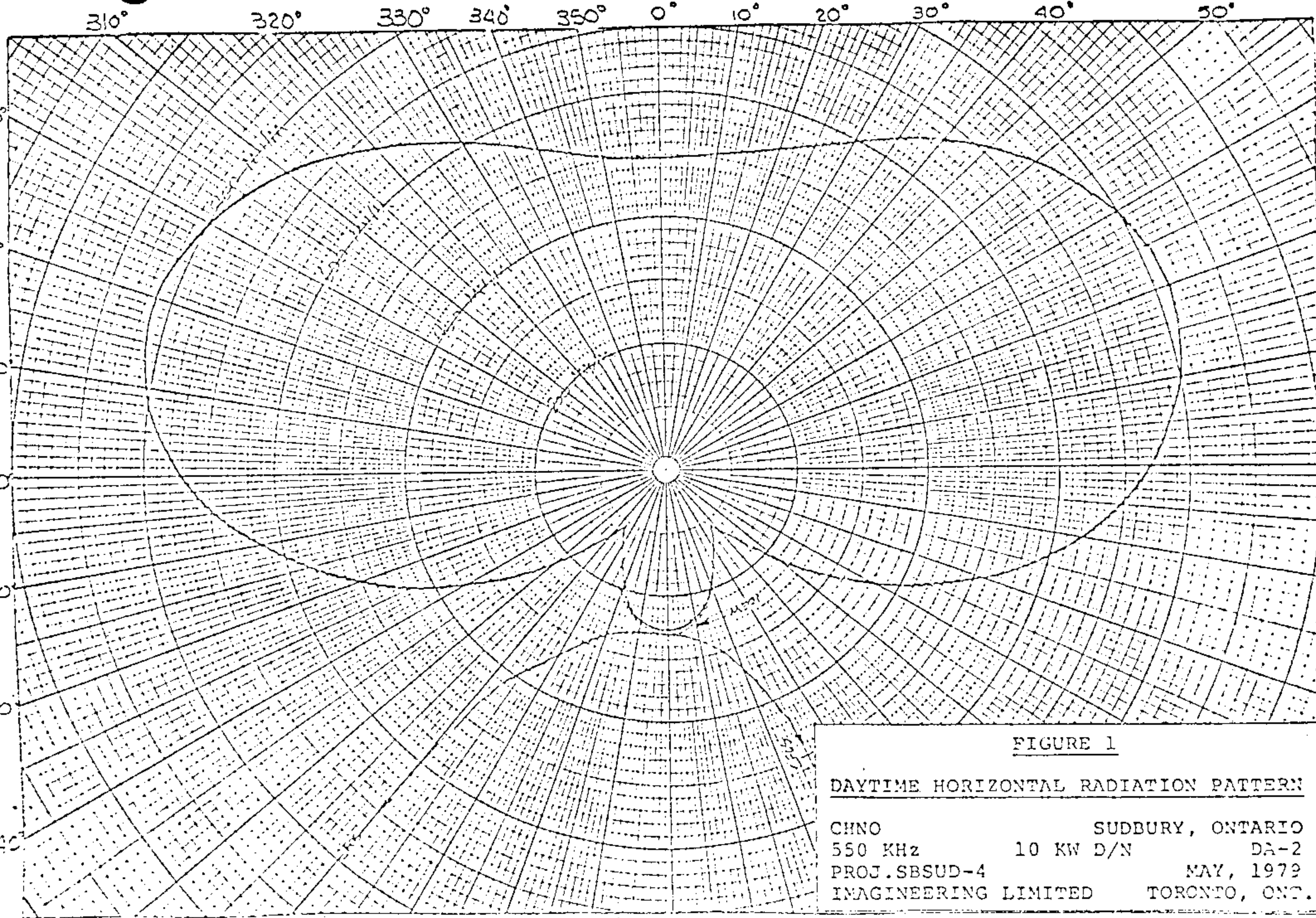


FIGURE 1

DAYTIME HORIZONTAL RADIATION PATTERN

CHNO SUDBURY, ONTARIO
550 KHz 10 KW D/N DA-2
PROJ.SBSUD-4 MAY, 1979
IMAGINEERING LIMITED TORONTO, ONT.

CHNO

DIRECTIONAL ANTENNA DESCRIPTION SHEET

STATION: CHNO

MAIN STUDIO: Sudbury, Ontario

POWER: 10 KW D/N

FREQUENCY: 550, Class II

NOTIFICATION LIST NO.: 360

DATE: November 23, 1976

GEOGRAPHICAL LOCATIONS: North Latitude 46° 26' 10"
West Longitude 80° 58' 30"

ANTENNA CHARACTERISTICS

MODE OF OPERATION: DA-2, Unlimited.

ANTENNA CHARACTERISTICS: Uniform cross-section, guyed steel towers, base insulated for series feed, no top-loading.

HEIGHT ABOVE INSULATORS: All towers 325' 65.4°.

OVERALL HEIGHT: 327 Feet.

FIELD RATIO, PHASING, SPACING AND ORIENTATION:

			NIGHT		DAY	
TOWER	SPACING	ORIENTATION	FIELD	PHASE	FIELD	PHASE
1	ref.	ref.	1.0	ref.	1.00	ref.
2	85.50	0.00°	1.5	-149.36	-	-
3	128.20	328.00°	1.0	- 97.14	-	-
4	160.10	0.00°	1.0	51.40	0.75	-10.0
5	205.63	342.02°	1.5	115.11	-	-
6	277.27	345.82°	1.0	- 45.74	-	-

GROUND SYSTEM: 120 radials of No. 10 AWG copper wire per tower. Radials from each tower bonded to a No. 4 AWG bus along common chords and extending to property limits. Maximum radial length 1150'; minimum radial length 298'. Effective radial length 715' (.4 wavelength).

PREDICTED EFFECTIVE FIELD: 575 Mv/M Night.
554 Mv/M Day.

CTR NC 10097A3

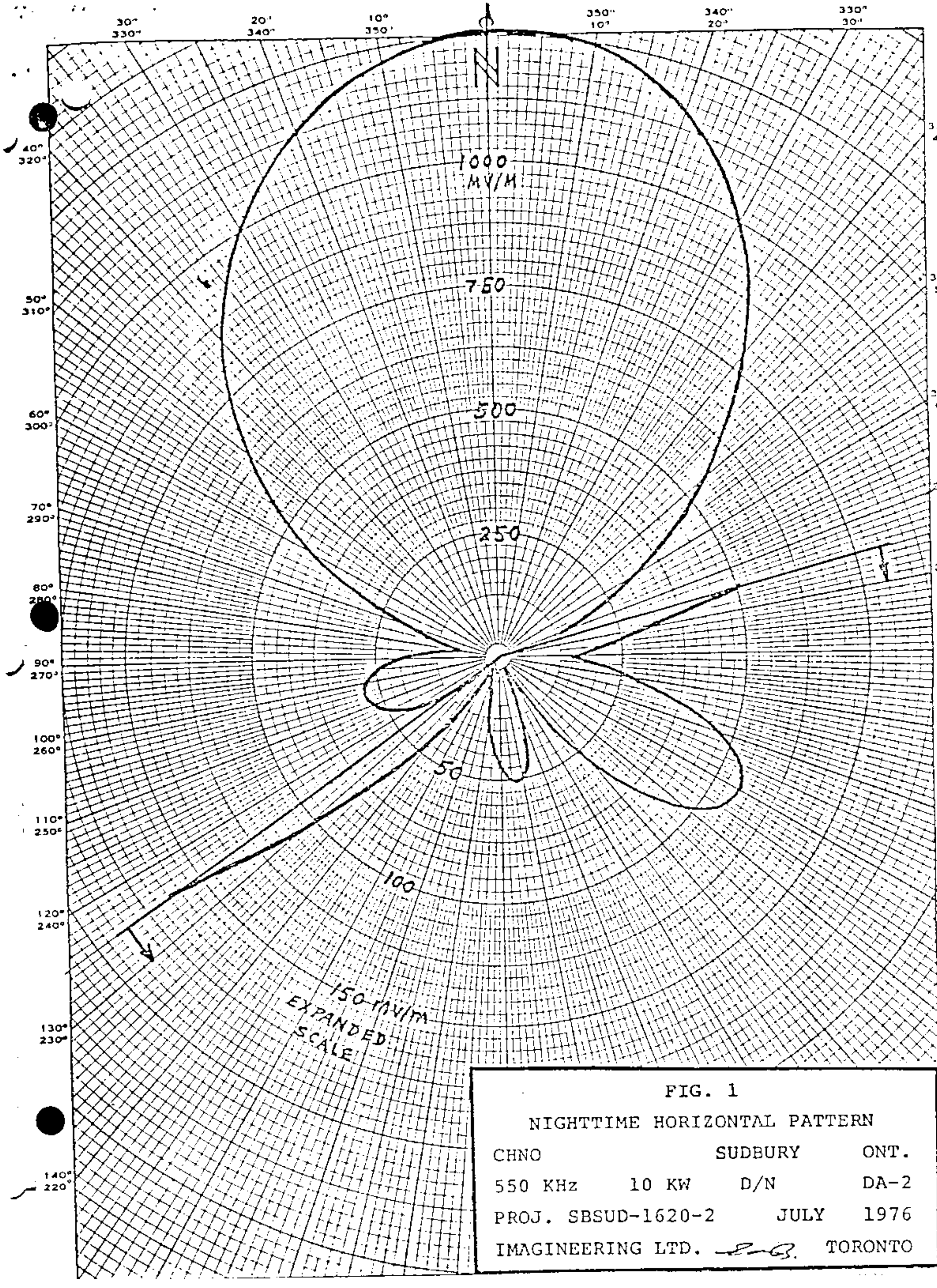


FIG. 1

NIGHTTIME HORIZONTAL PATTERN

CHNO SUDBURY ONT.

550 KHz 10 KW D/N DA-2

PROJ. SBSUD-1620-2 JULY 1976

IMAGINEERING LTD. TORONTO

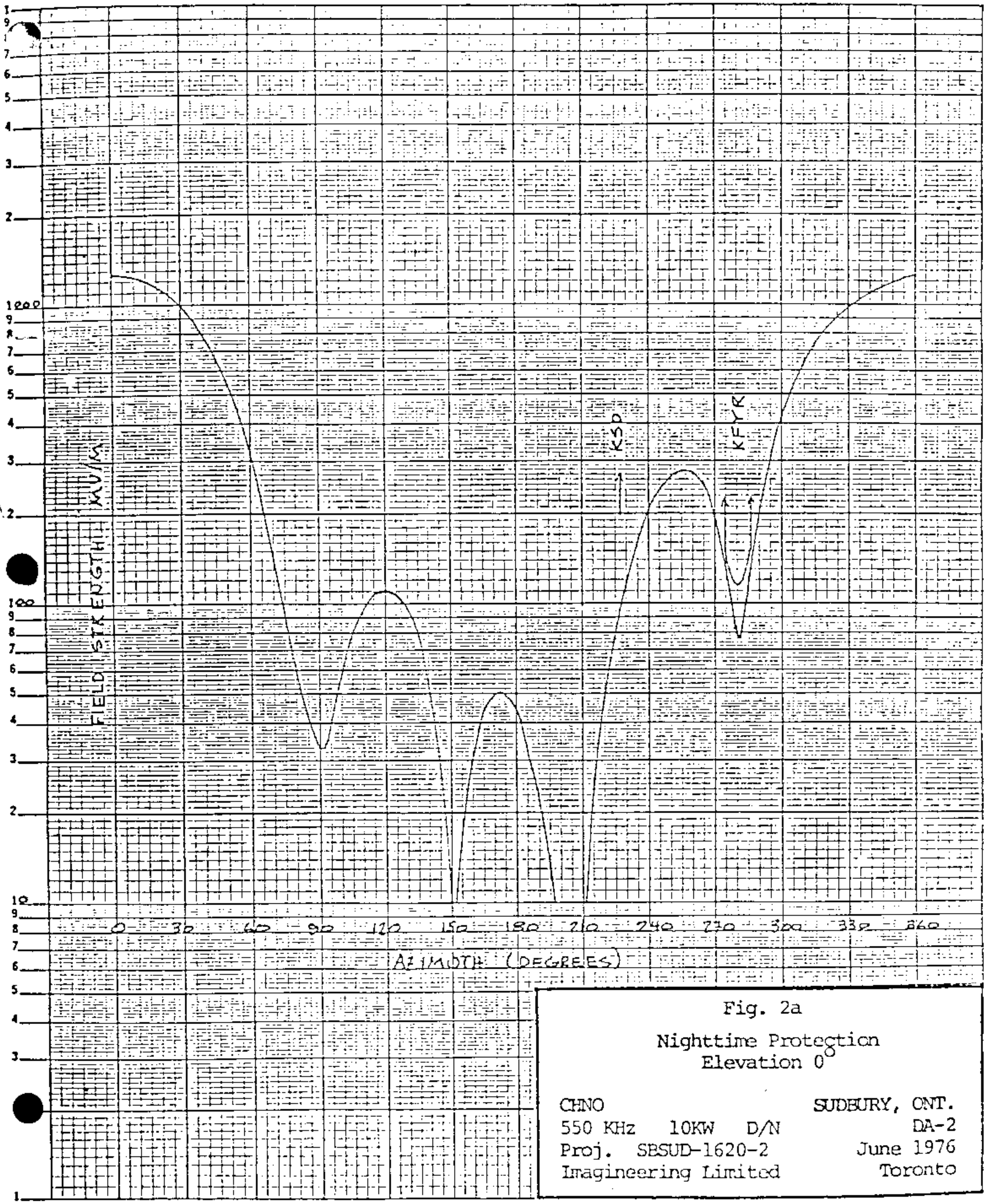


Fig. 2a

Nighttime Protection
Elevation 0°

CHNO SUDBURY, ONT.
550 KHz 10KW D/N DA-2
Proj. SBSUD-1620-2 June 1976
Imagineering Limited Toronto

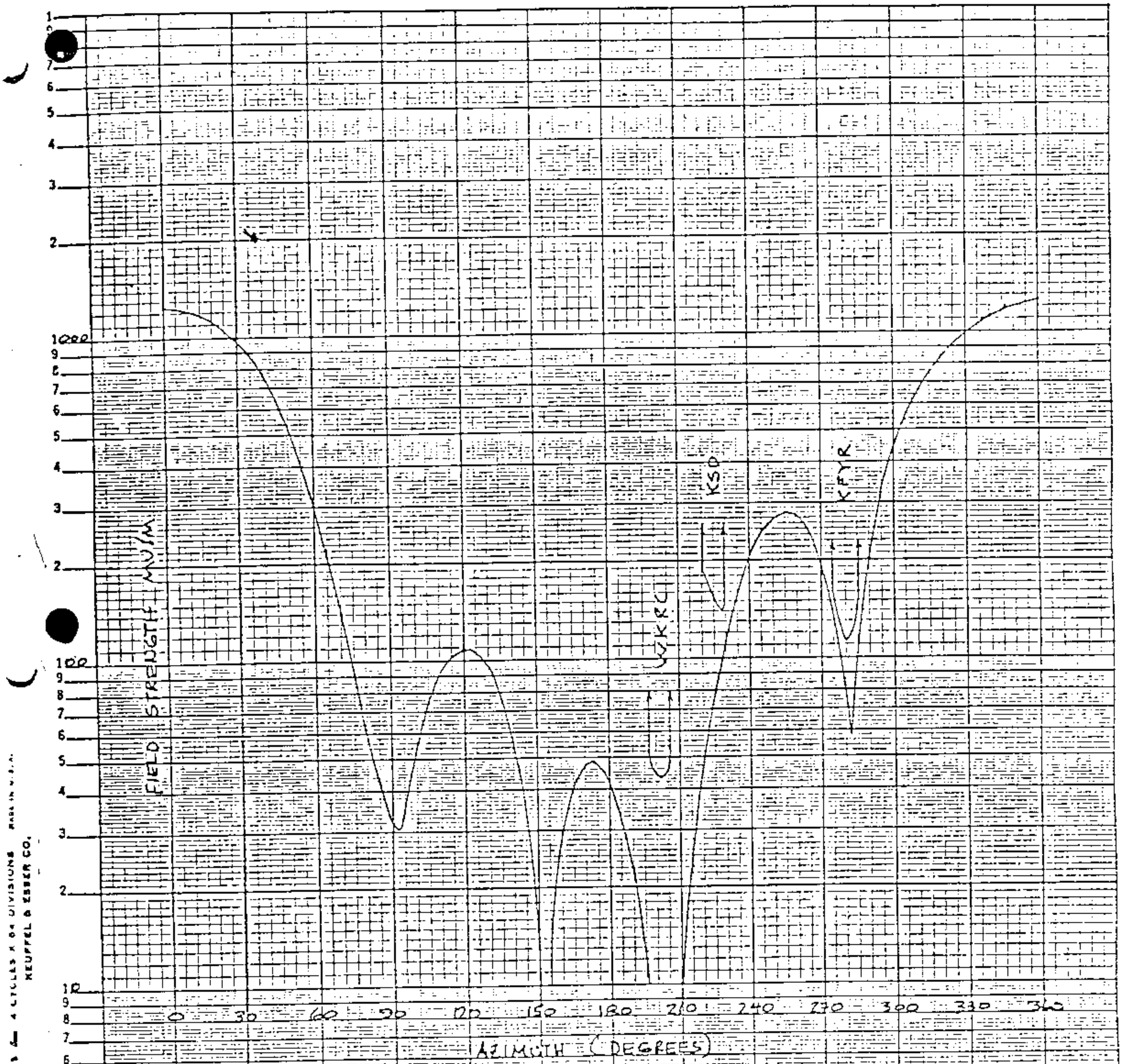


Fig. 2b

Nighttime Protection
Elevation 5°

CHNO SUDBURY, ONT.
550 KHz 10KW D/N DA-2
Proj. SBSUD-1620-2 June 1976
Imagineering Limited Toronto

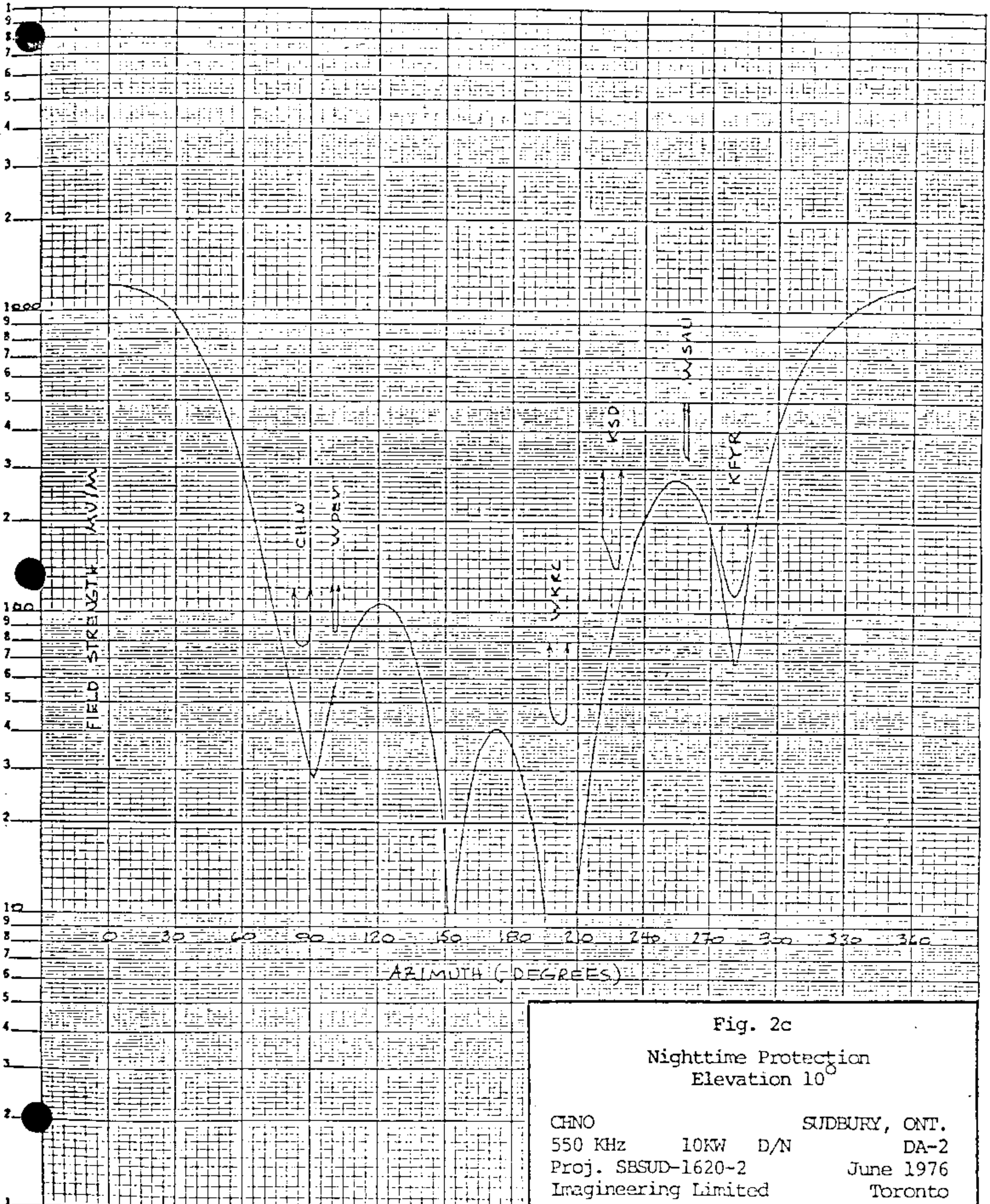


Fig. 2c

Nighttime Protection
Elevation 10°

CHNO SUDBURY, ONT.
550 KHz 10KW D/N DA-2
Proj. SBSUD-1620-2 June 1976
Imagineering Limited Toronto

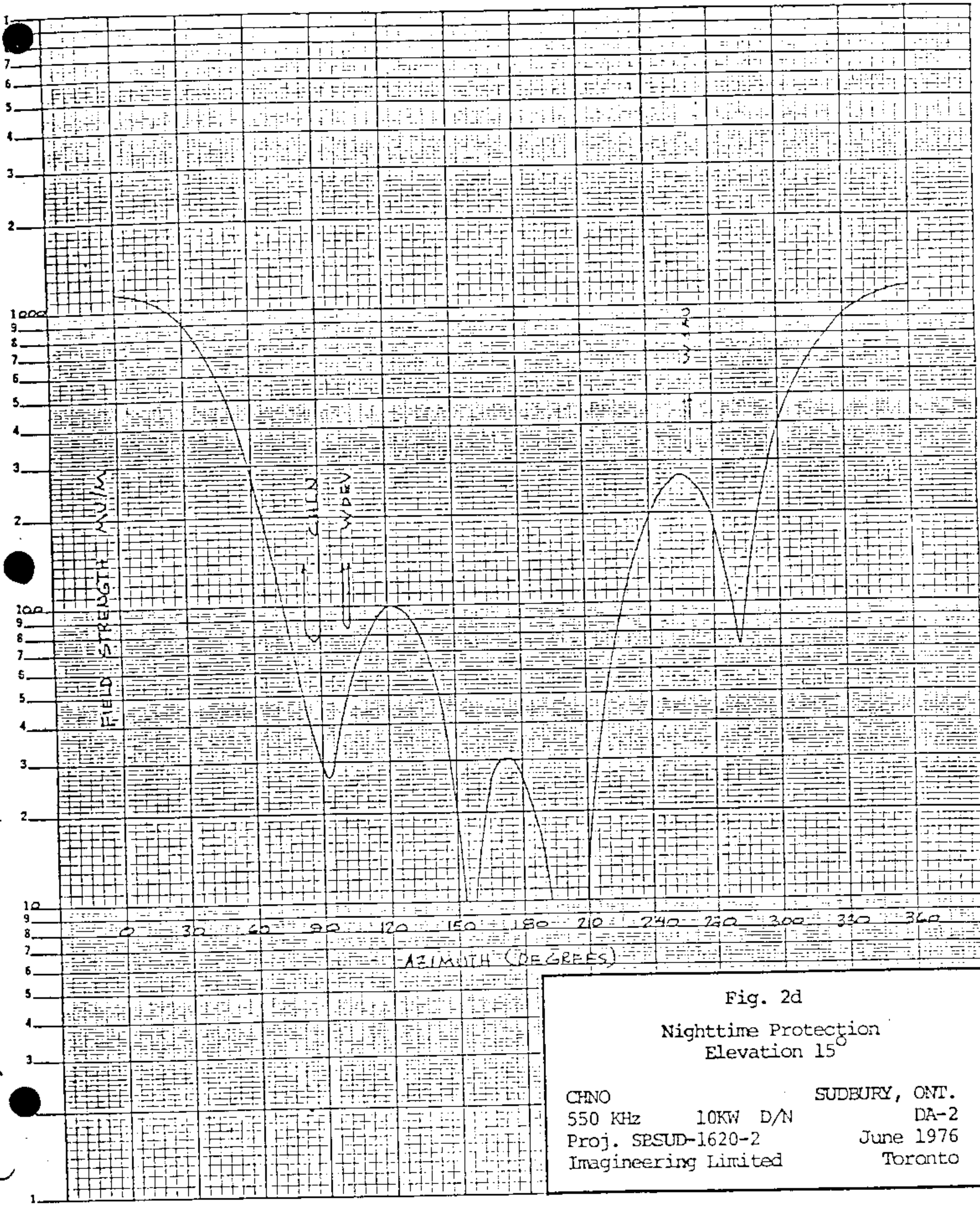


Fig. 2d

Nighttime Protection
Elevation 15°

CHNO	SUDBURY, ONT.
550 KHz 10KW D/N	DA-2
Proj. SPSUD-1620-2	June 1976
Imagineering Limited	Toronto

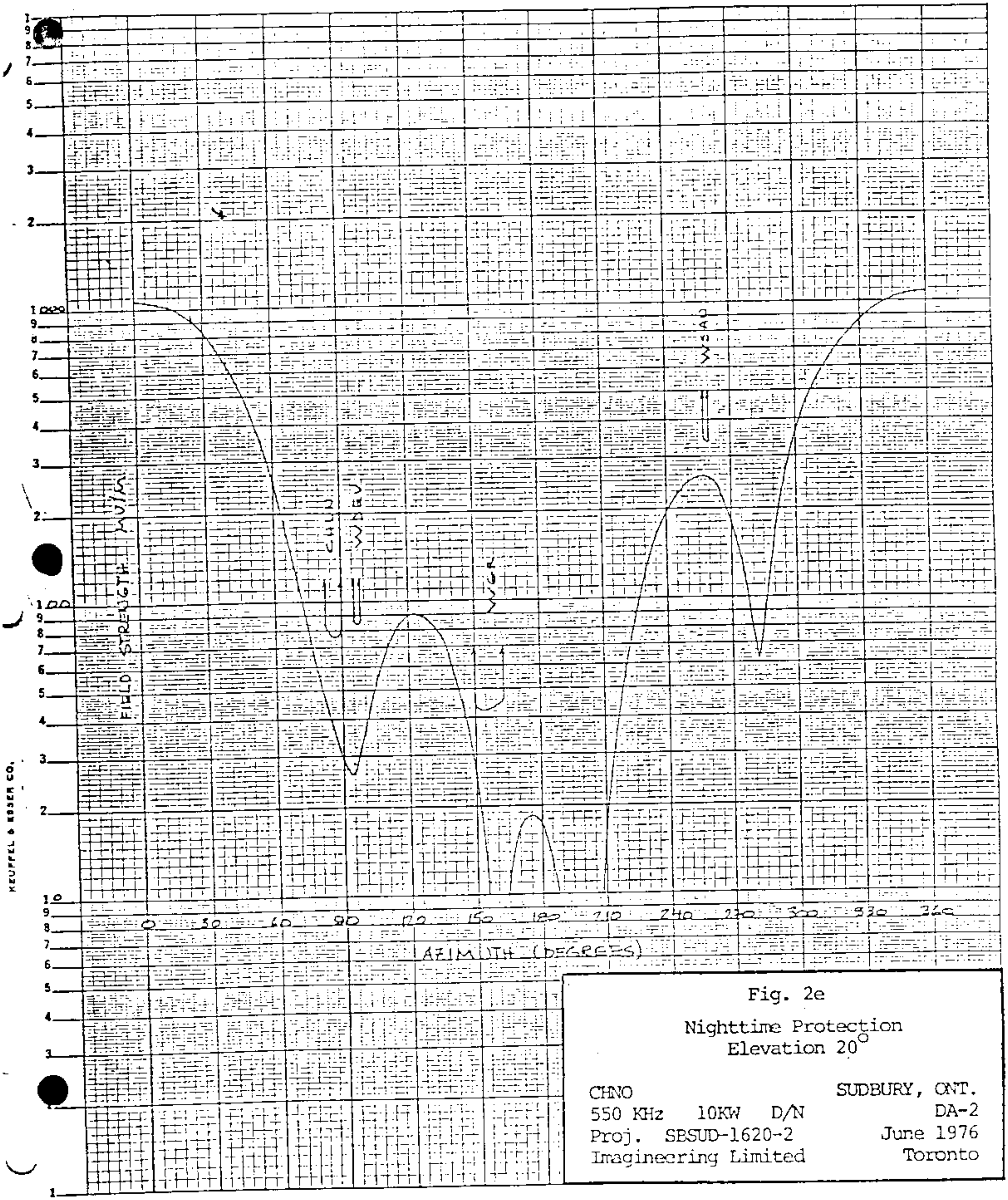


Fig. 2e

Nighttime Protection
Elevation 20°

CHNO
550 KHz 10KW D/N
Proj. SBSUD-1620-2
Imagineering Limited

SUDBURY, ONT.
DA-2
June 1976
Toronto

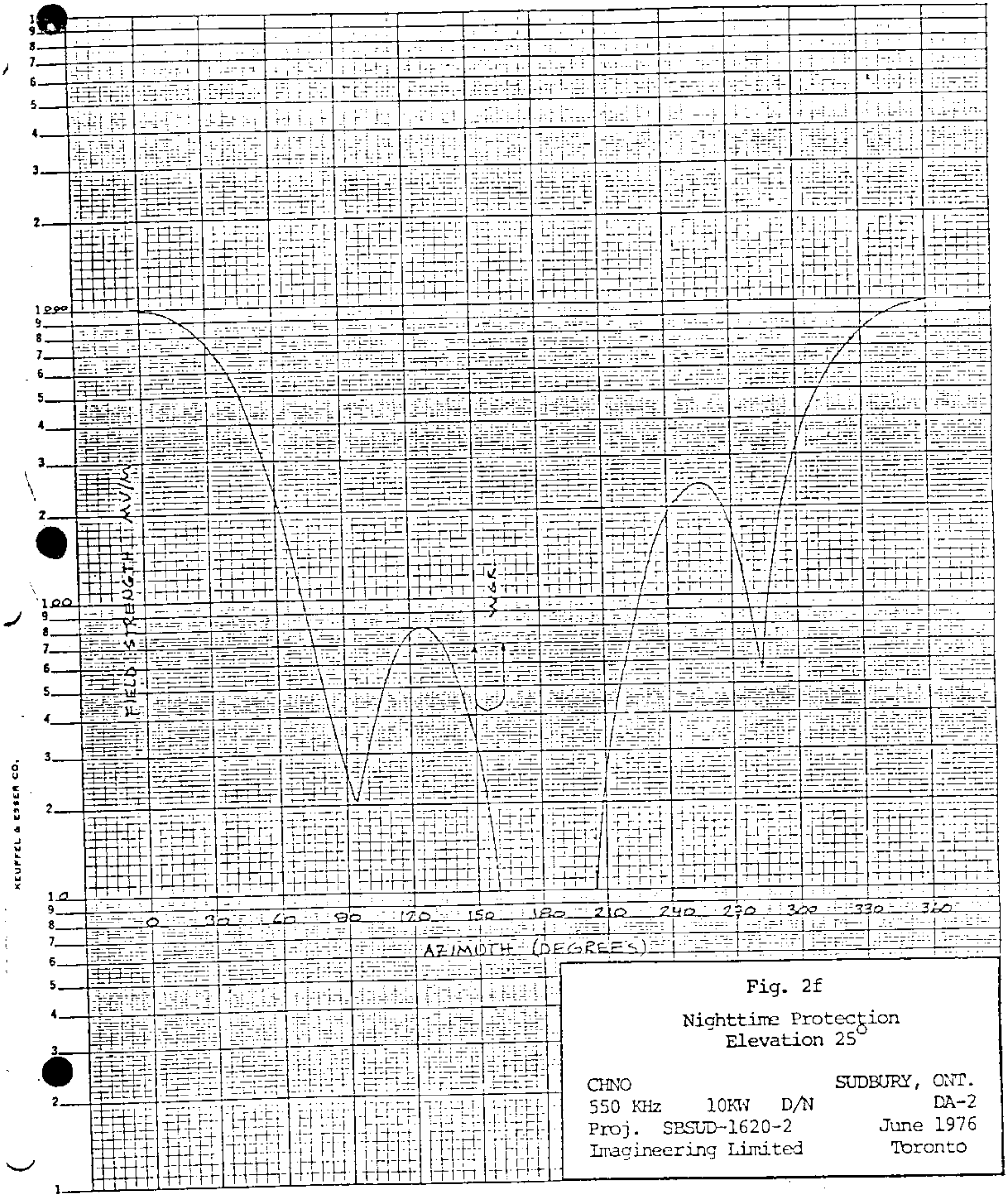


Fig. 2f

Nighttime Protection
Elevation 25°

CHNO SUDBURY, ONT.
550 KHz 10KW D/N DA-2
Proj. SBSUD-1620-2 June 1976
Imagineering Limited Toronto

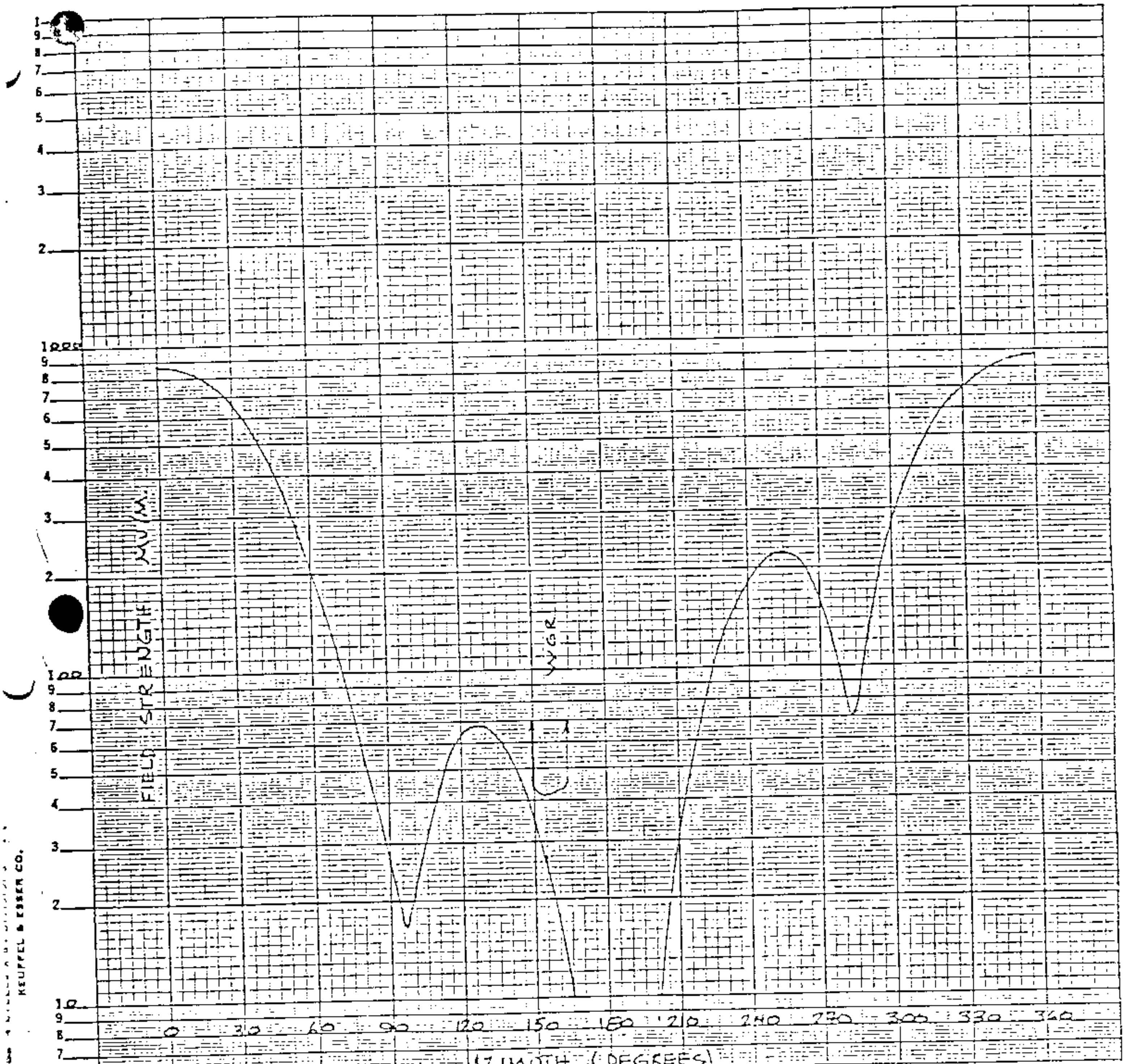


Fig. 2g

Nighttime Protection
Elevation 30°

CHNO
550 KHz 10KW D/N
Proj. SBSUD-1620-2
Imagineering Limited

SUDBURY, ONT.
DA-2
June 1976
Toronto

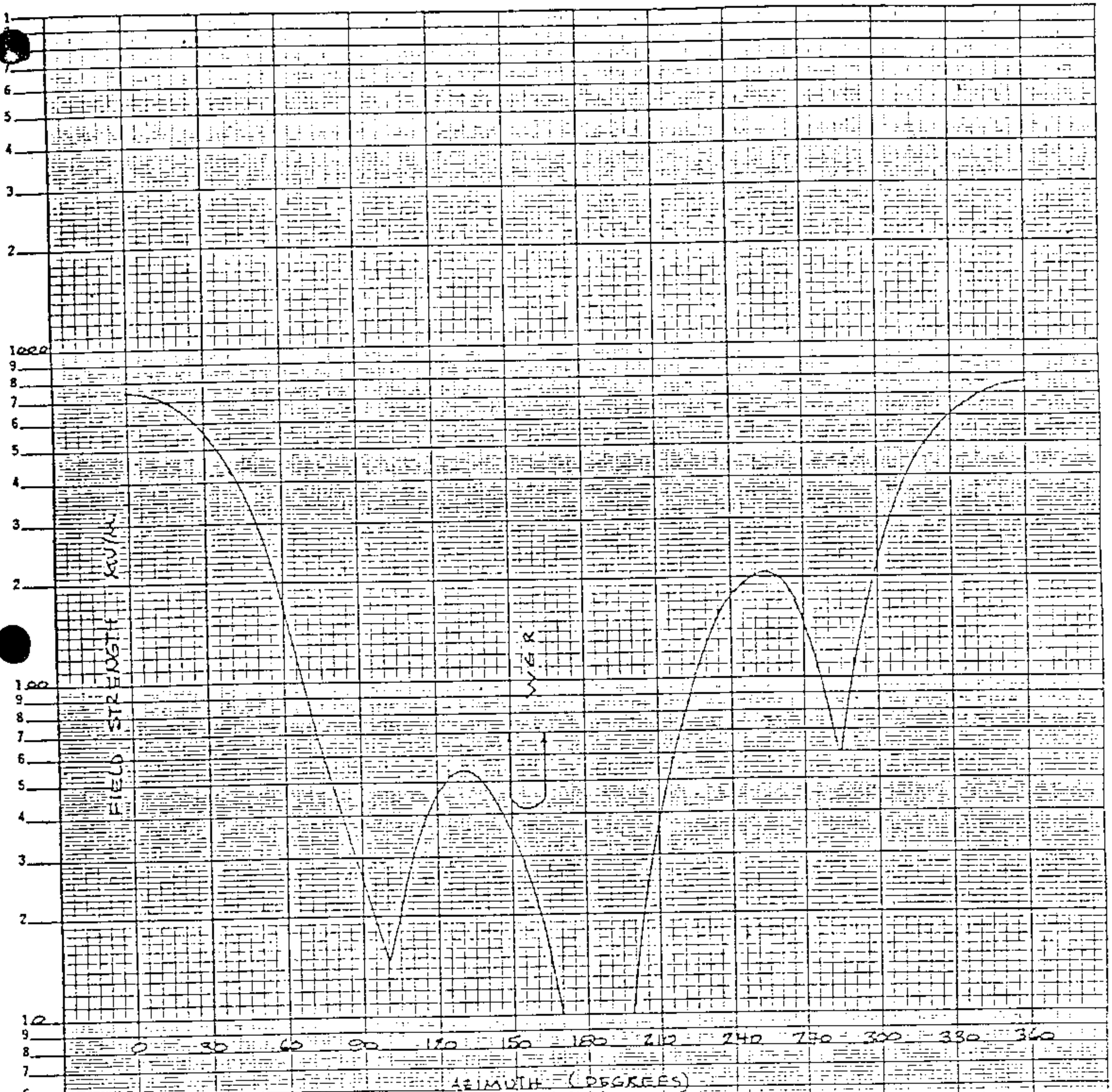


Fig. 2h

Nighttime Protection
Elevation 35°

CHNO SUDBURY, ONT.
550 KHz 10KW D/N DA-2
Proj. SBSUD-1620-2 June 1976
Imagineering Limited Toronto

CJOK
550

IFRB Serial No. 7027

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT

CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART I GENERAL INFORMATION

(01) Administration: CANADA | Sheet No. 414 | Date 821108

Assigned frequency (kHz)		02	550
Transmitting station	Name of the station	03	FORT MCMURRAY
	Call sign	04	CJOK
	Additional identification	05	AB
	Station class	06	B
	Operational Status	07	P
Country		08	CAN
Geographical coordinates of the transmitting station		09	111W19 55 56N 116

(11) a) New assignment [ ] b) Modification of characteristic of an assignment recorded in the plan [X] c) Cancellation of an assignment [ ]

(12) Modification under Section 4.2.14 Yes [ ] No [X]

(13) Date of bringing into service or cessation of operation: Year Month Day

STATION PARAMETERS		DAYTIME OPERATION		NIGHT-TIME OPERATION
Station power (kW)	21	10.	31	5.
r.m.s. value of radiation for station power (mV/m at 1 km)	25	.	35	.
Antenna type	26	B	36	B
Simple vertical antenna electrical height (degrees)	27	.	37	.

(44) Remarks

COORDINATION UNDER ARTICLE 4:

COUNTRY	USA							
IN PROGRESS	X							
ACCEPTANCE OBTAINED								

CJOK 550

IFRB Serial No. 7027

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 414

Date 821108

(01) Name of transmitting station: FORT MCMURRAY

(02) Country: CAN

(03) Hours of operation: HN

(04) Total number of towers: 2

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	0.	0.	0	.	1
2	.91	-129.	80.	13.5	0	.	1

(14) r.m.s value of radiation	(15) Type of pattern	(16) Special quadrature factor
627.51 mV/m at 1 km	E	. mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

CJOK 550

IFRB Serial No. 7027

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART II Section I

Description of a directional antenna consisting of vertical conductors

Sheet No. 414

Date 821108

(01) Name of transmitting station: FORT MCMURRAY

(02) Country: CAN

(03) Hours of operation: HJ

(04) Total number of towers: 2

(05) Tower No.	(06) Tower field ratio	(07) Phase difference of the field (± degrees)	(08) Electrical tower spacing (degrees)	(09) Angular tower orientation (degrees)	(10) Reference tower indicator	(11) Electrical height of tower (degrees)	(12) Tower structure
1	1.	0.	0.	0.	0	.	1
2	.5	-153.	80.	13.5	0	.	1

(14) r.m.s value of radiation: 885. mV/m at 1 km

(15) Type of pattern: E

(16) Special quadrature factor: . mV/m at 1 km

(17) SUPPLEMENTARY INFORMATION

CJOK
550

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART IV

7027 | IFRB Serial No.

Description of the top-loaded or sectionalized towers used for :

A) Directional antenna systems for towers entered in Part II Section I as top-loaded or sectionalized (column 12), or

B) Non-directional antenna towers entered in Part I as top-loaded or sectionalized (column 26 or 36)

01 FORT MCMURRAY — Name of transmitting station

02 CAN — Country

414 — Sheet No.

03 HN — Hours of Operation

04 TOWER NUMBER	05 A	06 B	07 C	08 D
1	58.74	11.26		
2	58.74	11.26		

CJOK
550

FORM FOR THE APPLICATION OF ARTICLE 4 OF THE AGREEMENT
CHARACTERISTICS OF A REGION 2 BROADCASTING STATION IN THE BAND 535 - 1605 kHz

PART IV

7027 — IFRB Serial No.

Description of the top-loaded or sectionalized towers used for :

A) Directional antenna systems for towers entered in Part II Section I as top-loaded or sectionalized (column 12), or

B) Non-directional antenna towers entered in Part I as top-loaded or sectionalized (column 26 or 36)

01 FORT MCMURRAY — Name of transmitting station

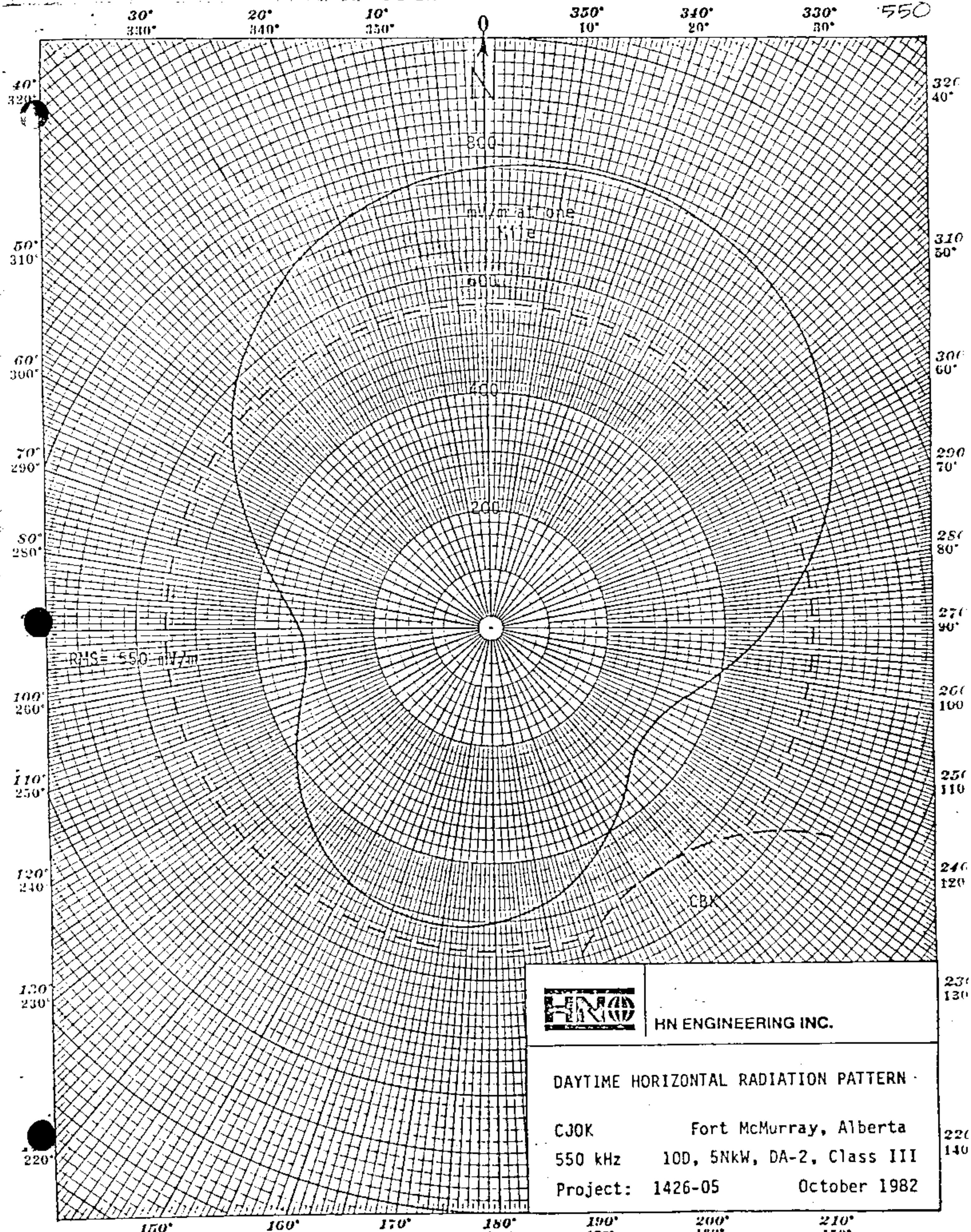
02 CAN — Country

414 — Sheet No.

03 HJ — Hours of Operation

04 TOWER NUMBER	05 A	06 B	07 C	08 D
1	58.74	11.26		
2	58.74	11.26		

CJOK
550



HN ENGINEERING INC.

DAYTIME HORIZONTAL RADIATION PATTERN

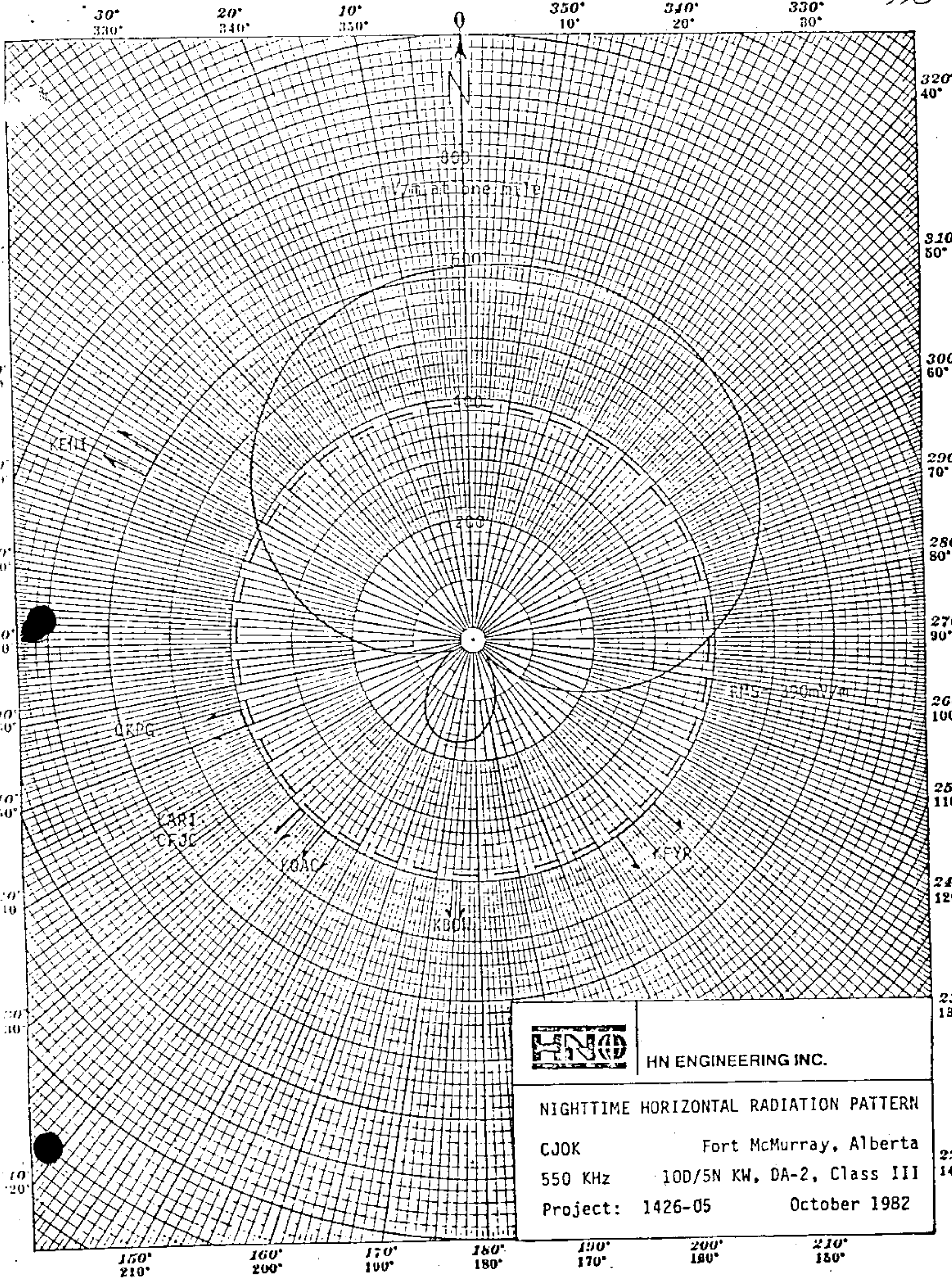
CJOK Fort McMurray, Alberta

550 kHz 10D, 5NkW, DA-2, Class III

Project: 1426-05 October 1982

CJOK

550



HN ENGINEERING INC.

NIGHTTIME HORIZONTAL RADIATION PATTERN

CJOK Fort McMurray, Alberta

550 KHz 10D/5N KW, DA-2, Class III

Project: 1426-05 October 1982

CJOK
550 kHz

DESCRIPTION SHEET

Station:	CJOK	Main Studio:	Fort McMurray, Alberta
Frequency:	550 kHz	Power:	10D/5N kW
Time:	Unlimited	Class:	III
Notification List No. 409		Date:	November 30, 1981
Geographical Location:		North Lat. West Long.	56° 41' 16" 111° 19' 55"

Antenna System

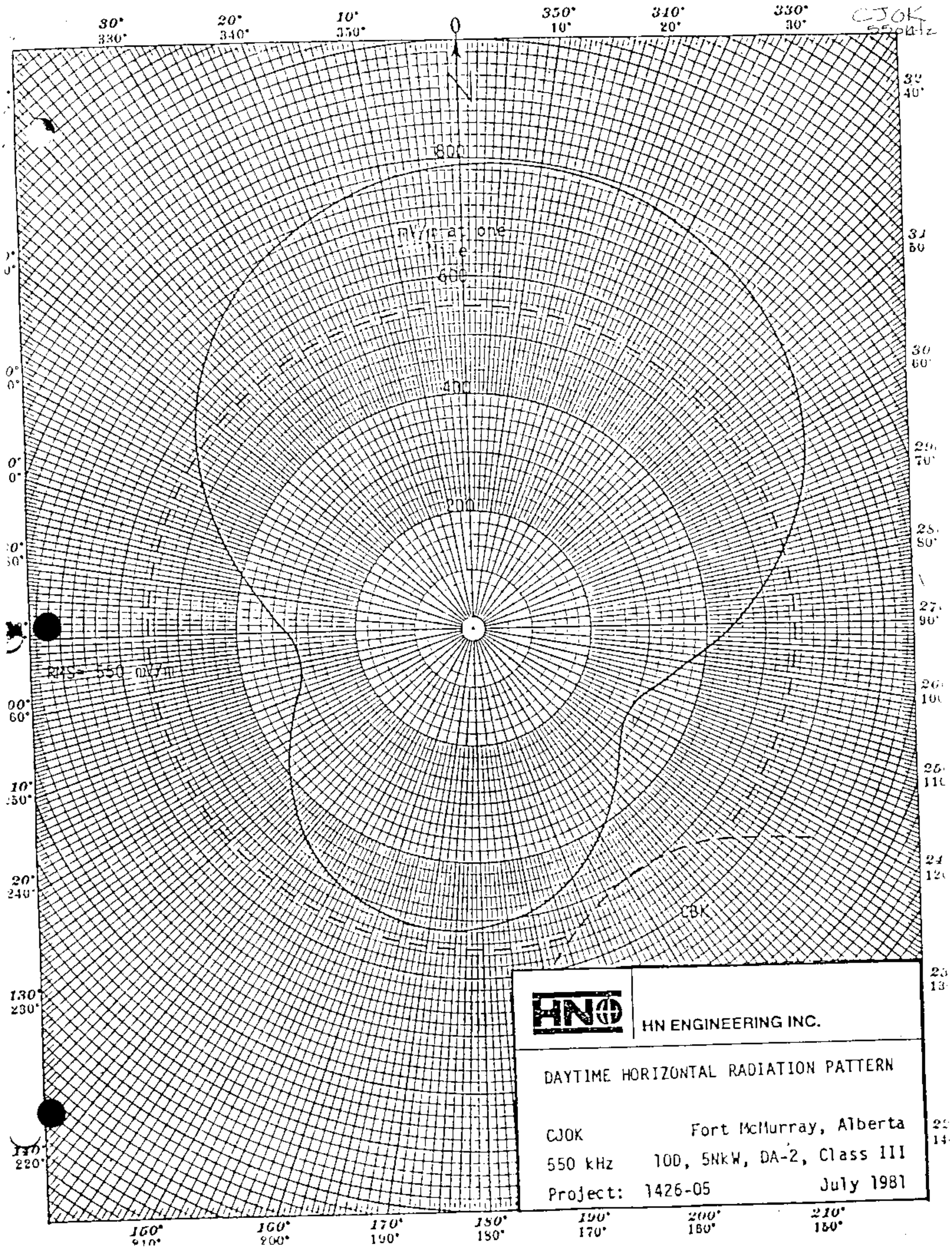
Mode of Operation: DA-2

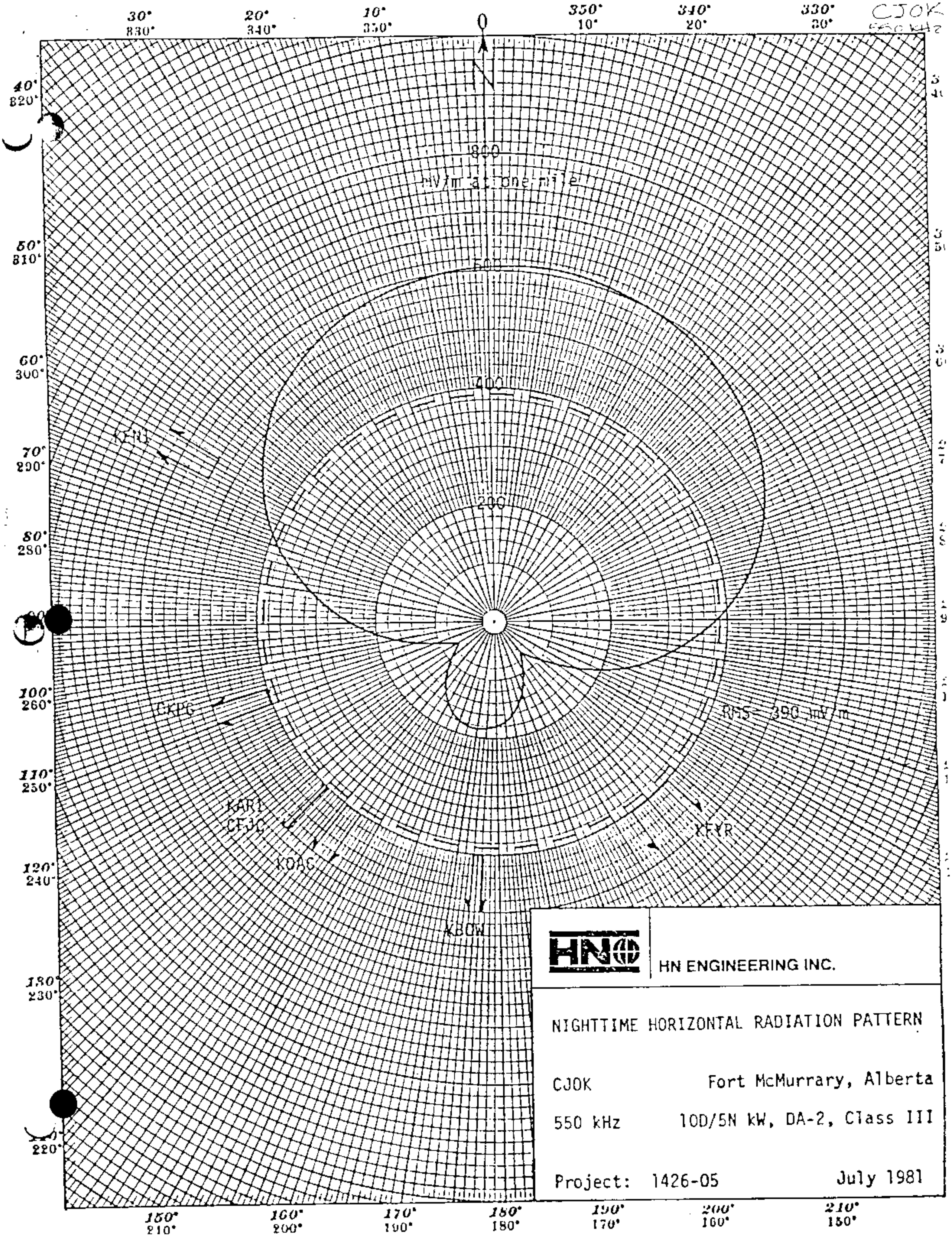
Elements: Two uniform cross-section, guyed steel towers, base insulated, series fed, and top loaded to 70° using upper section of guys.

Towers:	1(S)	2(N)
Height above insulators:	292'	292'
Overall Height:	295'	295'
Spacing:	ref	90°
Phasing: Day	0	-150
Phasing: Night	0	-122
Current Ratio: Day	1.0	0.5
Current Ratio: Night	1.0	0.8
Orientation:	ref	10°

Ground Systems: The ground system shall consist of 120, No. 10 copper wire radials about each tower buried approximately 8 inches below grade. The arrangement is equivalent to a 0.4 ground system.

Predicted Effective Field: 390 mV/m for 5 kW nighttime
550 mV/m for 10 kW daytime


CJOK
550kHz
0
N
800
mV/m at one mile
600
400
200
RMS= 550 mV/m
CBK
HN ENGINEERING INC.
DAYTIME HORIZONTAL RADIATION PATTERN
CJOK
Fort McMurray, Alberta
550 kHz
10D, 5NkW, DA-2, Class III
Project: 1426-05
July 1981



HN ENGINEERING INC.

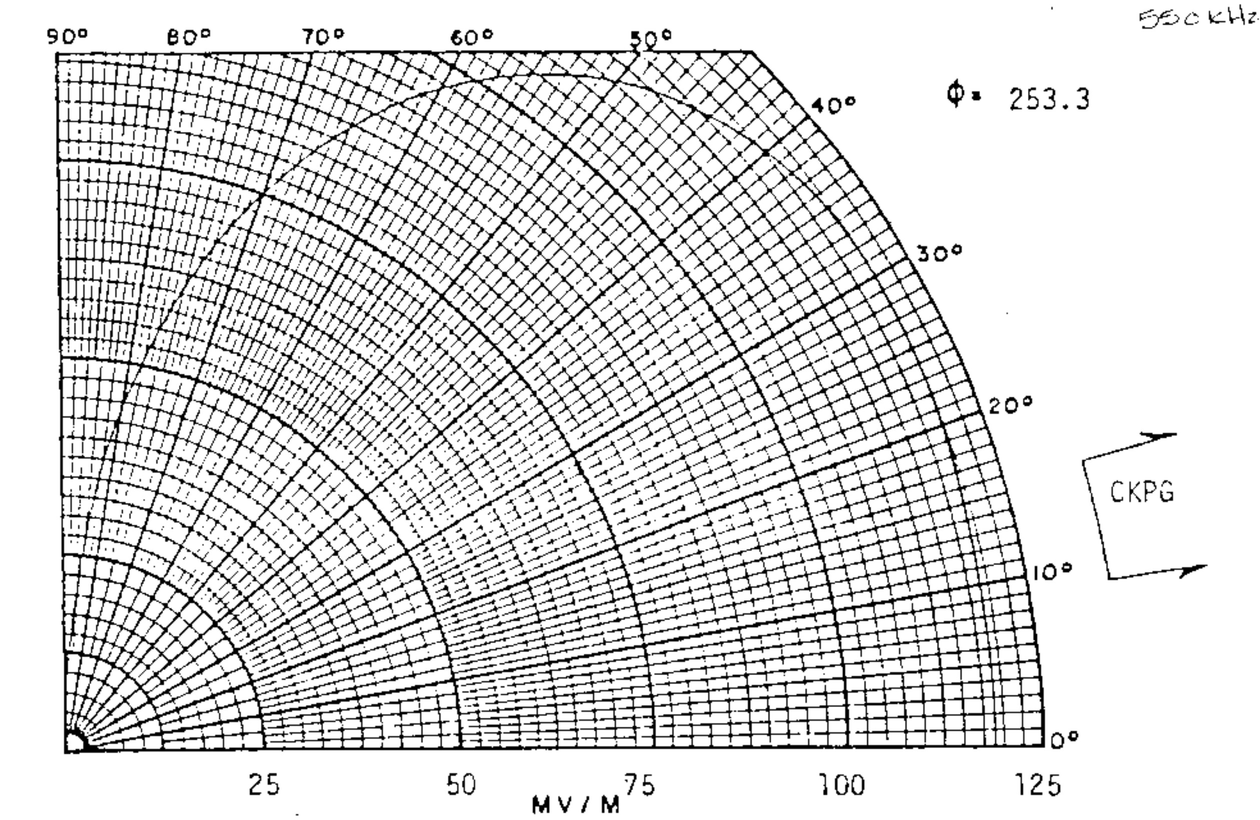
NIGHTTIME HORIZONTAL RADIATION PATTERN

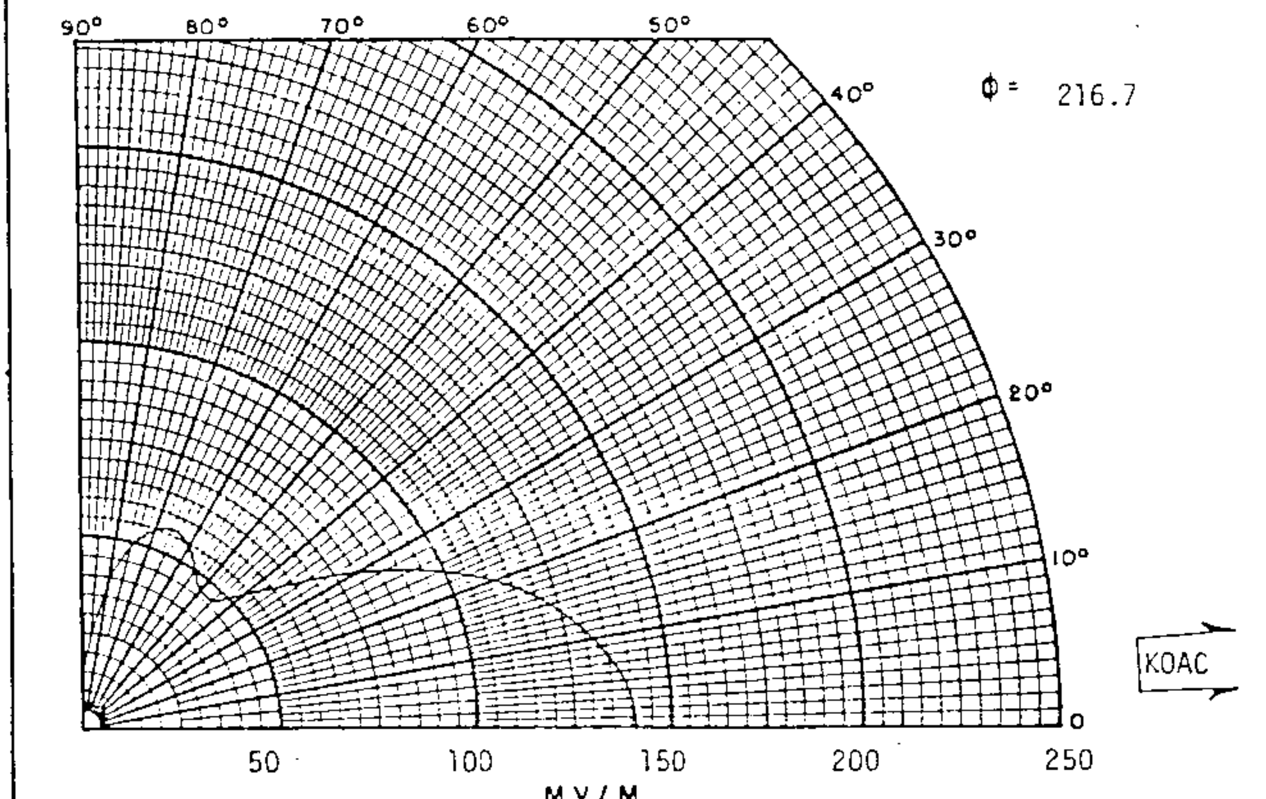
CJOK Fort McMurrary, Alberta

550 kHz 10D/5N kW, DA-2, Class III

Project: 1426-05 July 1981

CJOK





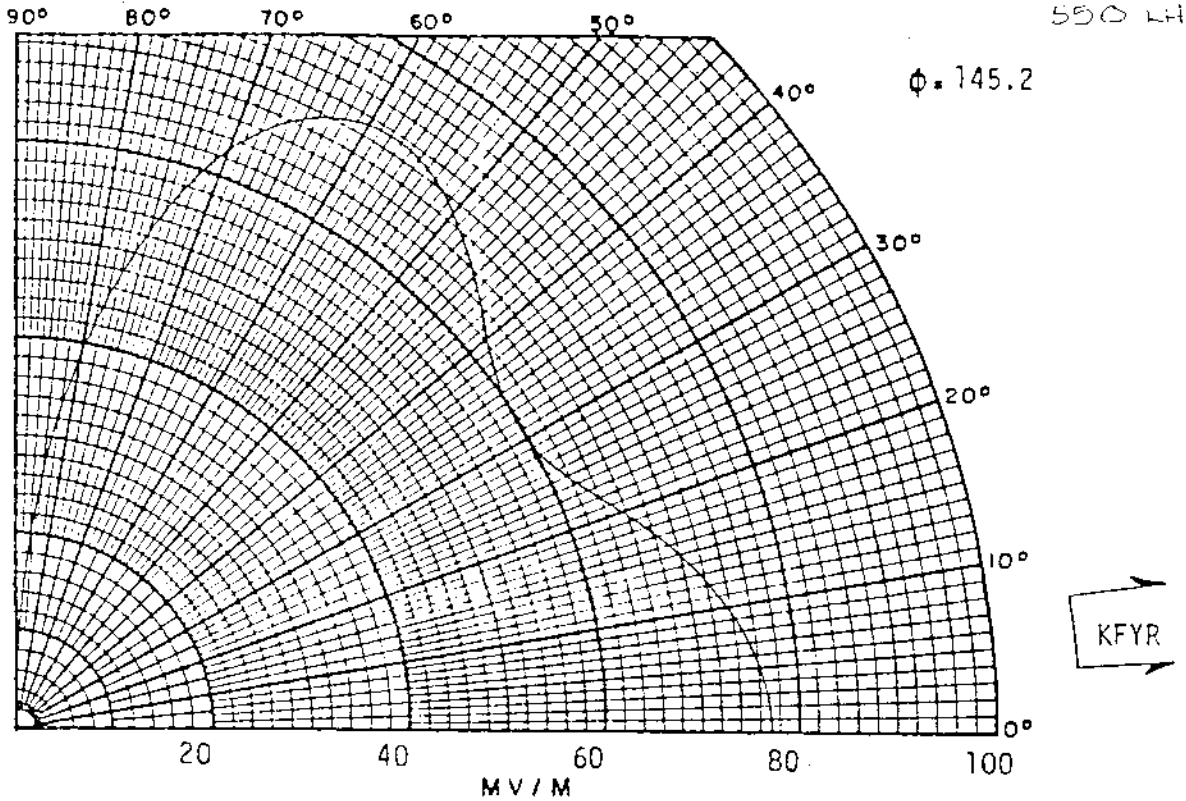
VERTICAL RADIATION PATTERNS

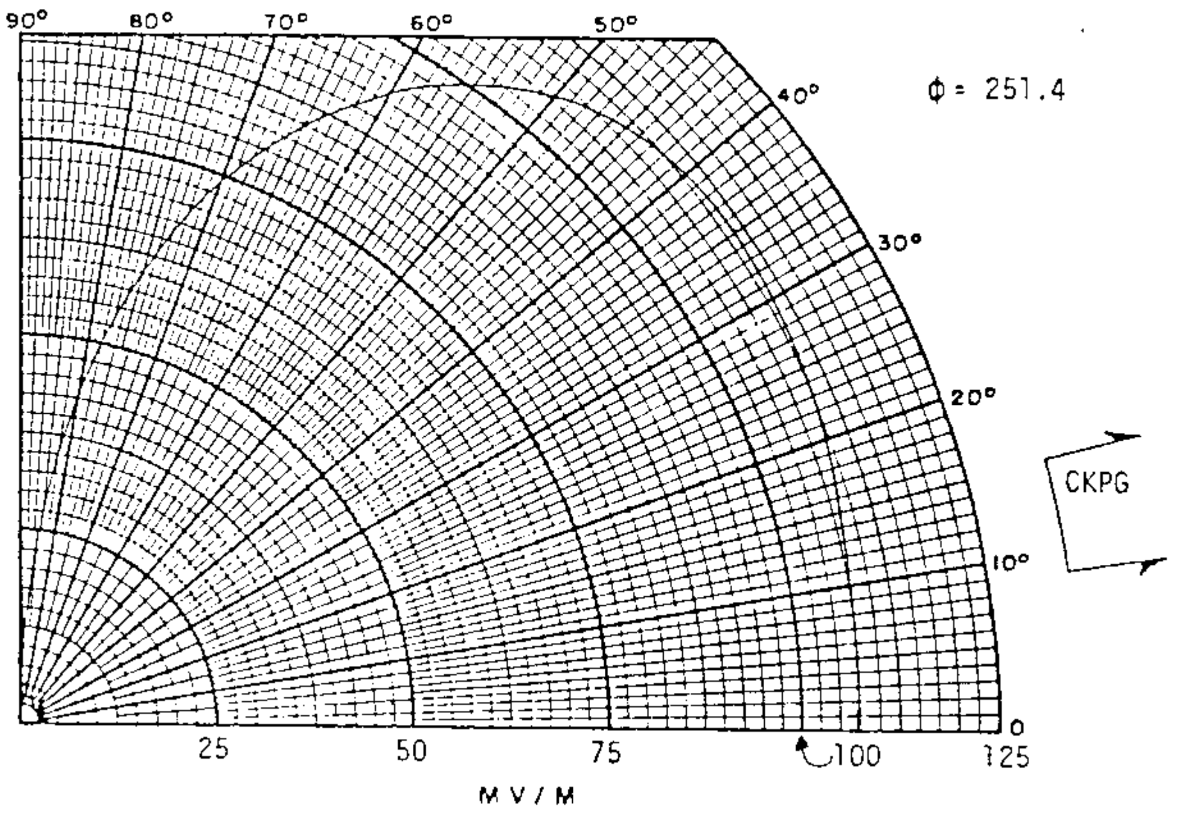
CJOK Fort McMurray, Alberta

550 KHz 10D/5N KW DA-2 Class III

Project: 1426-05 July 1981

550 kHz





VERTICAL RADIATION PATTERNS

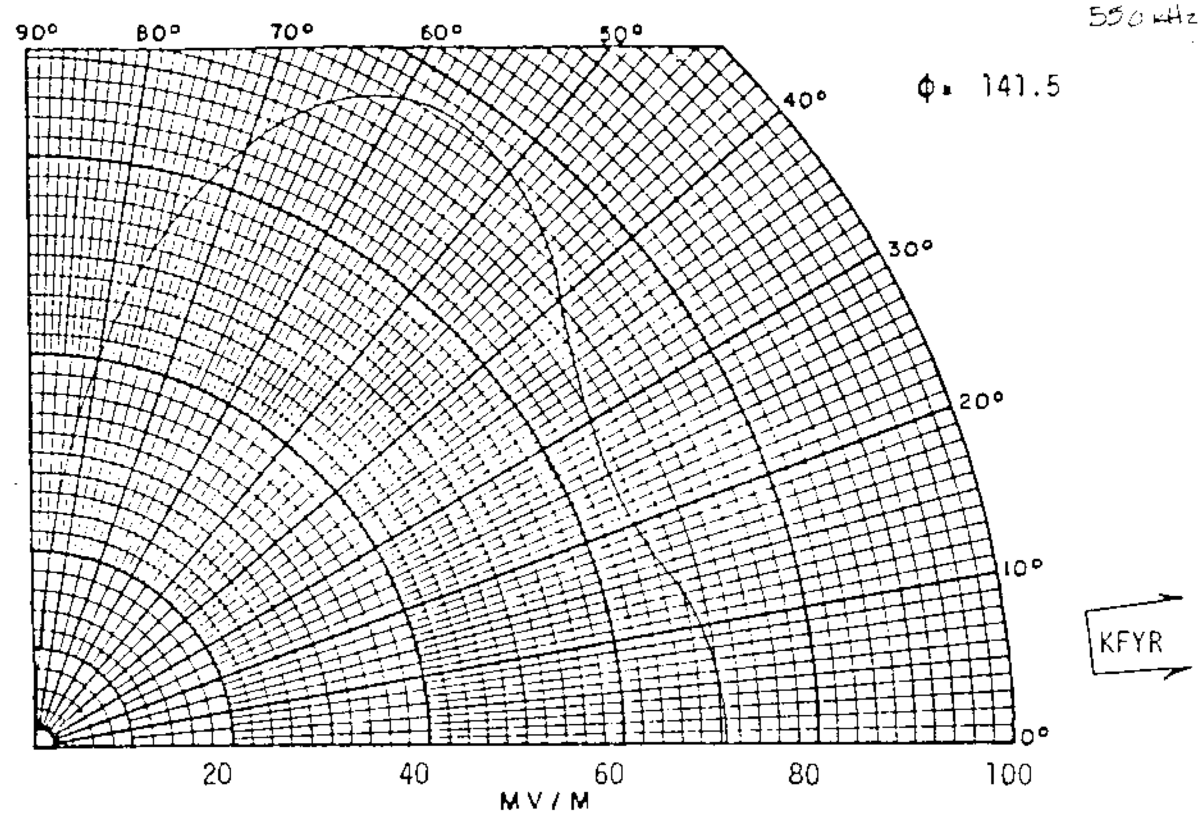
CJOK Fort McMurray, Alberta

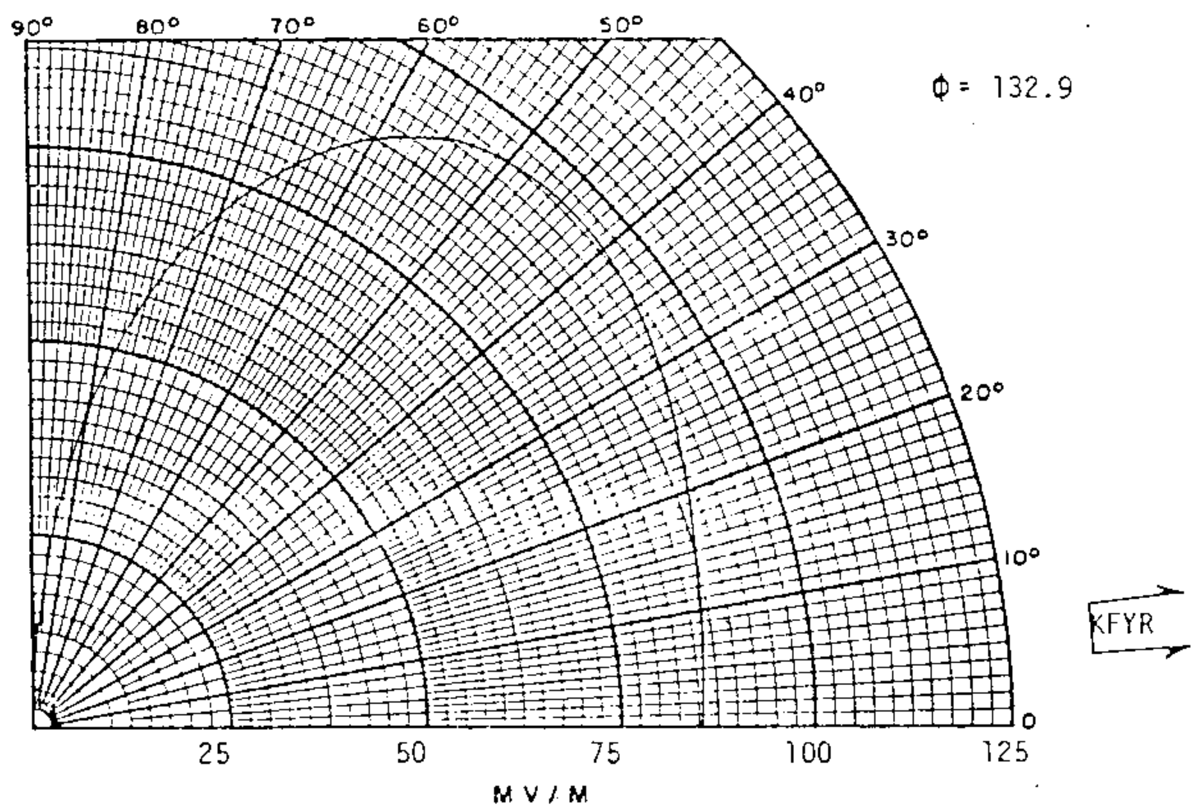
550 KHz 10D/5N KW DA-2 Class III

Project: 1426-05 July 1981

HN ENGINEERING INC. CONSULTING ENGINE

CJOK





VERTICAL RADIATION PATTERNS

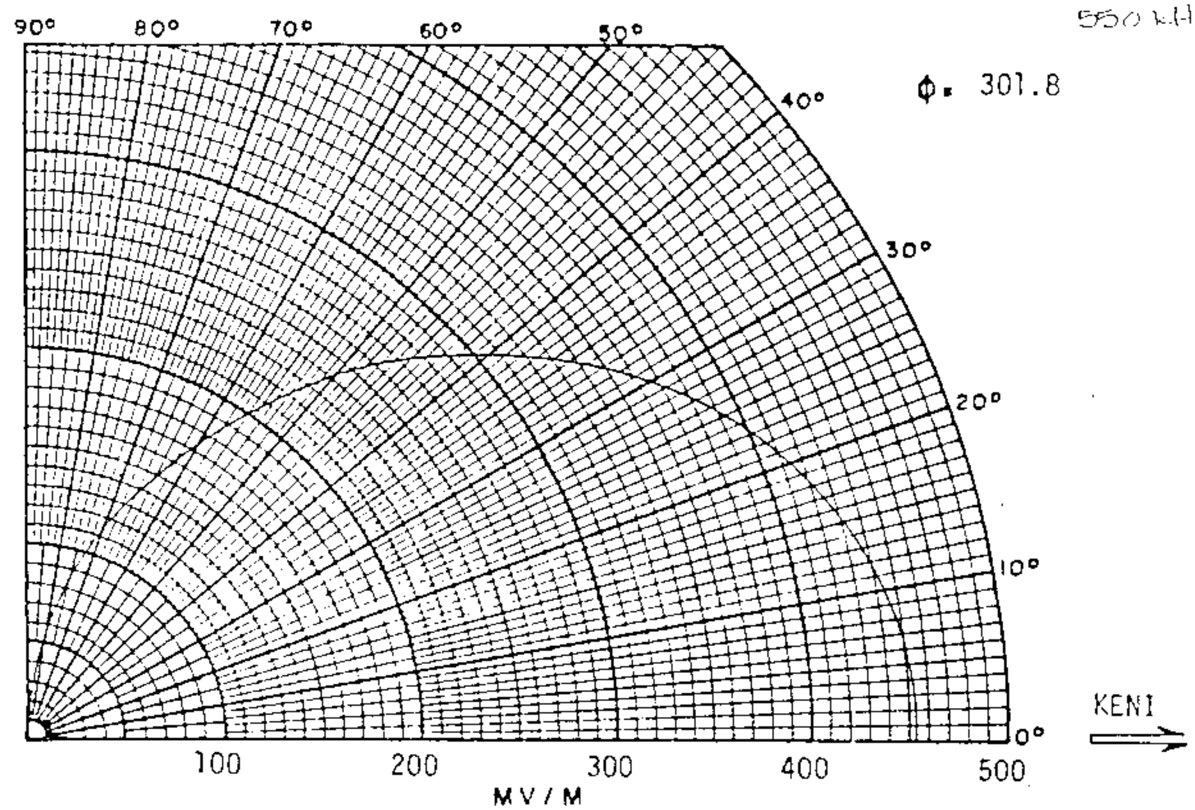
CJOK Fort McMurray, Alberta

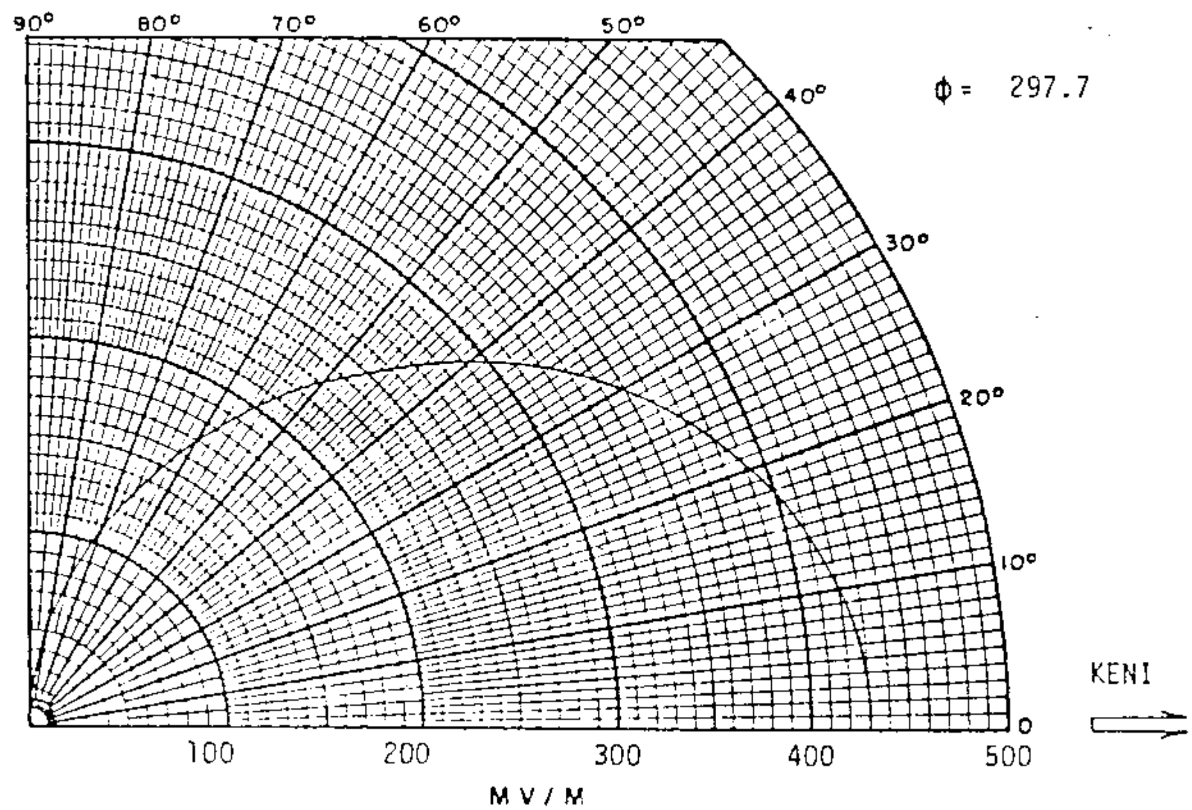
550 KHz 10D/5N KW DA-2 Class III

Project: 1426-05 July 1981

HN ENGINEERING INC.

CJOK
550 kHz



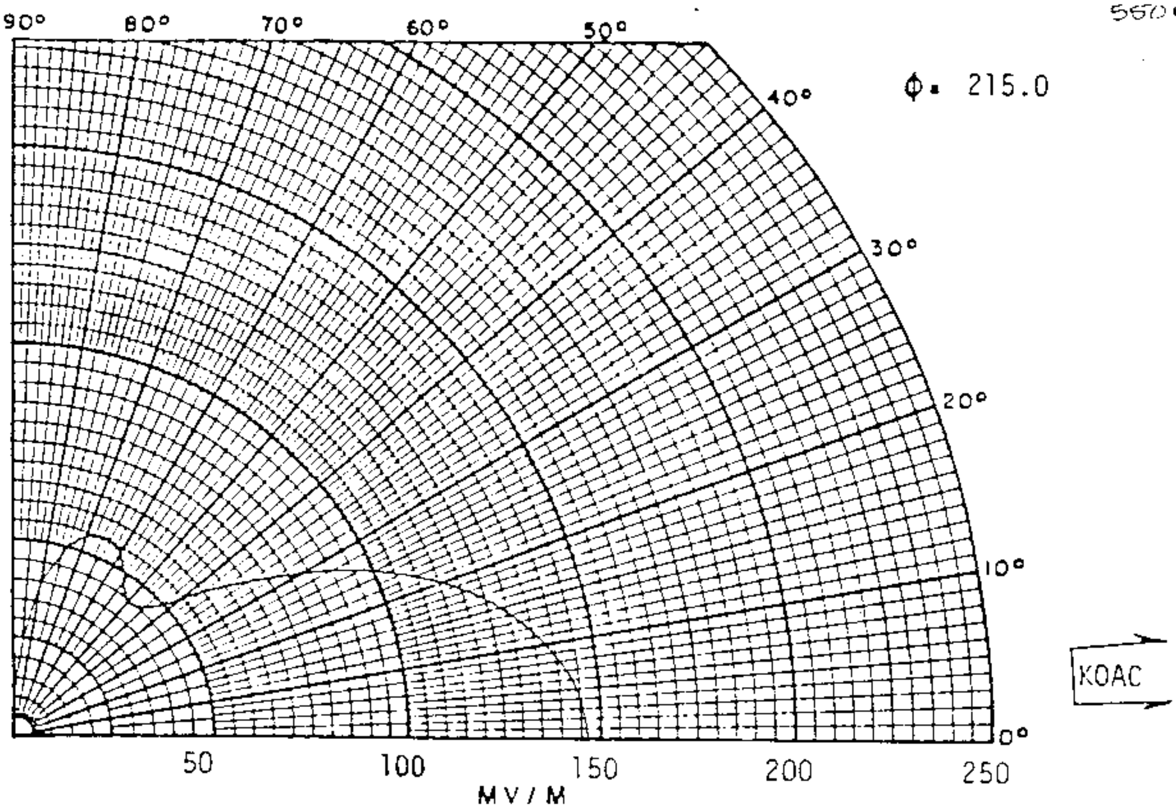


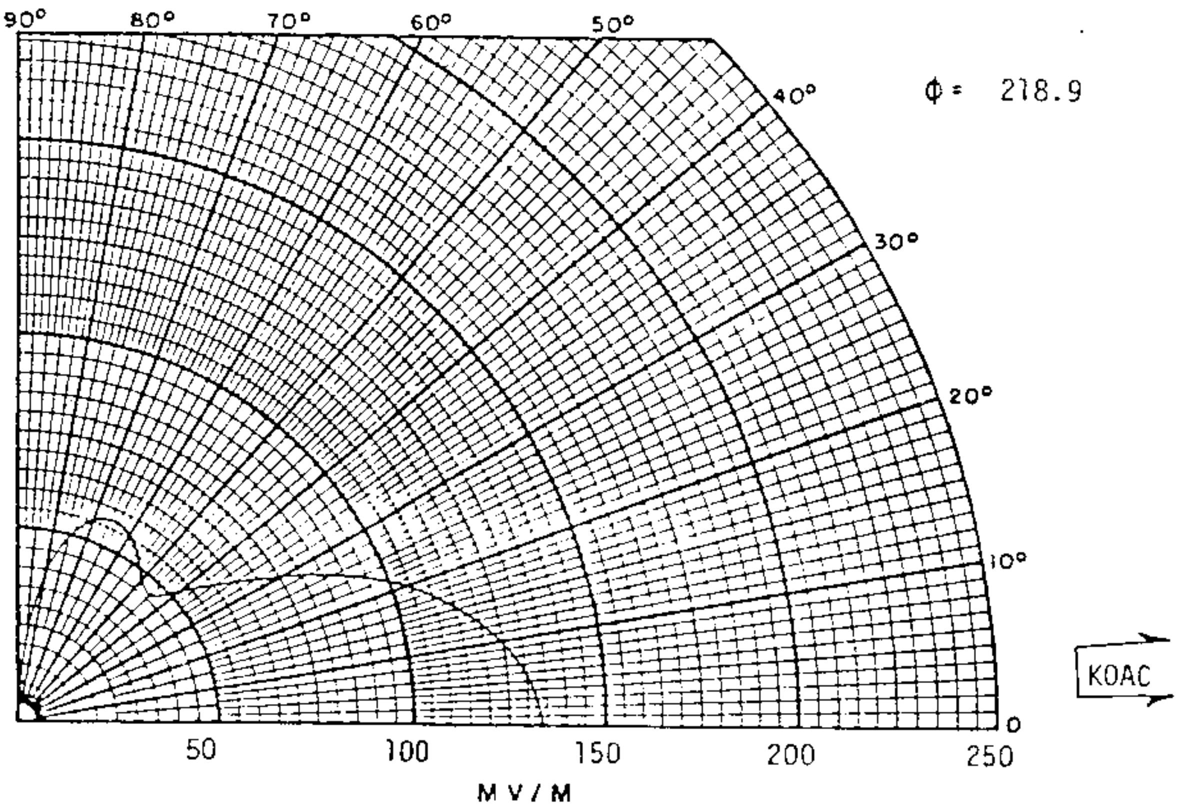
VERTICAL RADIATION PATTERNS

CJOK Fort McMurray, Alberta
550 KHz 10D/5N KW DA-2 Class III

Project: 1426-05 July 1981

CJOK
560 kHz





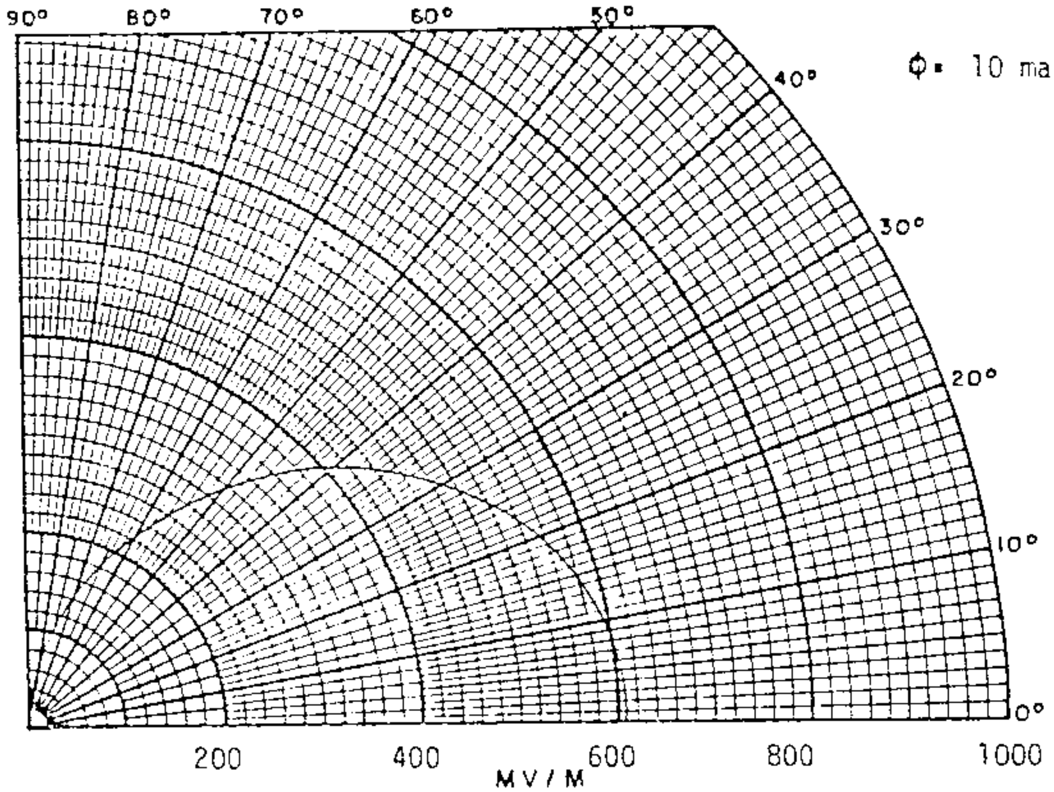
VERTICAL RADIATION PATTERNS

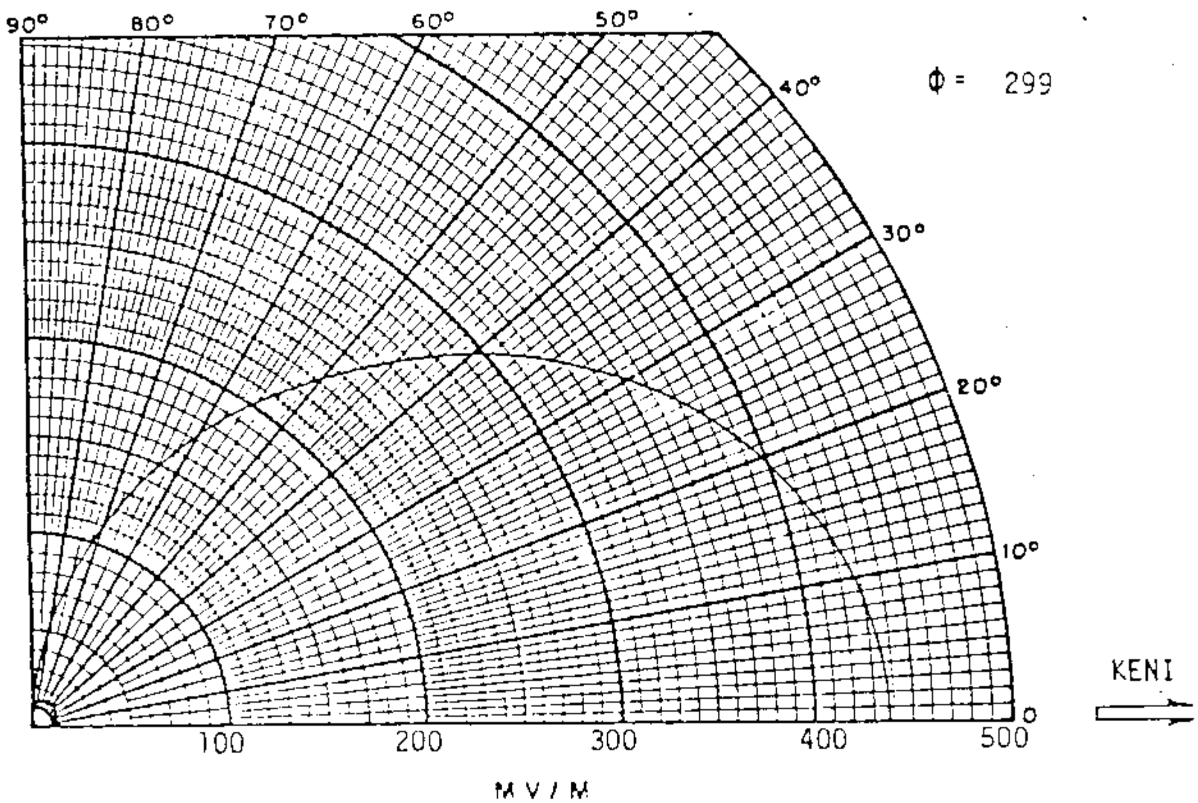
CJOK Fort McMurray, Alberta

550 KHz 10D/5N KW DA-2 Class III

Project: 1426-05 July 1981

HN ENGINEERING INC. | CONSULTING ENGINEERS





VERTICAL RADIATION PATTERNS

CKOK Fort McMurray, Alberta

550 KHz 10D/5N KW DA-2 Class III

Project: 1426-05 July 1981

HN ENGINEERING INC.

CKPG

HOYLES, NIBLOCK AND ASSOCIATES

DESCRIPTION SHEET

Station: CKPG

Main Studio: Prince George, B.C.

Power: 10 kw

Frequency: 550 kc/s Class III

Notification List No: 189

Date: July 20, 1964

Location: North Latitude 53° 55' 45"
West Longitude 122° 36' 15"

Antenna:

Mode of Operation: DA-N (omnidirectional day - directional night)

Elements: Two uniform cross section, guyed steel towers with base insulated fitted for series feed and top loaded to 60° electrical height.

Towers	Southeast	Northwest
Height above insulators	260' (53°)	260' (53°)
Overall height	265'	265'
Spacing	845' (170°)	
Phasing - Night	0	-44°
Field Ratio - Night	1	0.82

Orientation: Towers on a line bearing 326° True.

Ground system: The ground system shall consist of 120 - 0.4λ radials about each tower. Radials shall be bonded to a traverse strap at the common chord between the towers.

Predicted effective field:
563 mv/m at 1 mile for 10 kw Day
553 mv/m at 1 mile for 10 kw Night

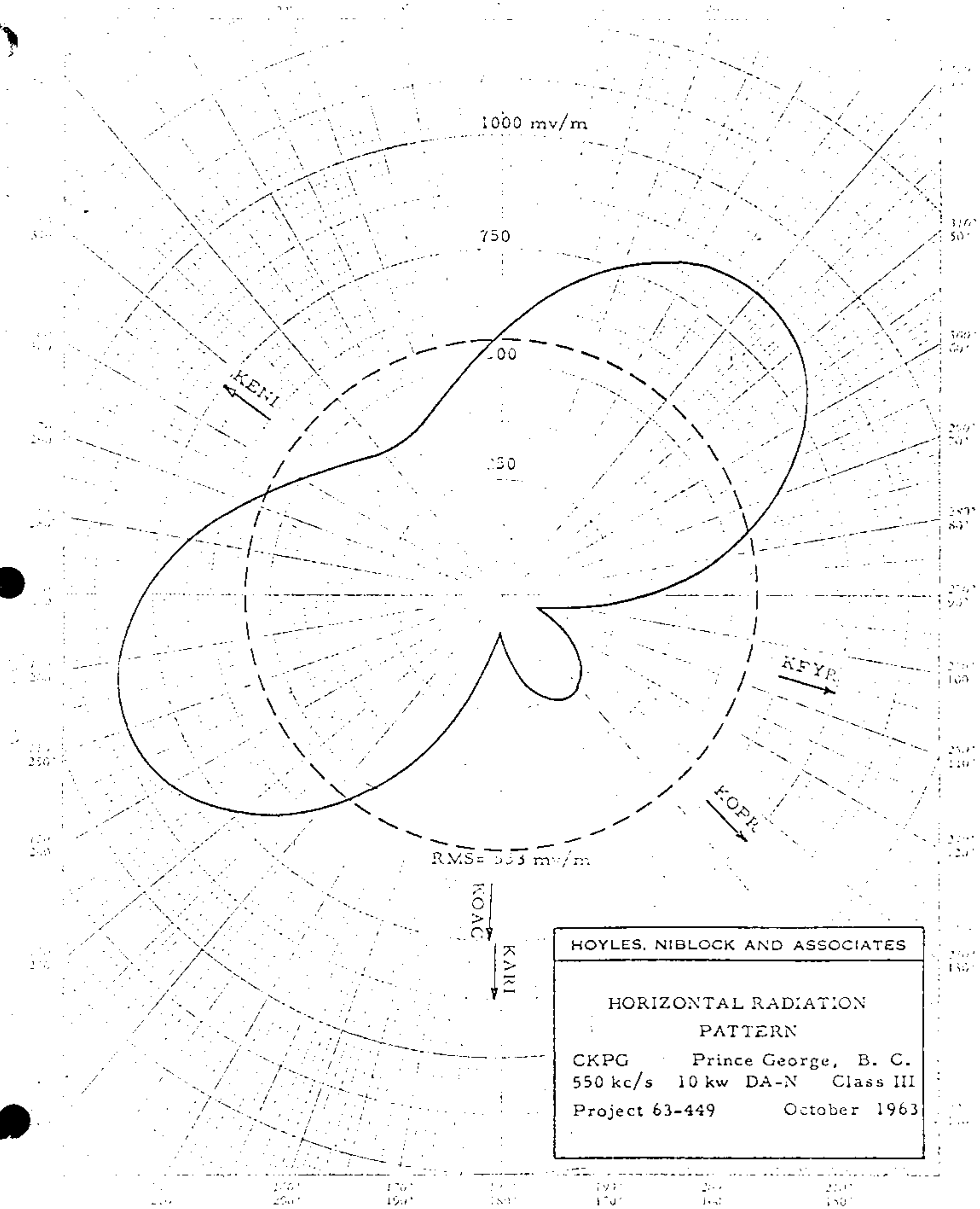
CONSULTING TELECOMMUNICATION ENGINEERS AND ATTORNEYS

CKPG

Proposed Night
(8-28-64ct)

Station CKPG
Prince George, B. C.

10kw,DA-N,U,Class III
550 kc



HOYLES, NIBLOCK AND ASSOCIATES

HORIZONTAL RADIATION PATTERN

CKPG Prince George, B. C.
550 kc/s 10 kw DA-N Class III
Project 63-449 October 1963

Cuba

CMW

87078

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: CMW

Main Studio: Havana, Cube

Frequency: 550kc/s

Power 10kw

Date: Received January 26, 1953

Class: I-C

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 23° 08' 20"
West Longitude: 82° 20'

ANTENNA CHARACTERISTICS

Number of elements: two (2)
Type of elements: Series-fed

Tower:	North	South
Height Above Insulators:	298'	298' (59.9°)
Spacing:	596.5' or 120° between adjacent towers.	
Phasing:	90° (N)	0° (S)
Field Ratio:	1	1

Orientation: Elements on a line bearing 0° true.

Predicted effective Field: 632 mv/m at rated power. ✓

F.C.C. Note:
This pattern supplements the particulars for this station set forth in Annex 3 to the North American Regional Broadcasting Agreement, Washington, D. C. 1950.

Cuba

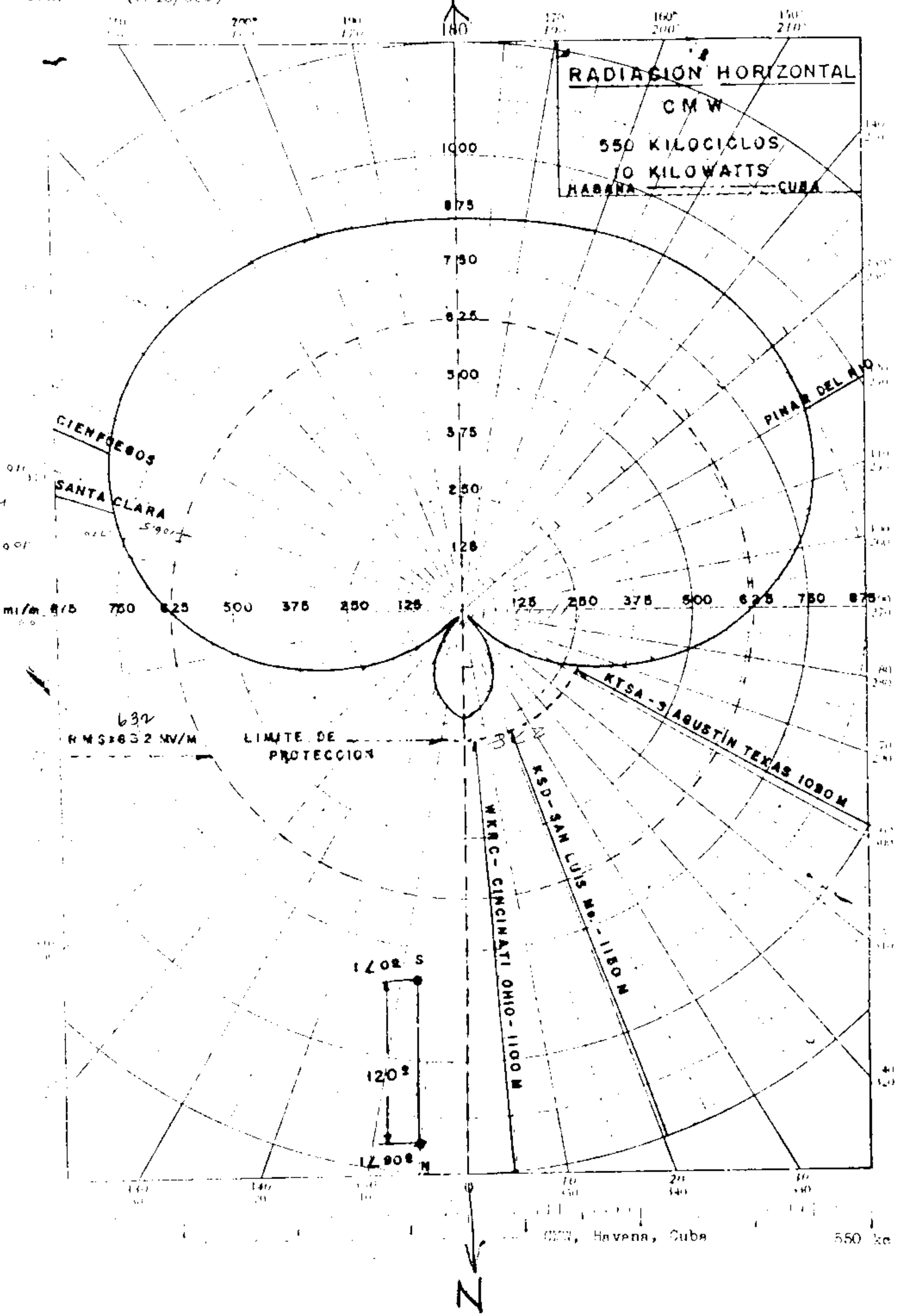
CMW

PROPOSED
NIGHT (3/18/53C)

CMW, HAVANA, CUBA

10 kw,

550 kc



CMW, Havana, Cuba

550 kc

KAFY ~~KAFY~~ KBAK

PROPOSED NIGHT&DAY NULLS KAFY, BAKERSFIELD, CAL. 1kw, DA-1 550 kc

GRANTED 1-13-65 CHANGE FROM 1 KW, DA-U TO 1 KW, DA-N, U

LIC 10-8-65 CHG DA

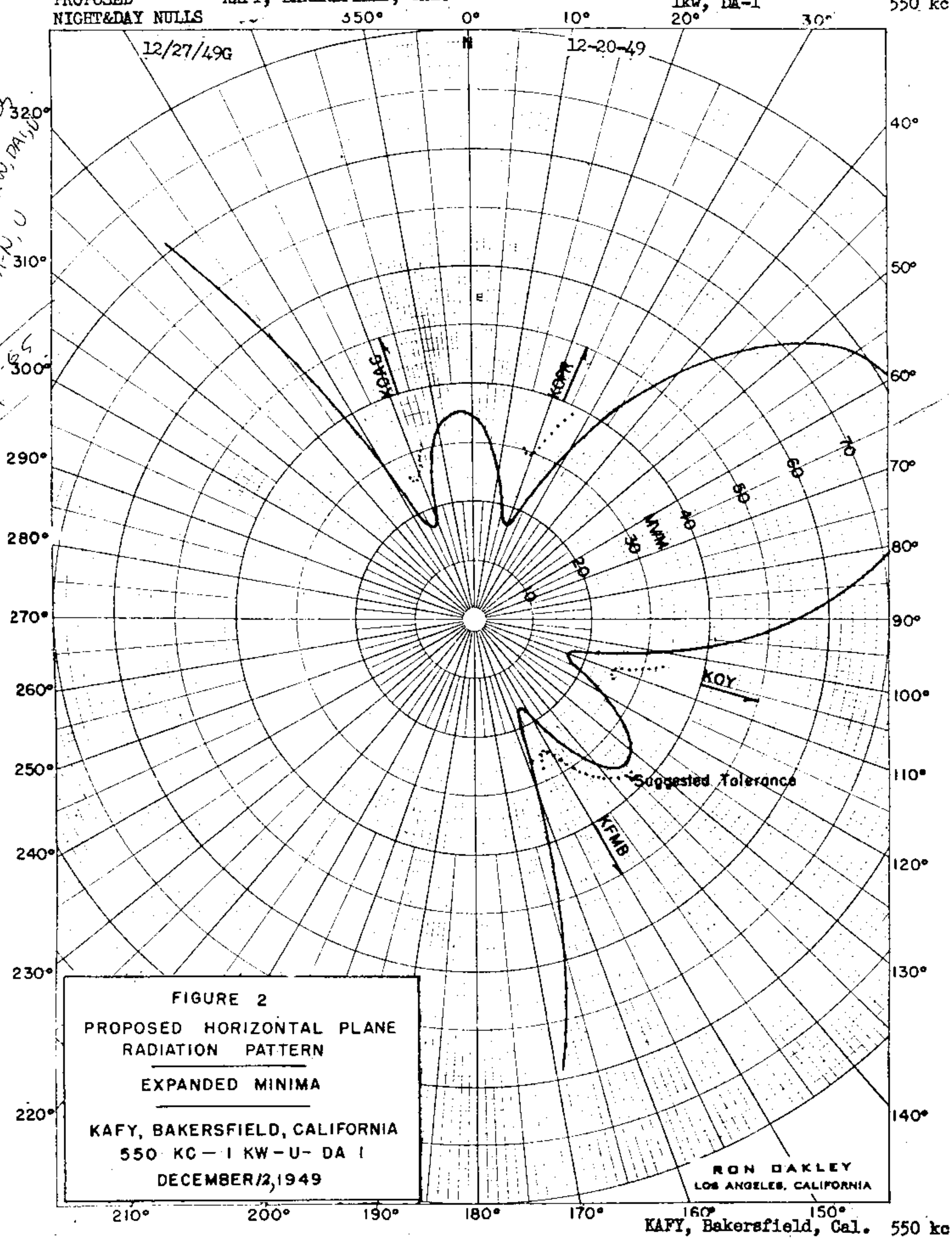


FIGURE 2

PROPOSED HORIZONTAL PLANE RADIATION PATTERN

EXPANDED MINIMA

KAFY, BAKERSFIELD, CALIFORNIA

550 KC — 1 KW — U — DA 1

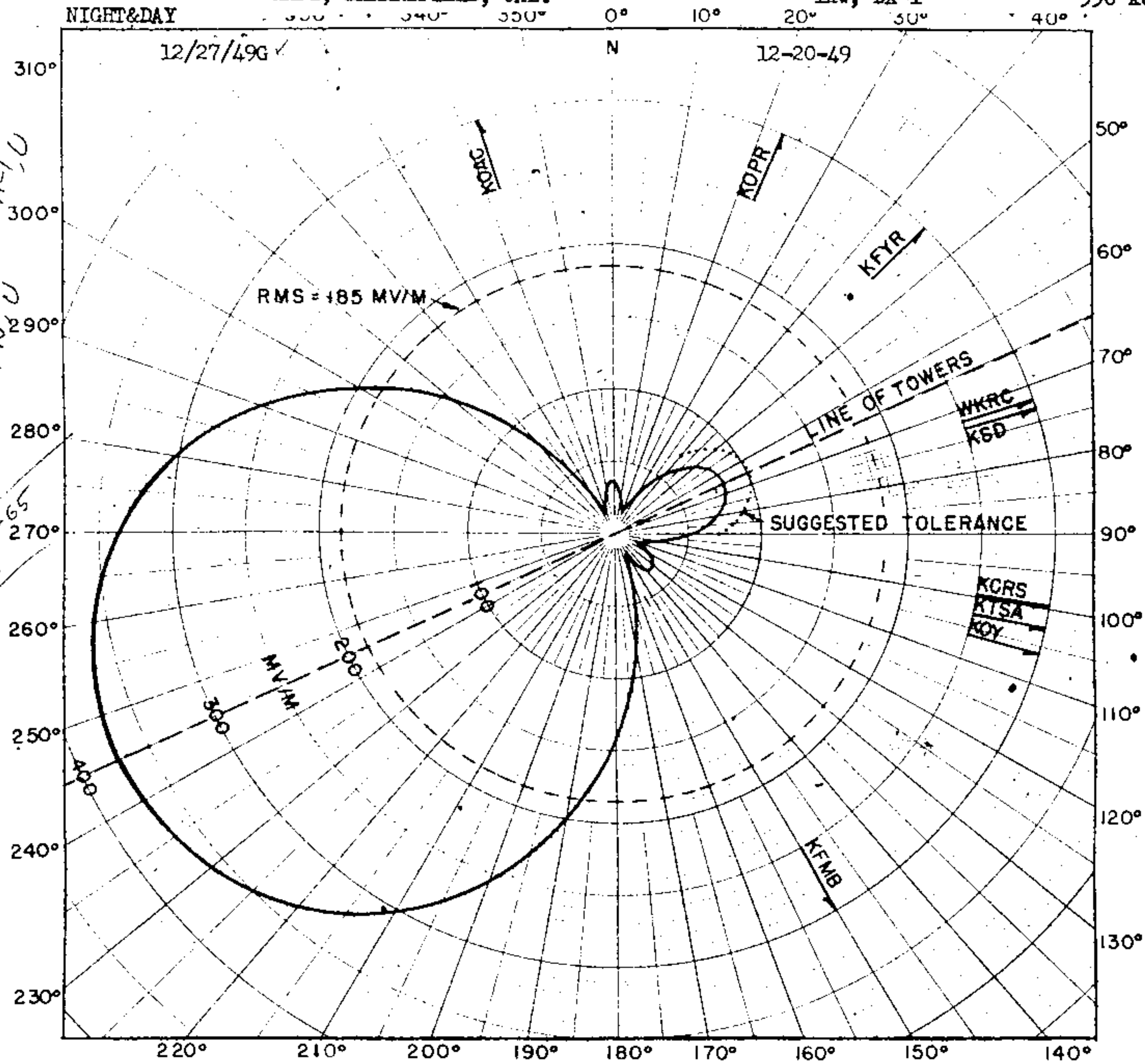
DECEMBER 12, 1949

KAFY, Bakersfield, Cal. 550 kc

KAFY ~~KAFY~~ KBAK

PROPOSED NIGHT&DAY — KAFY, BAKERSFIELD, CAL. — 1kw, DA-1 — 550 kc

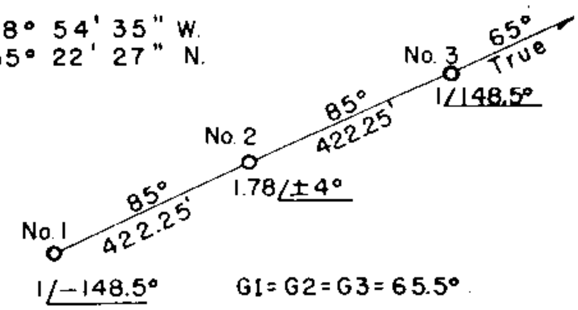
12/27/49G ✓ — 12-20-49



CHANGE FROM 1 KW, DA-1U TO 1 KW, DA-N,U

LIC 10-8-65 CHG DA

SITE:
118° 54' 35" W.
35° 22' 27" N.



G1 = G2 = G3 = 65.5°

DECEMBER 12, 1949

FIGURE 1

PROPOSED HORIZONTAL PLANE RADIATION PATTERN

KAFY, BAKERSFIELD, CALIFORNIA
550 KC - 1 KW - U - DA 1

RON OAKLEY
LOS ANGELES, CALIFORNIA

KAFY, Bakersfield, Cal. 550 kc

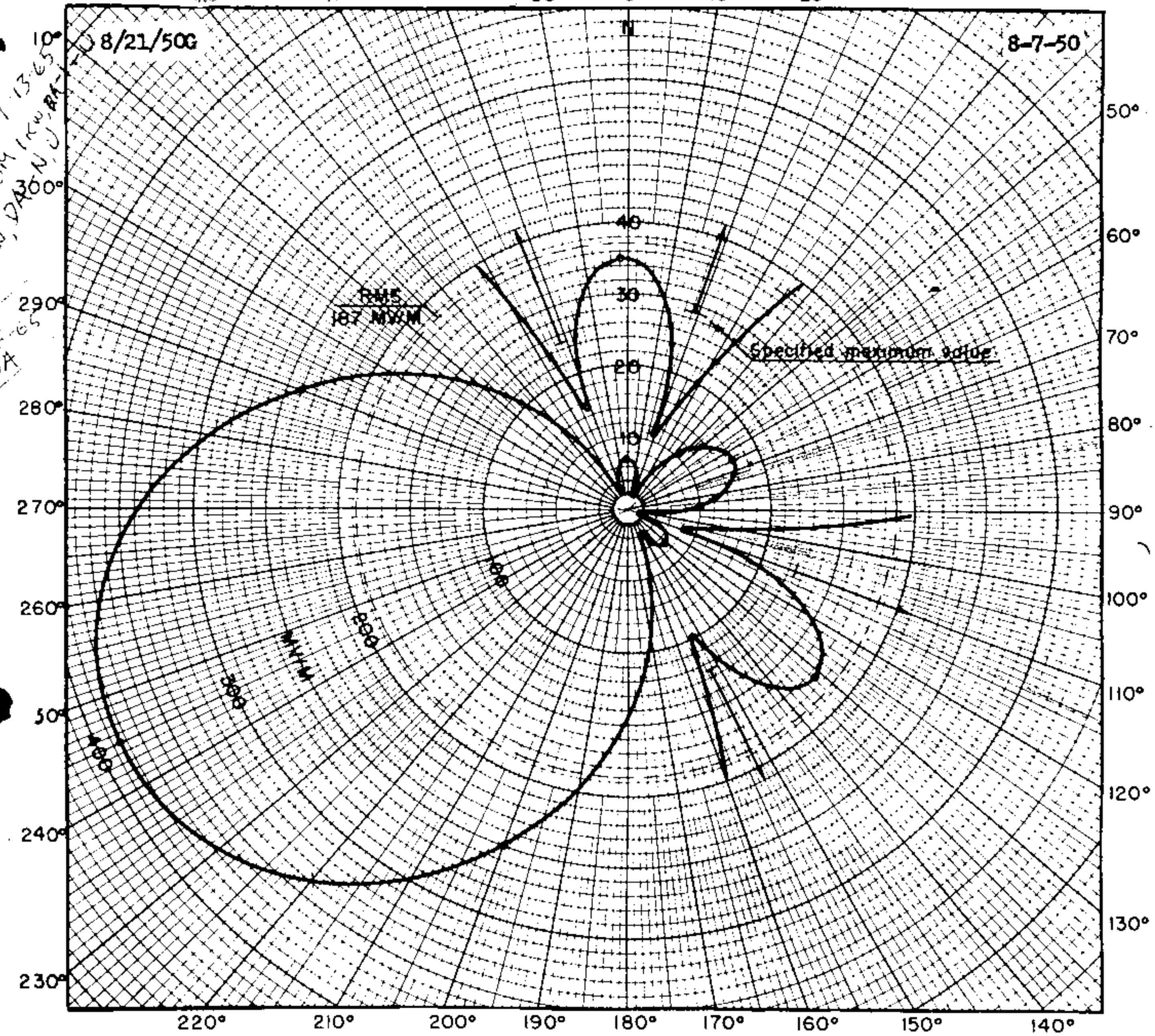
KAFY ~~KAFY~~ ~~KBAK~~

BL-4158

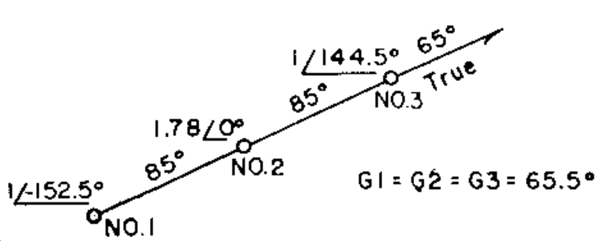
GRANTED 1-13-65 CHANGE FROM 1KW, DA-1 TO 1KW, DA-N, U

LIC 10-5-65 CHG DA

MEASURED NIGHT & DAY KAFY, BAKERSFIELD, CAL. 1kw, U, DA-1 550 kc



SITE:
118° 54' 35" W.
35° 22' 27" N.



G1 = G2 = G3 = 65.5°

AUGUST 3, 1950

FIGURE 6 8

HORIZONTAL FIELD INTENSITY AT ONE MILE

KAFY, BAKERSFIELD, CALIFORNIA

550 KC — 1 KW - U — DA 1

BOND AND OAKLEY
Consulting Radio Engineers
LOS ANGELES, CALIFORNIA

KAFY, Bakersfield, Cal. 550 kc

KARI

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: KARI   Main Studio: Blaine, Washington

Frequency: 550 KHz   Power: 2.5 Kw Night 5 Kw Day

Notification List No. 1778   Date: August 30, 1978   Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	48°	57'	15"
West Longitude:	122°	44'	36"

ANTENNA CHARACTERISTICS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 5
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER :	N (#1)	C (#2)	S (#3)	EC (#4)	NE (#5)	
HEIGHT ABOVE INSULATORS :	320	320	320	320	380	
NIGHT PHASING :	+ 303°	0°	-	+ 150°	+ 93°	
NIGHT FIELD RATIO:	1.0	1.0	-	1.33	1.34	
DAY PHASING :	- 126.5°	+ 63.7°	+ 126.5	-	-	
DAY FIELD RATIO :	0.4	0.333	1.0	-	-	

SPACING AND ORIENTATION : With the WC (#2) tower as reference, the NW (#1) tower is spaced 680' (137°) on a line bearing 358° true, the SW (#3) tower is spaced 680' (137°) on a line bearing 178° true, the EC (#4) tower is spaced 298' (60°) on a line bearing 55° true, and the NE (#5) tower is spaced 874' (176°) on a line bearing 14.5° True.

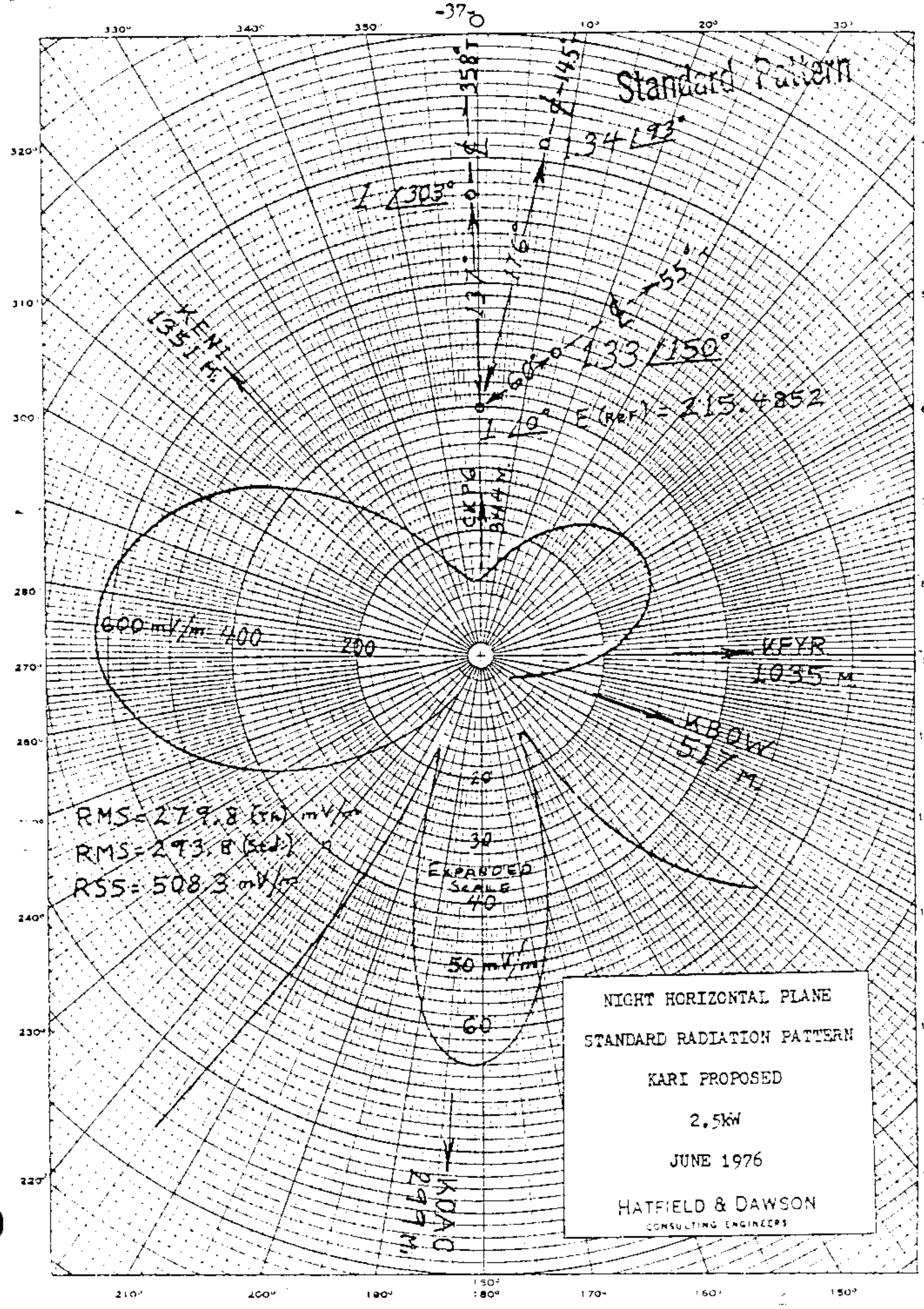
GROUND SYSTEM: 120 - 250' to 680' equally spaced copper radials about each tower. Radials are shortened and bonded to transverse straps along intersections between towers.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day 1/	402 mv/m	508.3 mv/m	293.8 mv/m
Night 1/	279.8 mv/m		

1/ By adjustment of input power.

Note: Please retain the Daytime directional antenna radiation pattern notified for Station KARI in United States Change List Number 991 dated January 3, 1963 and attach to this Revised Description Sheet and Nighttime patterns. This notification concerns only a correction in the antenna heights and spacing of the daytime directional antenna system and a change in the nighttime directional antenna system.



NIGHT HORIZONTAL PLANE

STANDARD RADIATION PATTERN

KARI PROPOSED

2.5kW

JUNE 1976

HATFIELD & DAWSON

CONSULTING ENGINEERS

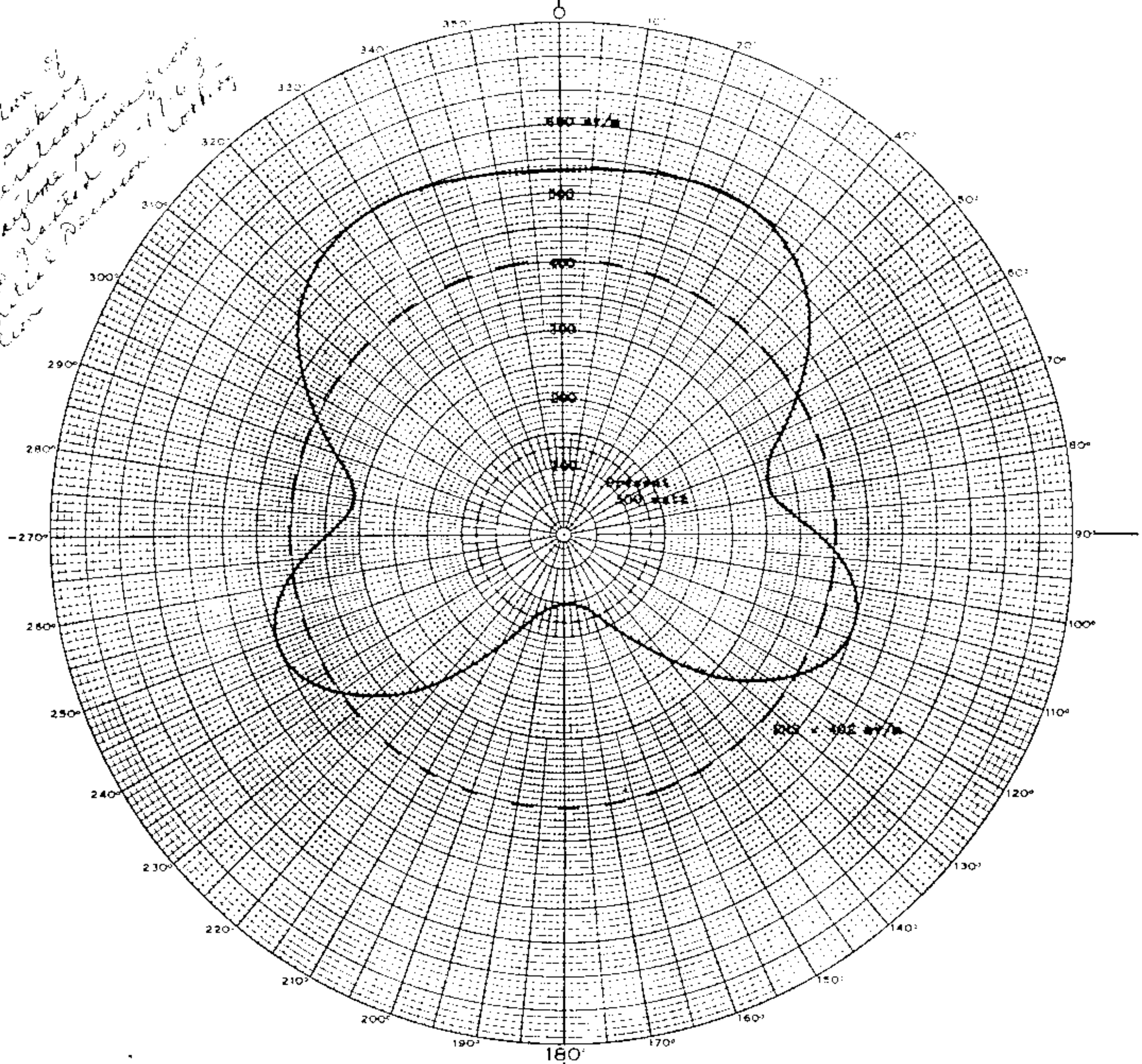
KARI

PROPOSED DAY
(5-27-60c)

Station KARI
Blaine, Washington

1kw, 5kw-LS, DA-2,U
550 KC

7-18-63
Granted portion of
application seeking
nighttime operation
Increased daytime power
500 w to 5 kw granted 5-17-63
12-21-63 Initial Decision
this action toward



DAYTIME HORIZONTAL PLANE RADIATION PATTERN 0.4/−126.5° — 2° — N 137° 0.333/+63.7° 137° 1.0/−126.5° Ant. Ht. 64° Gnd. Sys.: 120 x 100' plus 120 x 450'-675' N. Lat. 48° 57' 15" W. Long. 122° 44' 36"	FIGURE 14 BIRCH BAY BROADCASTING CO. KARI 550 kc Pres. 500 w D Prop. 5 kw D, 1 kw N, DA-2 BLAINE, WASHINGTON ARCHER S. TAYLOR CONSULTING RADIO ENGINEER — MARCH 1960

FCC File No. BP-14075
Accepted 4-27-60

KARI
Blaine, Washington

550 KC

DL 10684

KARI

1kw,5kw-LS,DA-2,U
550 kc

Measured Day
(12-22-64ct)

Station KARI
Blaine, Washington

3L-10684
1-29-65
LIC. CHG.
HRS. OPER.

EXHIBIT E-FIG. 1

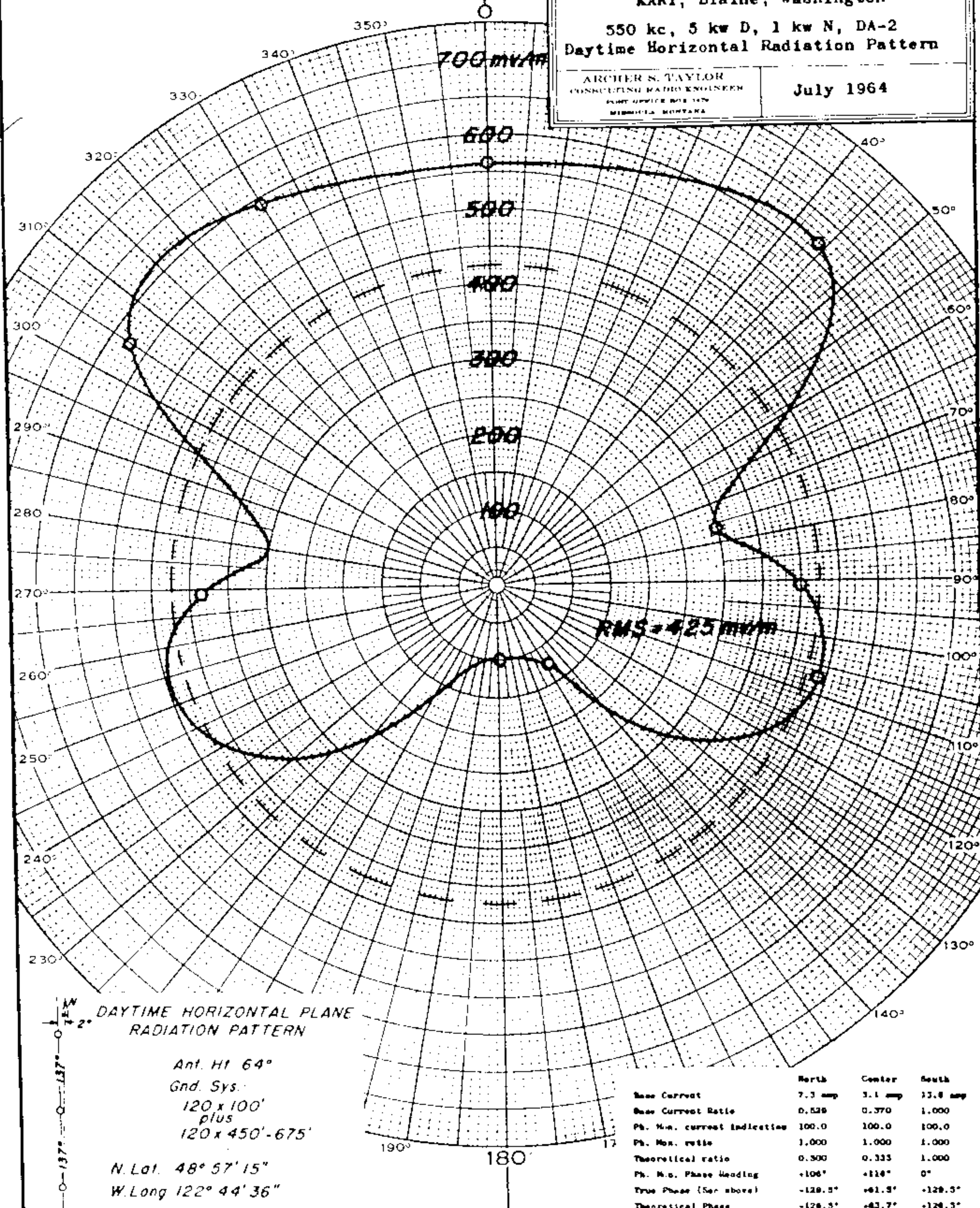
PROOF OF PERFORMANCE

KARI, Blaine, Washington

550 kc, 5 kw D, 1 kw N, DA-2
Daytime Horizontal Radiation Pattern

ARCHER S. TAYLOR
CONSULTING RADIO ENGINEER
POST OFFICE BOX 1479
MISSOULA, MONTANA

July 1964



DAYTIME HORIZONTAL PLANE
RADIATION PATTERN

Ant. Ht 64°
Gnd. Sys.
120 x 100'
plus
120 x 450'-675'

N. Lat. 48° 57' 15"
W. Long 122° 44' 36"

	North	Center	South
Base Current	7.3 amp	3.1 amp	13.8 amp
Base Current Ratio	0.529	0.370	1.000
Ph. M.o. current indication	100.0	100.0	100.0
Ph. Mon. ratio	1.000	1.000	1.000
Theoretical ratio	0.300	0.333	1.000
Ph. M.o. Phase Reading	+106°	+114°	0°
True Phase (See above)	-120.5°	+61.5°	+120.5°
Theoretical Phase	-120.5°	+43.7°	+120.5°

FCC File No. BL-10684
Accepted 11-27-64

Station KARI
Blaine, Washington

550 kc

KARI
1kw,5kw-LS,DA-2,U
550 kc

Measured Non-DA
(12-22-64ct)

Station KARI
Blaine, Washington

EXHIBIT E- FIG. 3

PROOF OF PERFORMANCE

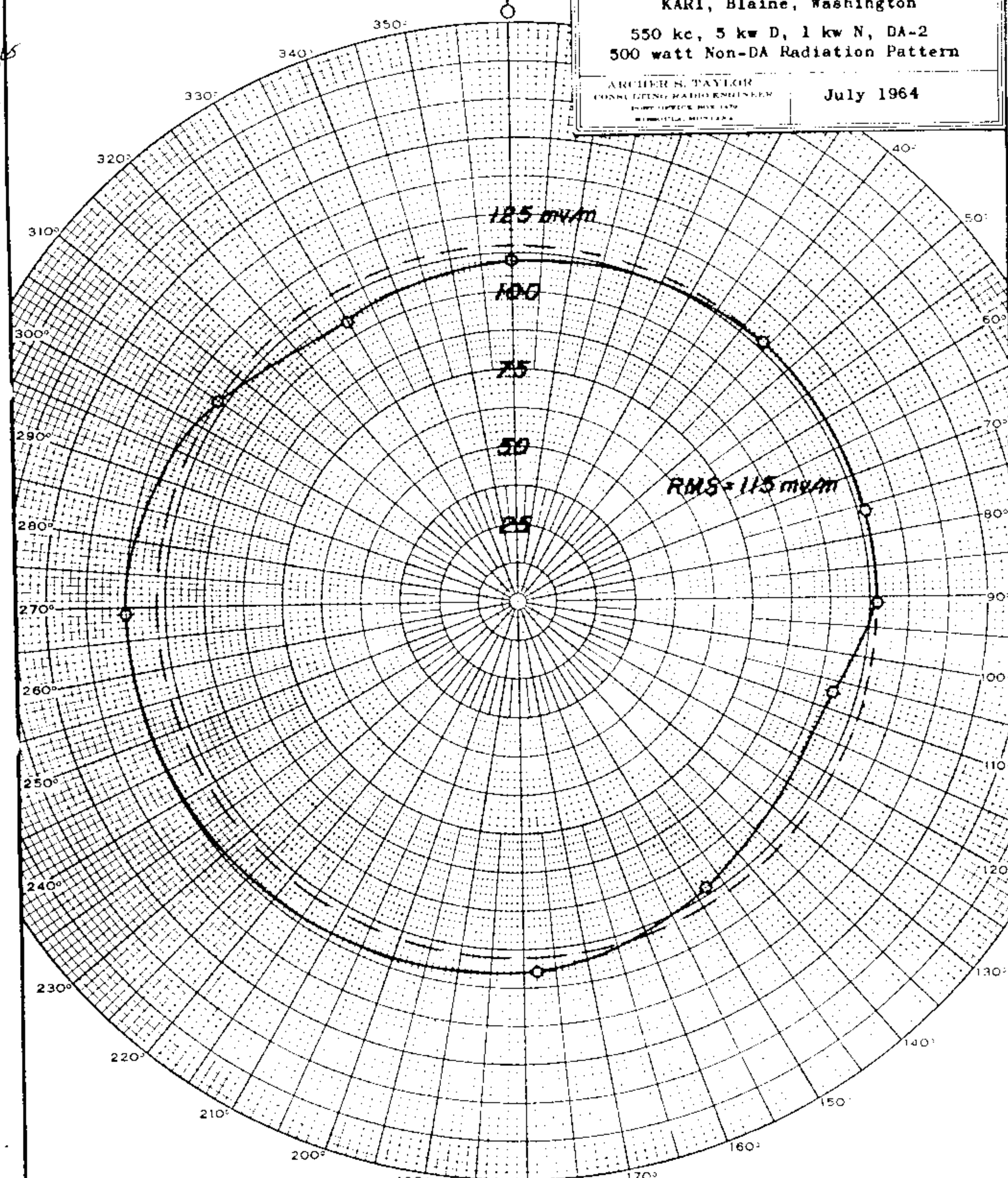
KARI, Blaine, Washington

550 kc, 5 kw D, 1 kw N, DA-2
500 watt Non-DA Radiation Pattern

ARCHER S. TAYLOR
CONSULTING RADIO ENGINEER

July 1964

L-10684
-29-65
IC. COVERING
CHG. IN HRS.
OF OPER.

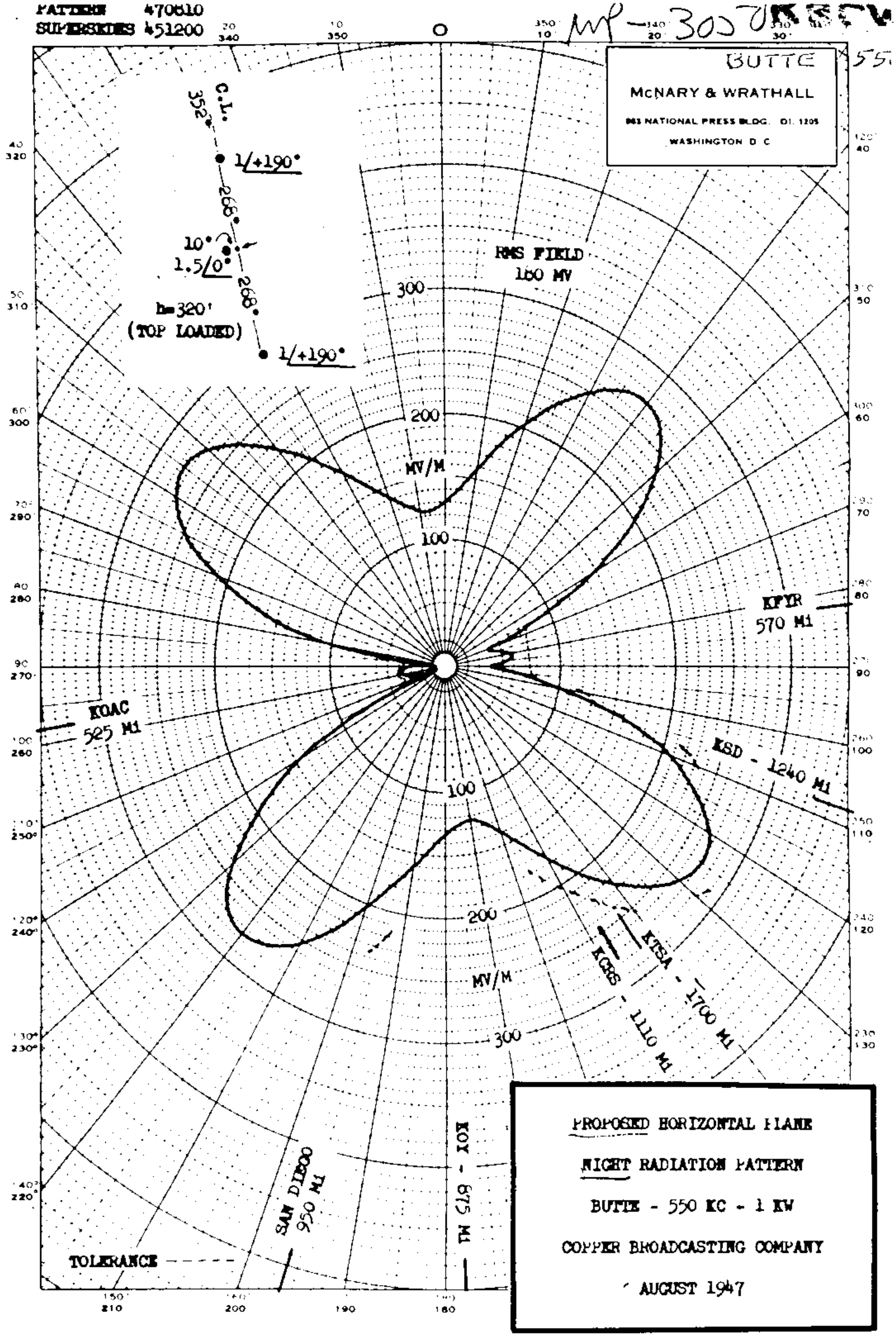


FCC File No. BL-10684
Accepted 11-27-64

Station KARI
Blaine, Washington

550 kc

Duplicate in file



PROPOSED HORIZONTAL PLANE

NIGHT RADIATION PATTERN

BUTTE - 550 KC - 1 KW

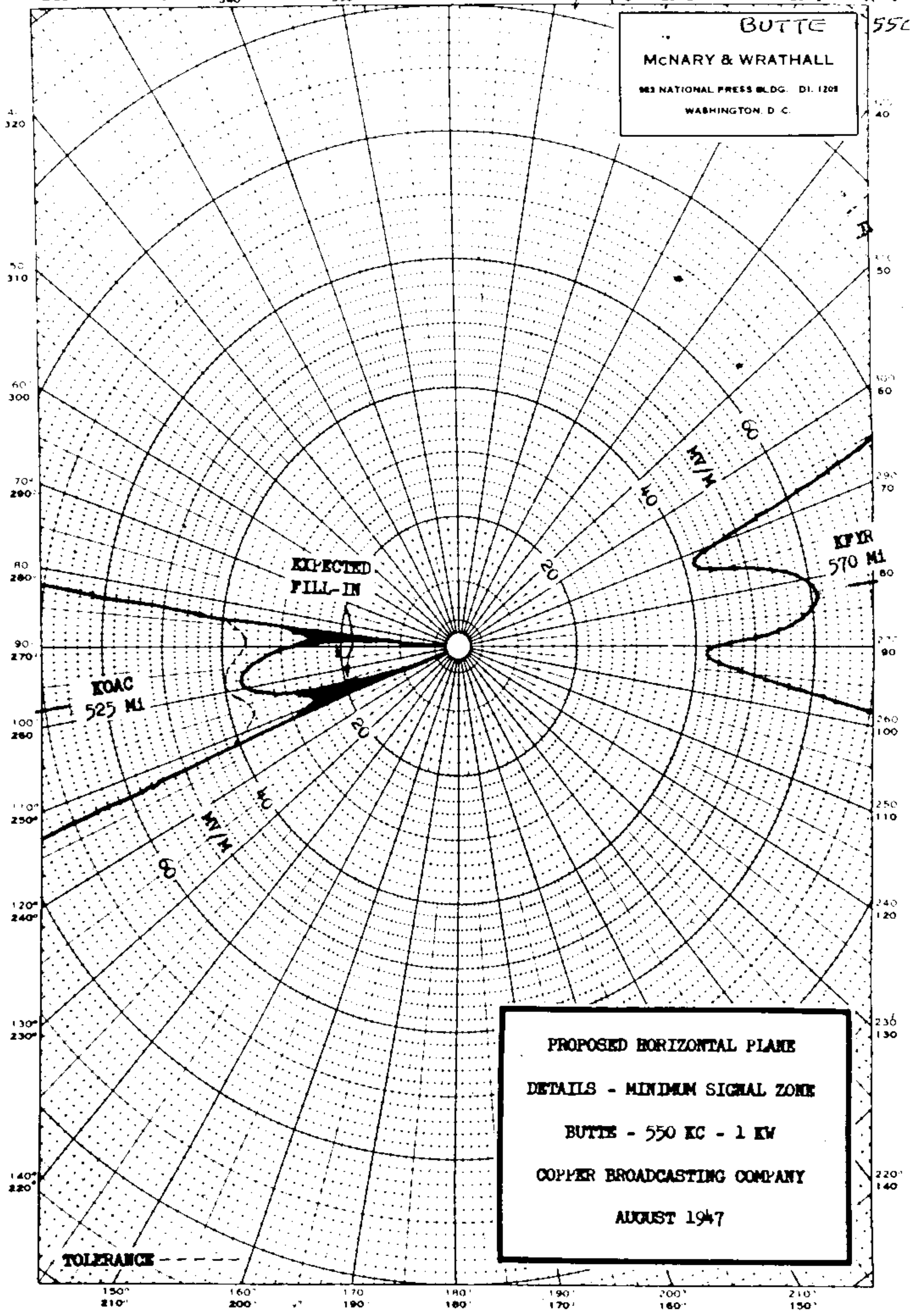
COPPER BROADCASTING COMPANY

AUGUST 1947

PATTERN 470810
SUPERSEDES 451200

MP-583 KBOW

Application to increase day ND power to 5KW



KBOW

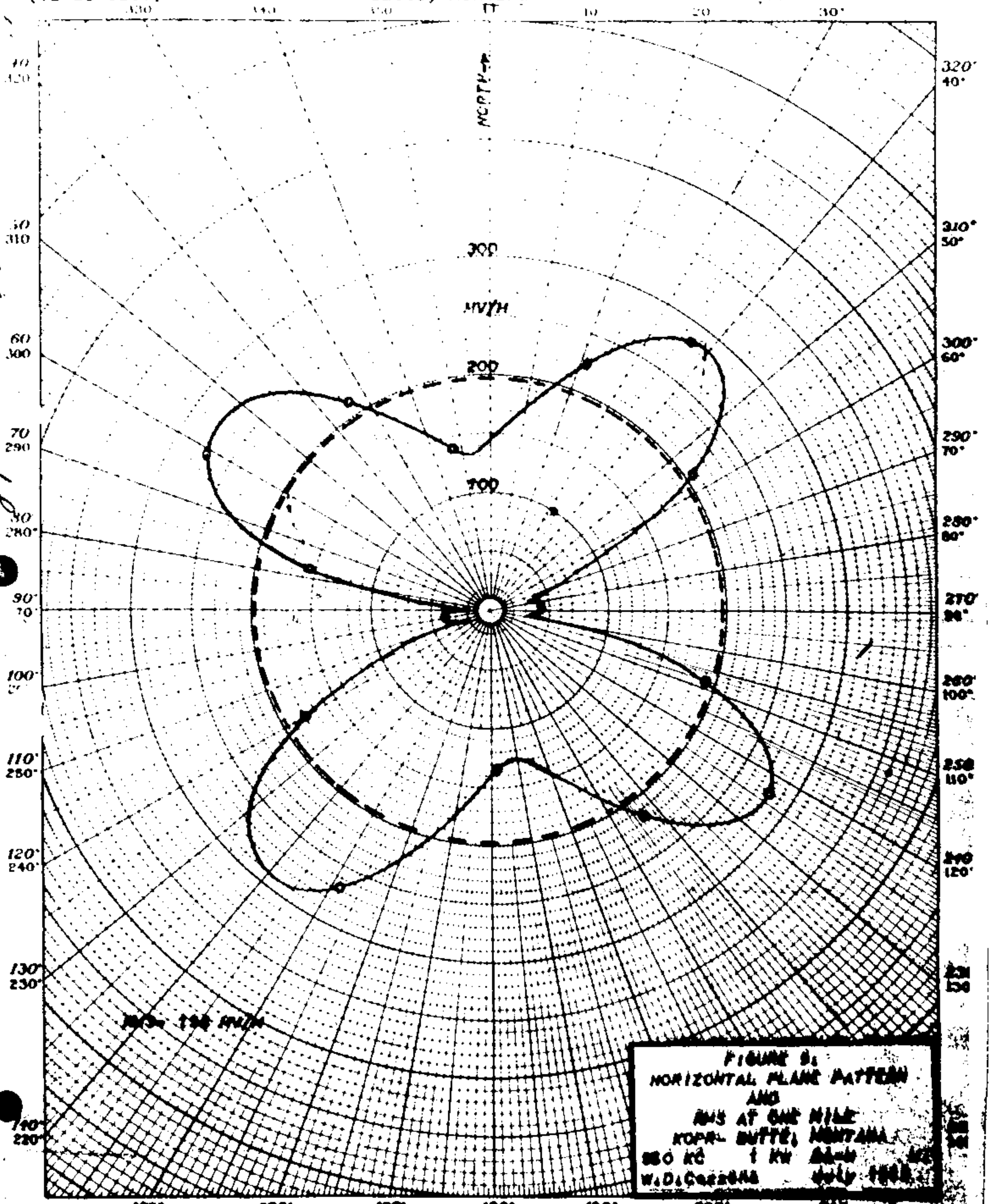
Measured Night
(12-28-62ct)

Station KOPR
Butte, Montana

1kw, DA-N, U BZ 4795
550 kc

1/23/63 granted CP & increase ND day power to 5KW

application to increase ND to 5KW



FCC File No. BZ-4795
Accepted 12-17-62

Station KOPR
Butte, Montana

550 kc

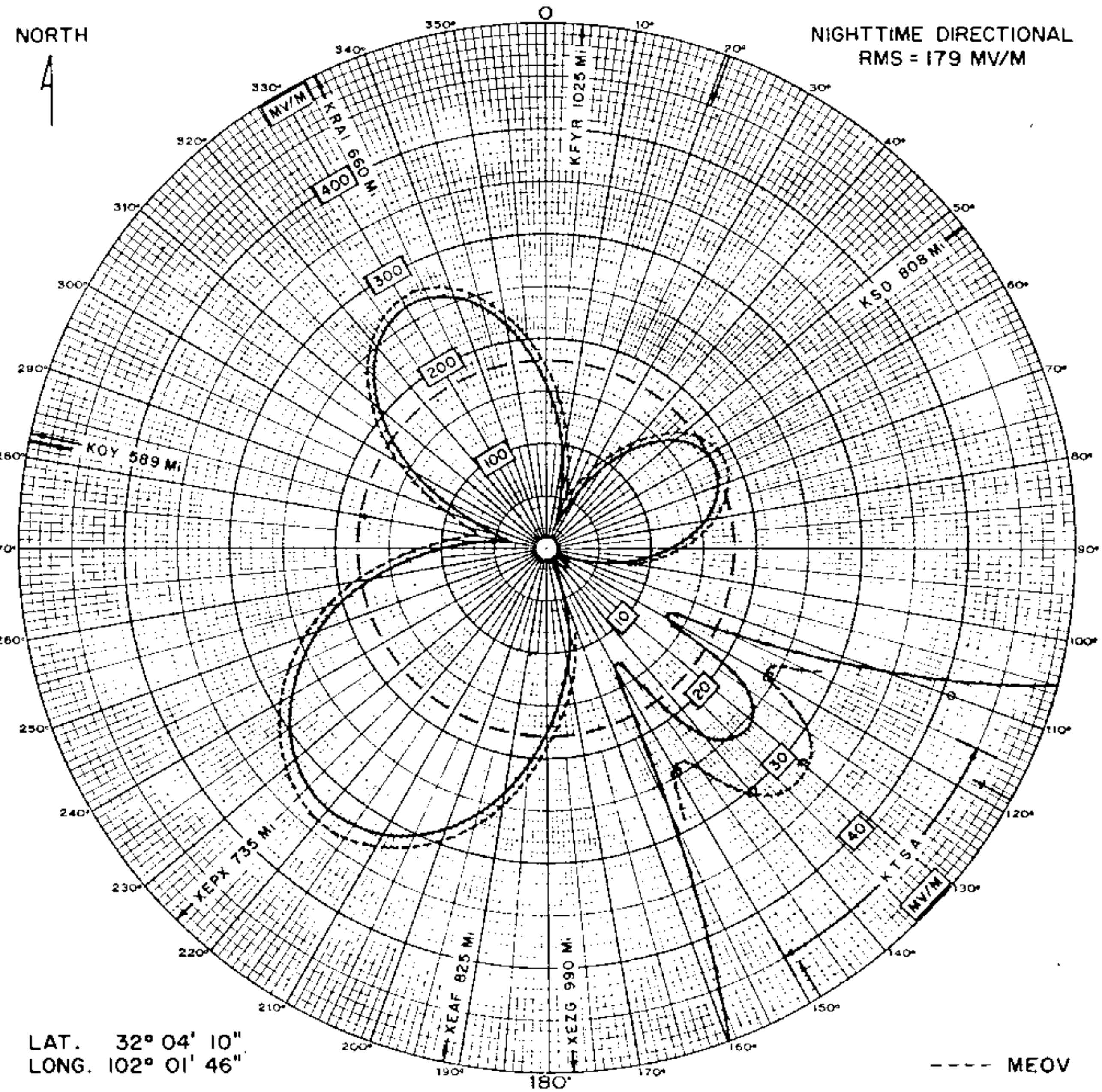
KCRS

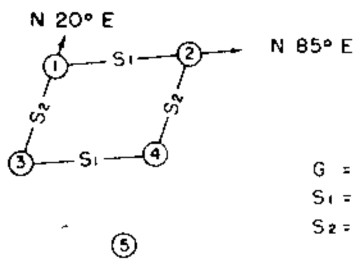
Proposed Night
(3-26-65ct)

Station KCRS
Midland, Texas

1kw,5kw-LS,DA-2,U
550 kc

BP-16583
3-24-65
CP: CHG.
LOC.,
DA





G = 320' = 64.5°
S_1 = 541.2' = 108.9°
S_2 = 407' = 81.9°

THEORETICAL PARAMETERS

TOWER	FIELD	PHASE
1	1.00	0°
2	0.90	132°
3	0.90	168°
4	0.81	300°
5	0.00	0°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KCRS
550 KC 1 KW 5 KW-LS DA-2
640830.3 FIGURE 5

FCC File No. BP-16583
Accepted 3-5-65

Station KCRS
Midland, Texas

550 kc

KCRS

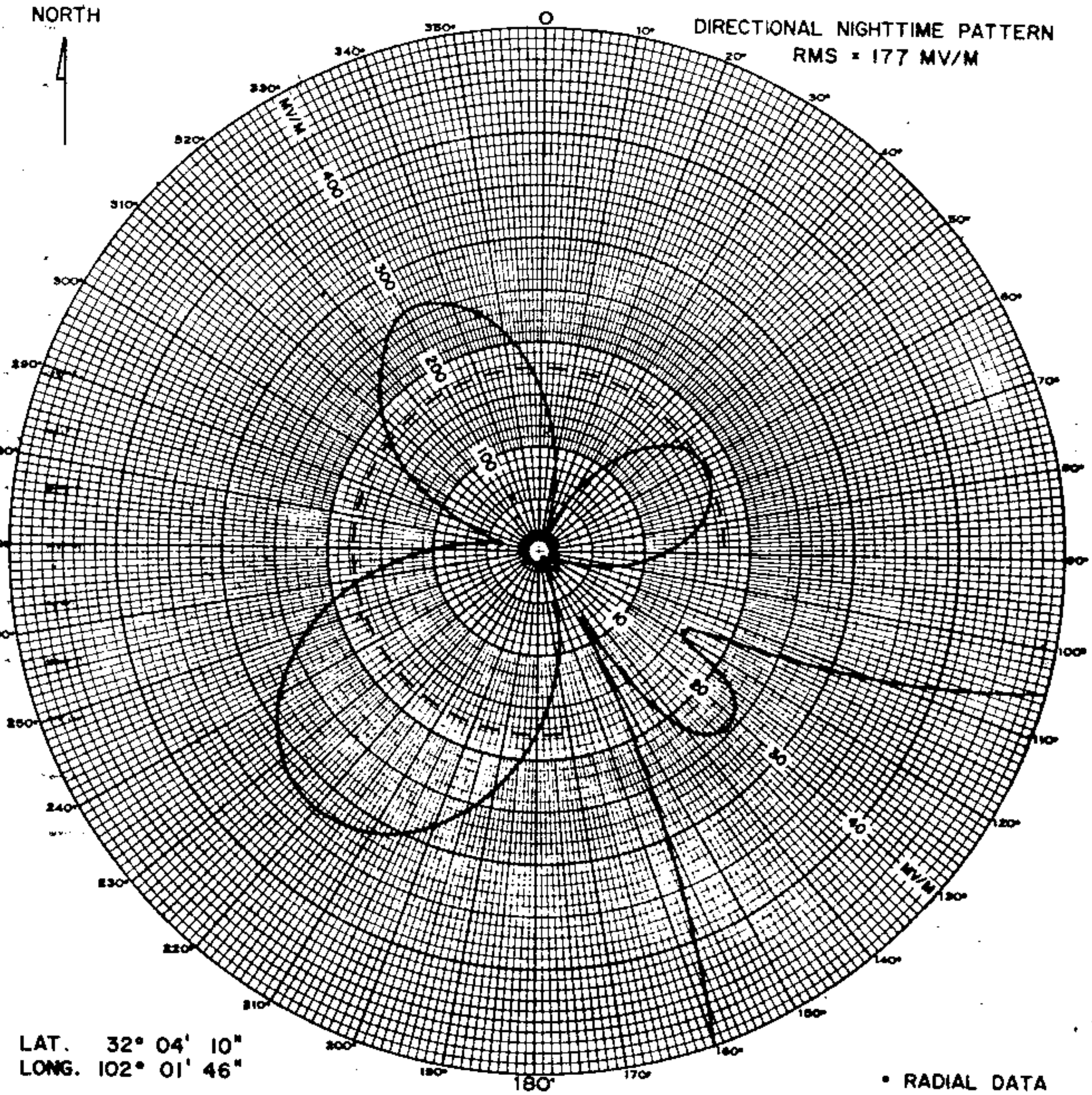
BL-11253

BL-11253
LIC 8-4-66

Measured Night
(5-27-66ct)

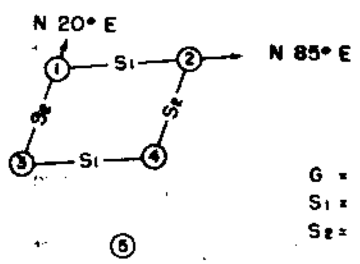
Station KCRS
Midland, Texas

1kw,5kw-LS,DA-2,U
550 kc



LAT. 32° 04' 10"
LONG. 102° 01' 46"

• RADIAL DATA



G = 320' = 64.5°
S1 = 541.2' = 108.9°
S2 = 407' = 81.9°

DIRECTIONAL ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	OBSERVED FIELD	OBSERVED PHASE
1	1.00	0°	1.00	0°
2	0.90	132°	0.90	132°
3	0.90	168°	0.90	168°
4	0.81	300°	0.81	-60°
5	—	—	—	—

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KCRS
550 KC 1 KW 5 KW-LS DA-2
651210 FIGURE 2C

FCC File No. BL-11253
Accepted 4-26-66

Station KCRS
Midland, Texas

550 kc

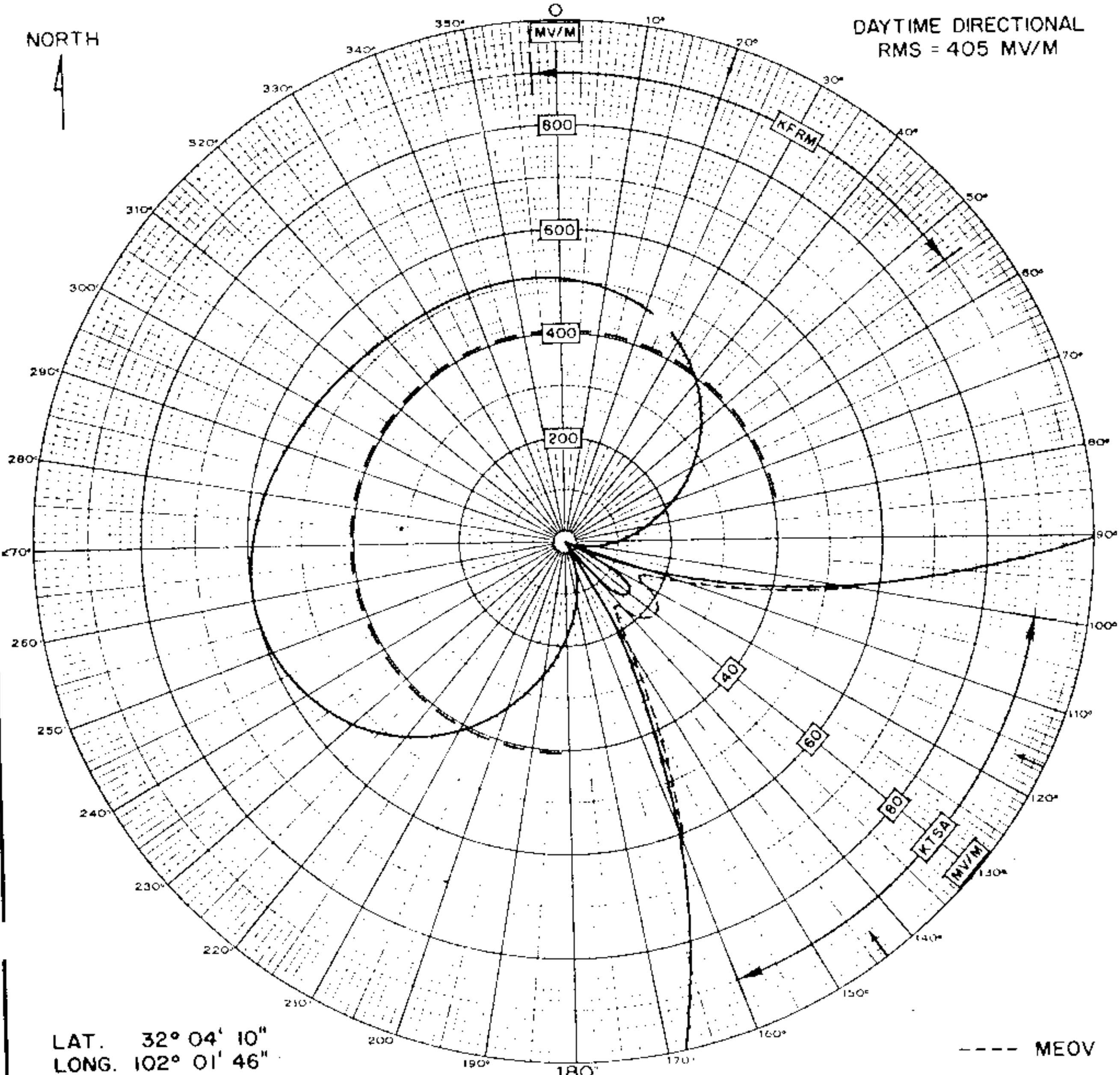
KCRS

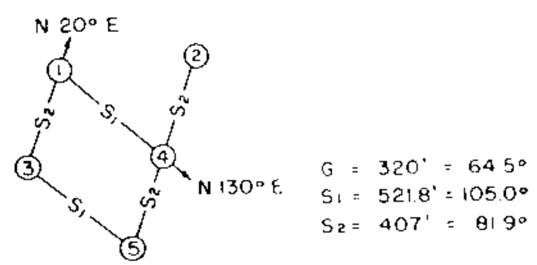
Proposed Day
(3-26-65ct)

Station KCRS
Midland, Texas

1kw,5kw-LS,DA-2,U
550 kc

BP-16583
3-24-65
CP: CHG.
LOC.,
DA





THEORETICAL PARAMETERS

TOWER	FIELD	PHASE
1	1.00	0°
2	0.00	0°
3	0.10	-90°
4	1.00	78°
5	0.10	-12°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KCRS
550 KC 1 KW 5 KW-LS DA-2
640830.2 FIGURE 5

FCC File No. BP-16583
Accepted 3-5-65

Station KCRS
Midland, Texas

550 kc

KCRS
BL-11253

Measured Day
(5-27-66ct)

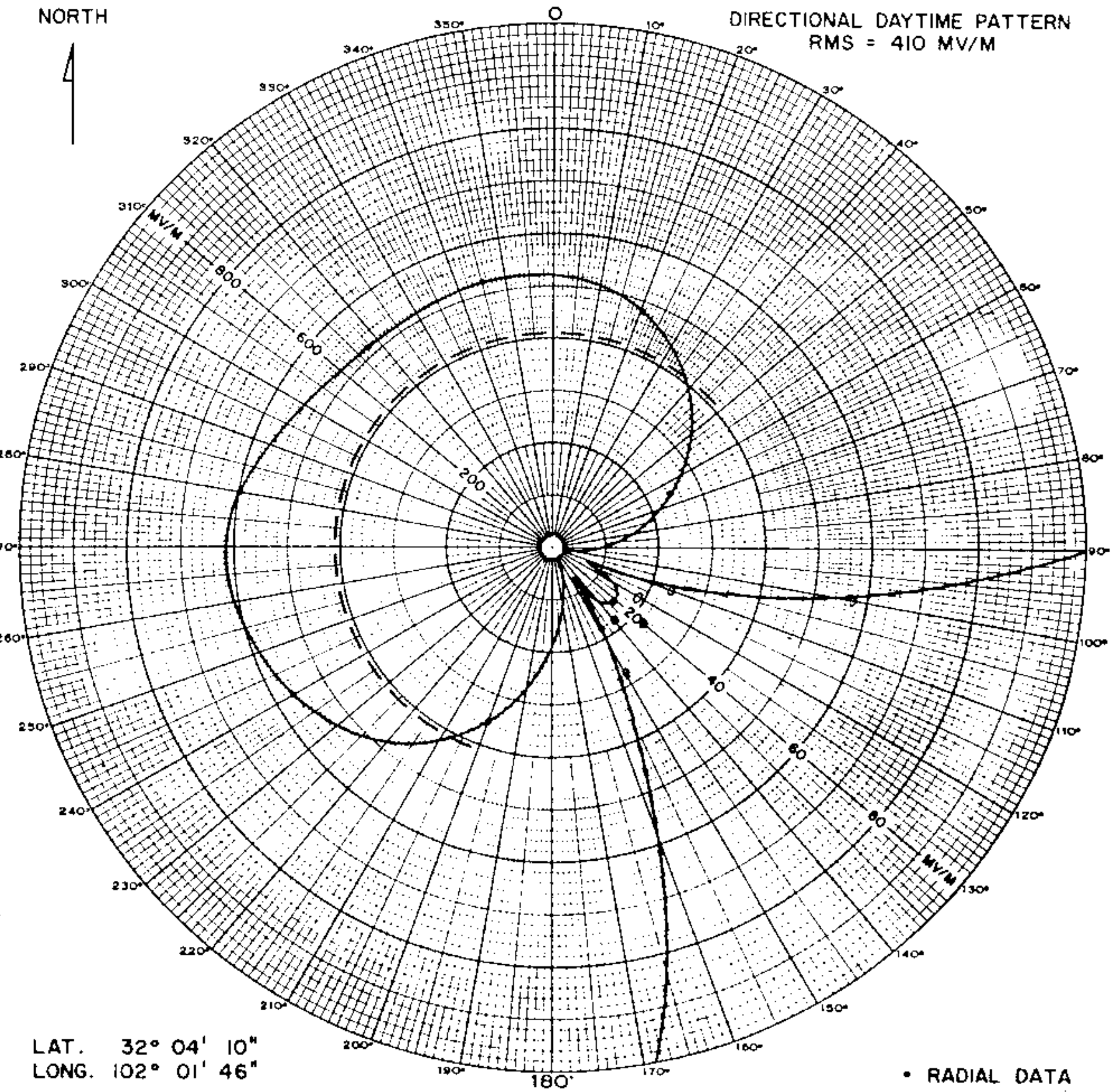
Station KCRS
Midland, Texas

1kw,5kw-LS,DA-2,U
550 kc

BL 11253
LIC 8-4-66

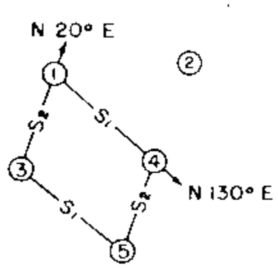
NORTH

DIRECTIONAL DAYTIME PATTERN
RMS = 410 MV/M



LAT. 32° 04' 10"
LONG. 102° 01' 46"

• RADIAL DATA



G = 320' = 64.5°
S1 = 521.8' = 105.0°
S2 = 407' = 81.9°

DIRECTIONAL ANTENNA PARAMETERS

TOWER	THEORETICAL FIELD	THEORETICAL PHASE	OBSERVED FIELD	OBSERVED PHASE
1	1.00	0°	1.00	0°
2	—	—	—	—
3	0.10	-90°	0.10	-90°
4	1.00	78°	1.00	76°
5	0.10	-12°	0.10	-14°

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KCRS
550 KC 1 KW 5 KW-LS DA-2
651210 FIGURE 2B

FCC File No. BL-11253
Accepted 4-26-66

Station KCRS
Midland, Texas

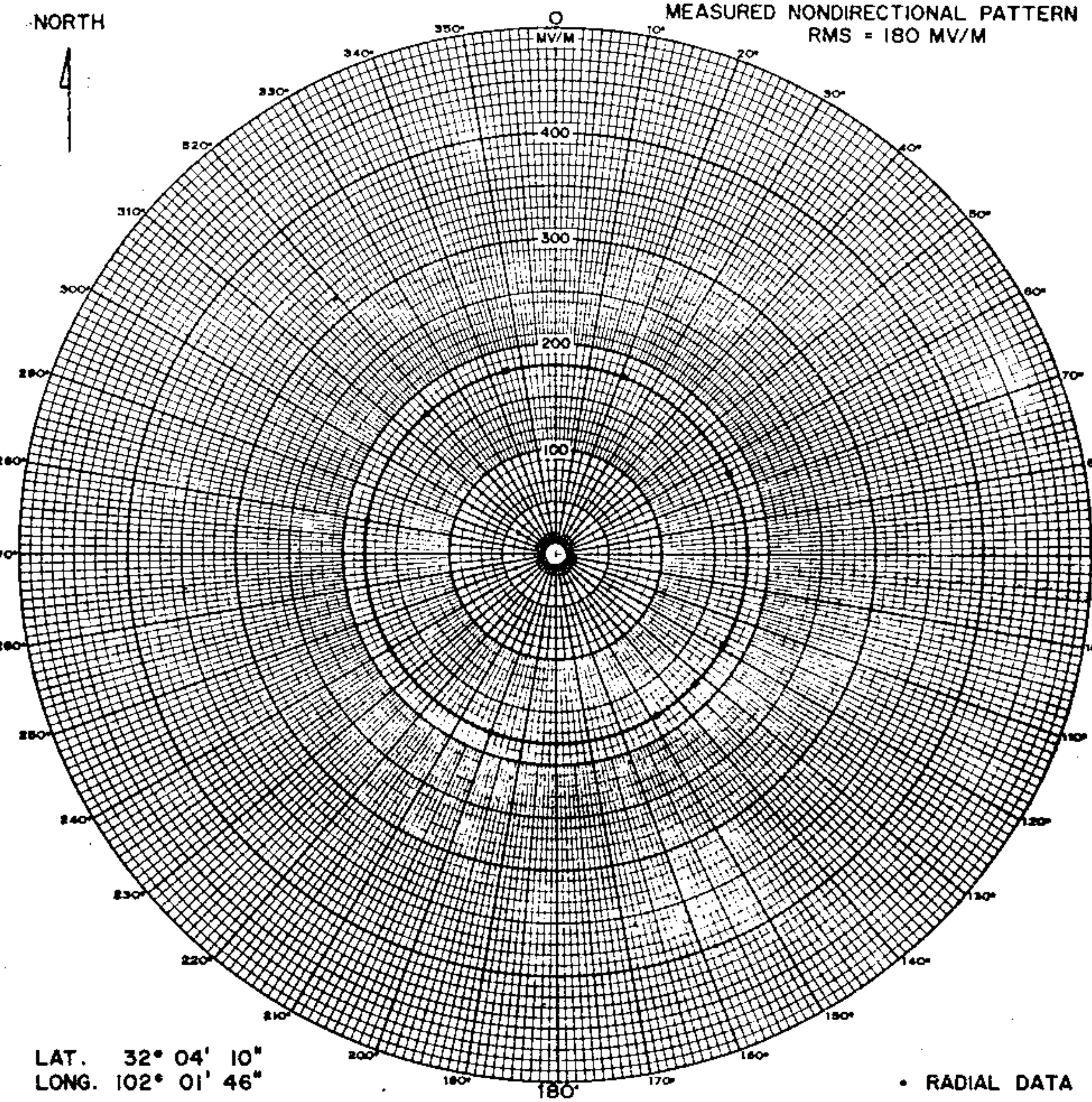
550 kc

KCRS

LIC 8-4-66

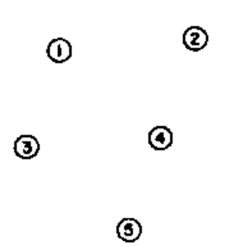
NORTH

MEASURED NONDIRECTIONAL PATTERN
RMS = 180 MV/M



LAT. 32° 04' 10"
LONG. 102° 01' 46"

• RADIAL DATA



G = 320' = 64.5°

RADIATING ELEMENTS

TOWER	OPERATION
1	SERIES FED
2	DETUNED
3	DETUNED
4	DETUNED
5	DETUNED

PREPARED BY
THE FIRM OF A. EARL CULLUM, JR.
CONSULTING ENGINEERS

RADIO STATION KCRS
550 KC 1 KW 5 KW-LS DA-2
651210 FIGURE 2A

Over ↓ near KFRM

550

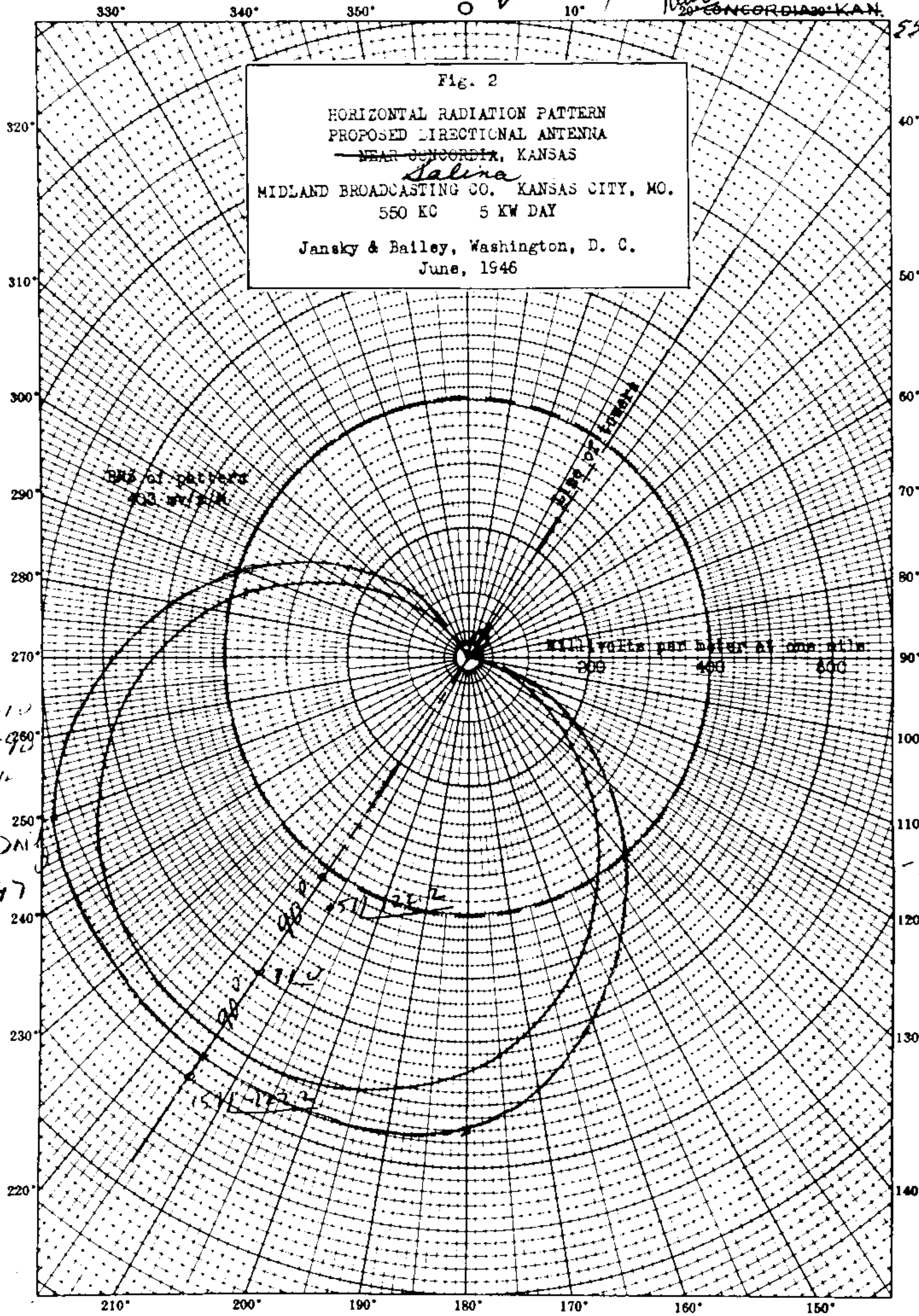


Fig. 2

HORIZONTAL RADIATION PATTERN
PROPOSED DIRECTIONAL ANTENNA
~~NEAR CONCORDIA~~, KANSAS
Salina
MIDLAND BROADCASTING CO. KANSAS CITY, MO.
550 KC 5 KW DAY

Jansky & Bailey, Washington, D. C.
June, 1946

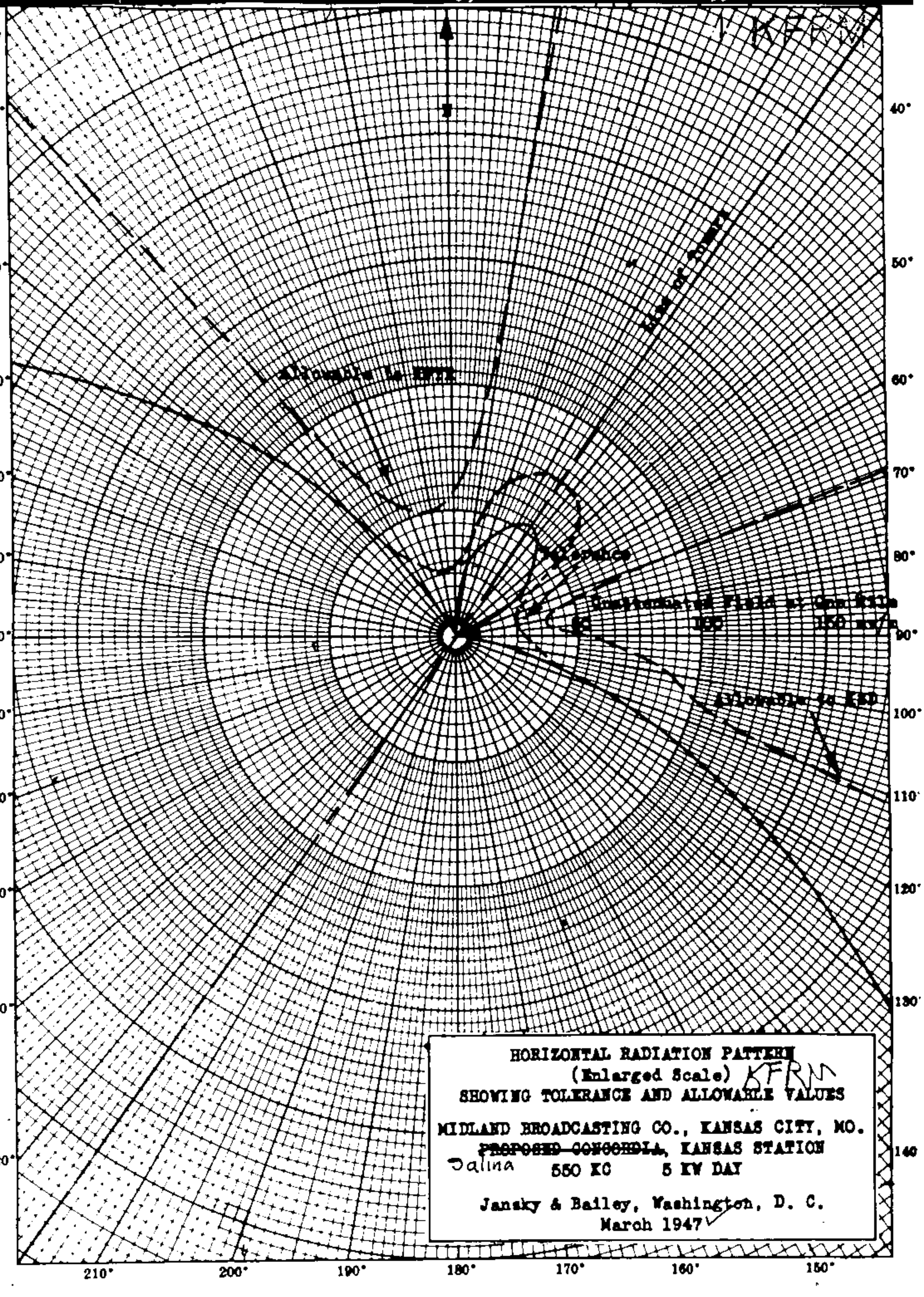
39-26-10
97-39-40
H=512 ft

prov'd by DAI
Nov 1947

PROPOSED DAY NULLS Station KFRM 5kw, DA-D
Kansas City, Missouri 550 KC

Salina

KFRM



HORIZONTAL RADIATION PATTERN
(Enlarged Scale) KFRM
SHOWING TOLERANCE AND ALLOWABLE VALUES

MIDLAND BROADCASTING CO., KANSAS CITY, MO.
~~PROPOSED CONCORDIA~~, KANSAS STATION
Salina 550 KC 5 KW DAY

Jansky & Bailey, Washington, D. C.
March 1947

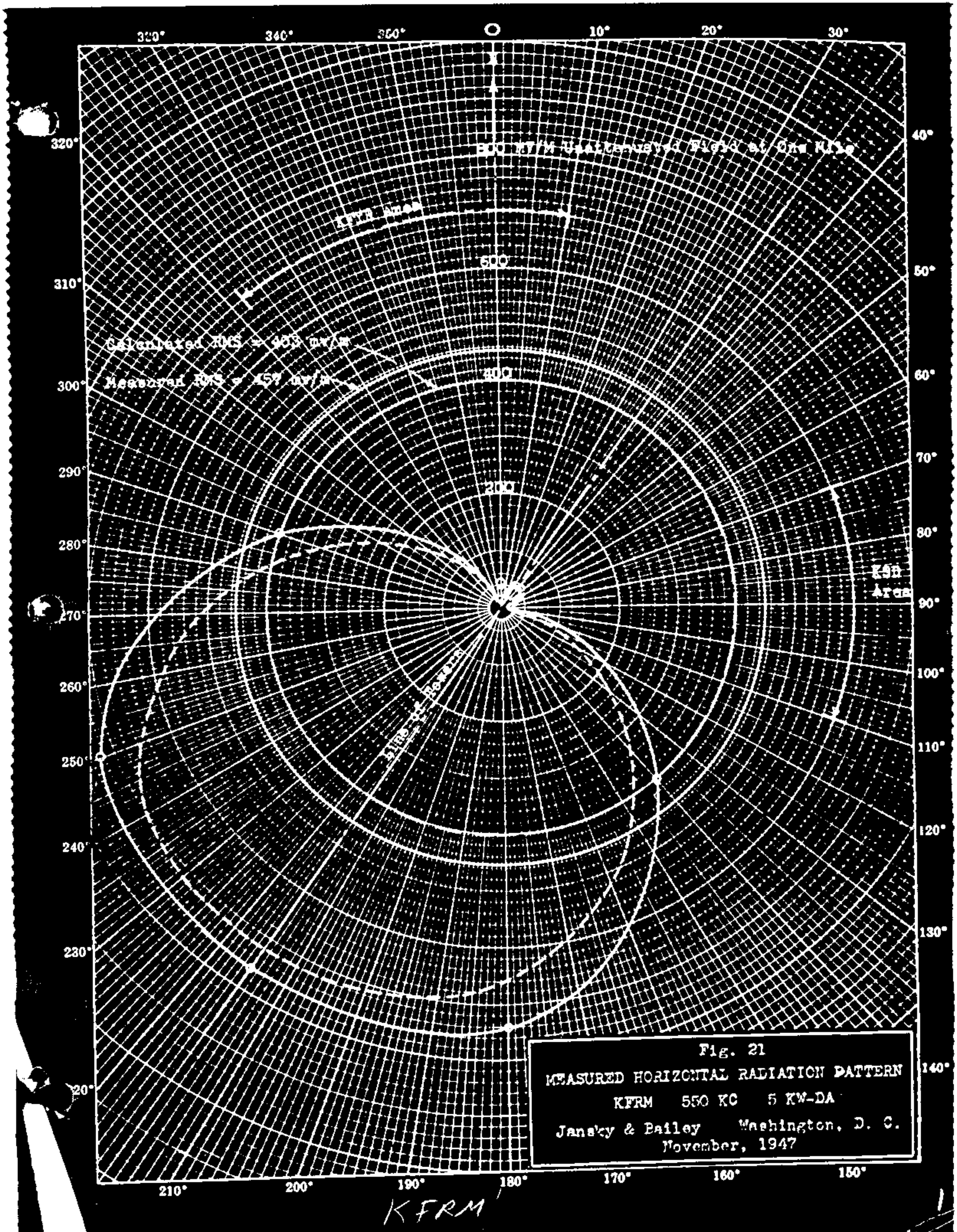


Fig. 21
MEASURED HORIZONTAL RADIATION PATTERN
KFRM 550 KC 5 KW-DA
Jansky & Bailey Washington, D. C.
November, 1947

KFRM

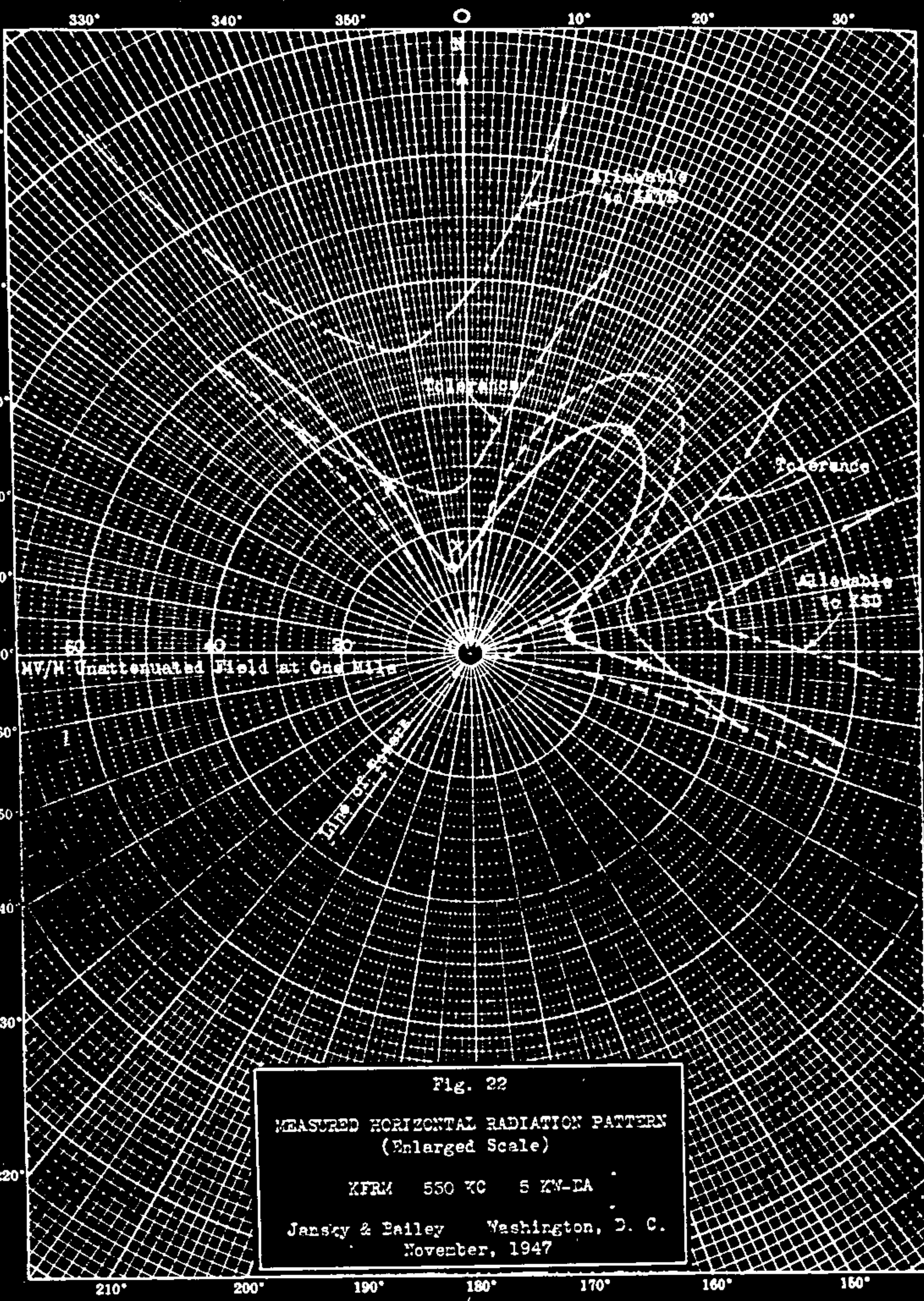


Fig. 22

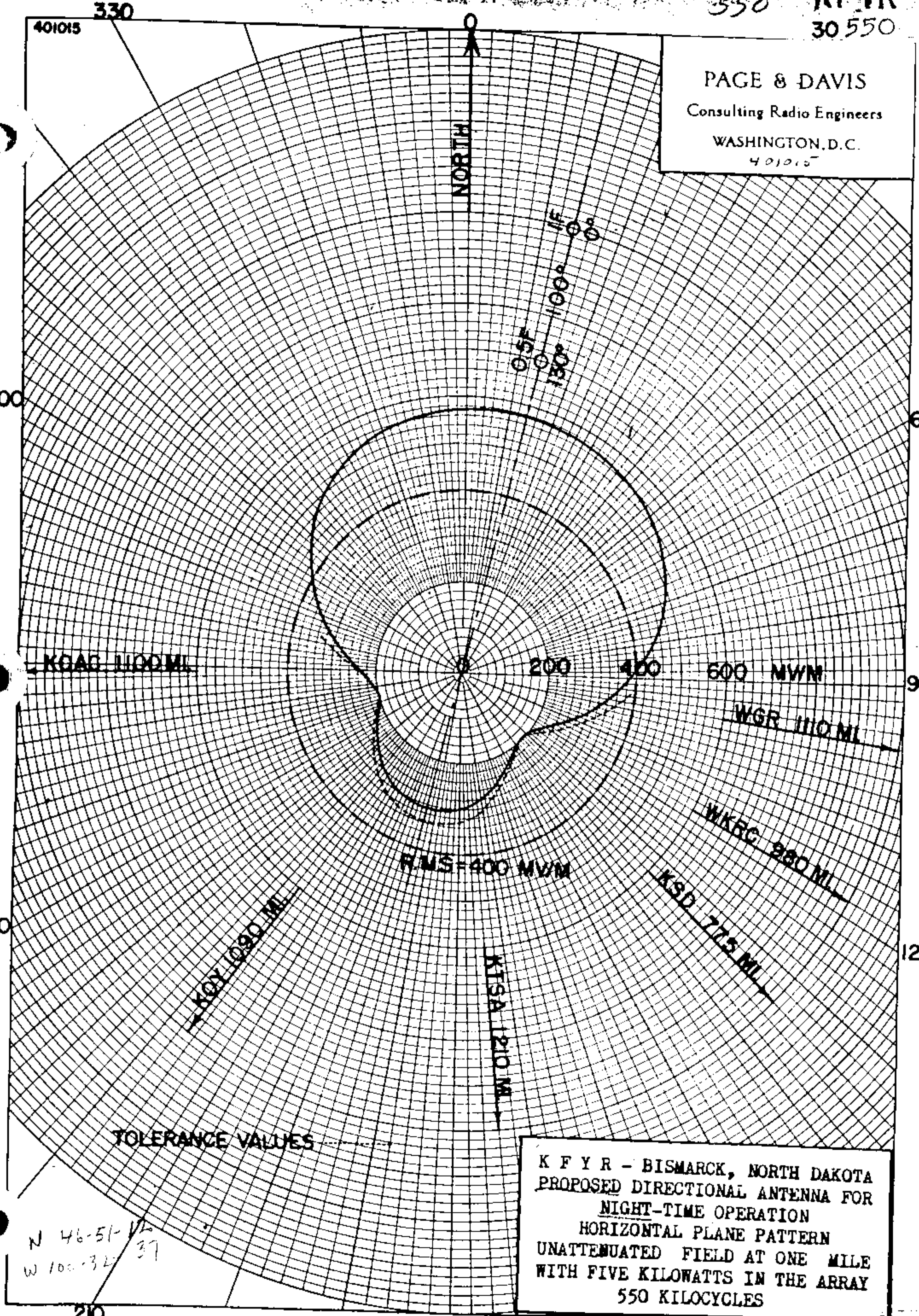
MEASURED HORIZONTAL RADIATION PATTERN
(Enlarged Scale)

KFRM 550 KC 5 KW-DA

Jansky & Bailey Washington, D. C.
November, 1947

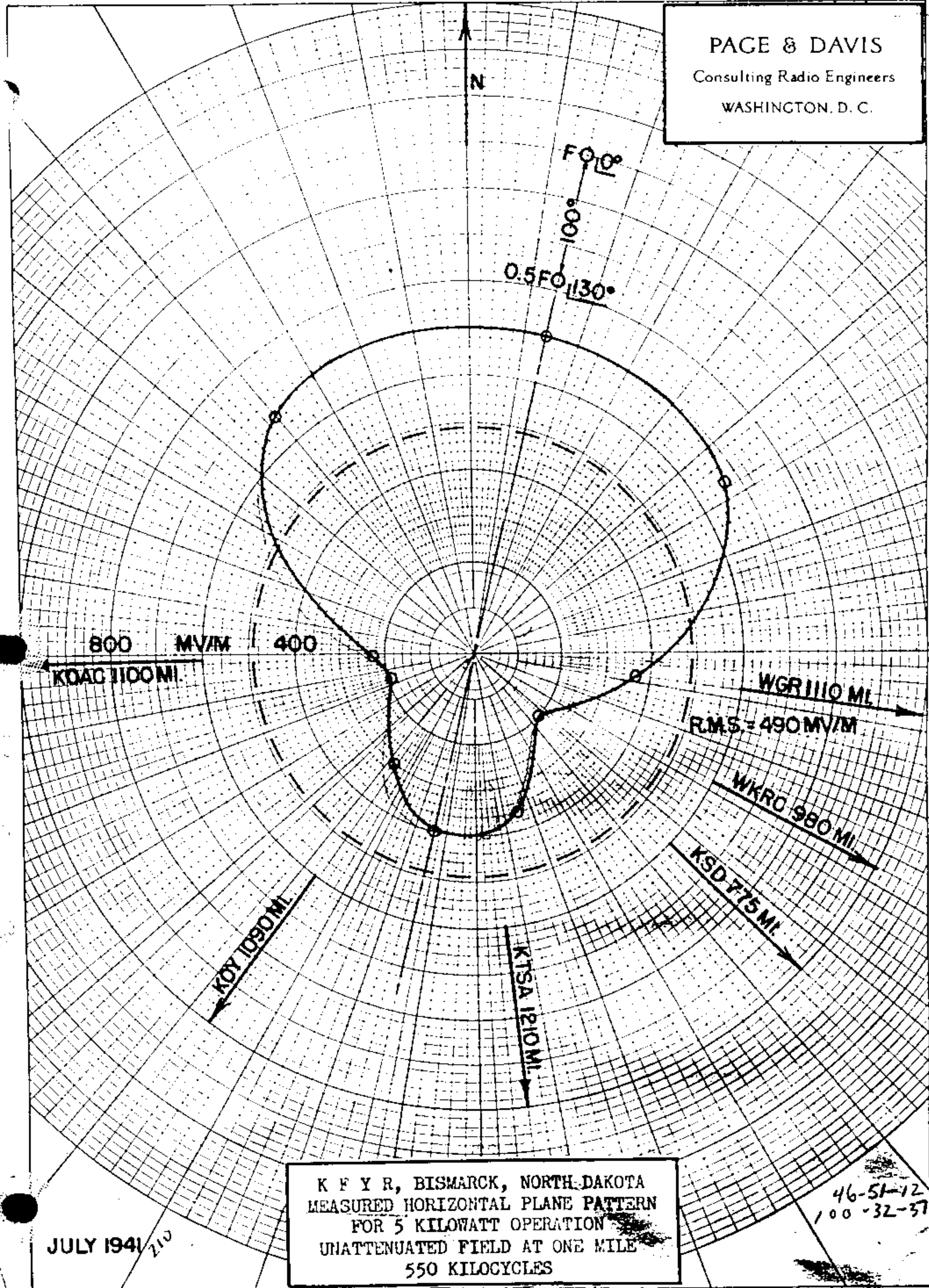
KFRM

550 KFYR
30550



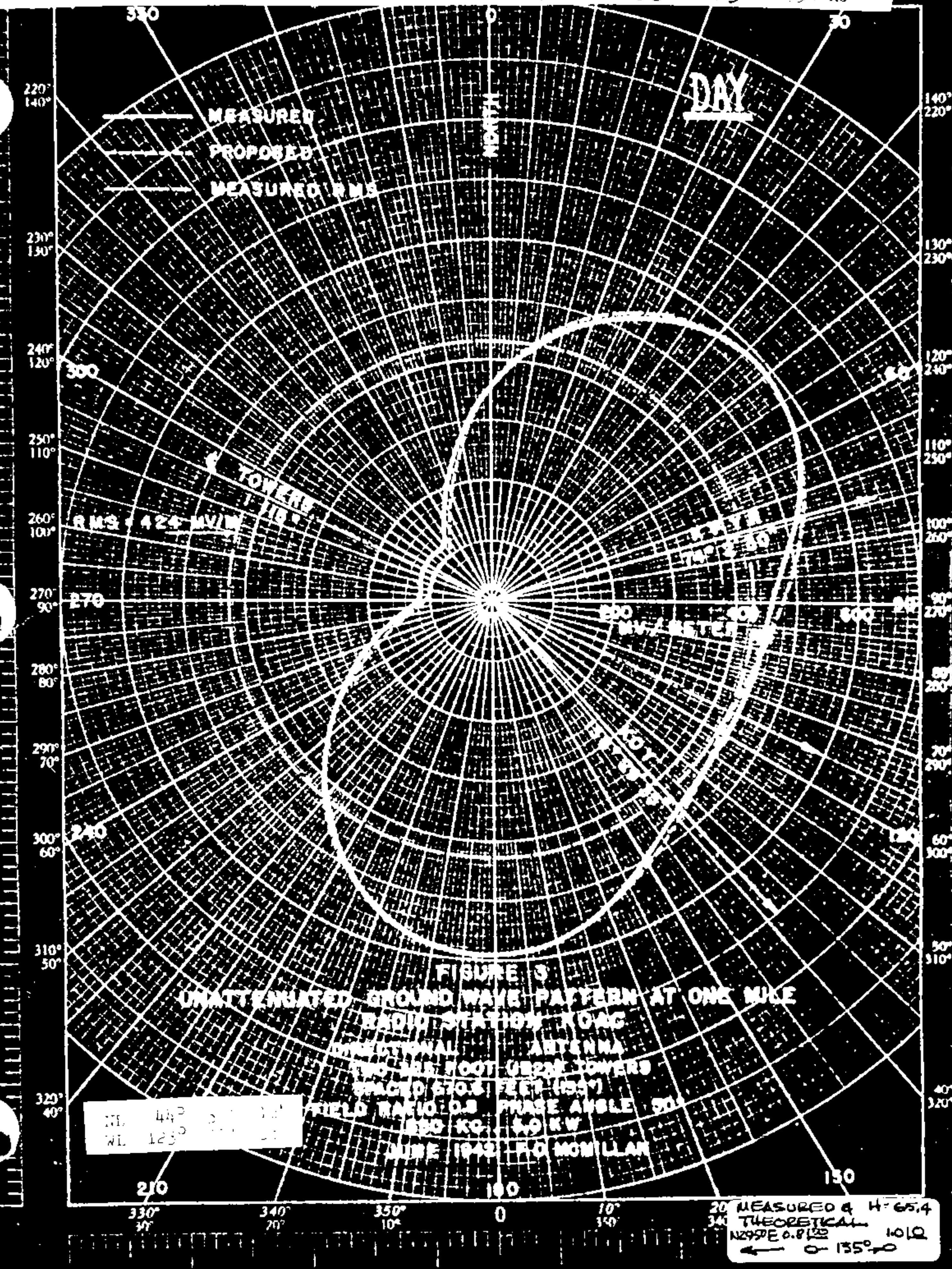
K F Y R - BISMARCK, NORTH DAKOTA
PROPOSED DIRECTIONAL ANTENNA FOR
NIGHT-TIME OPERATION
HORIZONTAL PLANE PATTERN
UNATTENUATED FIELD AT ONE MILE
WITH FIVE KILOWATTS IN THE ARRAY
550 KILOCYCLES

KFYR - 550 B4-1-1481



K F Y R, BISMARCK, NORTH DAKOTA
MEASURED HORIZONTAL PLANE PATTERN
FOR 5 KILOWATT OPERATION
UNATTENUATED FIELD AT ONE MILE
550 KILOCYCLES

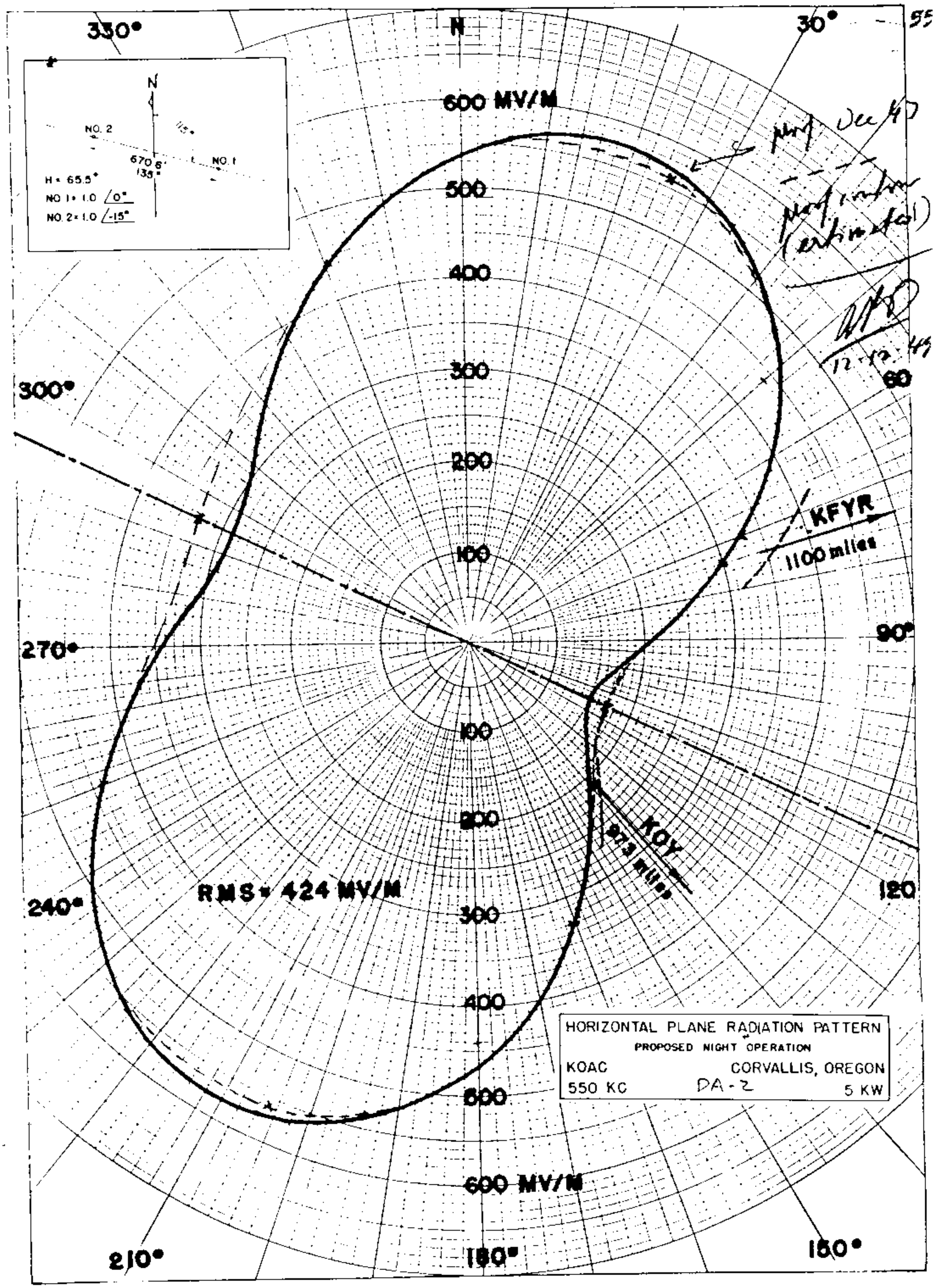
MEASURED & PROPOSED DAY Station KOAC 5kw, DA-2,U KOAC
Corvallis, Oregon B5- 550 KC



NL 44°
WL 123°

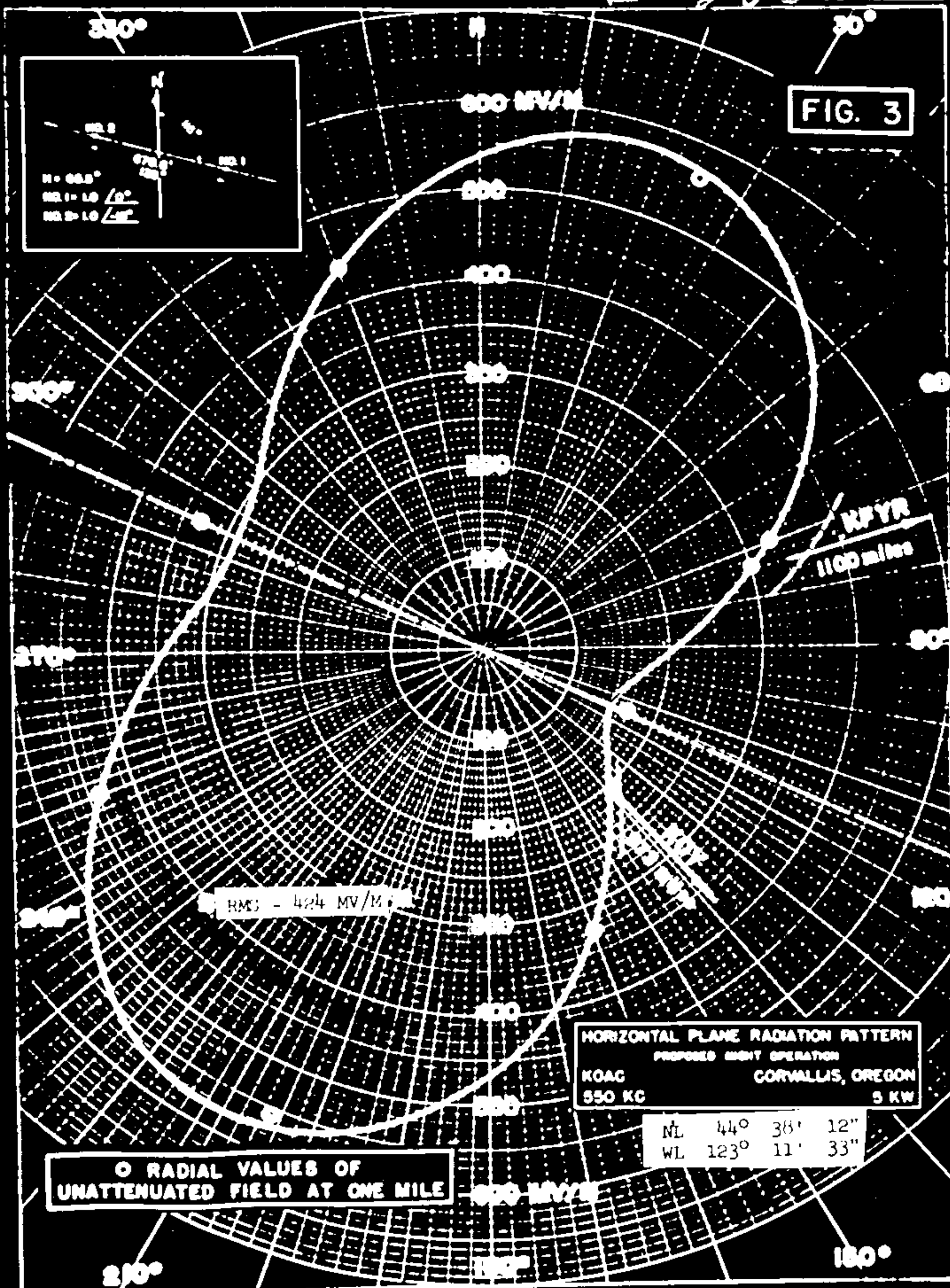
KOAC

55

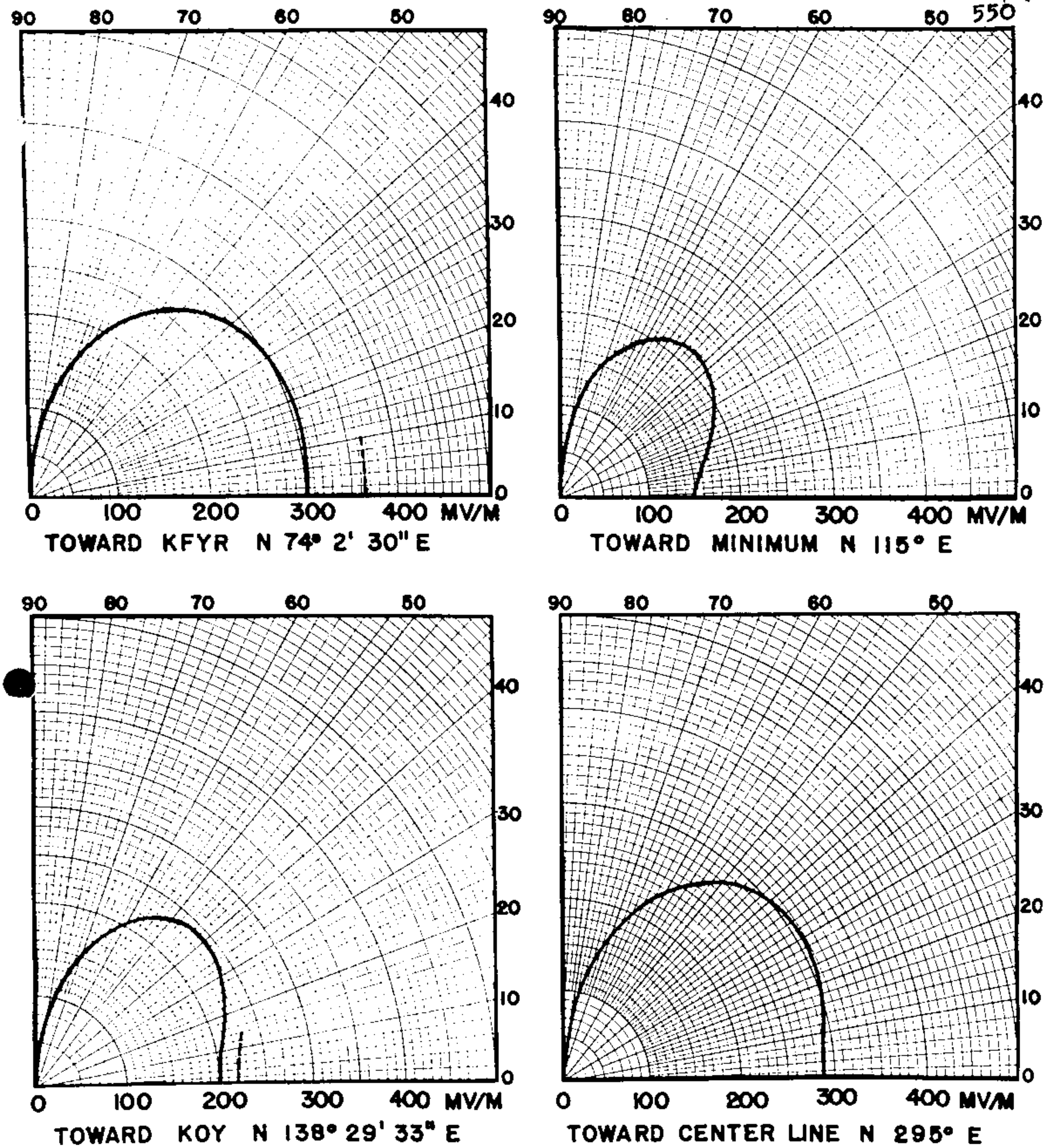


KEUFFEL & ESSER CO., N. Y. NO. 343 A
POLAR CO-ORDINATE

MEASURED & PROPOSED NIGHT Station KOAC 5kw, DA-2,U
Corvallis, Oregon 550 KC KOAC



KOAC
550



----ADJUSTMENT TOLERANCE

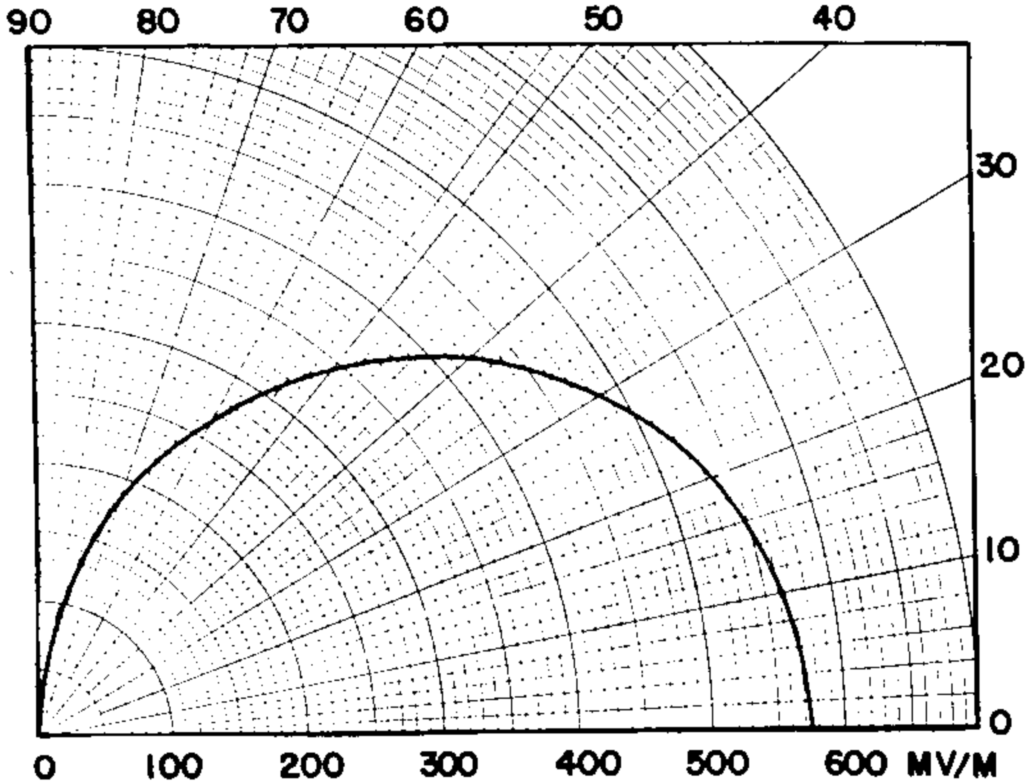
VERTICAL PLANE RADIATION PATTERNS

PROPOSED NIGHT OPERATION

KOAC CORVALLIS, OREGON

550 KC 5 KW

KOAC
550



TOWARD MAXIMUM N 20°E & N 210°E

VERTICAL PLANE RADIATION PATTERN

PROPOSED NIGHT OPERATION

KOAC CORVALLIS, OREGON

550 KC 5 KW

KRAI

PROPOSED NIGHT
(9/6/55G)

STATION KRAI
CRAIG, COLORADO

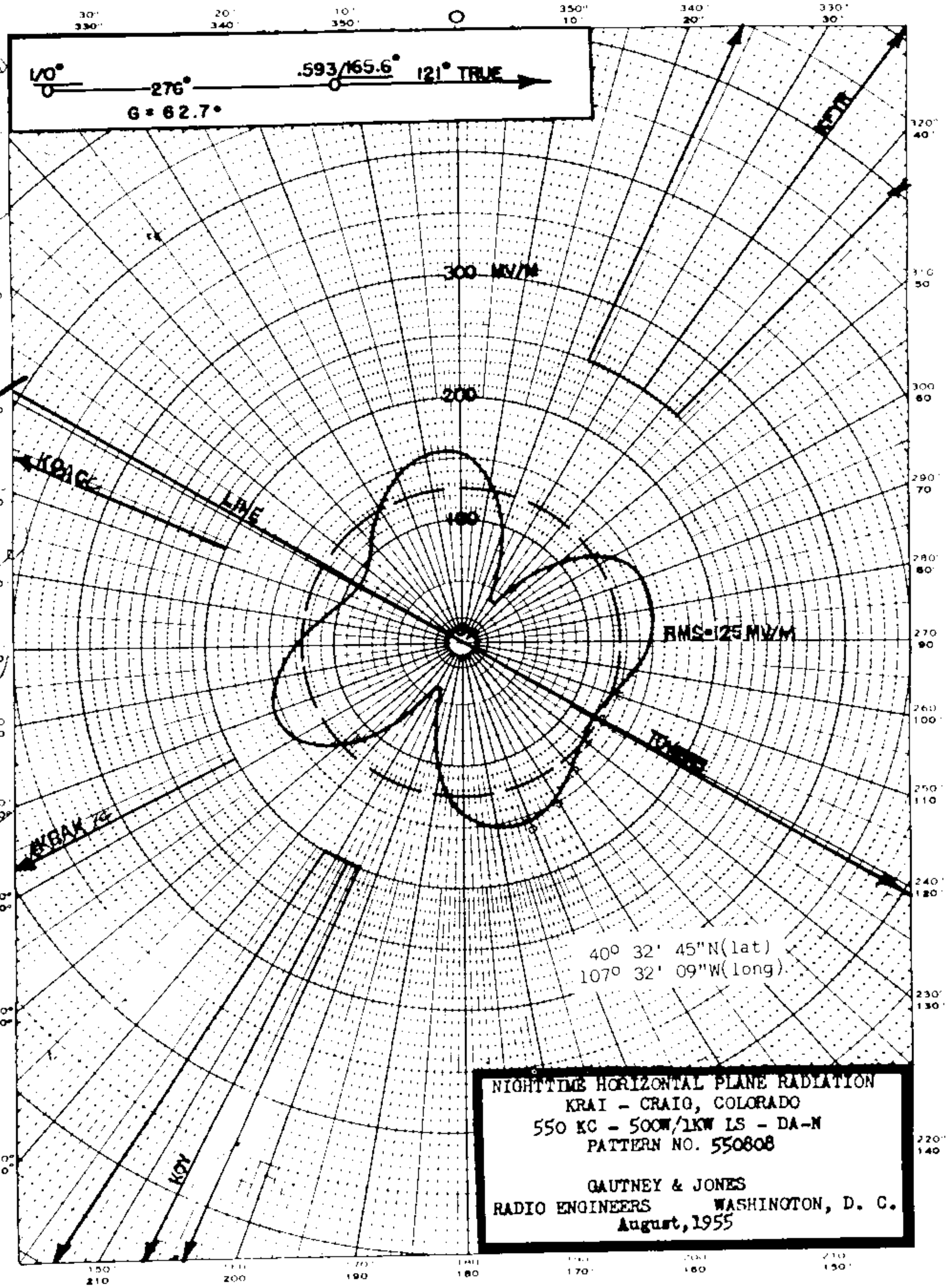
500W,1KW-LS
DA-N, U

550 KC

BP-17787
APPL. ACCEPTED
12-11-67 TO
INCREASE DAYTIME
FROM 1 KW
TO 5 KW

6-19-68
GRANTED CP
FROM 1KW
TO 5KW

BL-12266
Granted
8/20/69
license
covering
CP to
increase
daytime
(non-DA)
power.



FILE NO. BP-9515(Amended) ACCEPTED FCC 6/25/55 KRAI, Craig, Colorado 550 KC

KRAI

MEASURED
NIGHT (6-20-56g)

STATION KRAI
CRAIG, COLO.

500 W, 1 KW BL-6191
DA-N, U
550 KC

BP-17787
APPL. ACCEPTED
12-11-67 TO
INCREASE POWER
FROM 1 KW
TO 5 KW

6-19-68
GRANTED
CP
FROM 1 KW
TO 5 KW

BL-12266
Granted
8/20/69
license
covering CP
to increase
daytime
non-DA
power

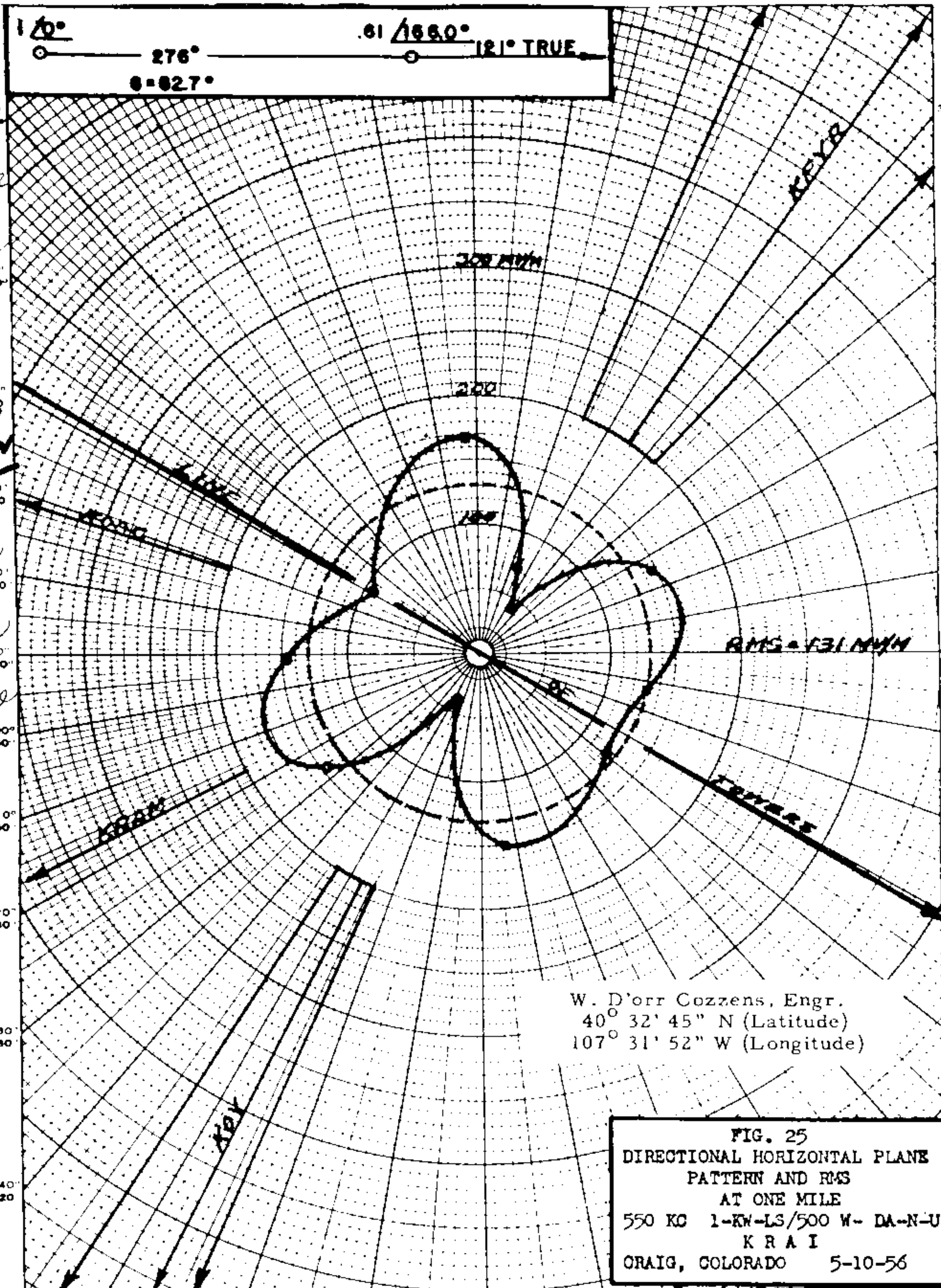


FIG. 25
DIRECTIONAL HORIZONTAL PLANE
PATTERN AND RMS
AT ONE MILE
550 KC 1-KW-LS/500 W- DA-N-U
K R A I
CRAIG, COLORADO 5-10-56

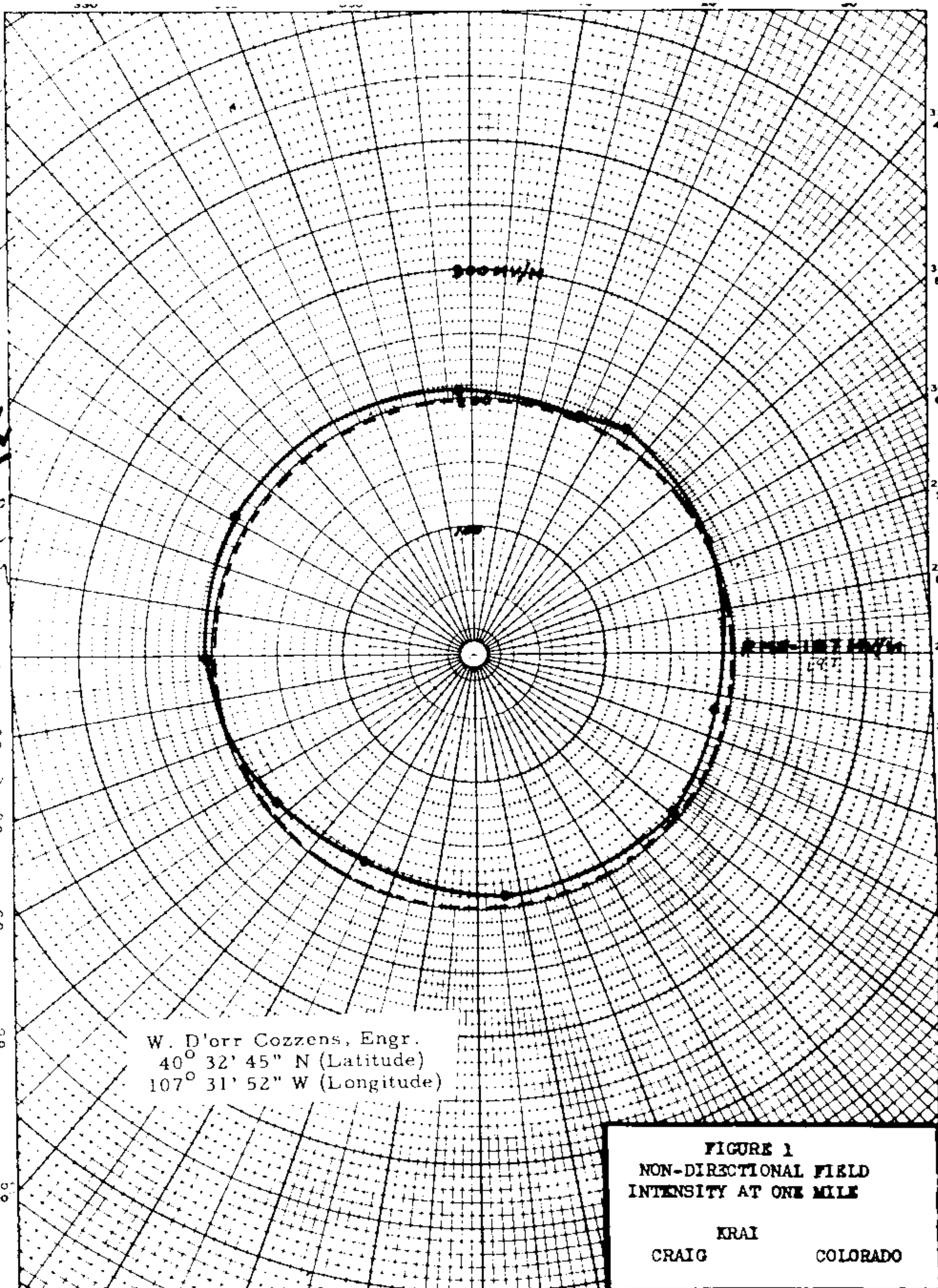
KRAI

MEASURED NON-DA (6-20-56g)

STATION KRAI CRAIG, COLO.

500 W, 1 KW DA-N, U

550 KC



BP-17707 APPL ACCEPTED 2-11-67 to increase power from 1 KW to 5 KW

6-19-68 GRANTED CP FROM 1 KW TO 5 KW

BL-12268 Granted 8/20/69

license covering CP to increase daytime NON-DA power

FCC File No. BL-6191 Accepted 6-12-56 KRAI, Craig, Colorado 550 KC

FIG. I-C

PROPOSED HORIZONTAL PLANE PATTERN

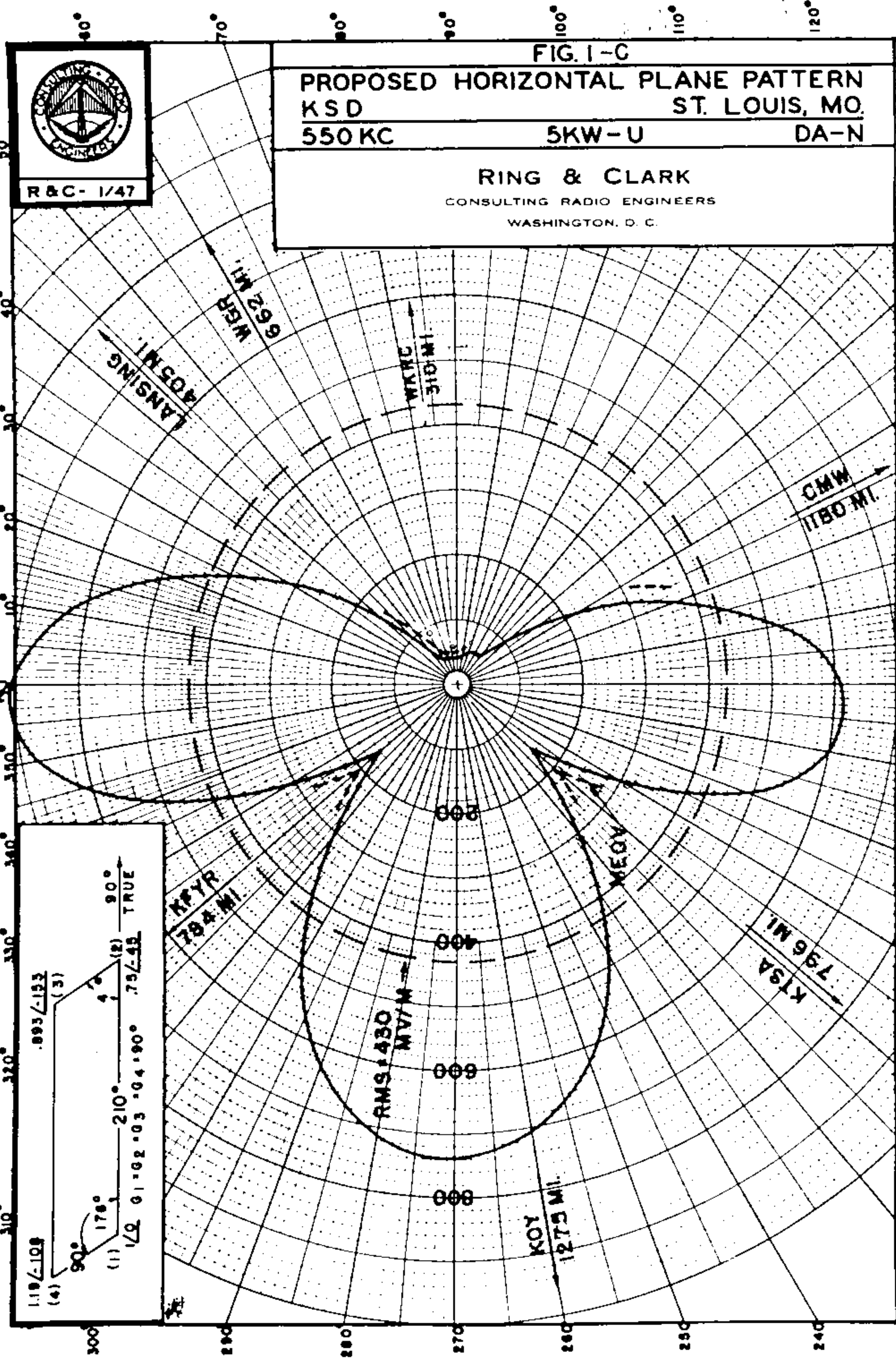
KSD ST. LOUIS, MO.

550 KC 5KW-U DA-N

RING & CLARK

CONSULTING RADIO ENGINEERS

WASHINGTON, D. C.



$E = 594 \times f(v) \left\{ [1.0417 + \cos(210 \cos A \cos V - 45)] [1.0152 + \cos[90 \cos(A-176) \cos V - 108]] \right\}^{1/2}$

$A = 0° @ N 90° E$ A mean counterclockwise

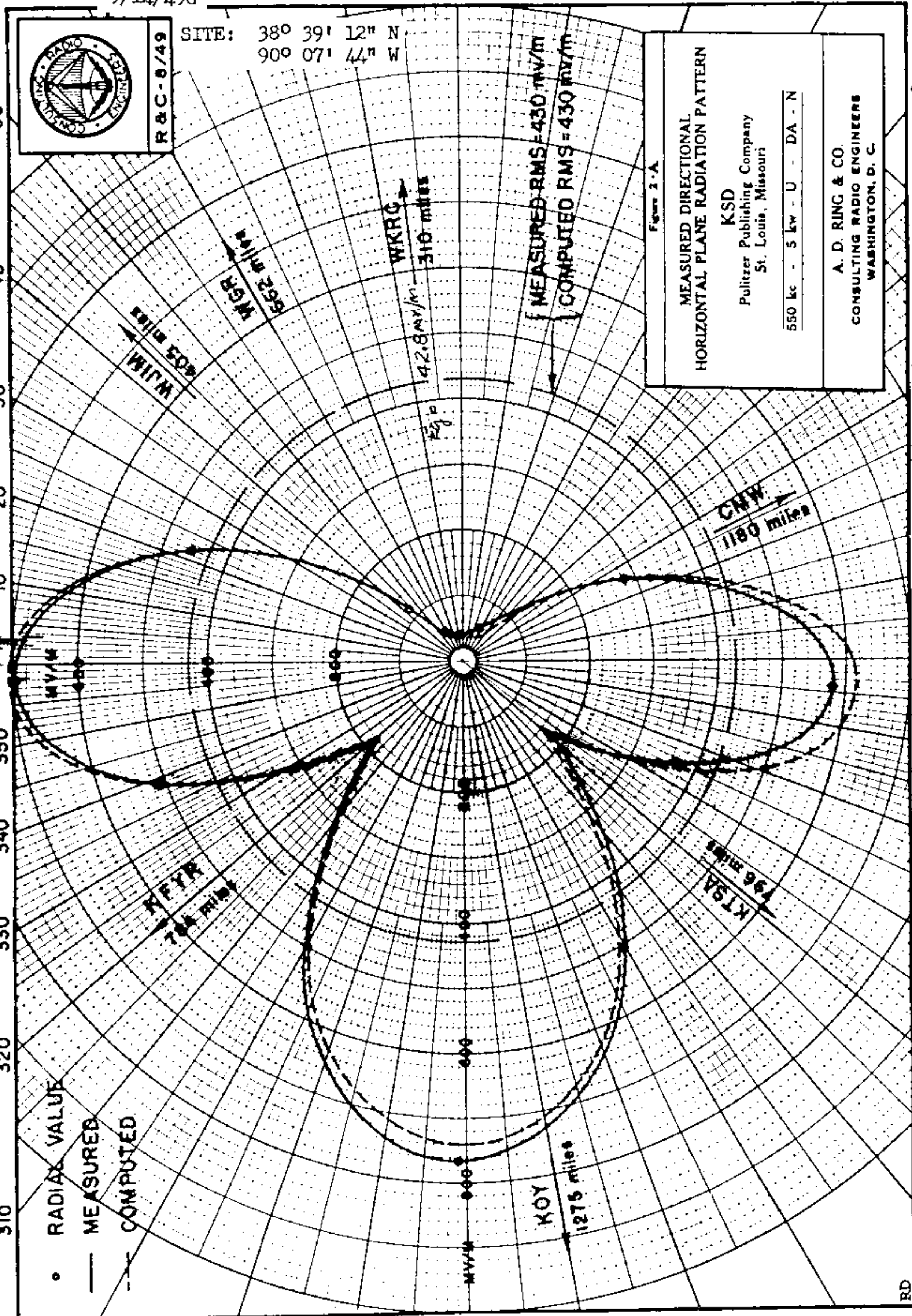
KSD

MEASURED NIGHT 9/14/49G

KSD, ST. LOUIS, MO.

5kw, DAN

550 kc



READJUSTED PATTERN FILED 9-12-49

KSD, St. Louis, Mo. 550 kc

DO NOT USE
RETAINED FOR INFO ONLY

KSD

KSD - 550 kc

MEASURED
DAY (Non-DA)

KSD, ST. LOUIS, MO.

11-17-48 5kw, DAN
BL-3460

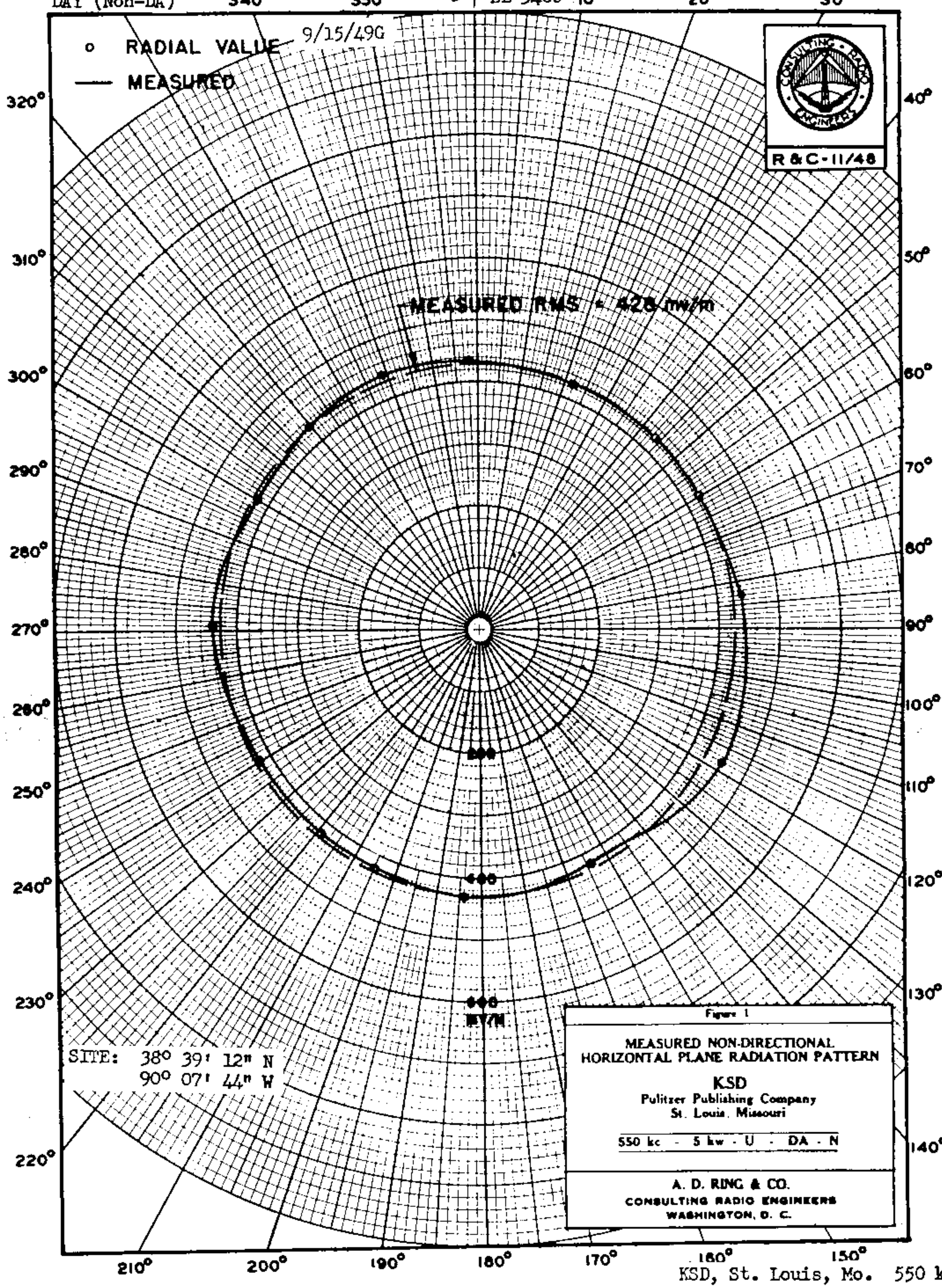


Figure 1

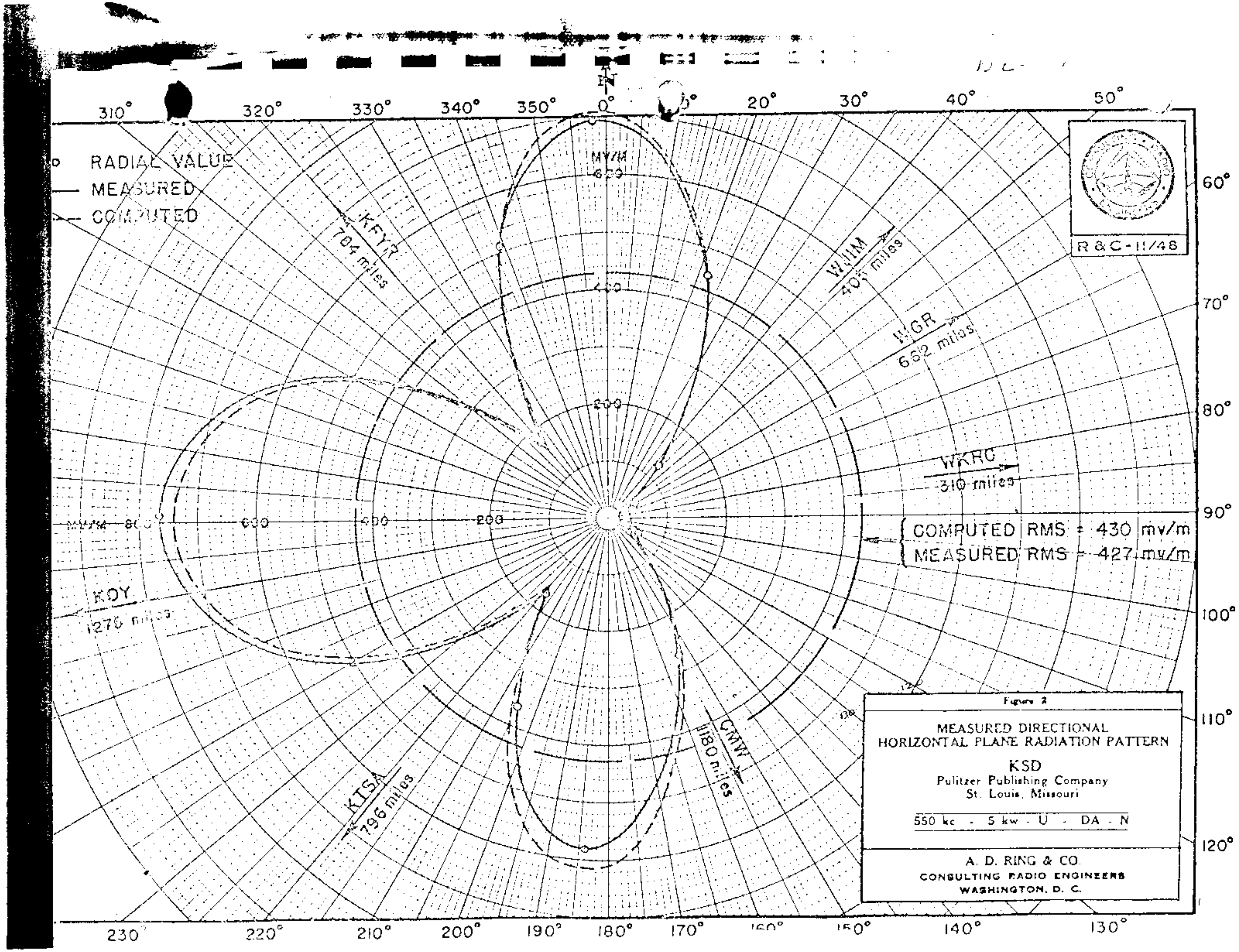
MEASURED NON-DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN

KSD
Pulitzer Publishing Company
St. Louis, Missouri

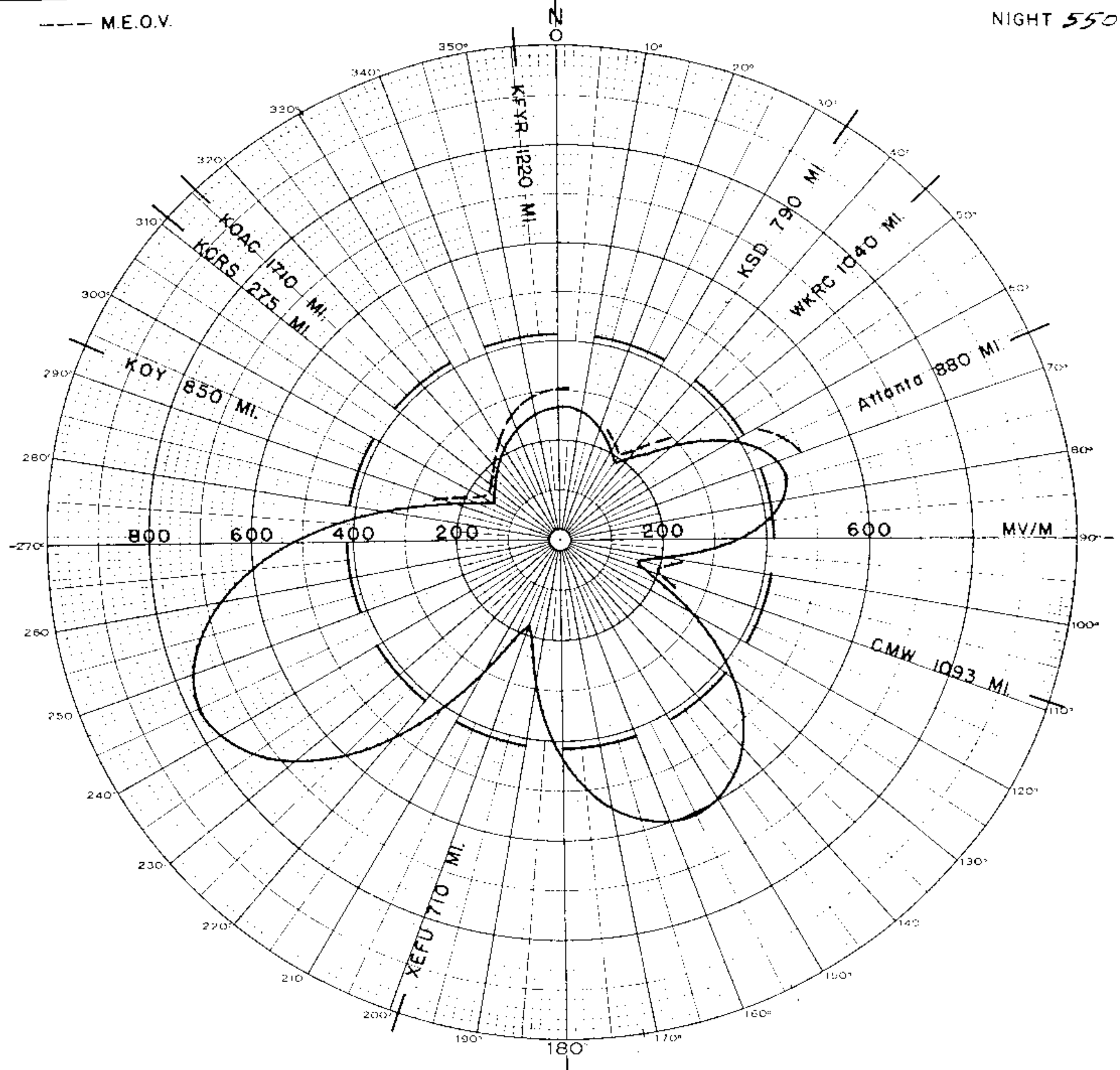
550 kc - 5 kw - U - DA - N

A. D. RING & CO.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

KSD, St. Louis, Mo. 550 kc

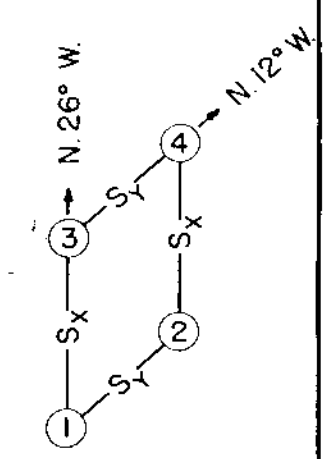


RADIAL VALUE
MEASURED
COMPUTED
KFYR
784 miles
WJJM
405 miles
WGR
662 miles
WKRC
310 miles
COMPUTED RMS = 430 mv/m
MEASURED RMS = 427 mv/m
KOY
1270 miles
KTSA
796 miles
CMW
1180 miles
R&C-11/48
MV/M
N
Figure 2
MEASURED DIRECTIONAL
HORIZONTAL PLANE RADIATION PATTERN
KSD
Pulitzer Publishing Company
St. Louis, Missouri
550 kc - 5 kw - U - DA - N
A. D. RING & CO.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.



RMS = 412 MV/M

PATTERN 470107



TOWER	FIELD	PHASE
1	0.75	0°
2	0.5625	121°
3	1.00	-62°
4	0.75	59°

S_X = 170°
S_Y = 87.6°
ALL G'S = 83.9°

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS TEXAS

RADIO STATION KTSA
PROPOSED 550 KC 5 KW DA-N
FIGURE 5A

MEASURED NIGHT

KTSA, SAN ANTONIO, TEX.

7-12-49

5kw, DAN

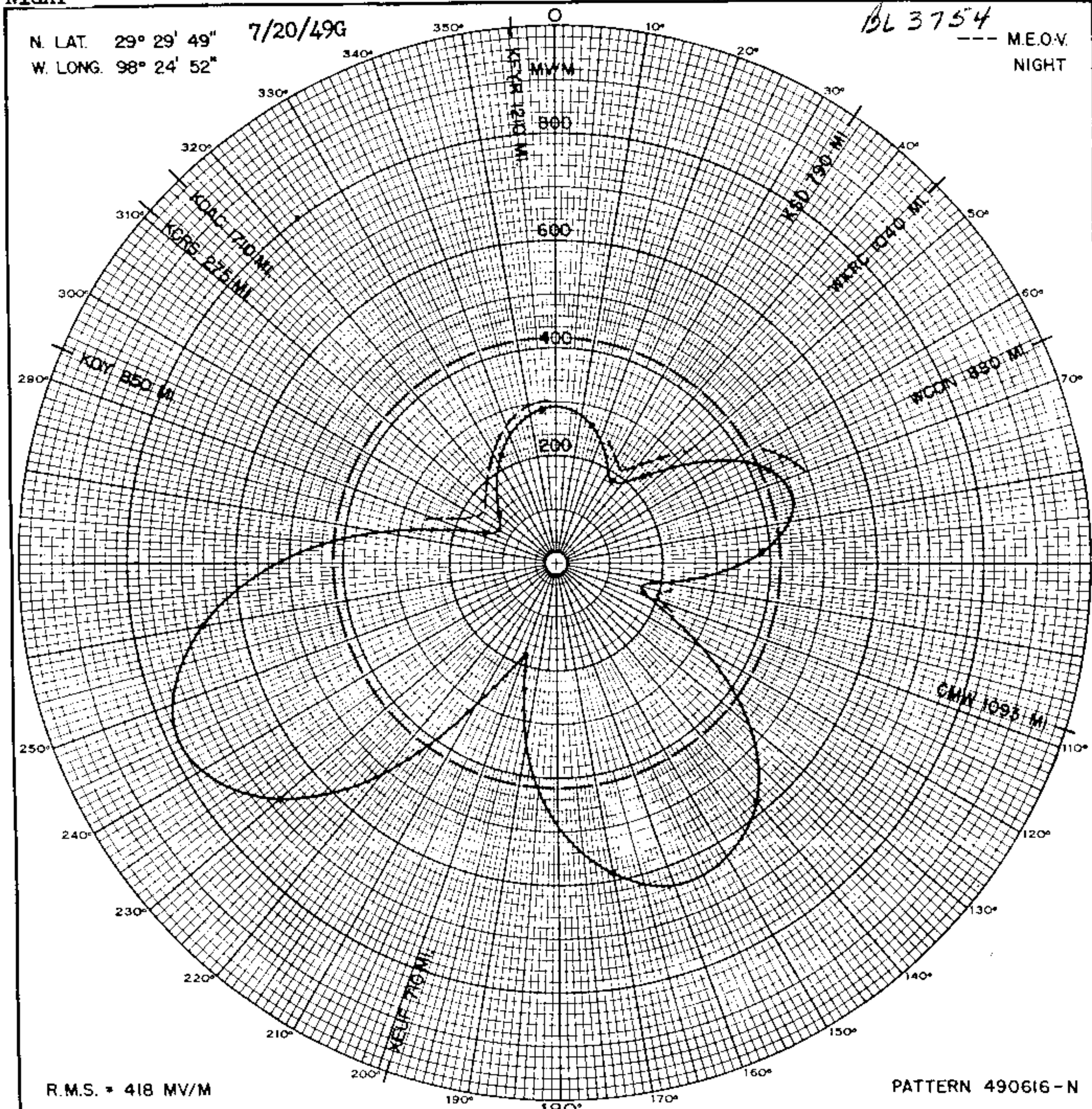
KTSA

N. LAT. 29° 29' 49"
W. LONG. 98° 24' 52"

7/20/49G

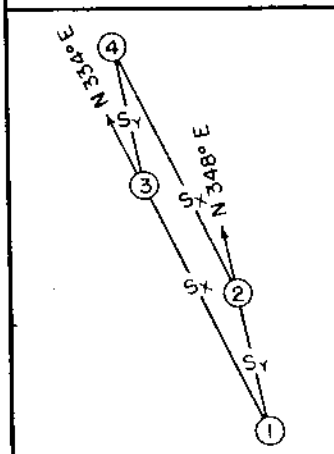
BL 3754

--- M.E.O.V. NIGHT



R.M.S. = 418 MV/M

PATTERN 490616-N



PATTERN BASED ON FIELD INTENSITY MEASUREMENTS

S_X = 170°

S_Y = 87.6°

ALL G' = 82°

RADIO STATION KTSA
SAN ANTONIO, TEXAS
550 KC 5 KW DA-N

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS

490616 FIGURE 2B

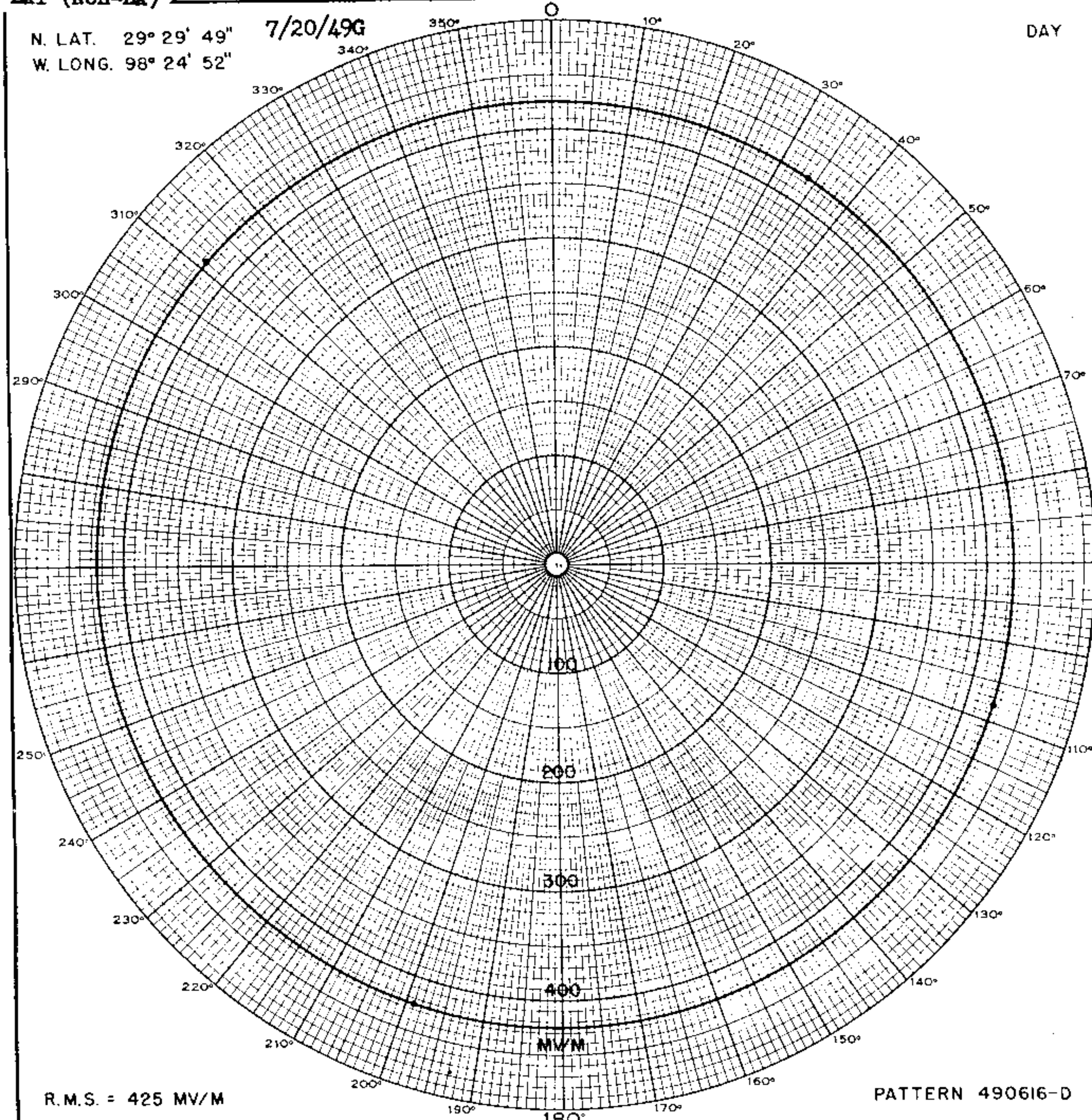
KTSA, San Antonio, Tex. 550 kc

MEASURED DAY (Non-DA) KTSA, SAN ANTONIO, TEX. 7-12-49 5kw, DAN

N. LAT. 29° 29' 49"
W. LONG. 98° 24' 52"

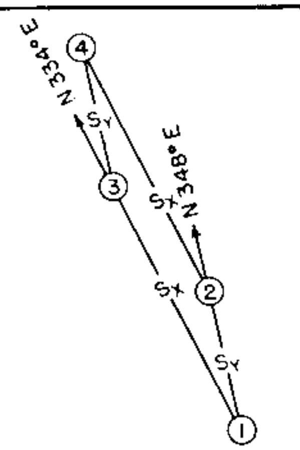
7/20/49G

DAY



R.M.S. = 425 MV/M

PATTERN 490616-D



PATTERN BASED
ON
FIELD INTENSITY
MEASUREMENTS

S_X = 170°
S_Y = 87.6°
ALL G's = 82°

RADIO STATION KTSA
SAN ANTONIO, TEXAS
550 KC 5 KW ND

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
490616 FIGURE 2A

NIGHTTIME LIMITATIONS TO STATIONS

FROM KTSA 550-KC, 5-KW, DA OPERATION

Station	Bearing	Distance	Θ	E_Θ	Limitation
KSD	34.0	790	7.0	207	2.50
WKRC	45.5	1040	3.5	280	1.60
Atlanta	65.5	880	5.5	472	4.40
CMW	109.0	1093	3.0	199	0.99
XEFU	199.0	710	8.0	185	2.80
KOY	293.5	850	6.0	210	2.13
KCRS	311.0	275	25.4	147	7.10
KOAC	315.5	1710	0.0	185	0.27
Butte	320.5	1375	0.0	235	0.35
KFYR	355.5	1220	1.8	300	1.08
XEKL*	171.5	673	9.0	520	8.4
XEPX*	247.5	813	6.0	775	8.6

* Class IV Station

WCBI

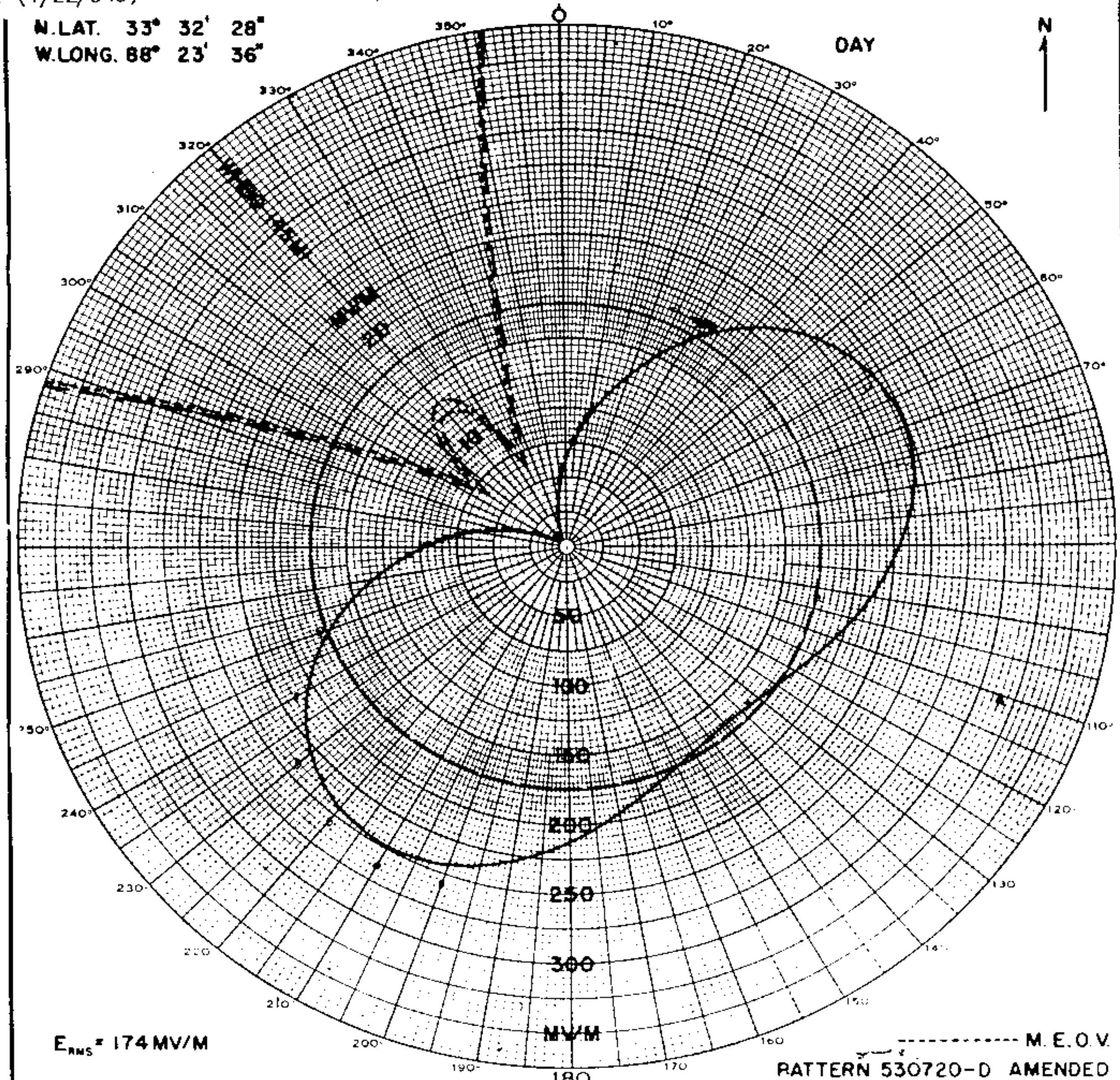
PROPOSED
DAY (7/22/54G)

WCBI
COLUMBUS, MISSISSIPPI

500W, 1KW-LS DA-2, U

550kc

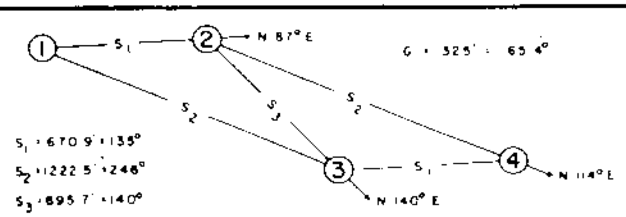
N.LAT. 33° 32' 28"
W.LONG. 88° 23' 36"



E_{RMS} = 174 MV/M

M.E.O.V.

PATTERN 530720-D AMENDED



RADIO STATION WCBI

COLUMBUS, MISSISSIPPI

550KC 0.5KW 1.0KW-LS DA-2

TOWER	1	2	3	4
FIELD	—	1.00	0.95	—
PHASE	—	0°	−45°	—

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

530720.1 AMENDED FIGURE 7A

FCC FILE NO. BP-8977 (AMENDED) DATE ACCEPTED 7-7-54 DOCKET NO. 10882

550kc

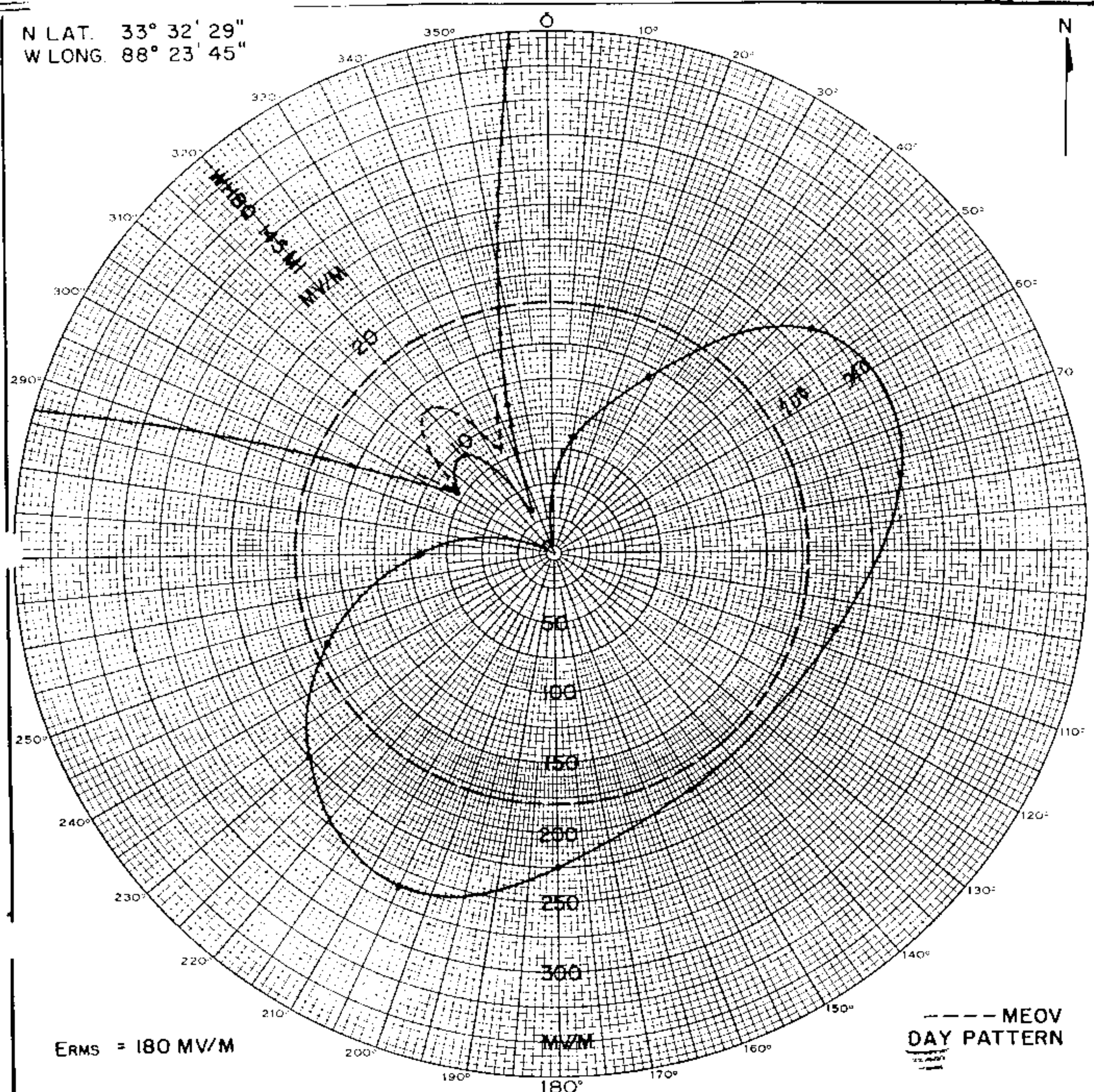
WCBI
BL-5673

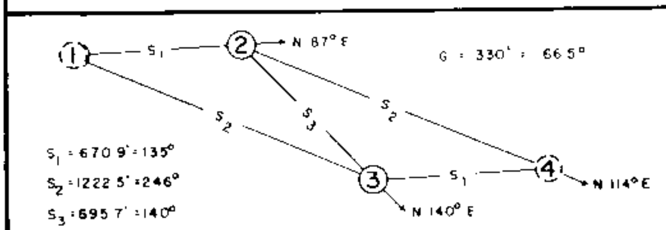
MEASURED
DAY (2/21/56G)

STATION WCBI
COLUMBUS, MISS.

0.5, 1 KW-LS
DA-2, U

550 KC





RADIO STATION WCBI

COLUMBUS, MISSISSIPPI

550KC 0.5KW 1.0KW-LS DA-2

PATTERN BASED ON MEASUREMENTS

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

550226.1 FIGURE 4B

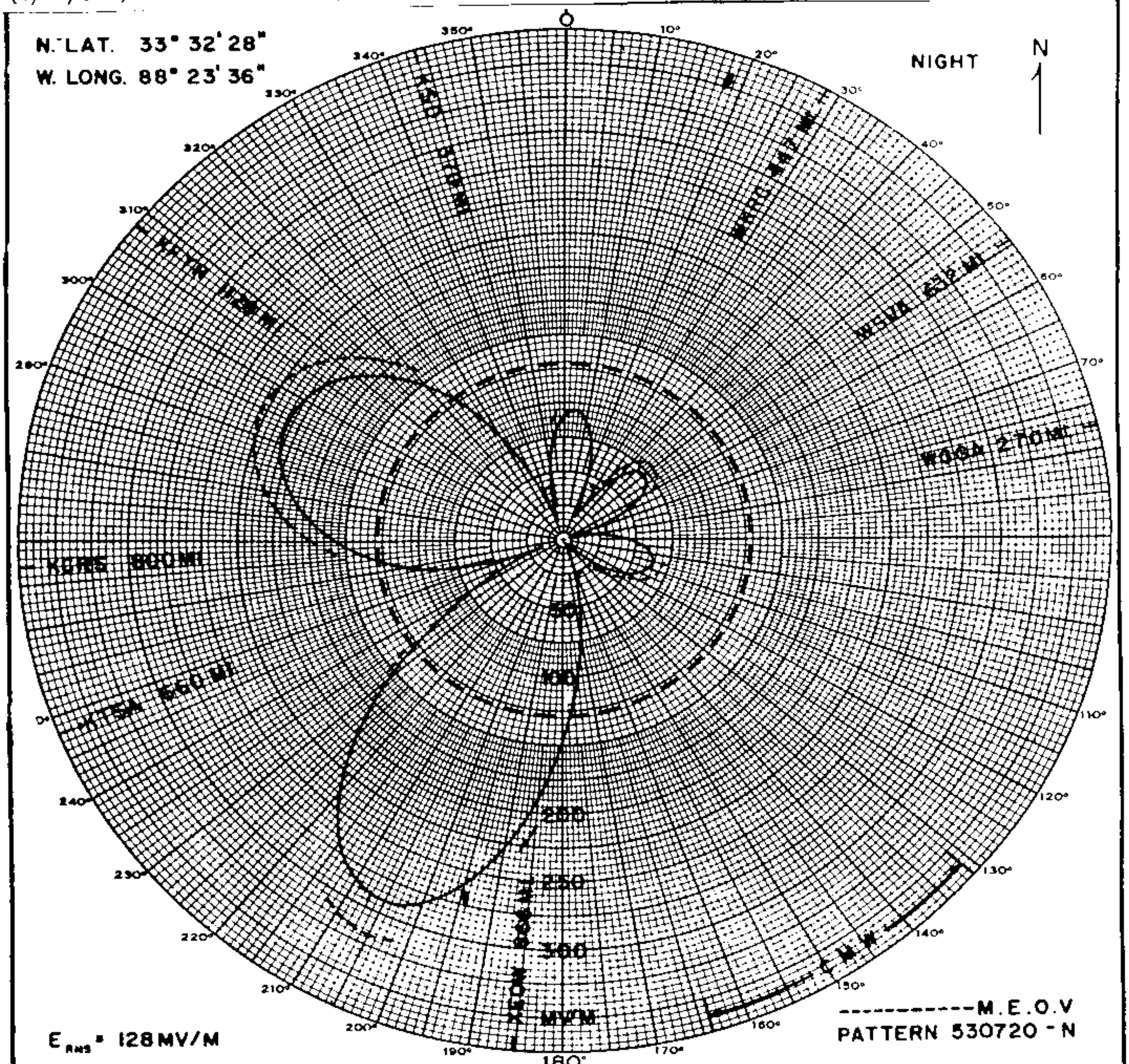
WCBI

PROPOSED
NIGHT (7/22/54G)

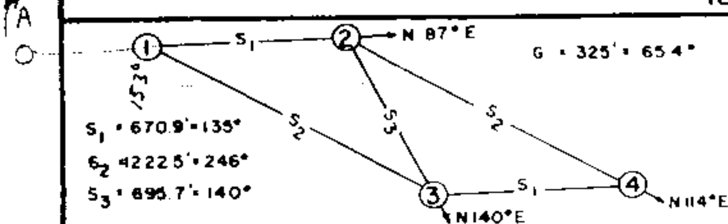
WCBI
COLUMBUS, MISSISSIPPI

500W, 1KW-LS DA-2, U

550kc



$E = 154\sqrt{[1.055 + \cos(135 A - 110)][1.055 + \cos(246 \cos(A + 153) - 15)]}$



RADIO STATION WCBI
COLUMBUS, MISSISSIPPI
550KC 0.5KW 1.0KW-LS DA-2

TOWER	1	2	3	4
FIELD	0.90	1.00	0.81	0.90
PHASE	-110°	0°	-125°	-15°

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
530720.1 FIGURE 8A

FCC FILE NO. BP--8977 (AMENDED) DATE ACCEPTED 7-7-54 DOCKET NO. 10882 550kc

WCBI

PROPOSED
NIGHT NULLS (7/22/54G)

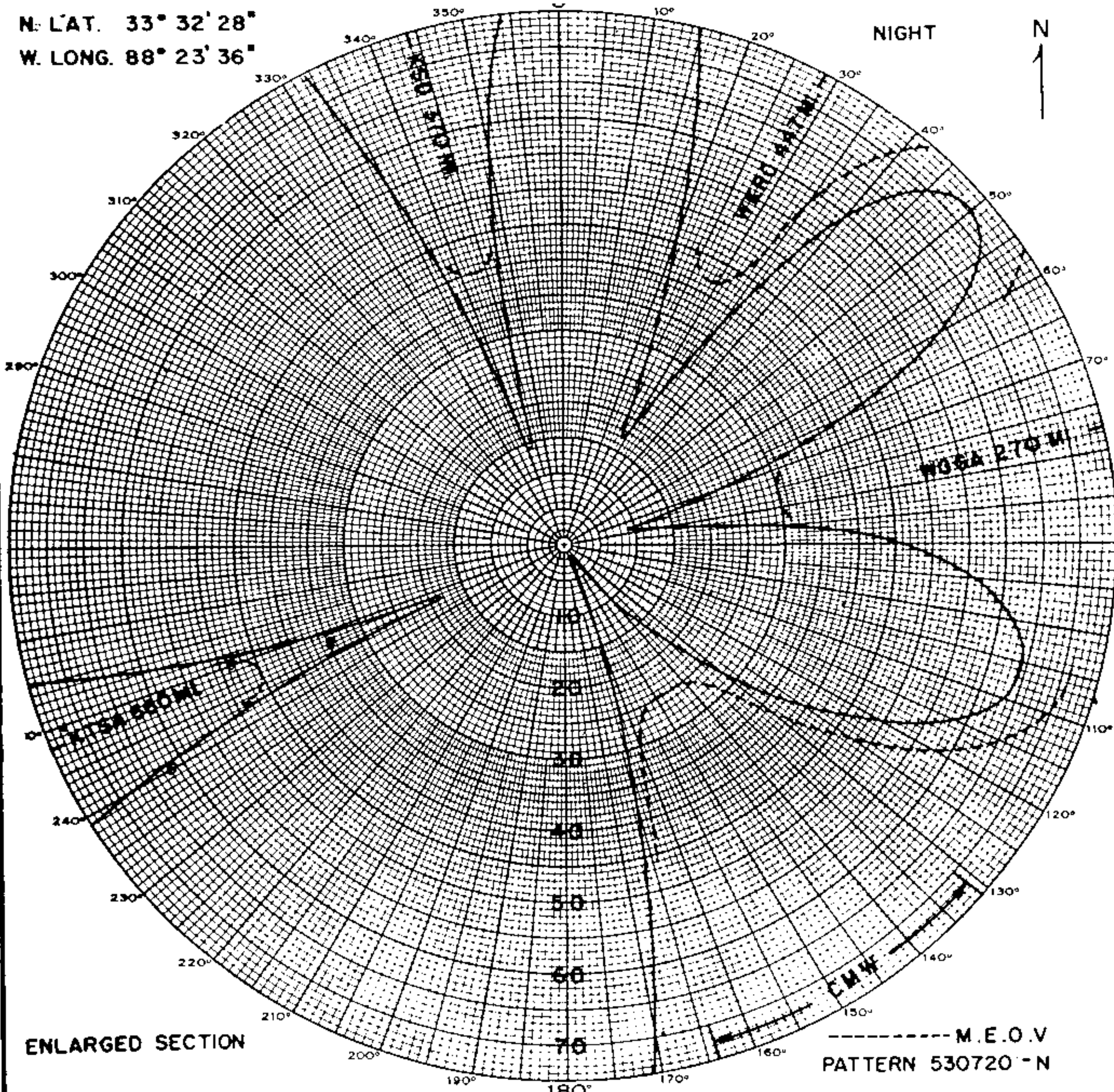
WCBI
COLUMBUS, MISSISSIPPI

500W, 1KW--LS DA-2, U

550kc

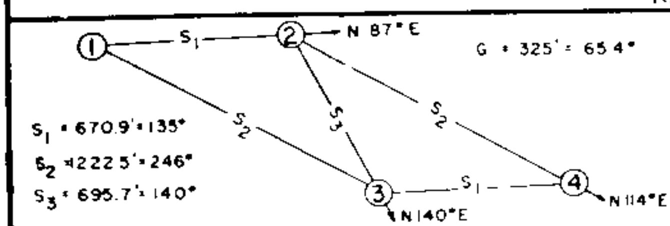
N. LAT. 33° 32' 28"
W. LONG. 88° 23' 36"

NIGHT



ENLARGED SECTION

----------- M.E.O.V
PATTERN 530720-N



RADIO STATION WCBI

COLUMBUS, MISSISSIPPI

550KC 0.5KW 1.0KW-LS DA-2

TOWER	1	2	3	4
FIELD	0.90	1.00	0.81	0.90
PHASE	-110°	0°	-125°	-15°

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

530720.1 FIGURE 8B

FCC FILE NO. BP--9877 (AMENDED) DATE ACCEPTED 7-7-54 DOCKET NO. 10882

550kc

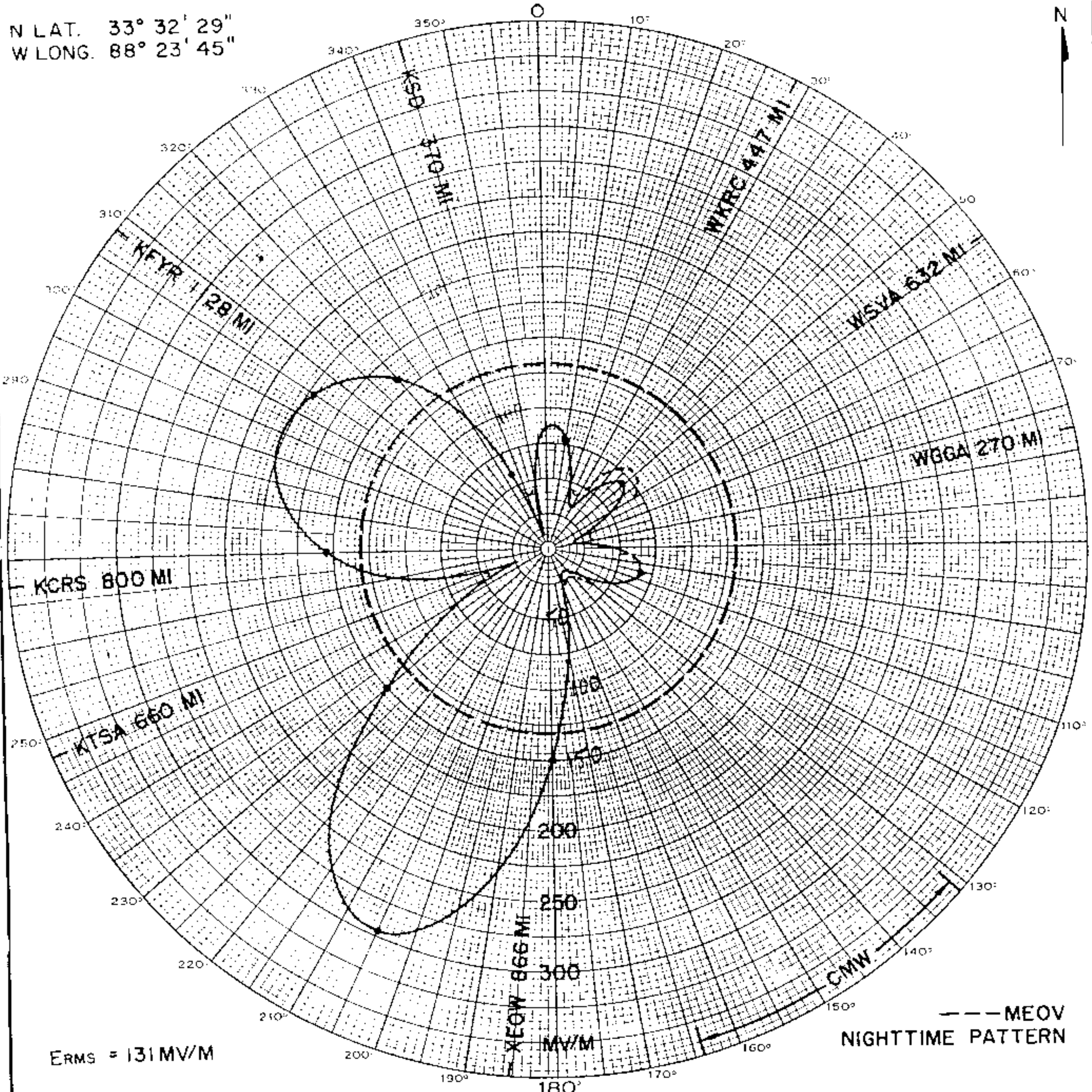
WCBI
BL-5673

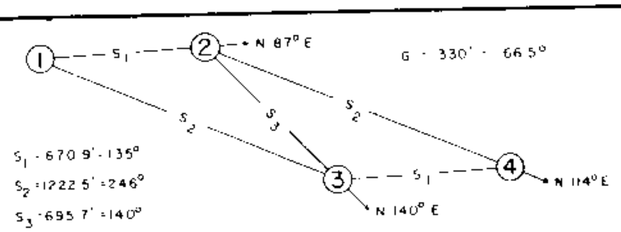
MEASURED
NIGHT (2/21/56G)

STATION WCBI
COLUMBUS, MISS.

0.5, 1 KW-LS
DA-2, U

550 KC





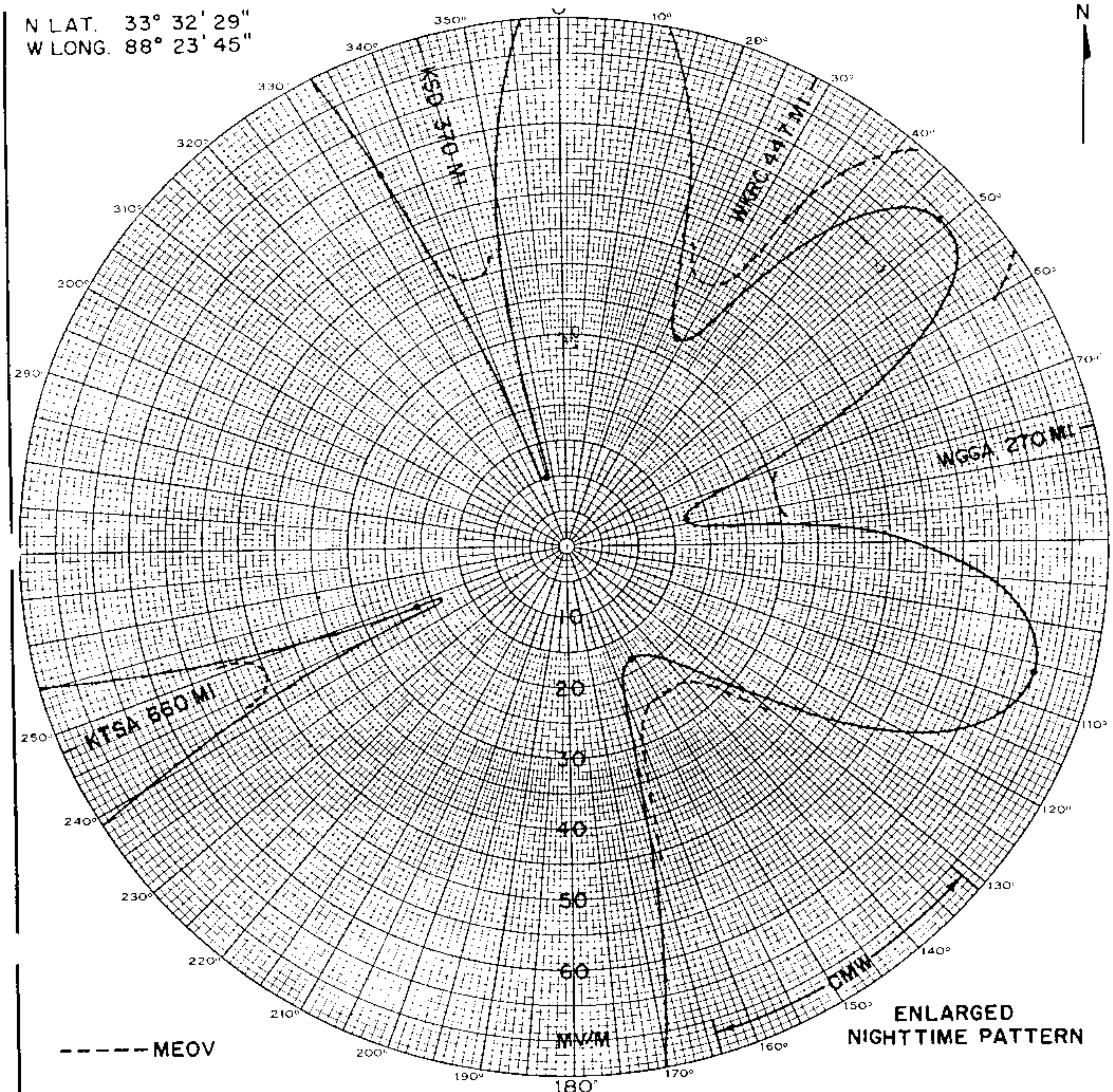
RADIO STATION WCBI
COLUMBUS, MISSISSIPPI
550KC 0.5KW 1.0KW-LS DA-2

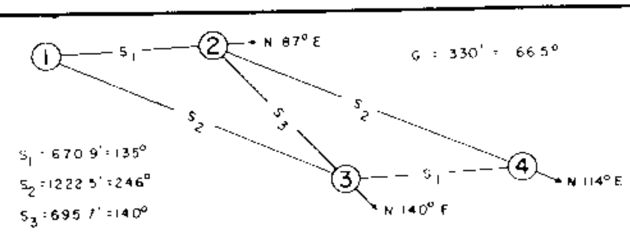
PATTERN BASED
ON
MEASUREMENTS

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
550226.1 FIGURE 4C

WCBI

MEASURED NIGHT NULLS (2/21/56G) | STATION WCBI COLUMBUS, MISS. | 0.5, 1 KW, LS DA-2, U | 550 KC





RADIO STATION WCBI

COLUMBUS, MISSISSIPPI

550KC 0.5KW 1.0KW-LS DA-2

PATTERN BASED ON MEASUREMENTS

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

550226.1 FIGURE 4D

WCBI

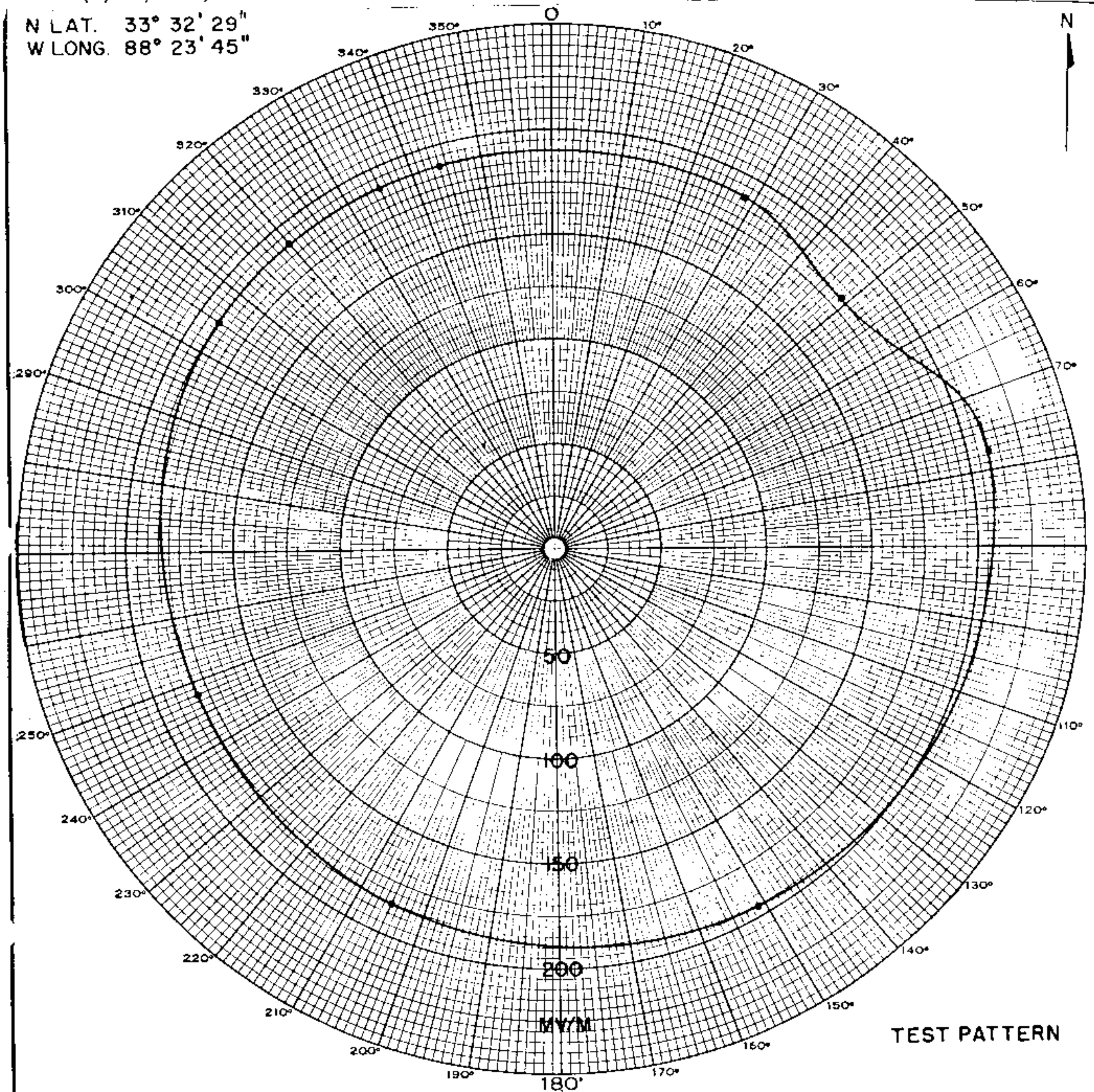
MEASURED
NON-DA (2/21/56G)

STATION WCBI
COLUMBUS, MISS.

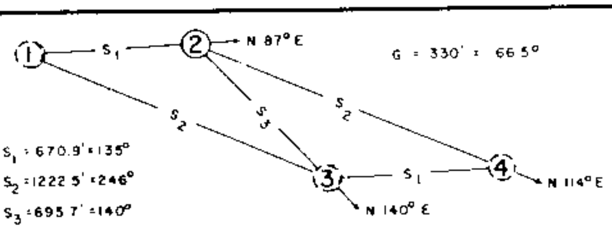
0.5, 1 KW-LS
DA-2, U

550 KC

N LAT. 33° 32' 29"
W LONG. 88° 23' 45"



TEST PATTERN



RADIO STATION WCBI

COLUMBUS, MISSISSIPPI

550KC 0.5KW 1.0KW–LS DA–2

PATTERN BASED

ON

MEASUREMENTS

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

550226.1

FIGURE 4A

WDLV
550kHz

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: New

Main Studio: Pinehurst, North Carolina

Frequency: 550 kHz

Power: 1kw Day

Notification List No. 1786

Date: May 16, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 09' 04"
West Longitude: 79° 29' 46"

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#1)	SE(#2)
HEIGHT ABOVE INSULATORS:	447'	447' (90°)
DAY PHASING:	0°	-90°
DAY FIELD RATIO:	1.0	0.9

SPACING AND ORIENTATION: Adjacent towers are spaced 447' (90°) on a line bearing 280° true.

GROUND SYSTEM: 120 - 447' equally spaced copper radials about each tower. Radials are bonded to a transverse strap along intersections between towers.

PREDICATED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	187.46 mv/m	190.80 mv/m	196.93 mv/m

Theoretical Pattern RMS = 187.46 mV/m

Theoretical Pattern RSS = 190.80 mV/m

Standard Pattern RMS = 196.93 mV/m

WDLV
550kHz

1/0 #1 — 90° — .9/-90 #2 — 100°

G=90°

STD

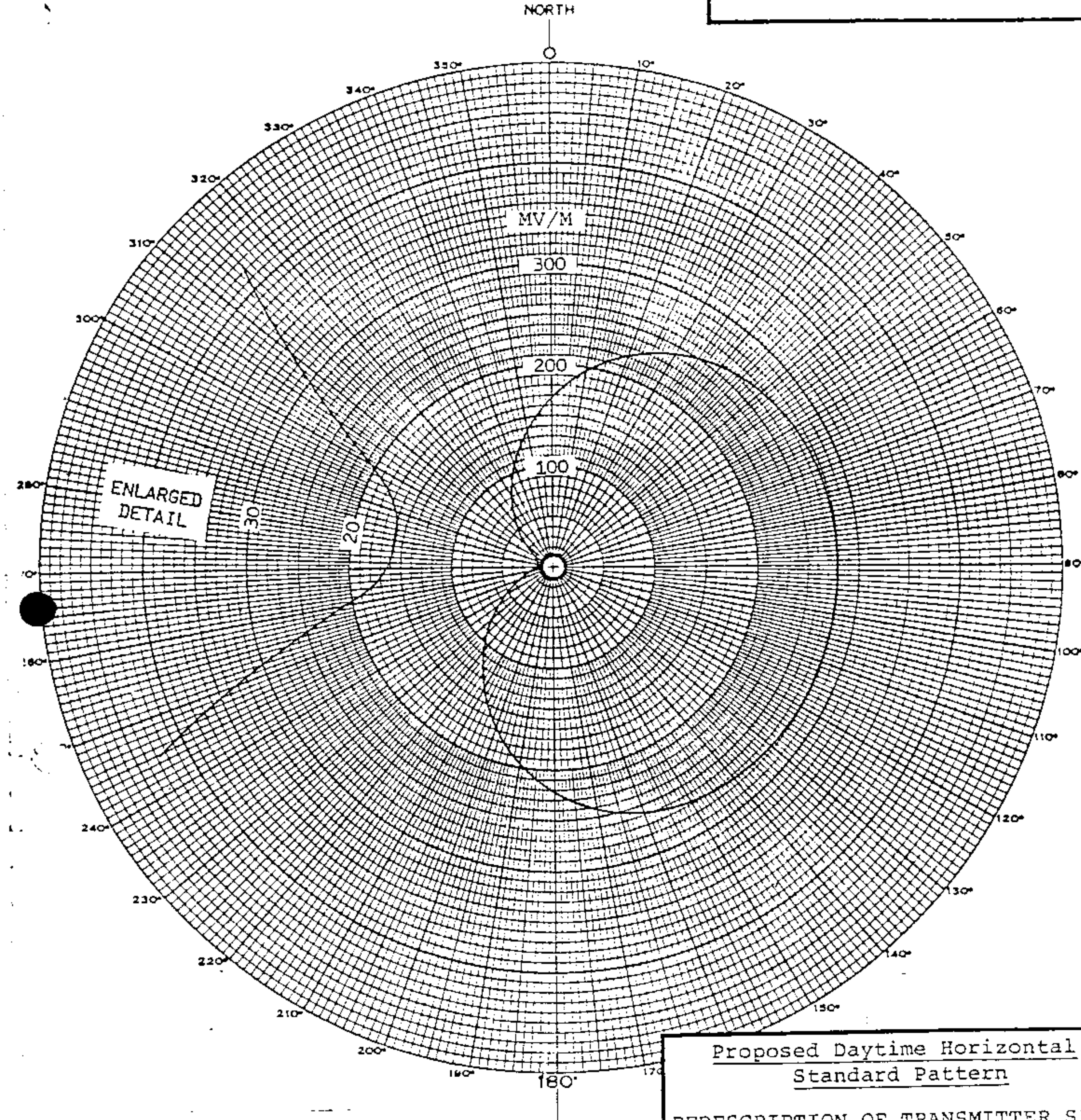


FIG. 1

Proposed Daytime Horizontal
Standard Pattern

REDESCRIPTION OF TRANSMITTER SITE
WDLV
107, Inc. Pinehurst, N.C.
550 Khz. 1 Kw. DA-D

SHERMAN & BEVERAGE ASSOCIATES, INC.
MEDFORD, NEW JERSEY 08055
11/79

WDLV
550kHz

SUPPLEMENTAL AND CORRECTED
DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WDLV

Main Studio: Pinehurst, North Carolina

Frequency: 550 kHz

Power 1kw Day

Notirication List No. 1789

Dated: September 12, 1980 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 35° 09' 04"
West Longitude: 79! 28' 40"

Note: Please retian the description sheet and directional antenna radiation patterns notified for a new station in Pinehurst, North Carolina on 550 kHz in United States Change List Number 1786, dated May 16, 1980, and attach to this supplemental Description Sheet. This notification is for the purpose of indicating only a change in the proposed geographical coordinates of the cneter of the antenna system.

WDEV

PROPOSED DAY
(11-29-57g)

Station WDEV
Waterbury, Vermont

1kw,5kw-LS, DA-2,U
550 KC

Granted CP (3/19/58) to increase day power to 5KW

Granted license 12/15/58

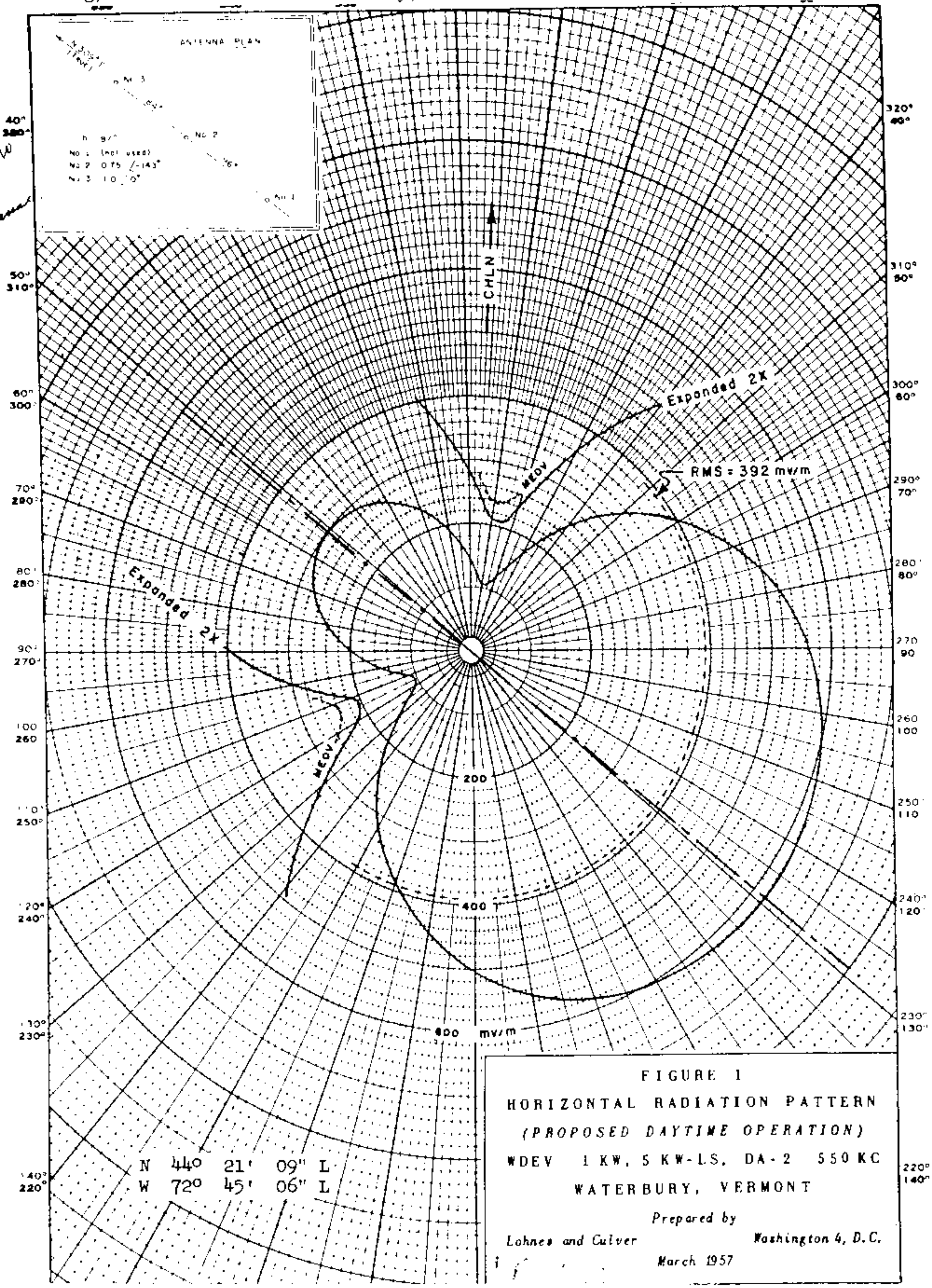


FIGURE 1
HORIZONTAL RADIATION PATTERN
(PROPOSED DAYTIME OPERATION)
WDEV 1 KW, 5 KW-LS, DA-2 550 KC
WATERBURY, VERMONT

Prepared by
Lohnes and Culver *Washington 4, D.C.*
March 1957

FCC File No. BP-9181
Accepted 11-21-57

WDEV
Waterbury, Vermont

550 KC

WDEV
BL-7273

MEASURED DAY
(11-17-58g)

Station WDEV
Waterbury, Vermont

1kw, 5kw-LS, DA-2, U
550 KC

Granted license 12/15/58

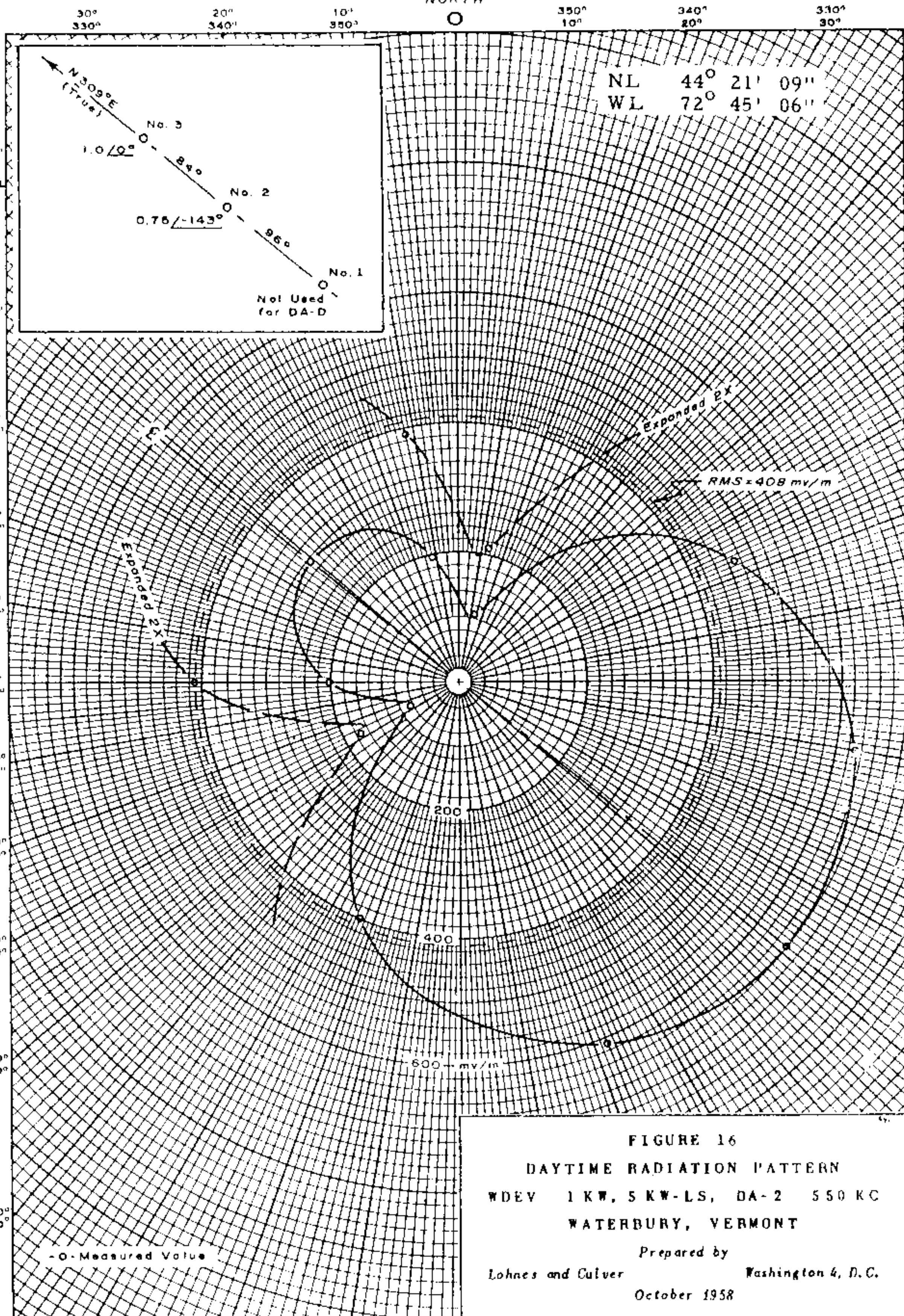


FIGURE 16
DAYTIME RADIATION PATTERN
WDEV 1 KW, 5 KW-LS, DA-2 550 KC
WATERBURY, VERMONT
Prepared by
Lohnes and Culver *Washington 4, D.C.*
October 1958

FCC File No. BL-7273
Accepted 11-6-58

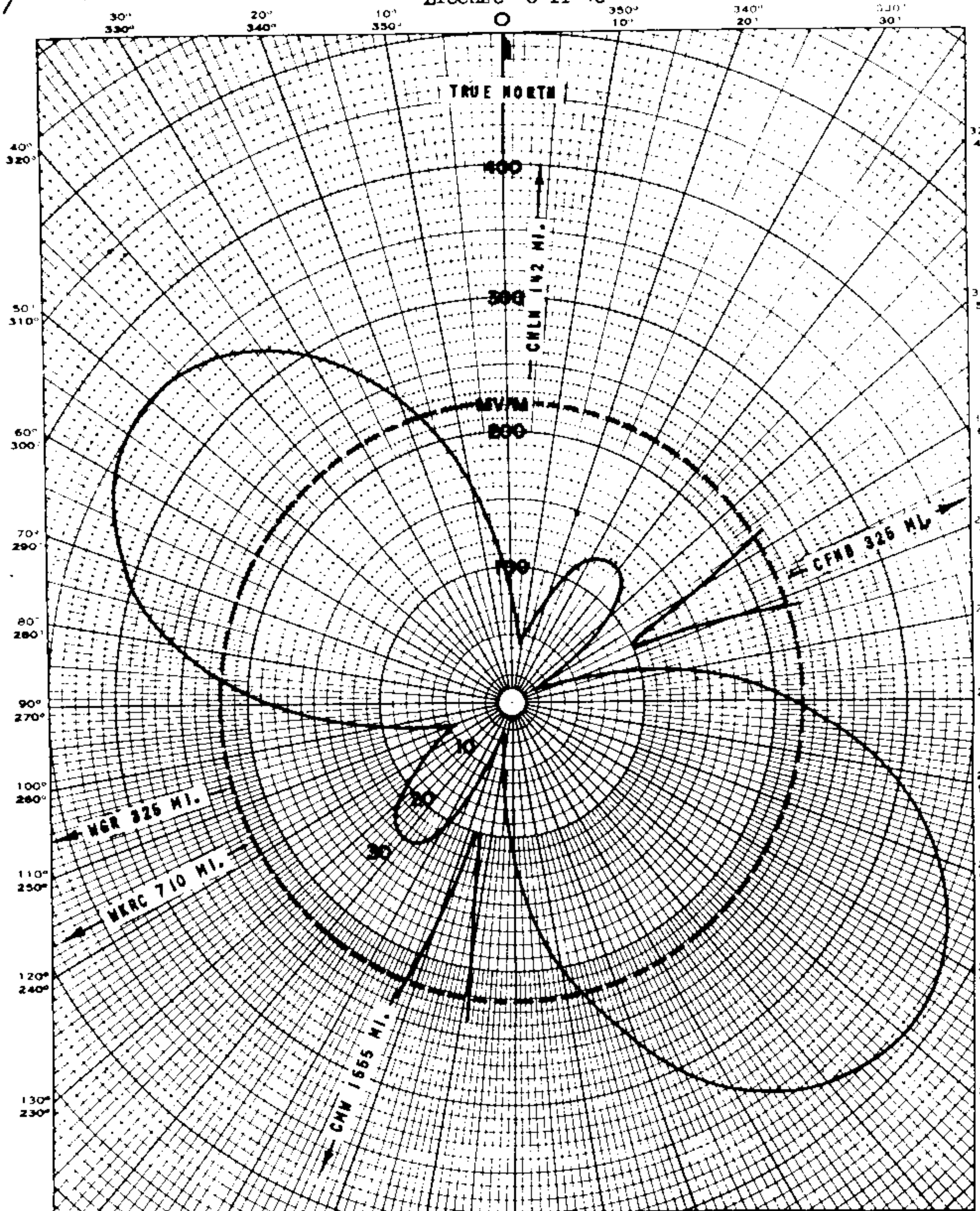
WDEV
Waterbury, Vermont

550 KC

WDEV
550

10/18/48G

License 8-11-48



JULY 1948 G = 87°

O← 96° →O← 84° →O 309° TRUE ←

1/-177.7° 1.58/-2.55° 1.13/177.7°

RADIO STATION WDEV
550KC - 1KW - U - DA (2)
WATERBURY, VERMONT

NIGHTTIME THEORETICAL PATTERN

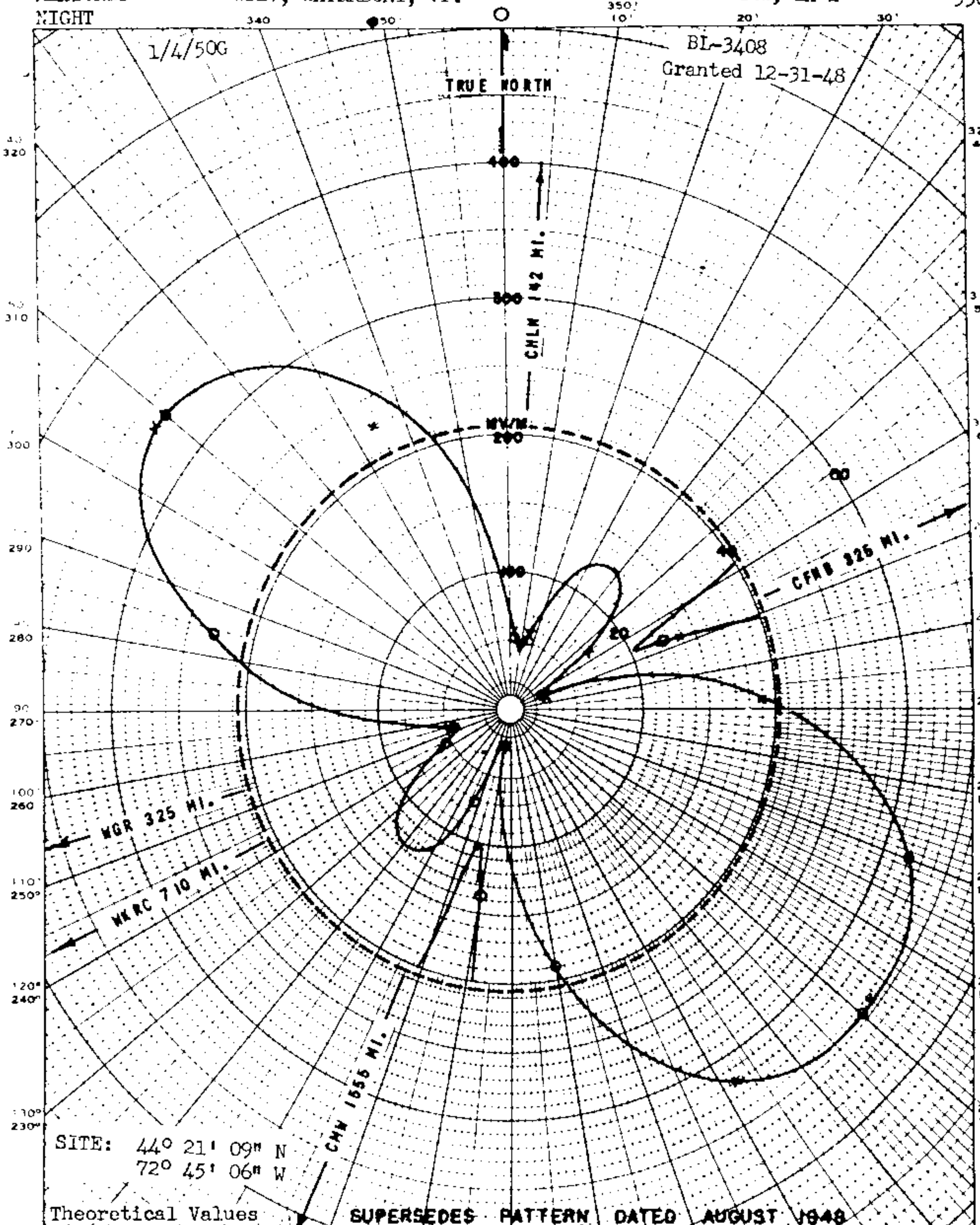
RUSSELL P. MAY
Consulting Radio Engineers
Washington 4, D.C.

RMS = 221 MV/M

EXHIBIT NO. 3

BL-3408 WDEV

MEASURED NIGHT WDEV, WATERBURY, VT. 1kw, DA-2 550 kc



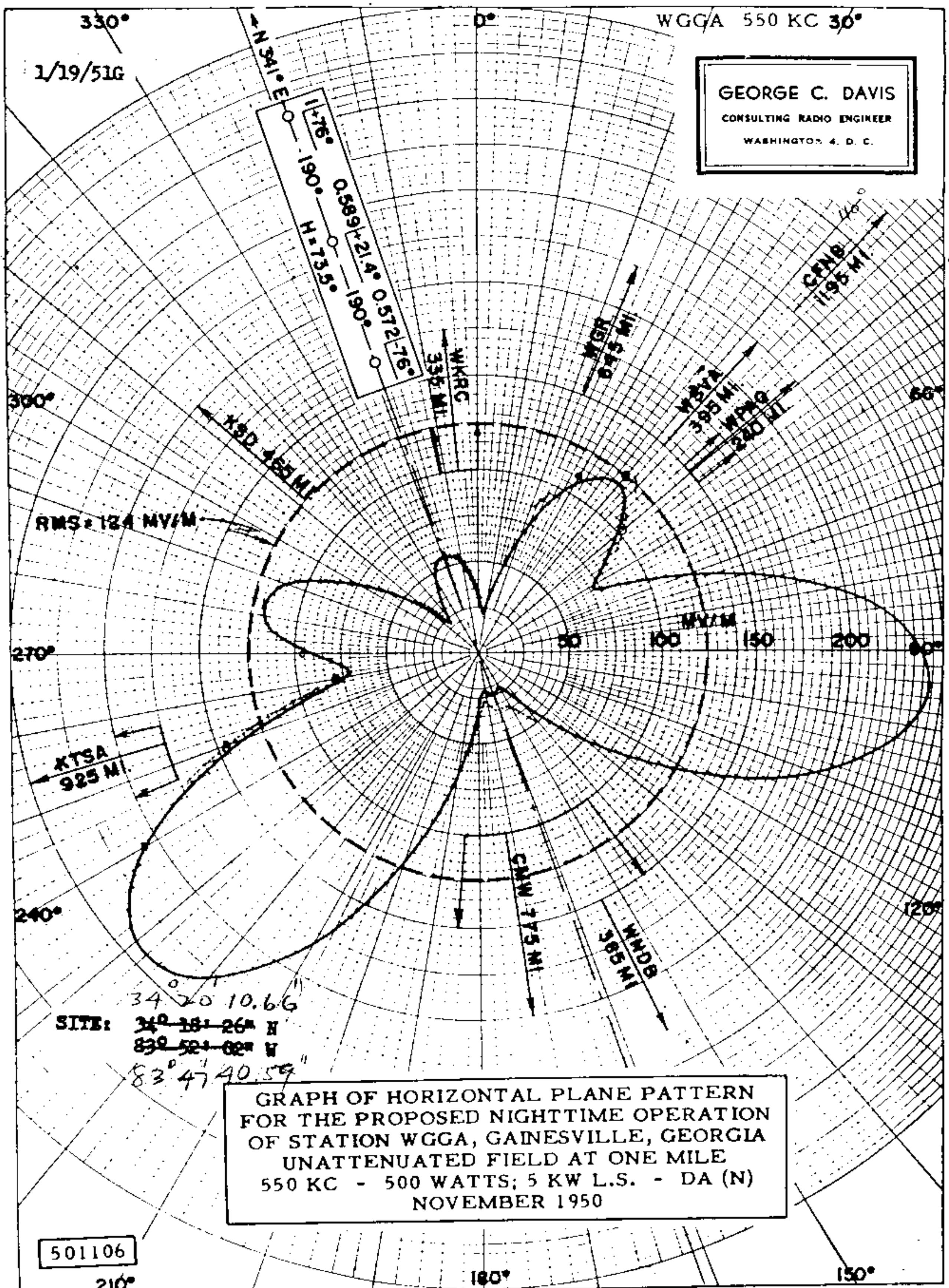
NOVEMBER 1948 G = 87° O——96°——O——84°——O—309° TRUE 1/-177.7° 1.58/-3.55° 1.13/177.7°	RADIO STATION WDEV 550KC - 1KW - U - DA (2) WATERBURY, VERMONT NIGHTTIME MEASURED PATTERN	
RUSSELL P. MAY Consulting Radio Engineers Washington 4, D.C.	RMS = 205 MV/M	EXHIBIT NO. 5

AMENDMENT RECD 12-6-48

WDEV, Waterbury, Vt. 550 kc

WGGA

PROPOSED NIGHT WGGA, GAINESVILLE, GA. - 500w, 5kw-LS, DA-N 550 kc

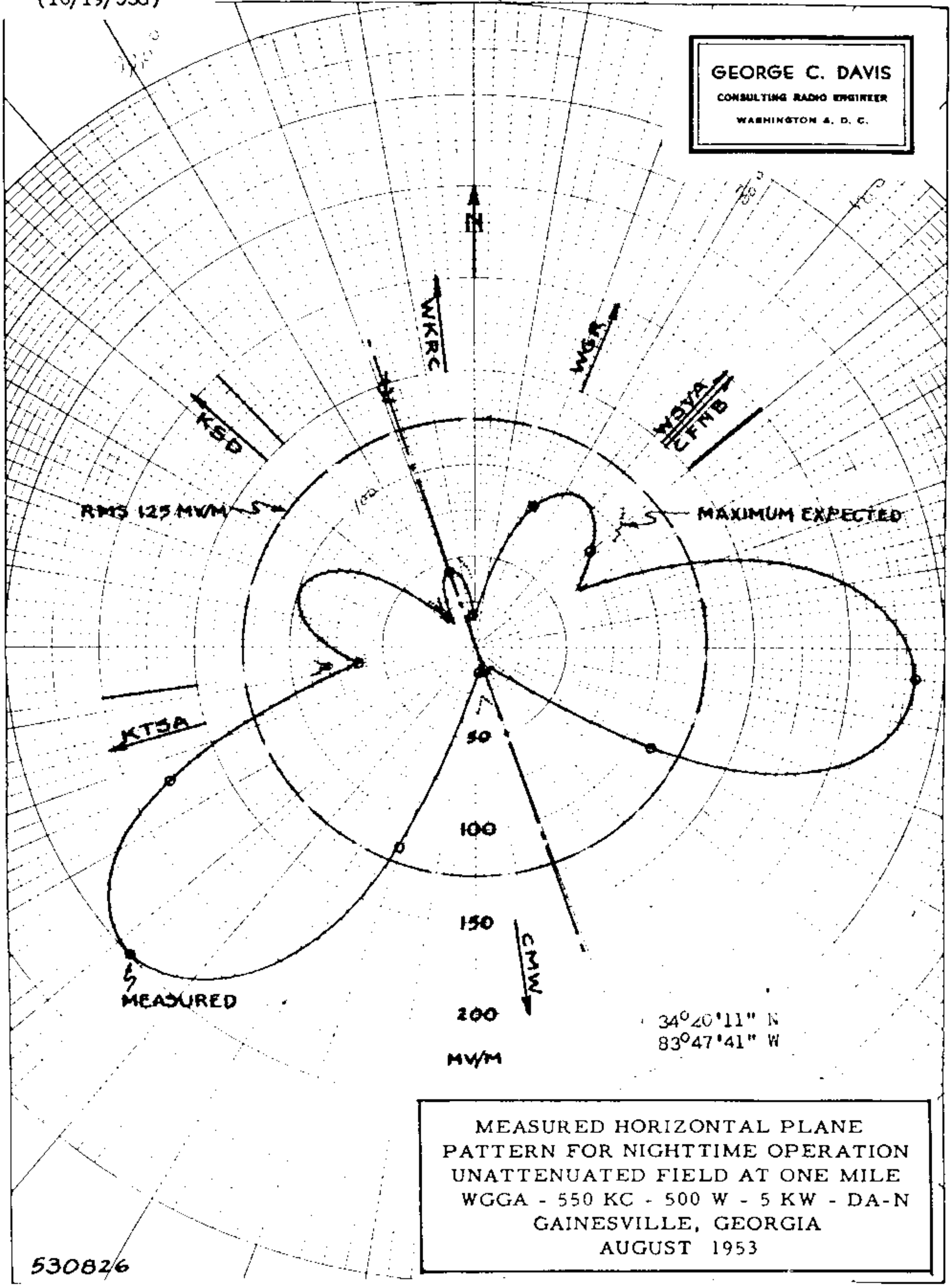


GRAPH OF HORIZONTAL PLANE PATTERN
FOR THE PROPOSED NIGHTTIME OPERATION
OF STATION WGGA, GAINESVILLE, GEORGIA
UNATTENUATED FIELD AT ONE MILE
550 KC - 500 WATTS; 5 KW L.S. - DA (N)
NOVEMBER 1950

501106

AMENDMENT RECD 1/11/51 BP-7661

WGGA, Gainesville, Ga. 550 kc

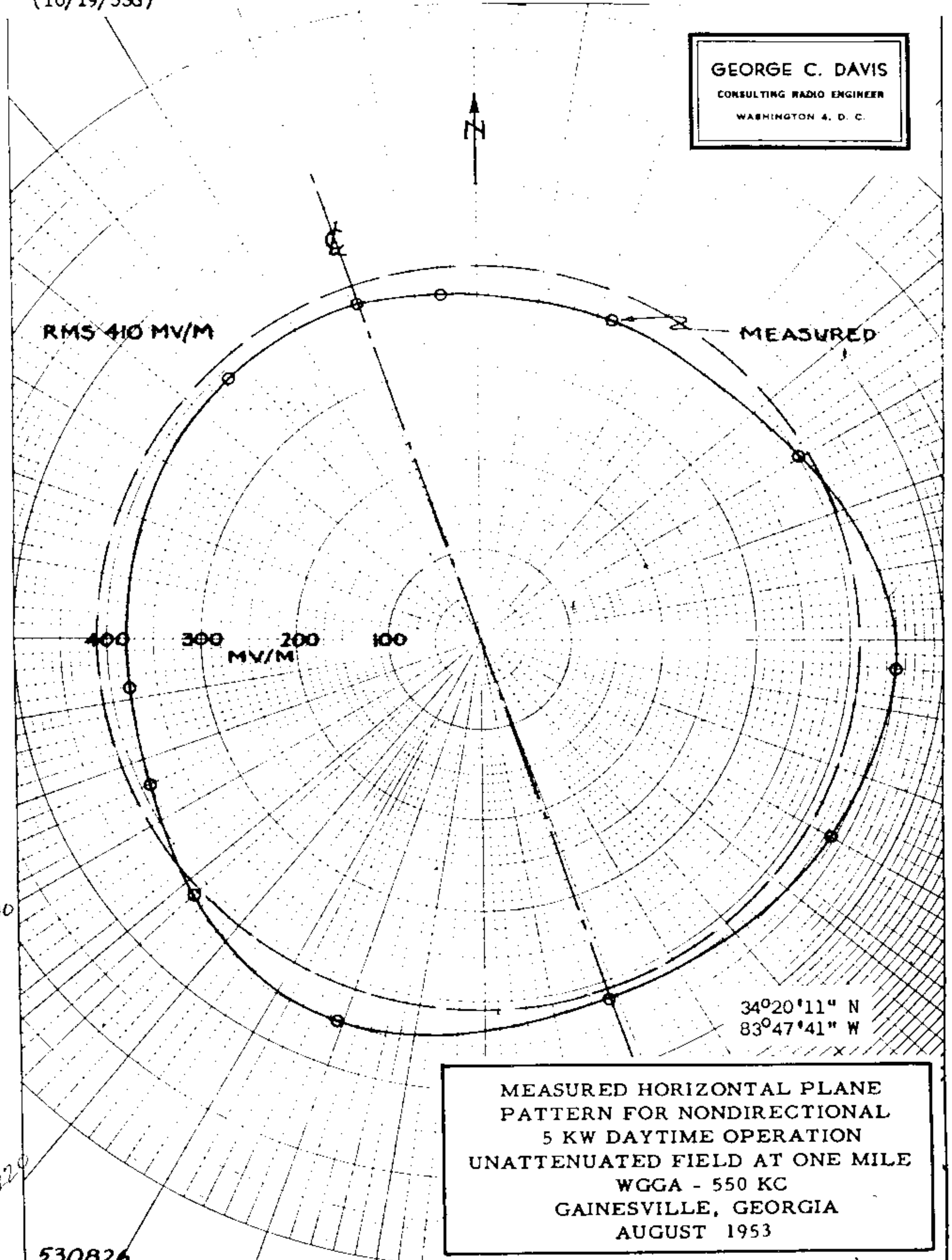


MEASURED HORIZONTAL PLANE
PATTERN FOR NIGHTTIME OPERATION
UNATTENUATED FIELD AT ONE MILE
WGGA - 550 KC - 500 W - 5 KW - DA-N
GAINESVILLE, GEORGIA
AUGUST 1953

530826

WGGA

MEASURED DAY (10/19/53G) WGGA, GAINESVILLE, GA. 500W, U, DA-N 550 kc



MEASURED HORIZONTAL PLANE
PATTERN FOR NONDIRECTIONAL
5 KW DAYTIME OPERATION
UNATTENUATED FIELD AT ONE MILE
WGGA - 550 KC
GAINESVILLE, GEORGIA
AUGUST 1953

WGN9 WXER

PROPOSED NIGHT
(5-28-59g)

Station WPAW
Pawtucket, Rhode Island

500w, 1kw-LS, DA-N,U
550 KC

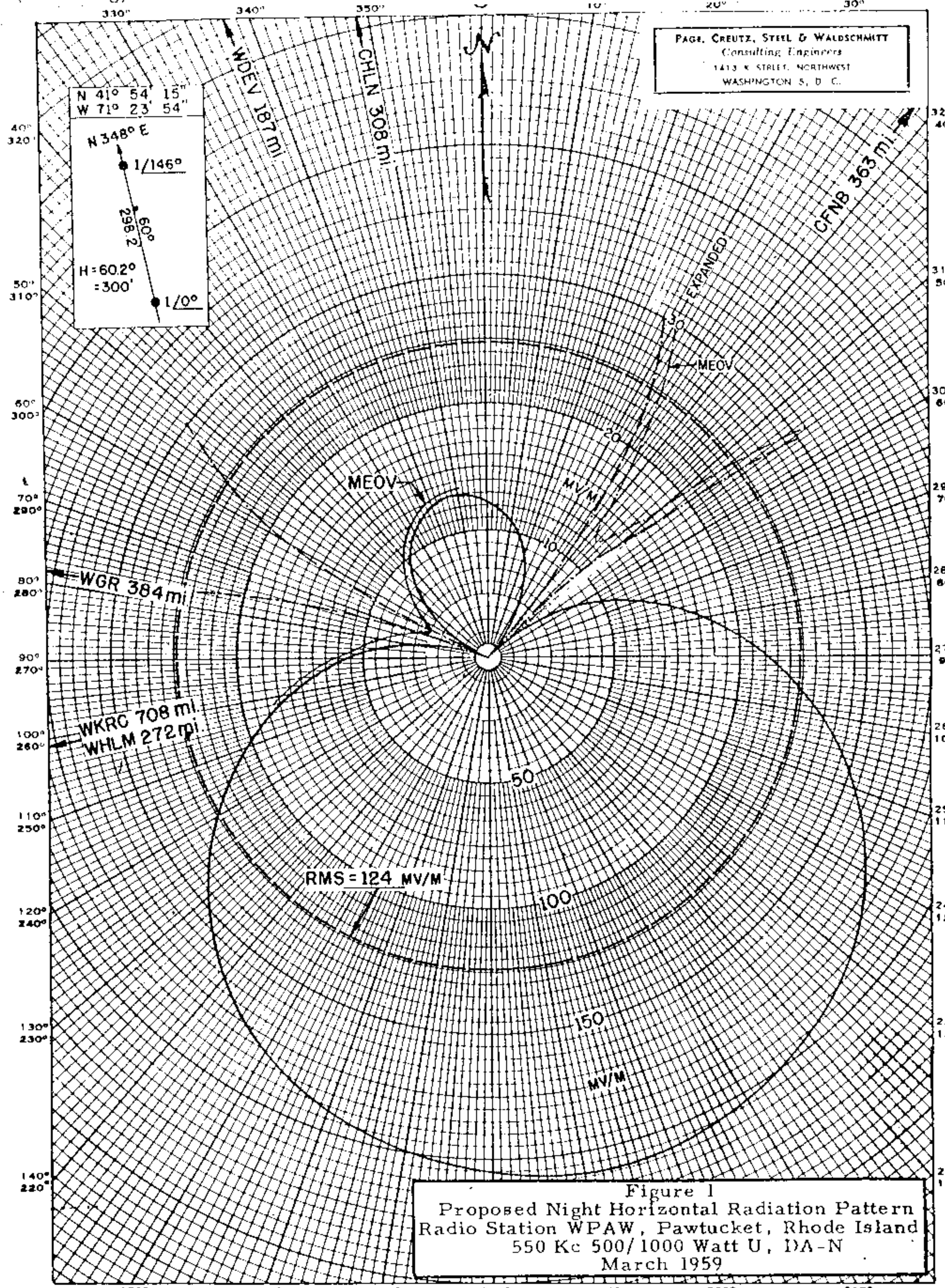


Figure 1
Proposed Night Horizontal Radiation Pattern
Radio Station WPAW, Pawtucket, Rhode Island
550 Kc 500/1000 Watt U, DA-N
March 1959

FCC File No. BP-12191
Accepted 4-15-59 (Amended)

WPAW
Pawtucket, Rhode Island

550 KC

WGNG
BL-7806

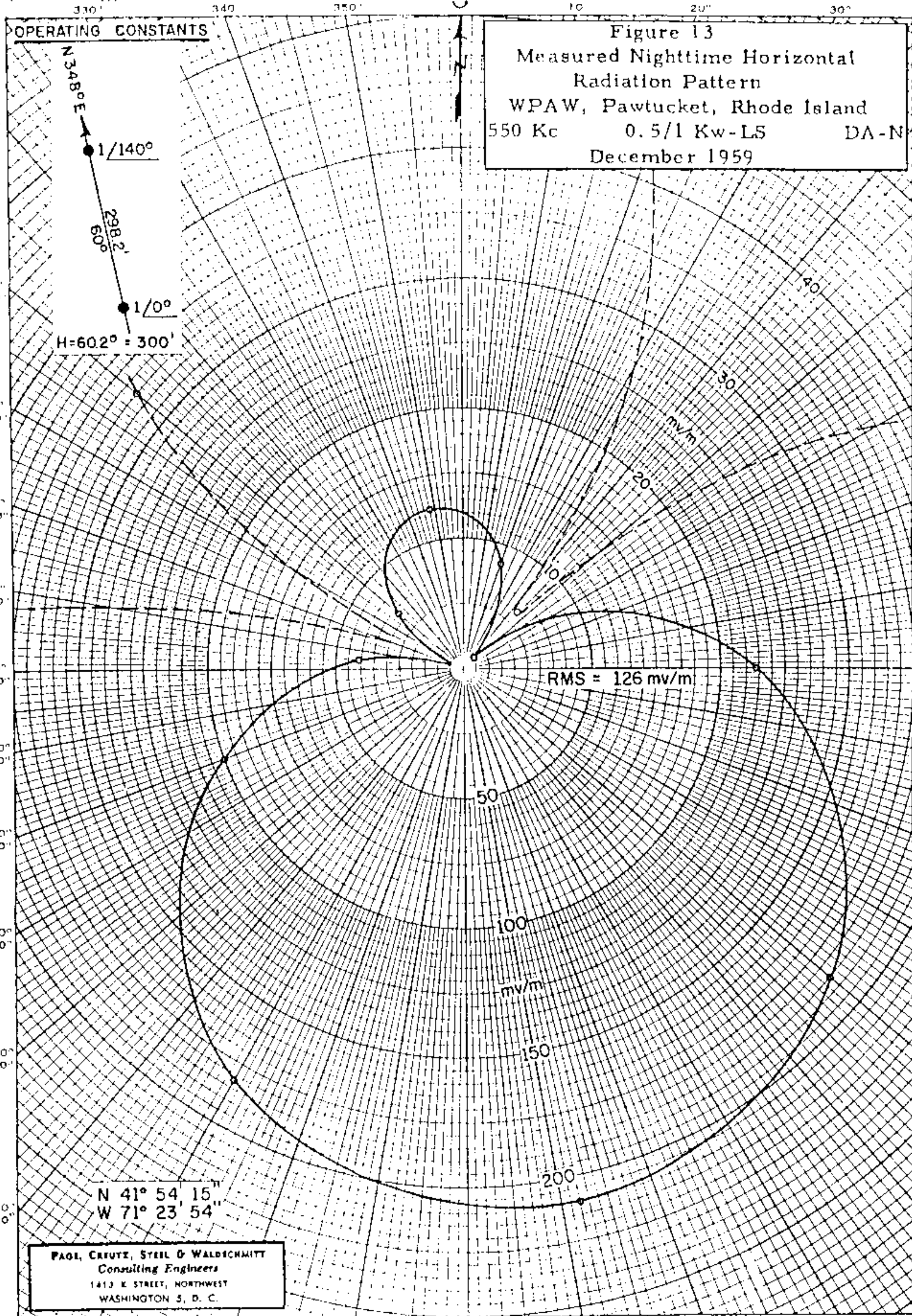
WXTR

MEASURED NIGHT
(2-26-60g)

Station WPAW
Pawtucket, Rhode Island

500w, 1kw-LS, DA-N,U
550 KC

Printed for DAN
1-12-60



FCC File No. BL-7806
Accepted 2-10-60

WPAW
Pawtucket, Rhode Island

550 KC

WGNG WXTR

MEASURED NON-DA (2-26-60g)

Station WPAW 500w, 1kw-LS, DA-N,U
Pawtucket, Rhode Island 550 KC

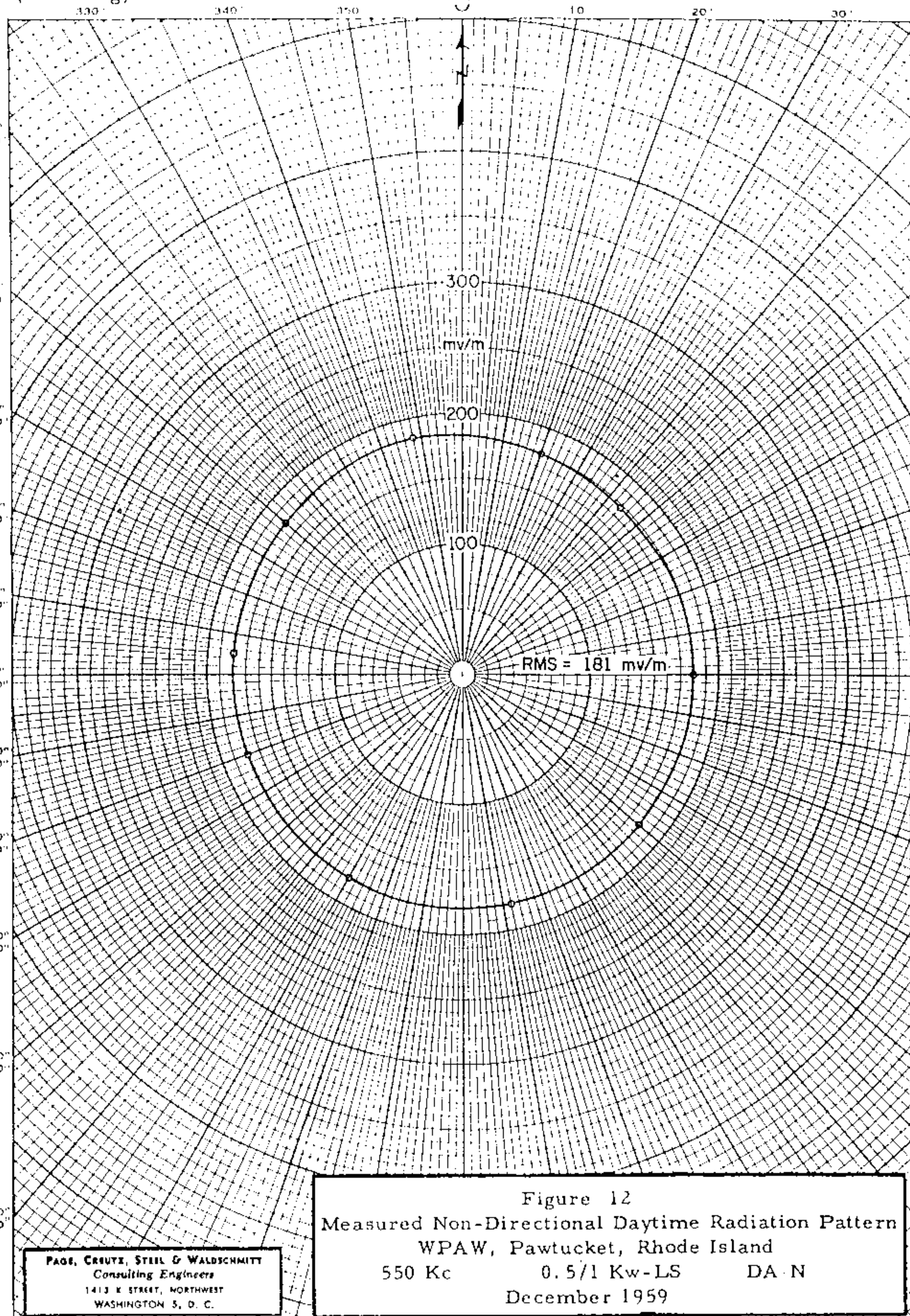


Figure 12
Measured Non-Directional Daytime Radiation Pattern
WPAW, Pawtucket, Rhode Island
550 Kc 0.5/1 Kw-LS DA-N
December 1959

PAGE, CREUTZ, STEEL & WALDSCHMITT
Consulting Engineers
1413 K STREET, NORTHWEST
WASHINGTON 5, D. C.

FCC File No. BL-7806
Accepted 2-10-60

WPAW
Pawtucket, Rhode Island 550 KC

WGR

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station	: WGR	Main Studio:	Buffalo, New York
Frequency	: 550 KHz	Power	: 5 kW Night 5 kW Day
Notification	: 1780	Date	: Sept. 28, 1979 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude:	42	46	04
West Longitude:	78	50	39

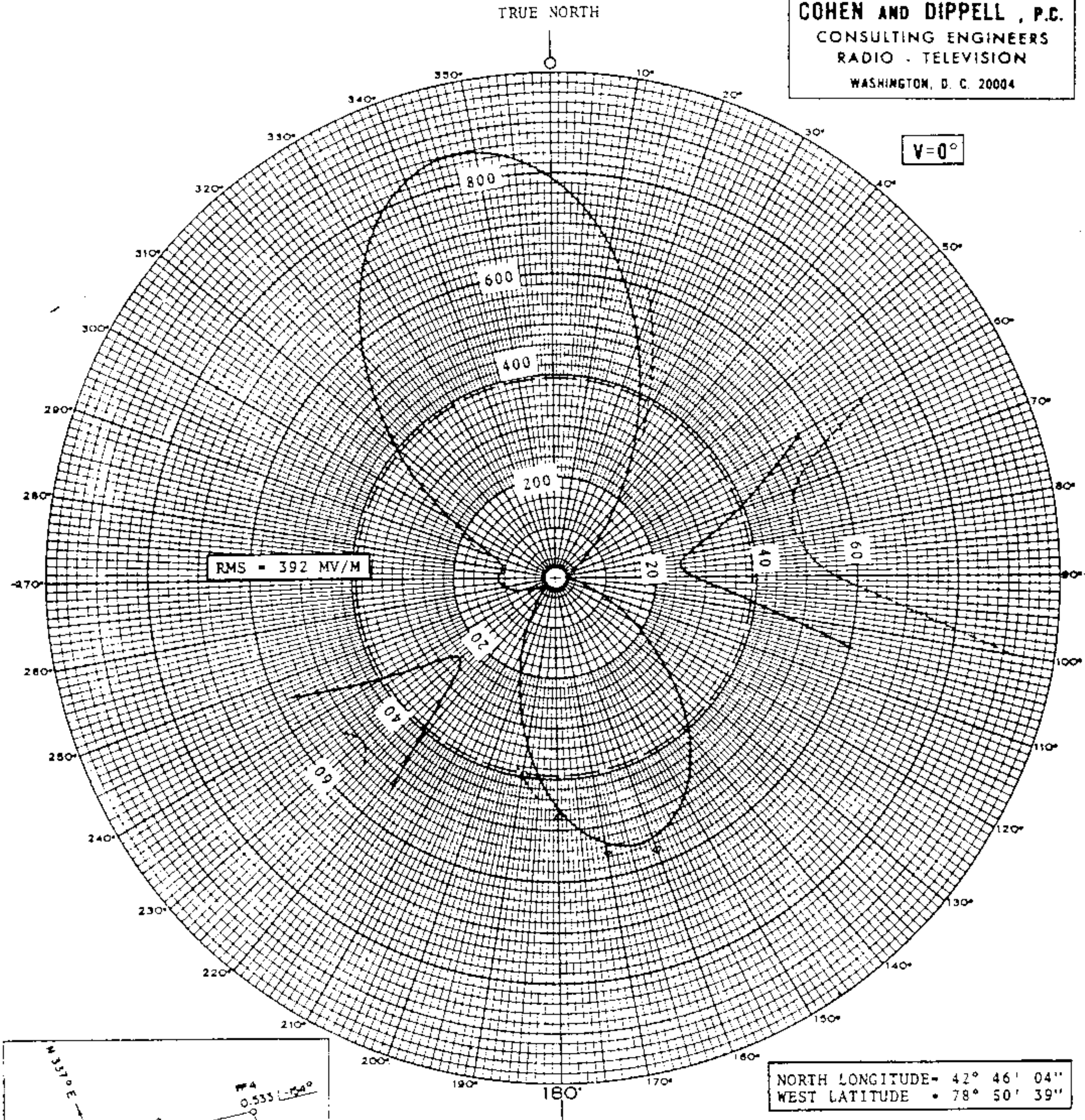
PREDICTED EFFECTIVE DAY FIELD: (omnidirectional) 183 mV/m at rated power

Note: Please retain the description sheet notified for station WGR in United States Change lIst Number 203, dated December 9, 1946 and attach to this supplemental Description Sheet and nighttime directional radiation patterns. This notification is for the purpose of indicating only the addition of MEOV's to the nighttime directional radiation patterns.

WGR

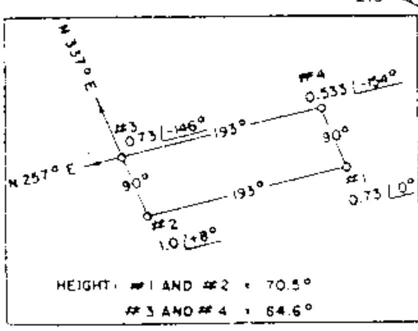
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004

THEO.



NORTH LONGITUDE- 42° 46' 04"
WEST LATITUDE • 78° 50' 39"

----- MEOV



HORIZONTAL PLANE RADIATION PATTERN

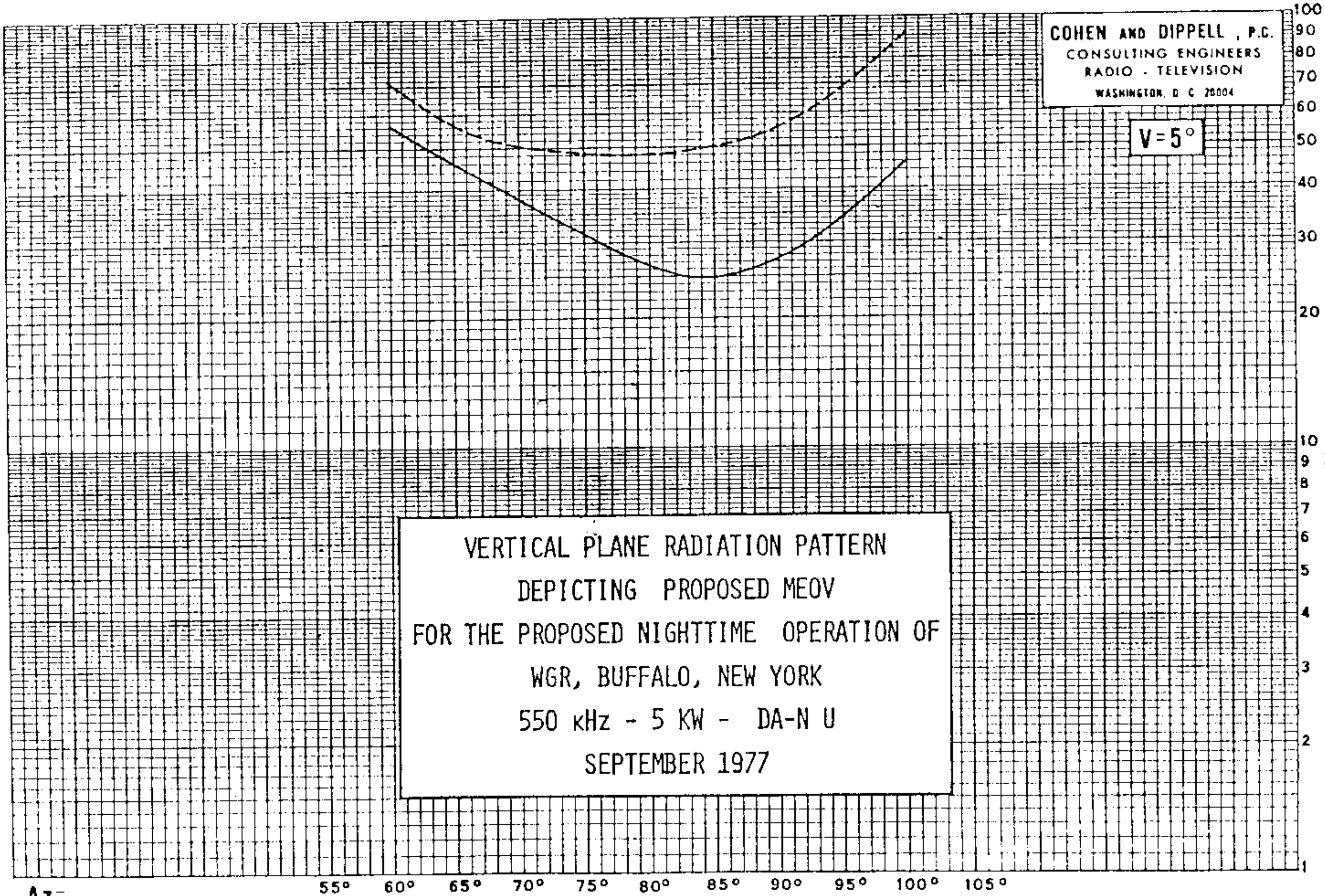
FOR THE PROPOSED NIGHTTIME OPERATION OF

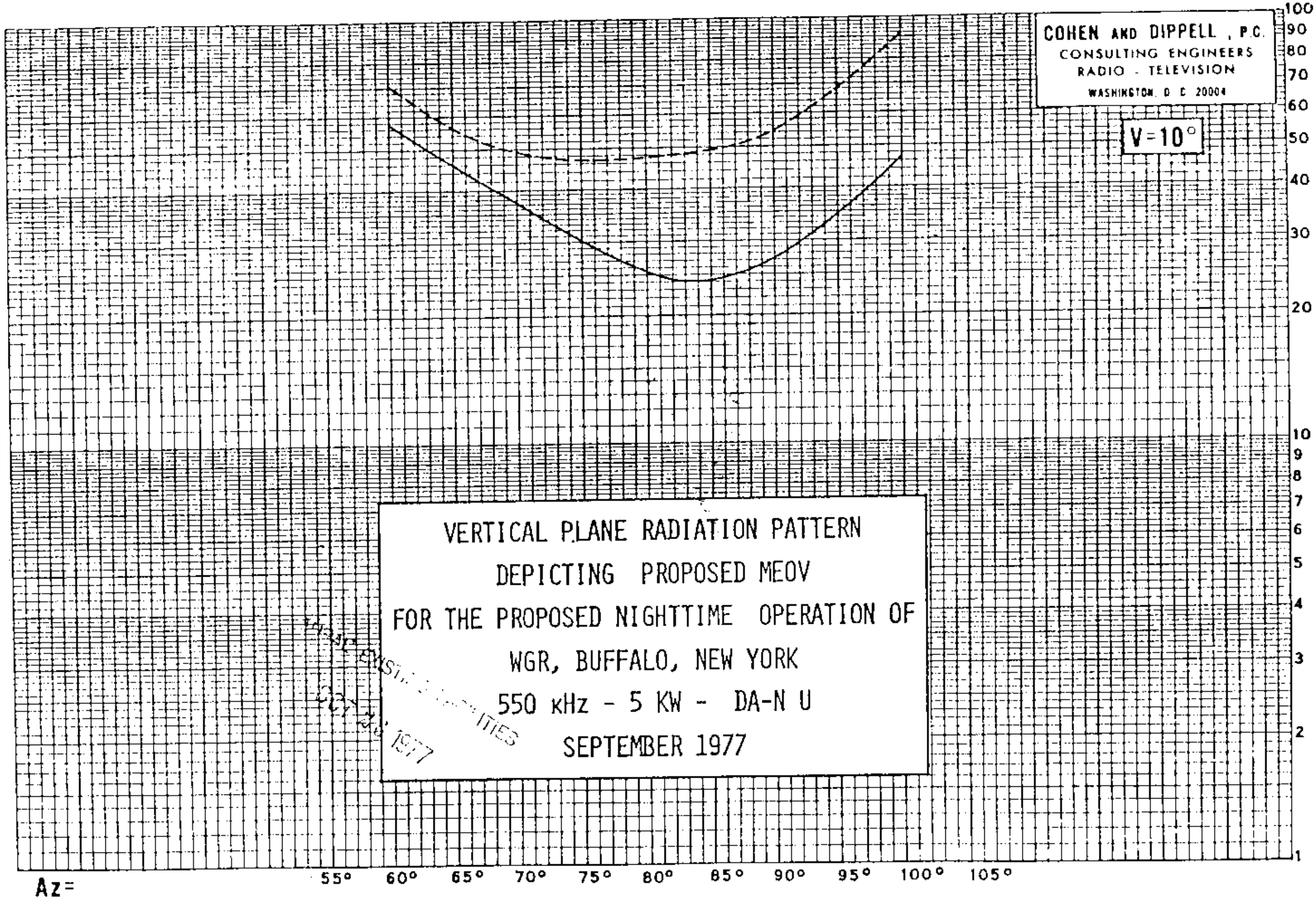
WGR, BUFFALO, NEW YORK

550 kHz 5 KW DA-N U

SEPTEMBER 1977

WGR

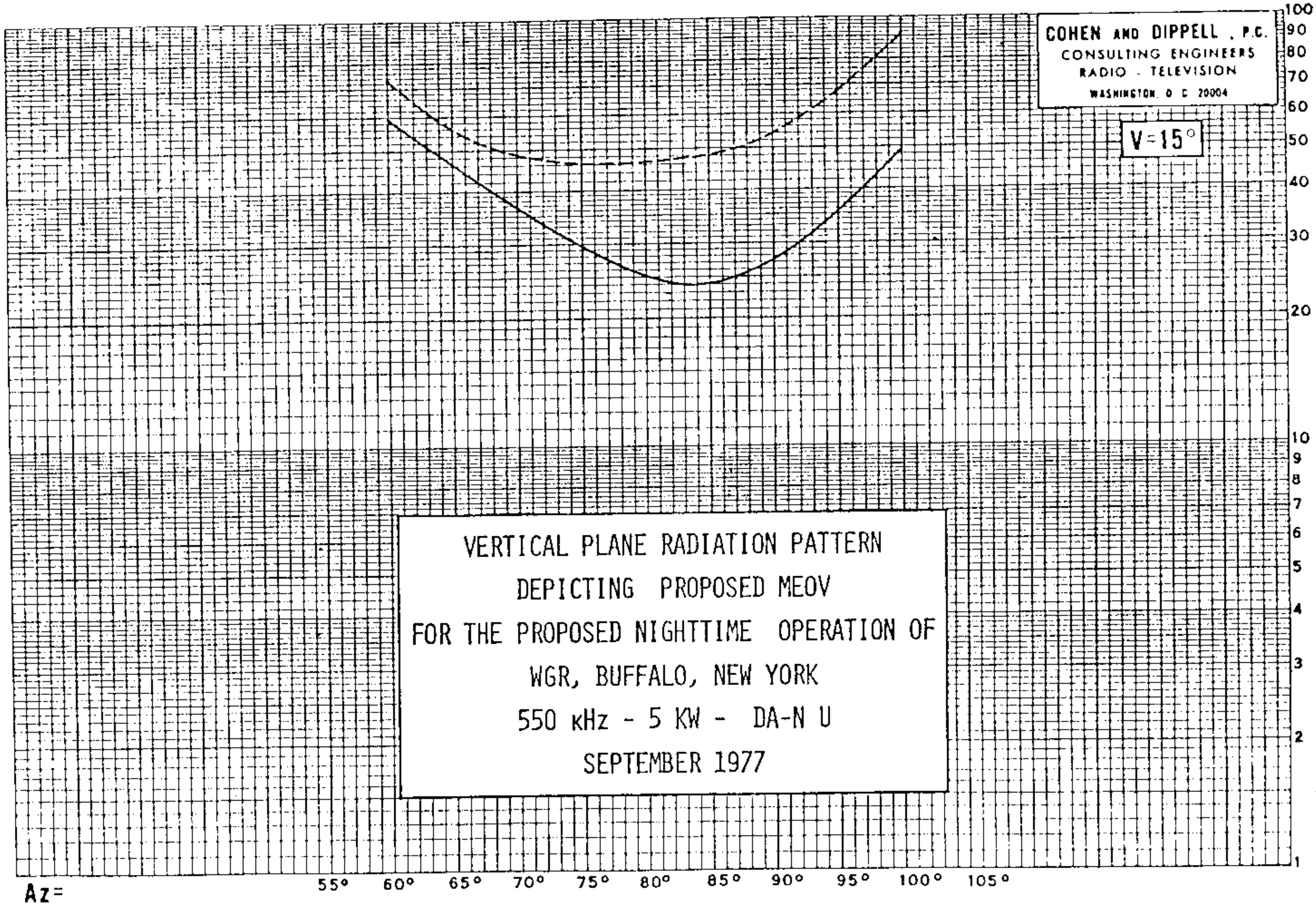

COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=5°
MV/M
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°



VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977

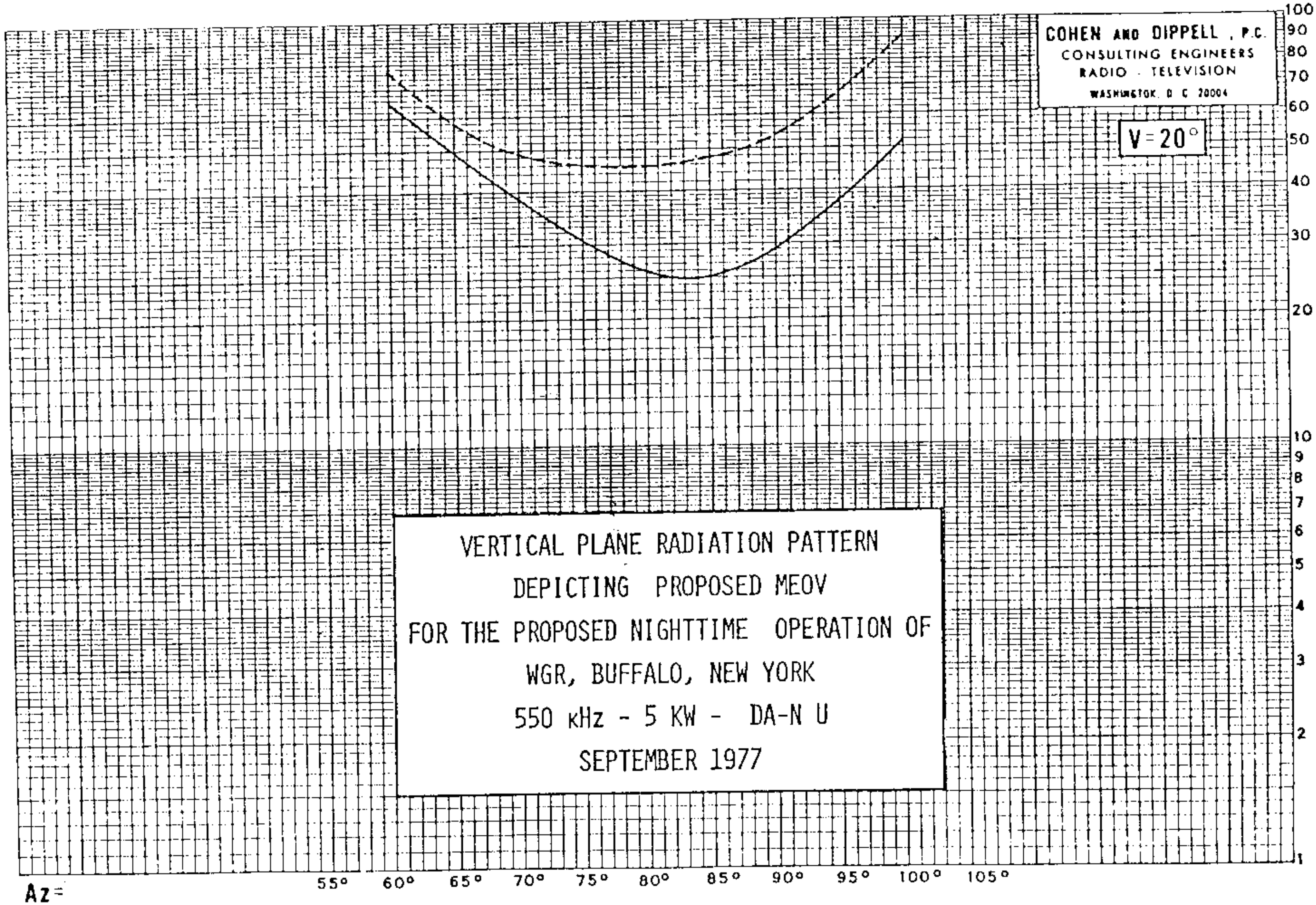
WGR

WGR

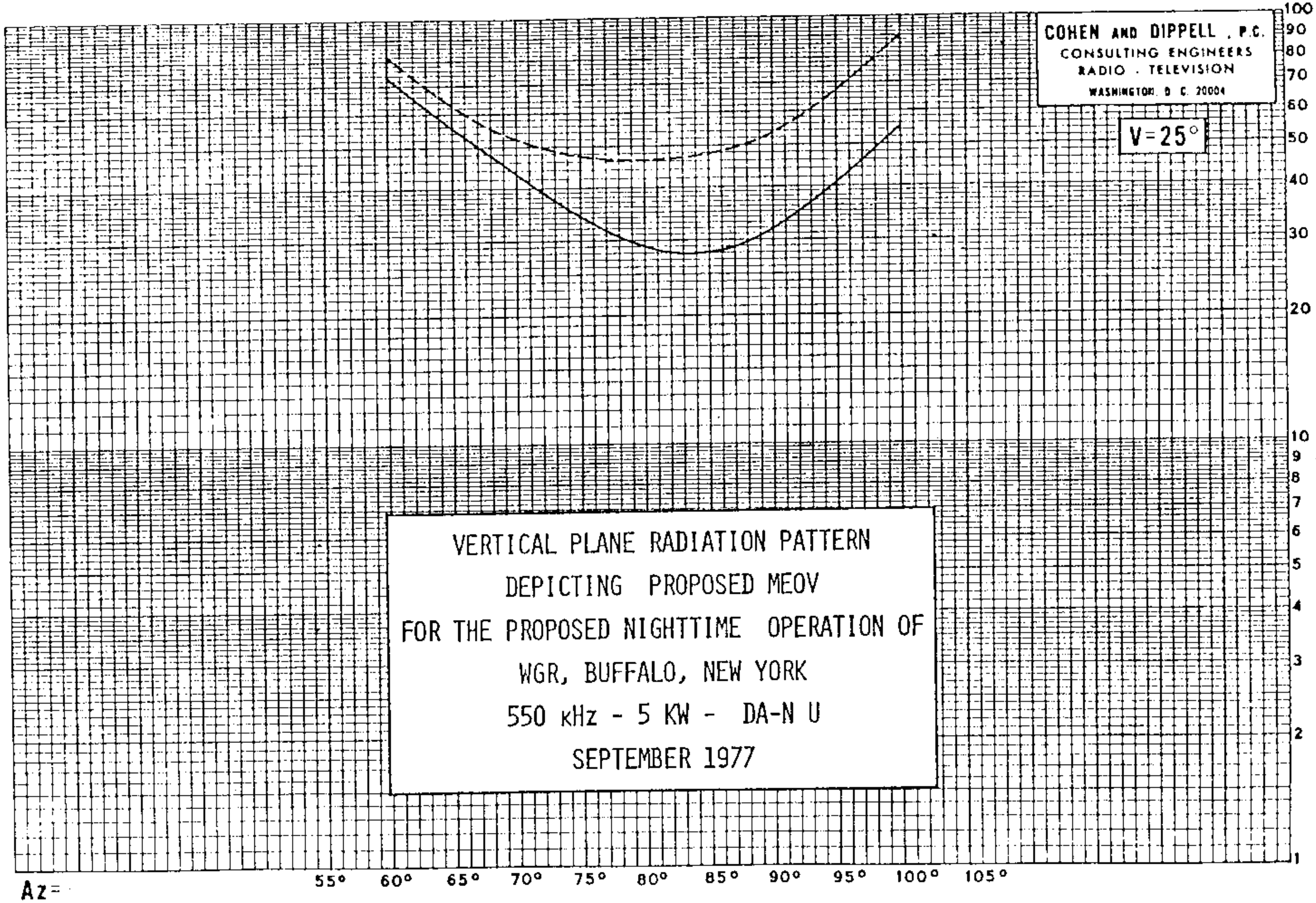


COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=15°
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
MV/M
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°

WGR

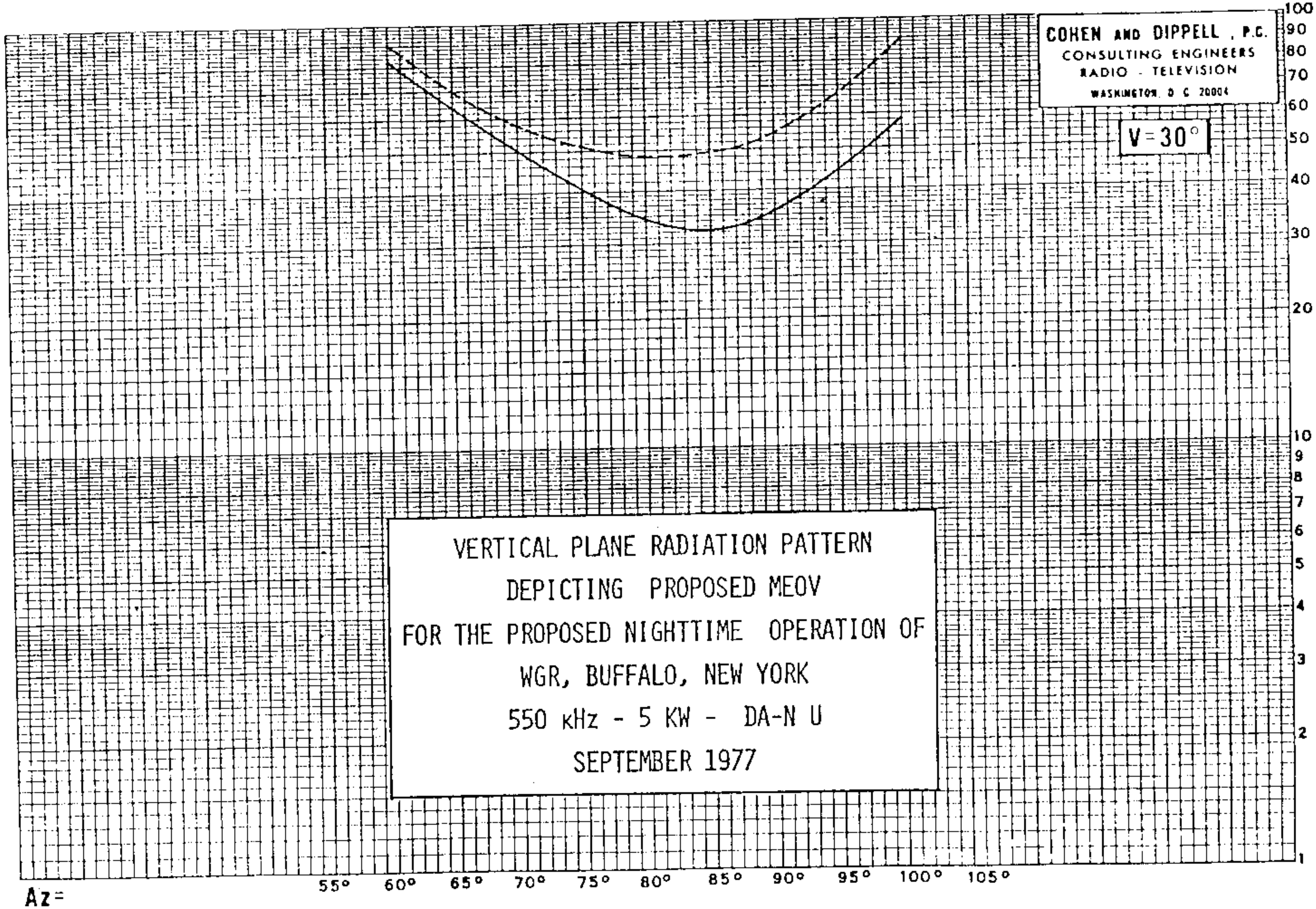


COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V = 20°
MV/M
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
Az =
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°


COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO . TELEVISION
WASHINGTON, D. C. 20004
V=25°
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
MV/M
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°

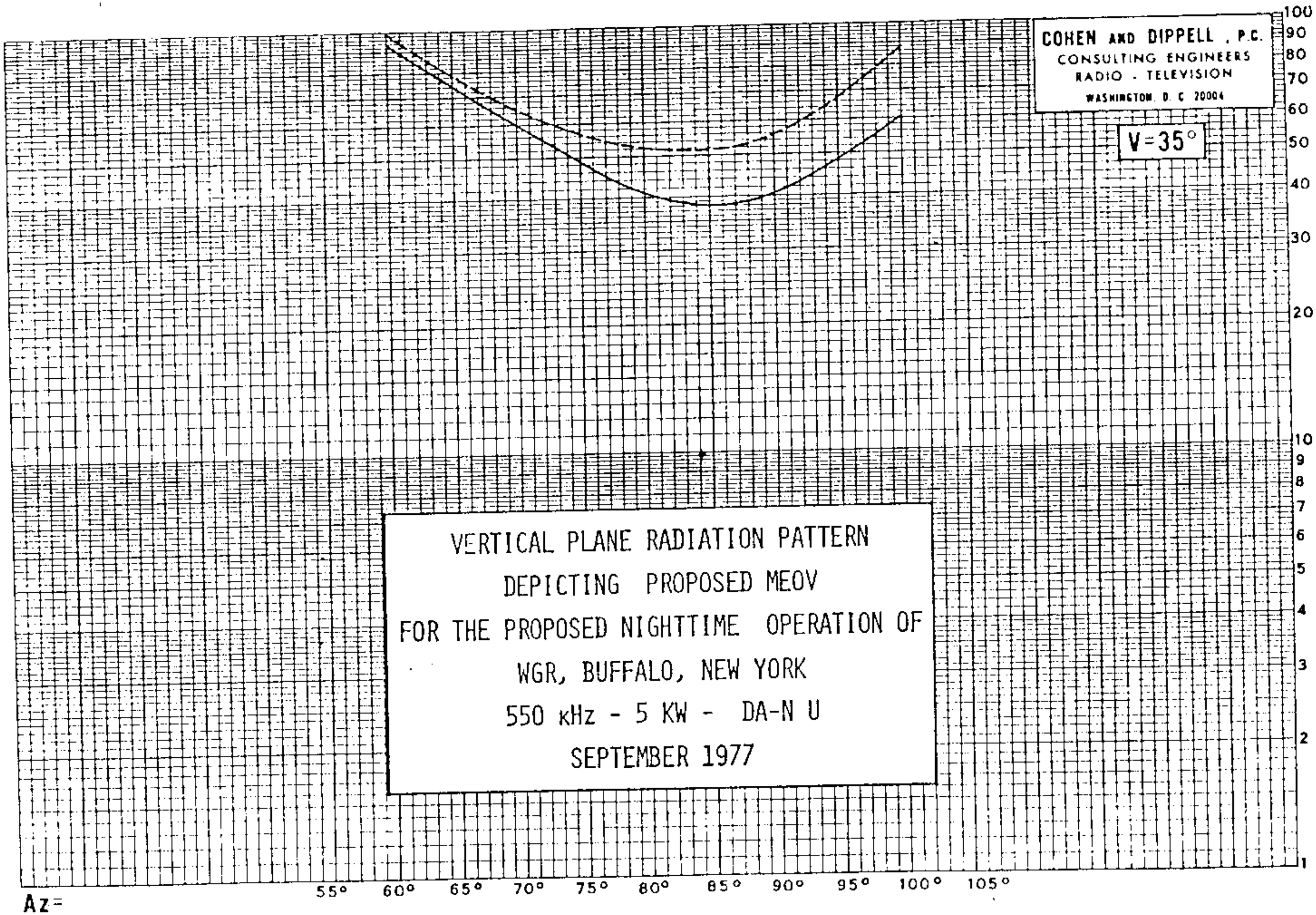
WGR

WGR

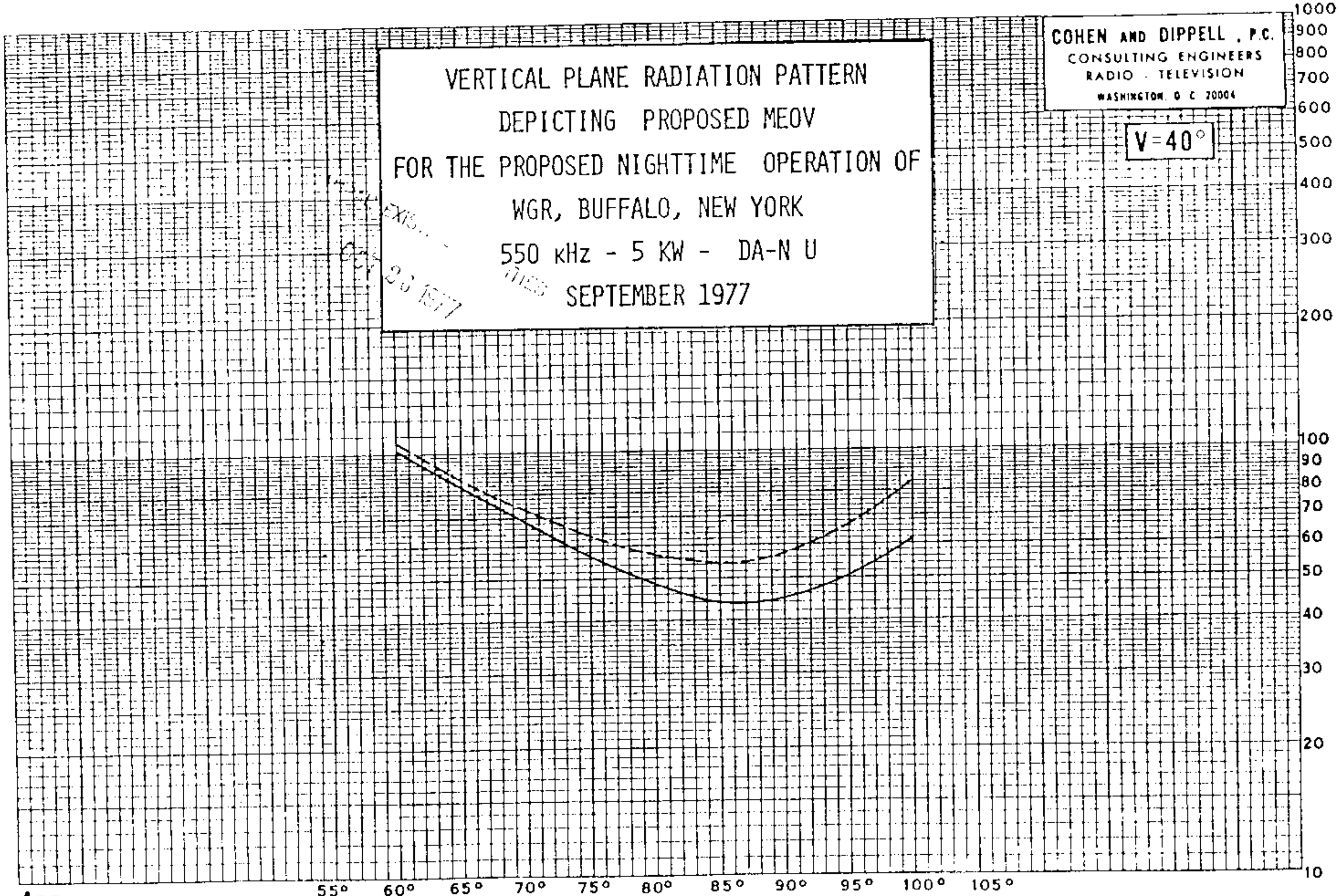


VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977

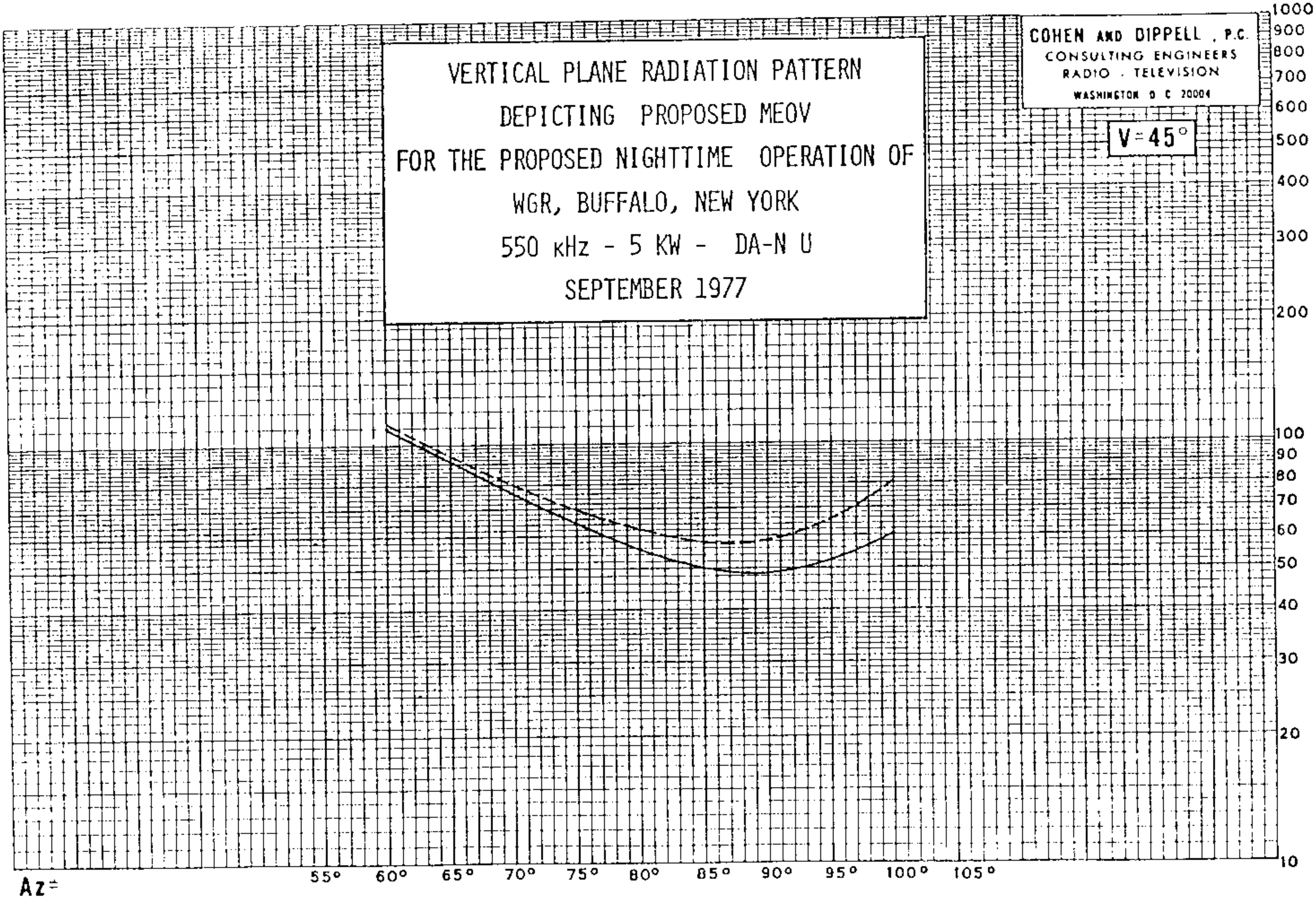
WGR

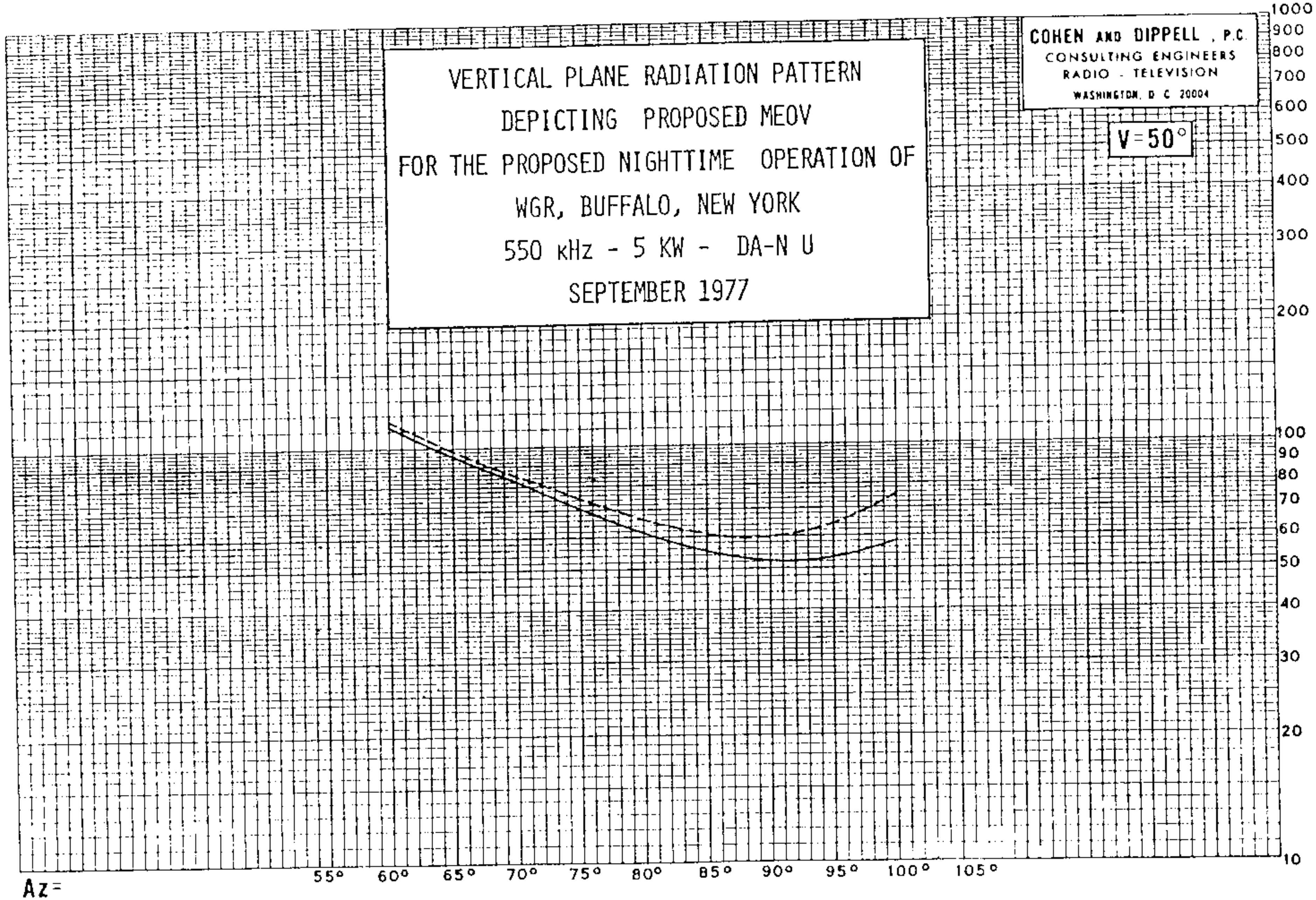

COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=35°
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
MV/M
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°

WGR

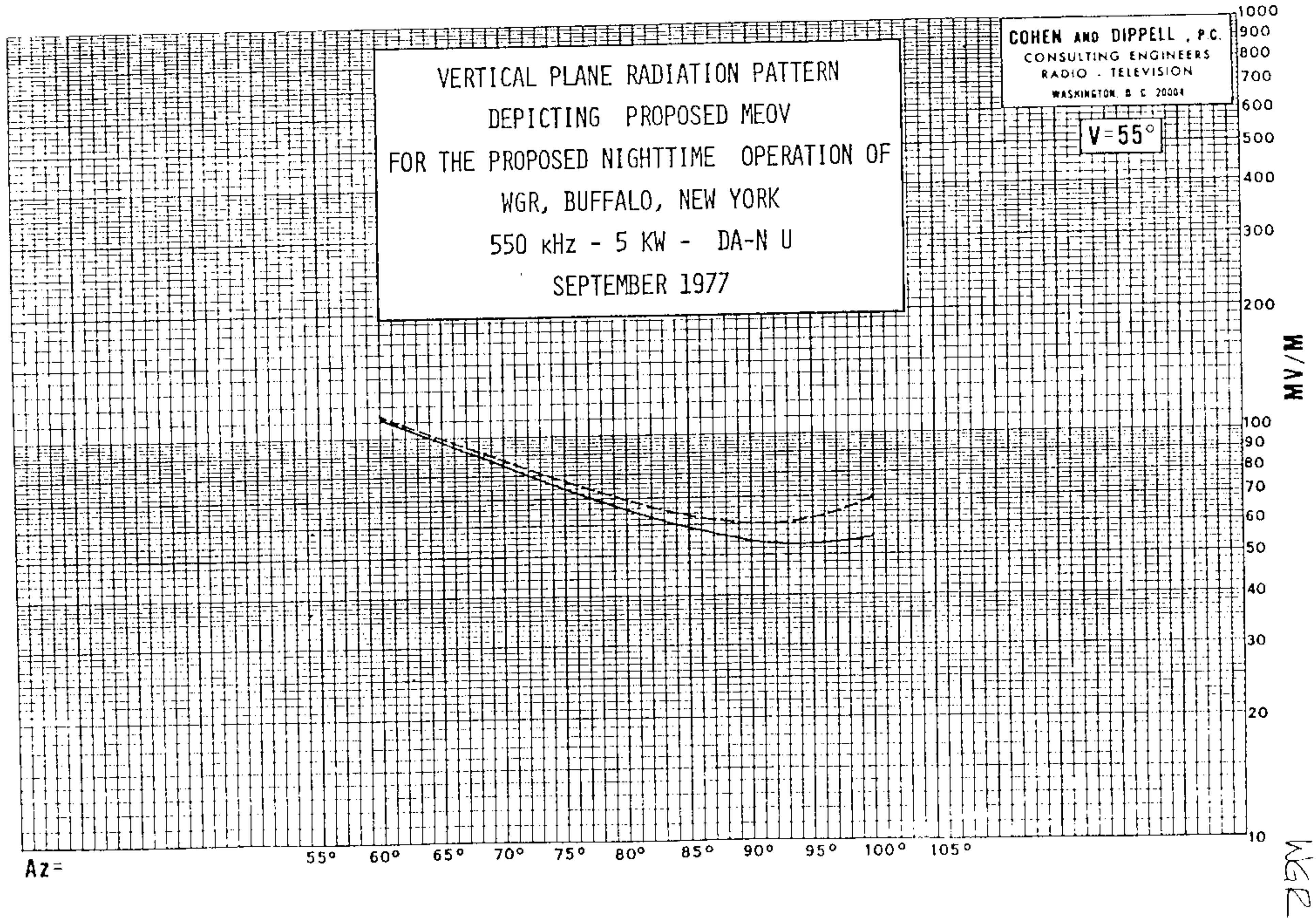


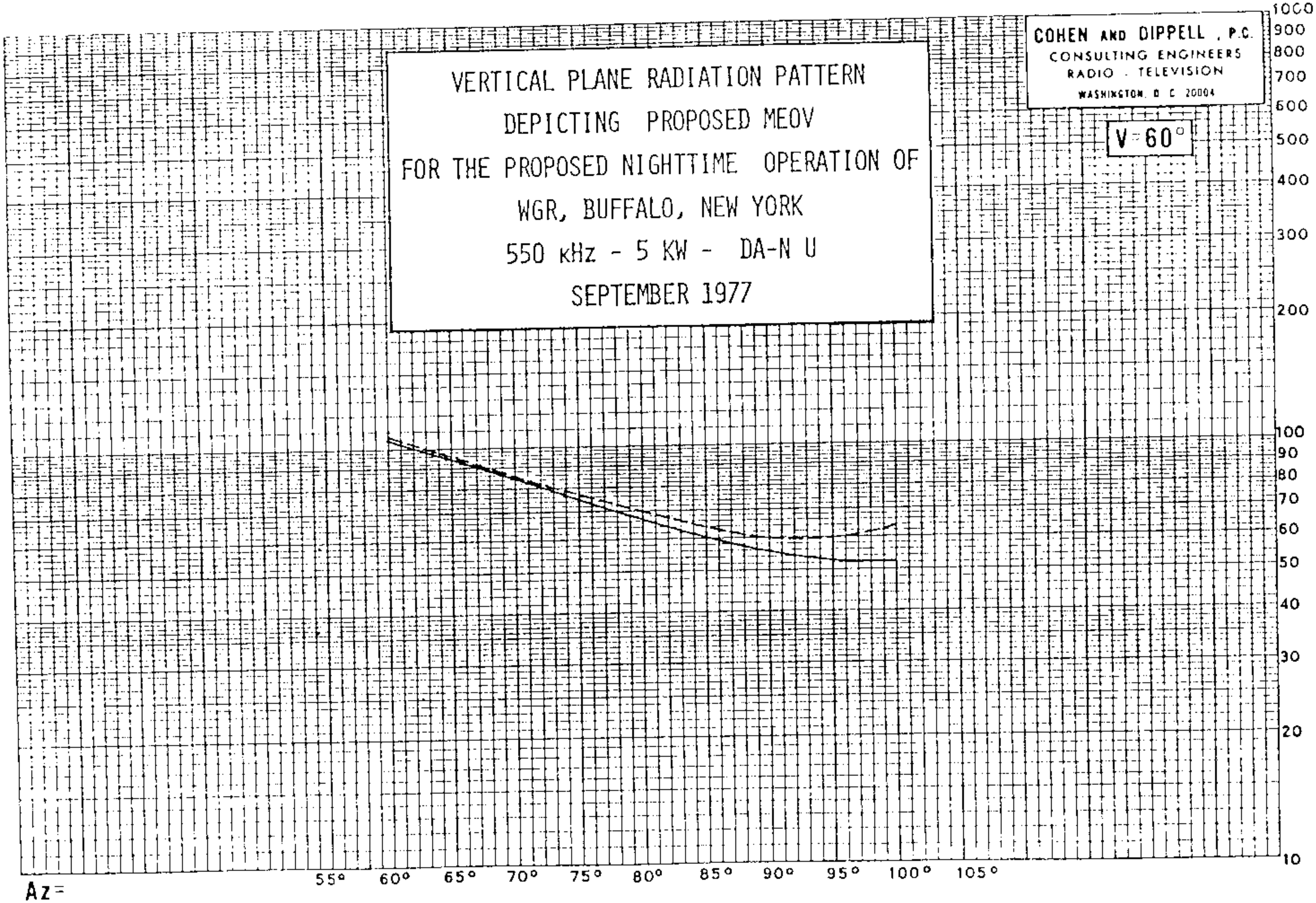
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO · TELEVISION
WASHINGTON, D.C. 20004
V=40°
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
MV/M
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°


VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO . TELEVISION
WASHINGTON D C 20004
V=45°
MV/M
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°
WGR


COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V = 50°
VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
MV/M
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
Az =
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°

WGR

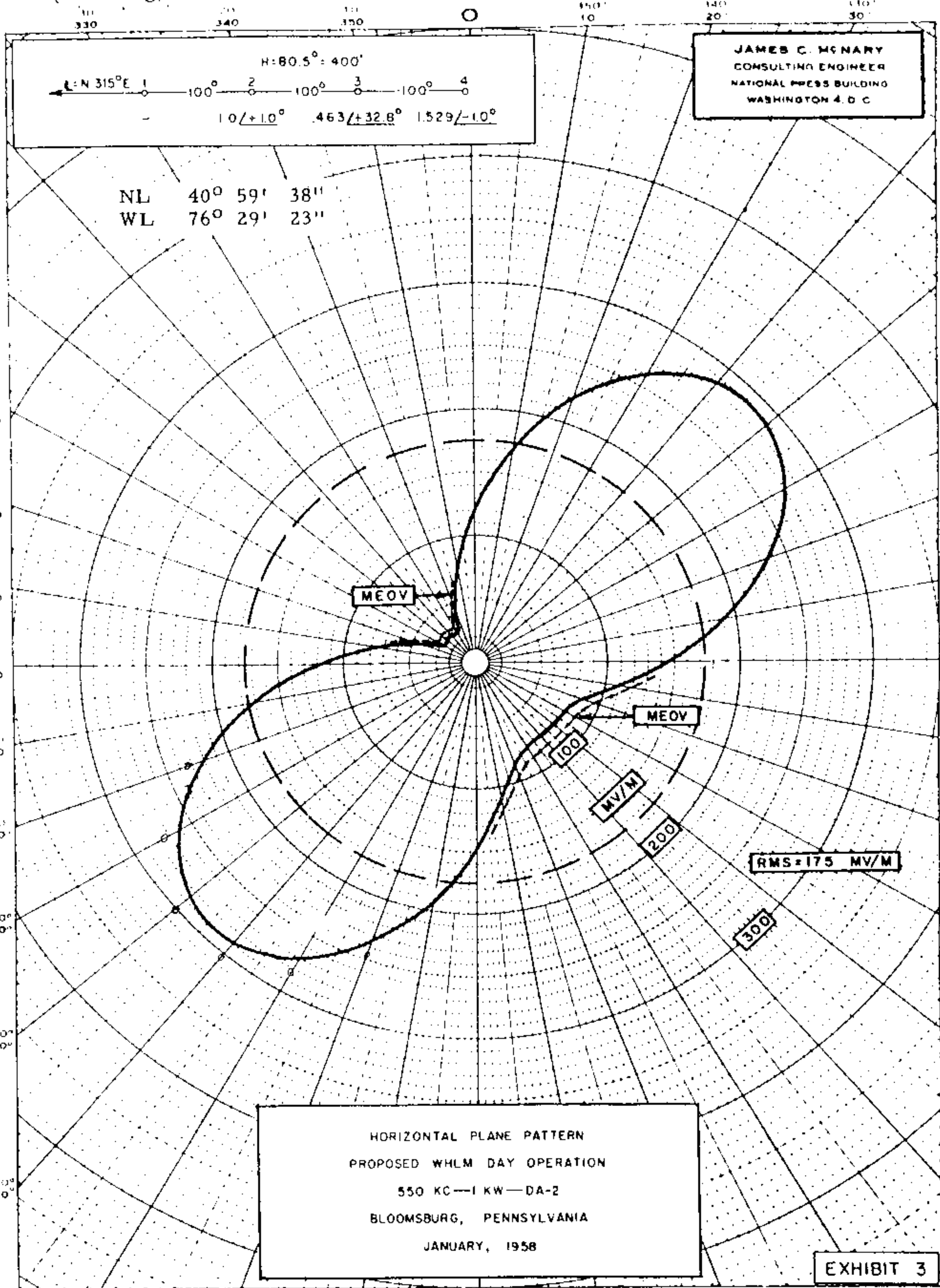

VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=55°
MV/M
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°
WGR


VERTICAL PLANE RADIATION PATTERN
DEPICTING PROPOSED MEOV
FOR THE PROPOSED NIGHTTIME OPERATION OF
WGR, BUFFALO, NEW YORK
550 kHz - 5 KW - DA-N U
SEPTEMBER 1977
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=60°
MV/M
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
Az=
55°
60°
65°
70°
75°
80°
85°
90°
95°
100°
105°
WGR

WHLM

PROPOSED DAY
(6-20-58g)

Station WHLM 1kw, DA-2, U
Bloomsburg, Pennsylvania 550 KC



FCC File No. BP-12,002 WHLM
Accepted 5-27-58 Bloomsburg, Pennsylvania 550 KC

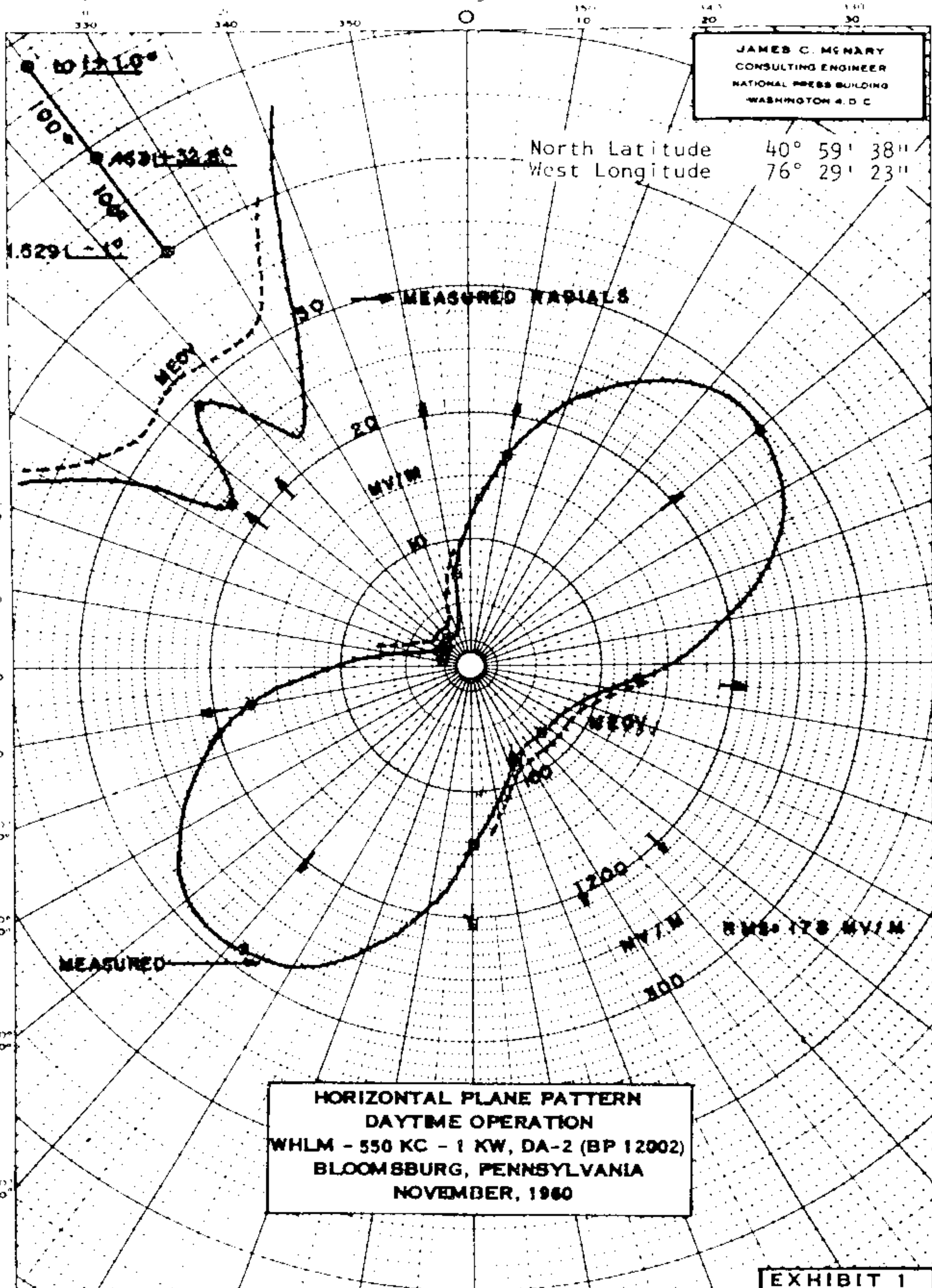
Granted CP for 1 KW 7-20-60 granted for increase in Power 5-8-61

WHLM

BL-8185

MEASURED DAY
(1-17-61q)

Station WHLM 1kw, DA-2,U
Bloomsburg, Pennsylvania 550 KC



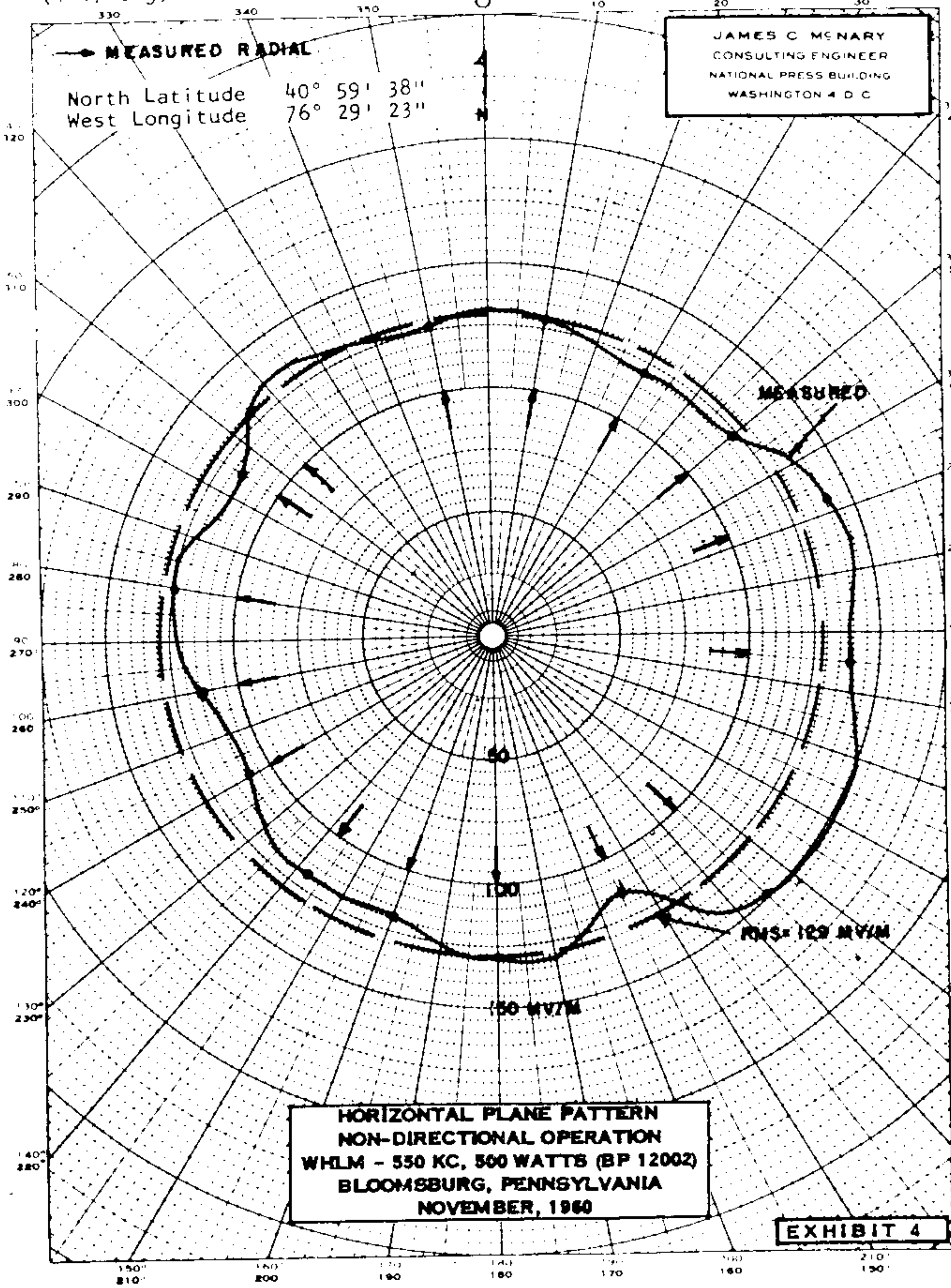
FCC File No. BL-8185
Accepted 12-28-60

WHLM
Bloomsburg, Pennsylvania 550 KC

WHLM

MEASURED NON-DA
(1-17-61g)

Station WHLM 1kw, DA-2,U
Bloomsburg, Pennsylvania 550 KC



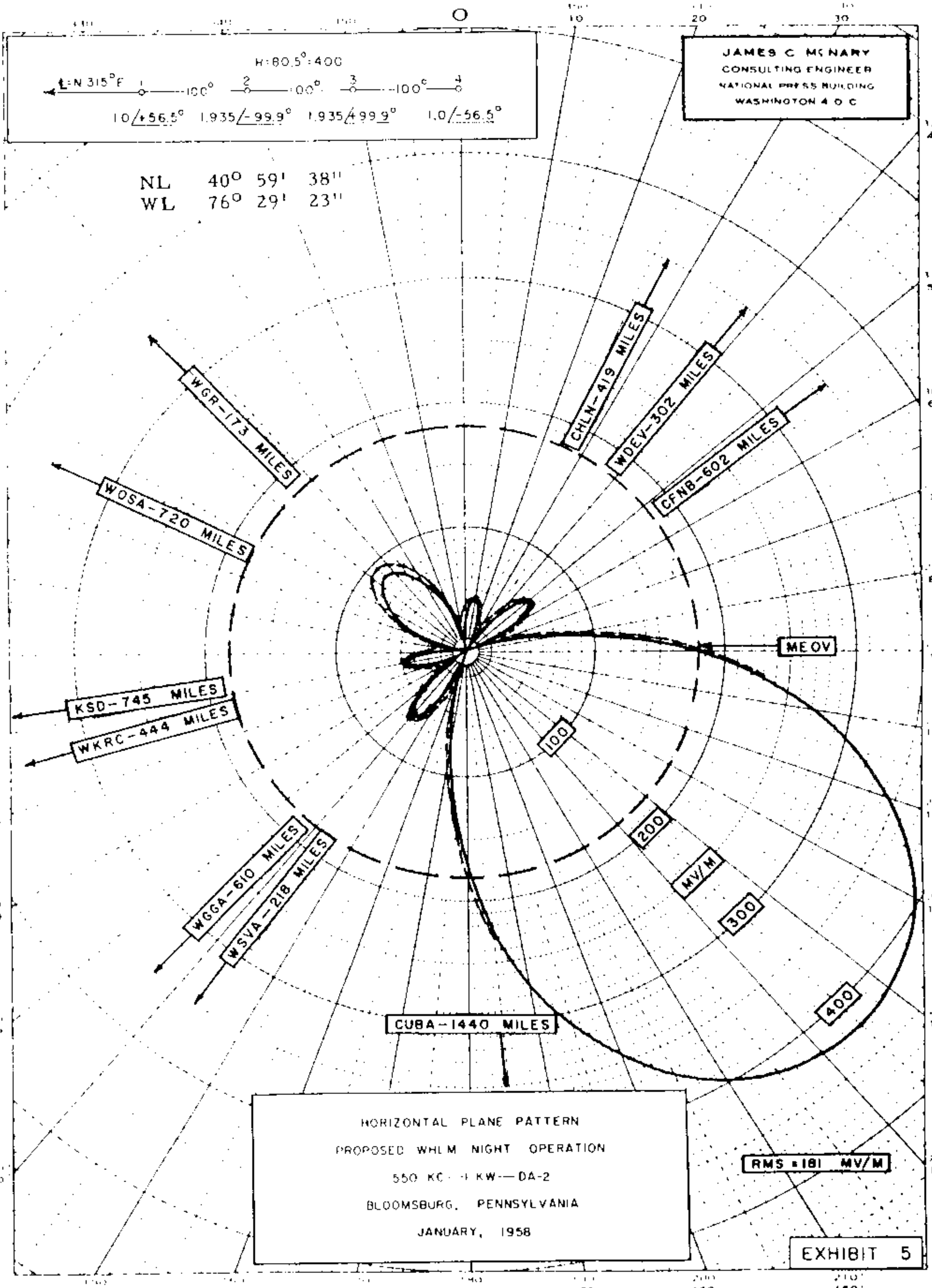
FCC File No. BL-8185
Accepted 12-28-60

WHLM
Bloomsburg, Pennsylvania 550 KC

WHLM

PROPOSED NIGHT
(6-20-58g)

Station WHLM 1kw, DA-2,U
Bloomsburg, Pennsylvania 550 KC



FCC File No. BP-12,002
Accepted 5-27-58

WHLM
Bloomsburg, Pennsylvania 550 KC

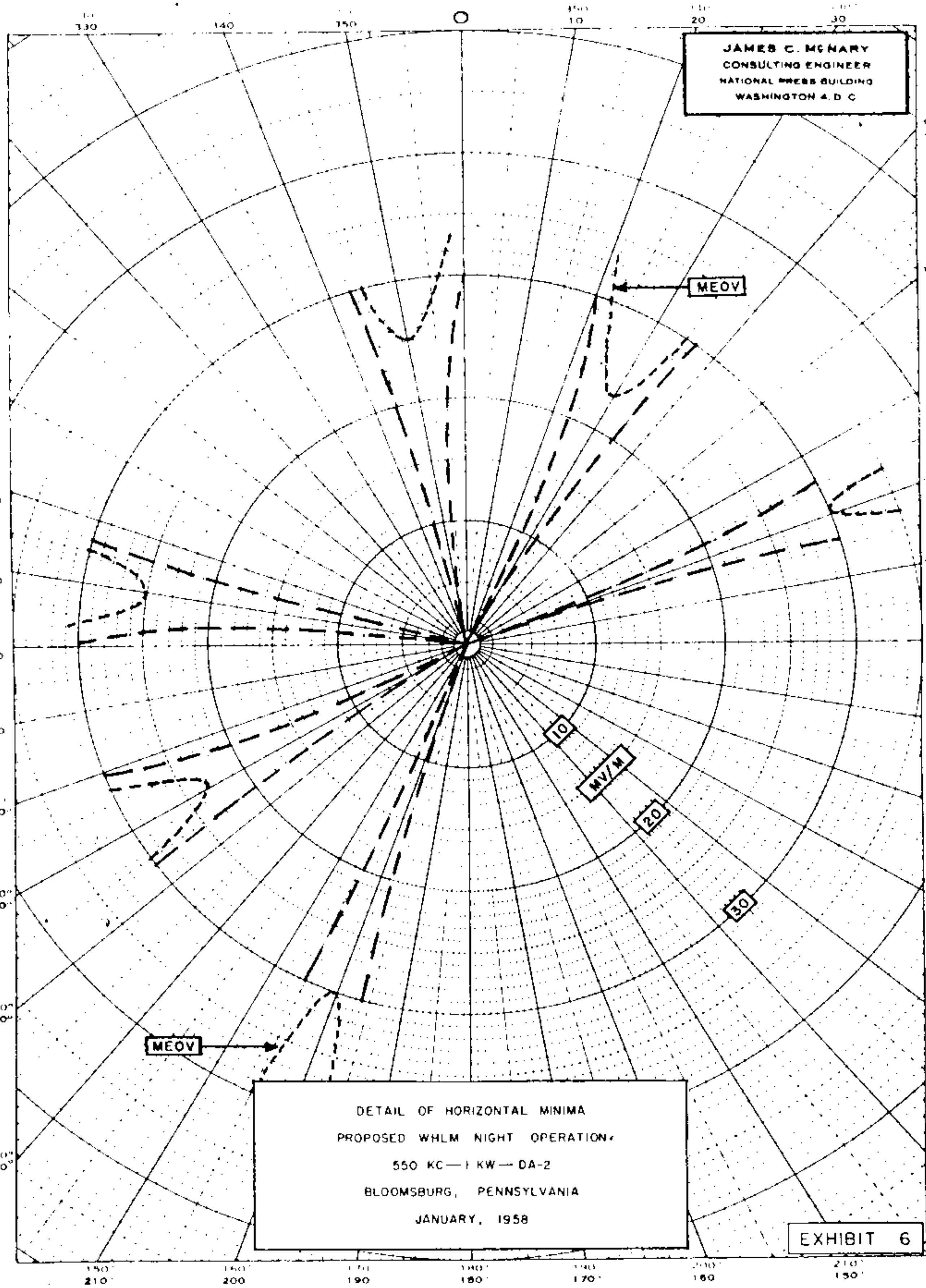
Granted CP for 1KW 7-20-60
Granted 2-5-8-61

WHLM

PROPOSED NIGHT NULLS
(6-20-58g)

Station WHLM
Bloomsburg, Pennsylvania

1kw, DA-2,U
550 KC



granted CP for 1 Kw 7-20-60
Granted L for power increase 5-8-61

FCC File No. BP-12,002
Accepted 5-27-58

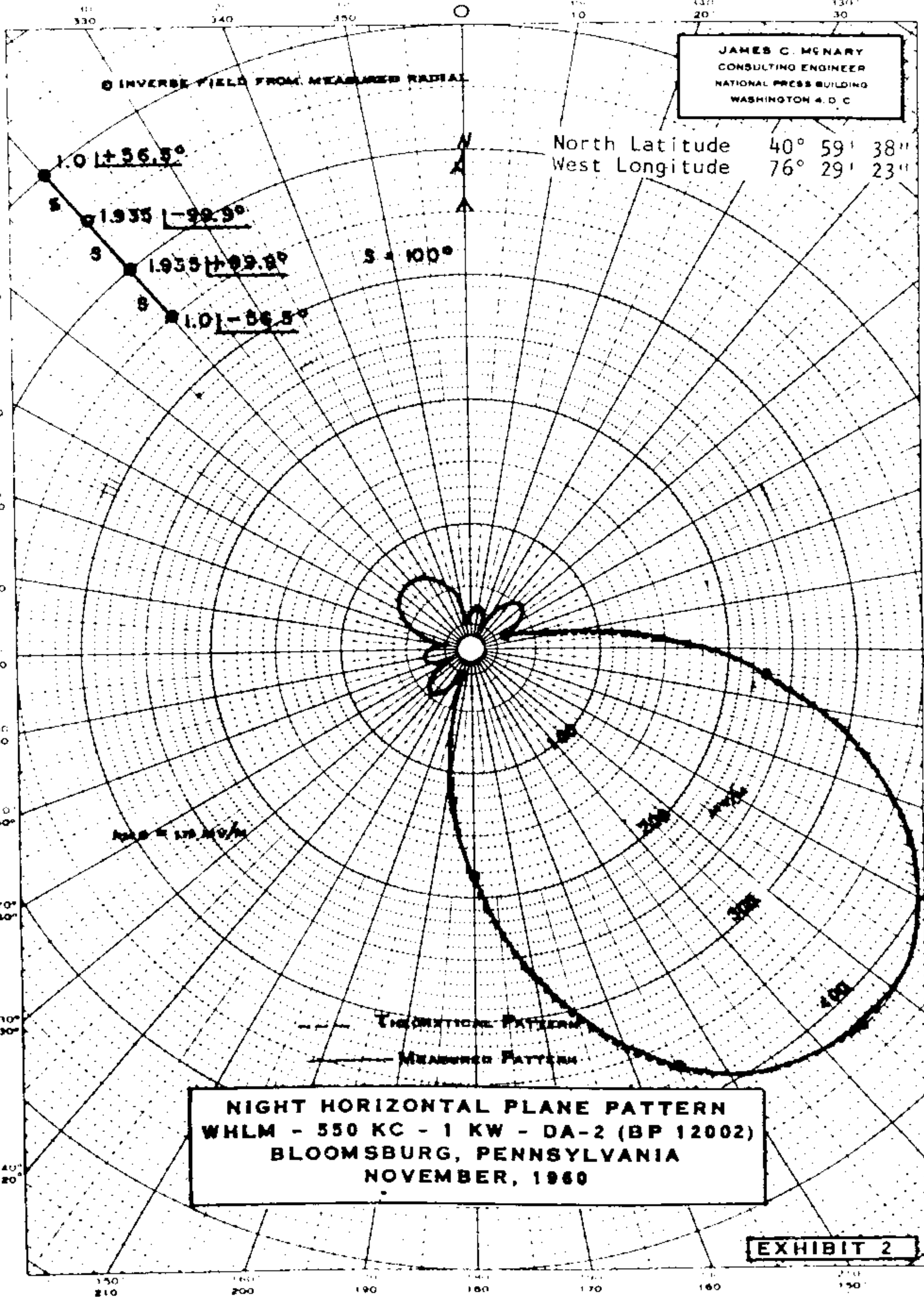
WHLM
Bloomsburg, Pennsylvania

550 KC

WHLM
BL-8185

MEASURED NIGHT
(1-17-61g)

Station WHLM 1kw, DA-2,U
Bloomsburg, Pennsylvania 550 KC



NIGHT HORIZONTAL PLANE PATTERN
WHLM - 550 KC - 1 KW - DA-2 (BP 12002)
BLOOMSBURG, PENNSYLVANIA
NOVEMBER, 1960

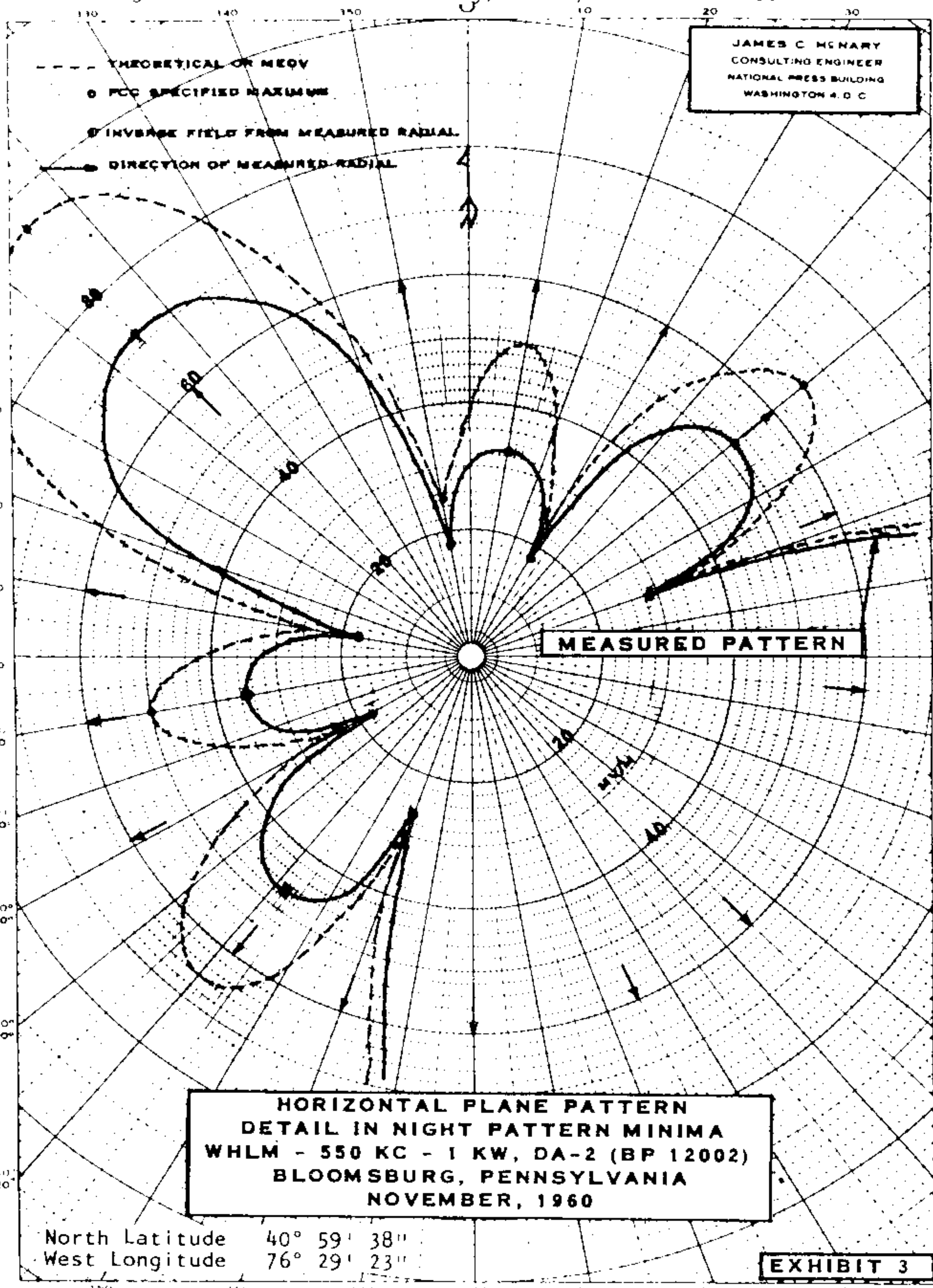
FCC File No. BL-8185
Accepted 12-28-60

WHLM
Bloomsburg, Pennsylvania 550 KC

WHLM

MEASURED NIGHT NULLS (1-17-61g)

Station WHLM 1kw, DA-2,U
Bloomsburg, Pennsylvania 550 KC



FCC File No. BL-8185
Accepted 12-28-60

WHLM
Bloomsburg, Pennsylvania 550 KC

WKRC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: WKRC

Main Studio: Cincinnati, Ohio

Frequency: 550 kHz

Power: 1 kW Night 5 kW Day

Notification List No. 1639

Date: July 2, 1975

Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:

North Latitude: 39° 00' 29"
West Longitude: 84° 26' 39"

ANTENNA CHARACTERISTICS

MODIFIED AND STANDARD PATTERNS

Authorized for Daytime and Nighttime operation. (DA-2)
Number of elements: 5
Type of elements: Series-excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	W(#5)	N(#1)	NC(#2)	SC(#3)	S(#4)
HEIGHT ABOVE INSULATORS:	All towers 350' (70.5°)				
NIGHT PHASING:	---	+235°	+56.52°	+221.09°	0°
NIGHT FIELD RATIO:	---	0.598	1.36	1.201	1.0
DAY PHASING:	+307°	---	0°	---	---
DAY FIELD RATIO:	1.718	---	1.0	---	---

SPACING AND ORIENTATION: Nighttime adjacent elements are spaced 497' (100°) on a line bearing 354.5° true. Daytime towers #2 and #5 are spaced 1292' (260°) on a line bearing 283° true.

GROUND SYSTEM: 120-447' equally spaced copper radials plus a 24' square ground screen about each tower. Radials are shortened and bonded to transverse straps along intersections between towers. Centers of systems are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS	THEORETICAL RSS	STANDARD RMS
Day	408.5 mv/m	446.5 mv/m	429.1 mv/m
Night	180.5 mv/m	359.6 mv/m	189.8 mv/m

NIGHTTIME MODIFIED PATTERN AUGMENTATION:

Azimuth of Maximum Augmentation	Augmented Radiation E_2	Span of Augmentation From - To
71°	126 mv/m	59° - 83°
354.5°	456 mv/m	320° - 29°

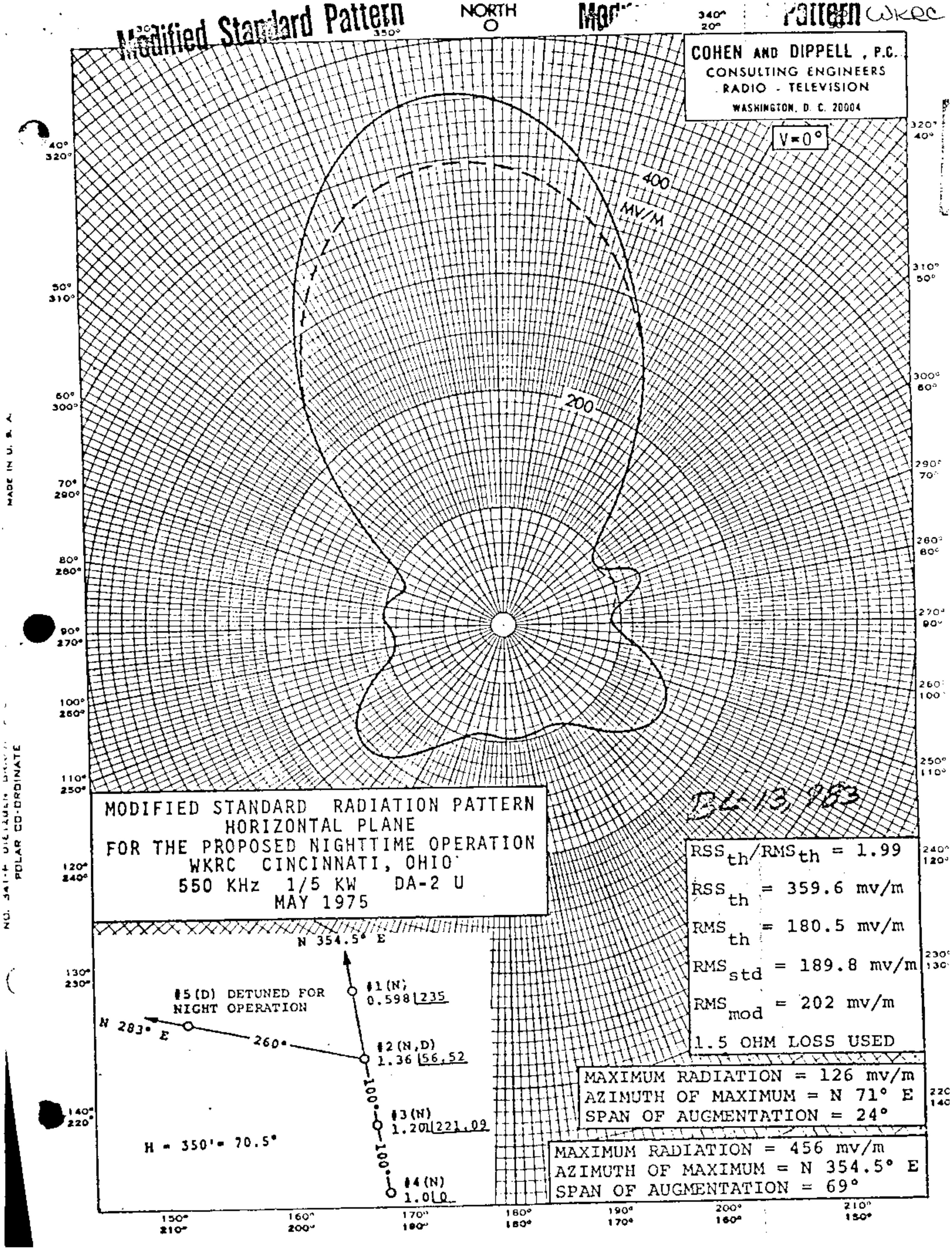
(Cont'd.)

WKRC

Station WKRC

Note: This notification conerns only a change in the Nighttime pattern to add augmentation to the standard pattern with Daytime operation continued as previously notified.

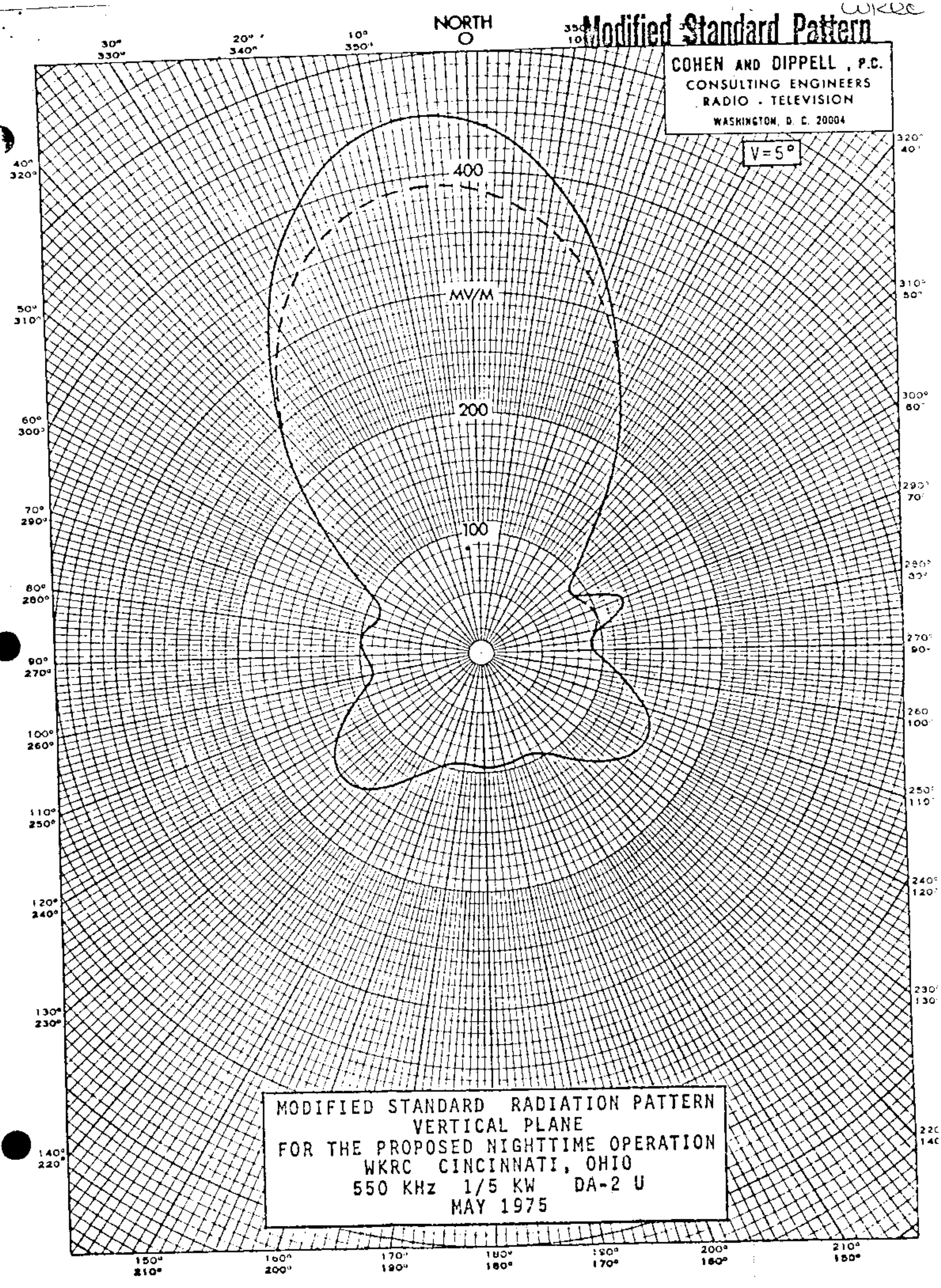
CTR NO 31275A4


Modified Standard Pattern
NORTH
WKRC
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=0°
400
MV/M
200
BL-13,953
MODIFIED STANDARD RADIATION PATTERN
HORIZONTAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975
N 354.5° E
#1 (N) 0.598 235
#5 (D) DETUNED FOR NIGHT OPERATION
N 283° E
260°
#2 (N,D) 1.36 56.52
100°
#3 (N) 1.201 221.09
100°
#4 (N) 1.0 0
H = 350' = 70.5°
RSS th / RMS th = 1.99
RSS th = 359.6 mv/m
RMS th = 180.5 mv/m
RMS std = 189.8 mv/m
RMS mod = 202 mv/m
1.5 OHM LOSS USED
MAXIMUM RADIATION = 126 mv/m
AZIMUTH OF MAXIMUM = N 71° E
SPAN OF AUGMENTATION = 24°
MAXIMUM RADIATION = 456 mv/m
AZIMUTH OF MAXIMUM = N 354.5° E
SPAN OF AUGMENTATION = 69°
MADE IN U. S. A.
POLAR CO-ORDINATE

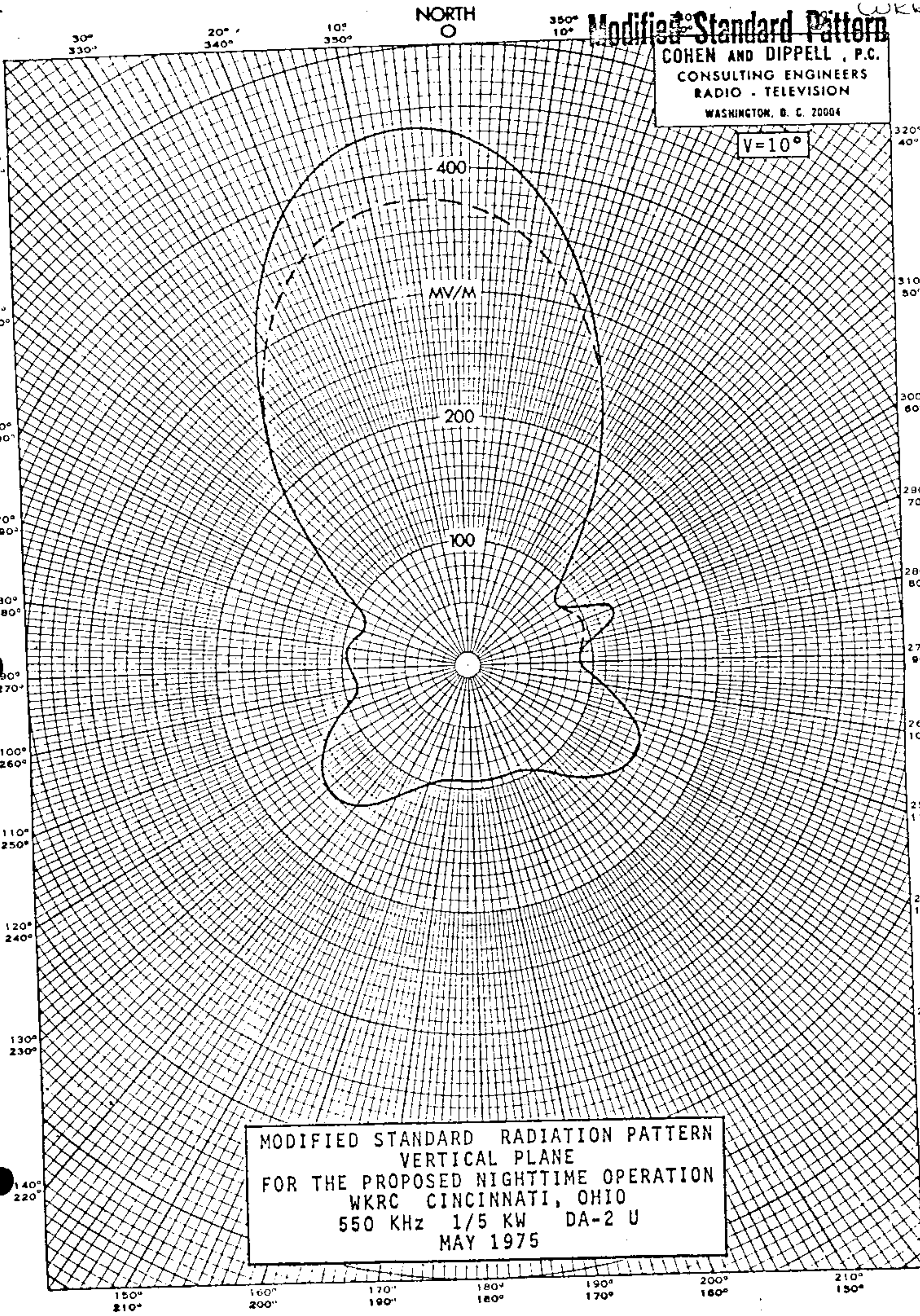
WKRC

Modified Standard Pattern

COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004



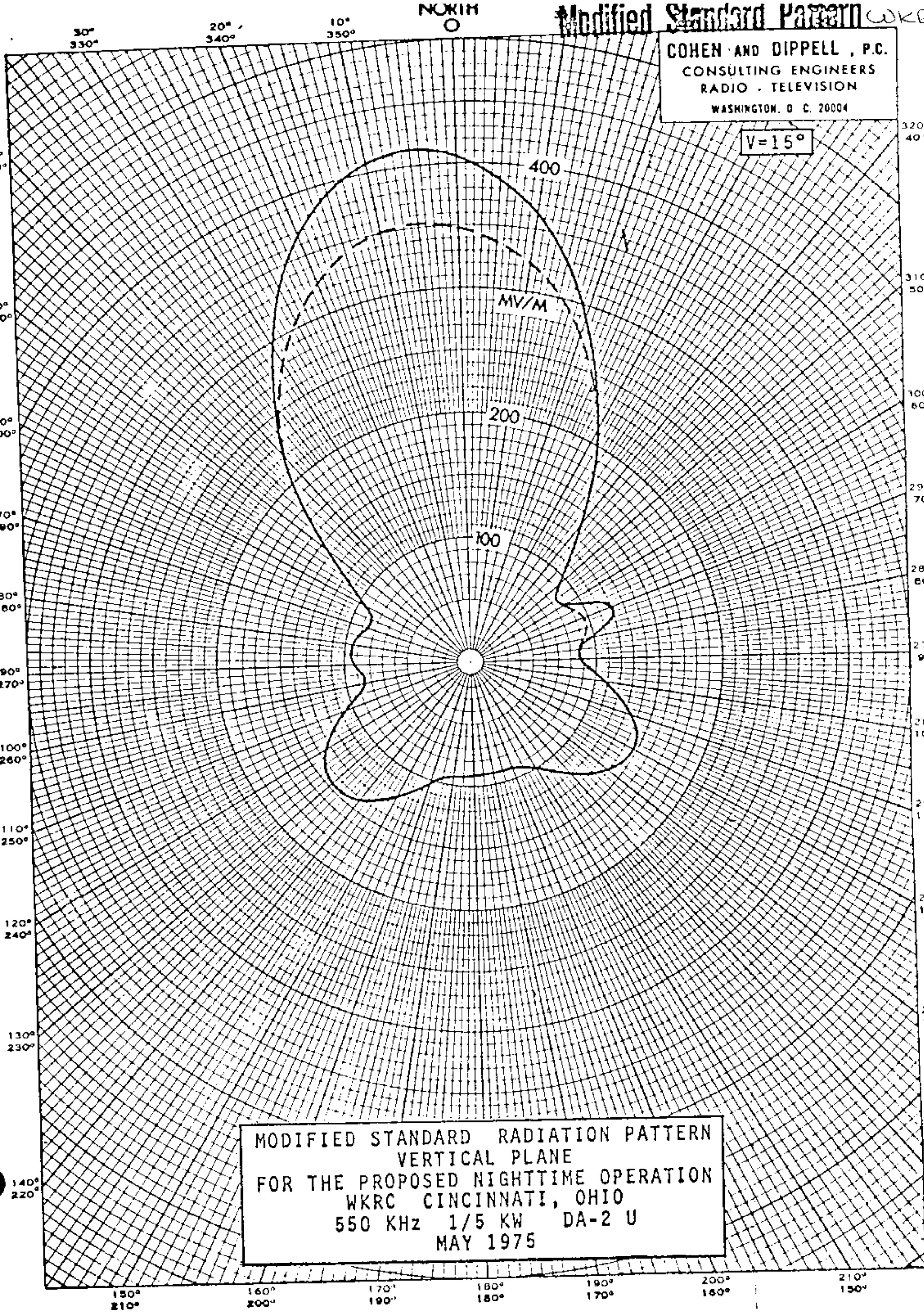
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975



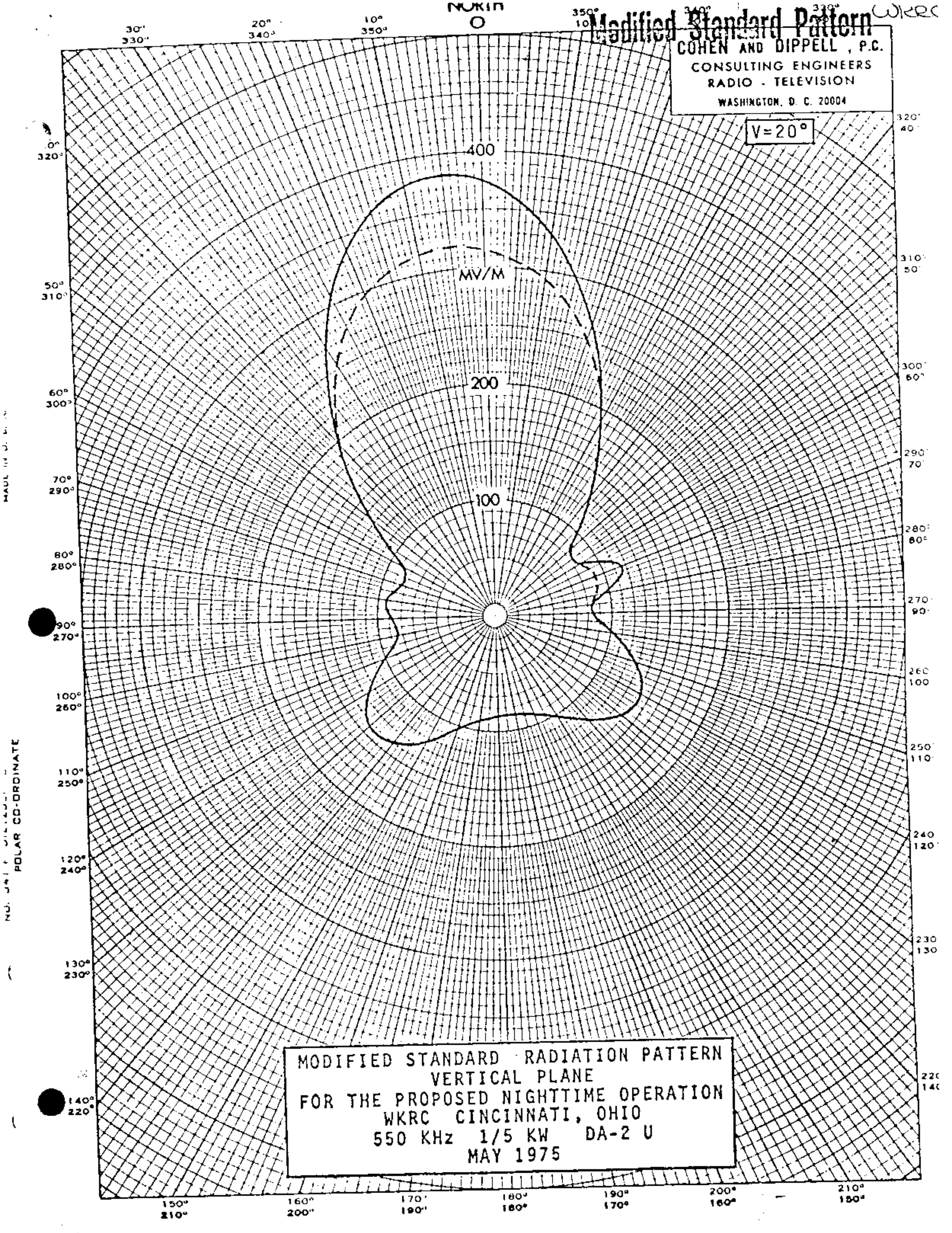
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975

Modified Standard Pattern WKRC

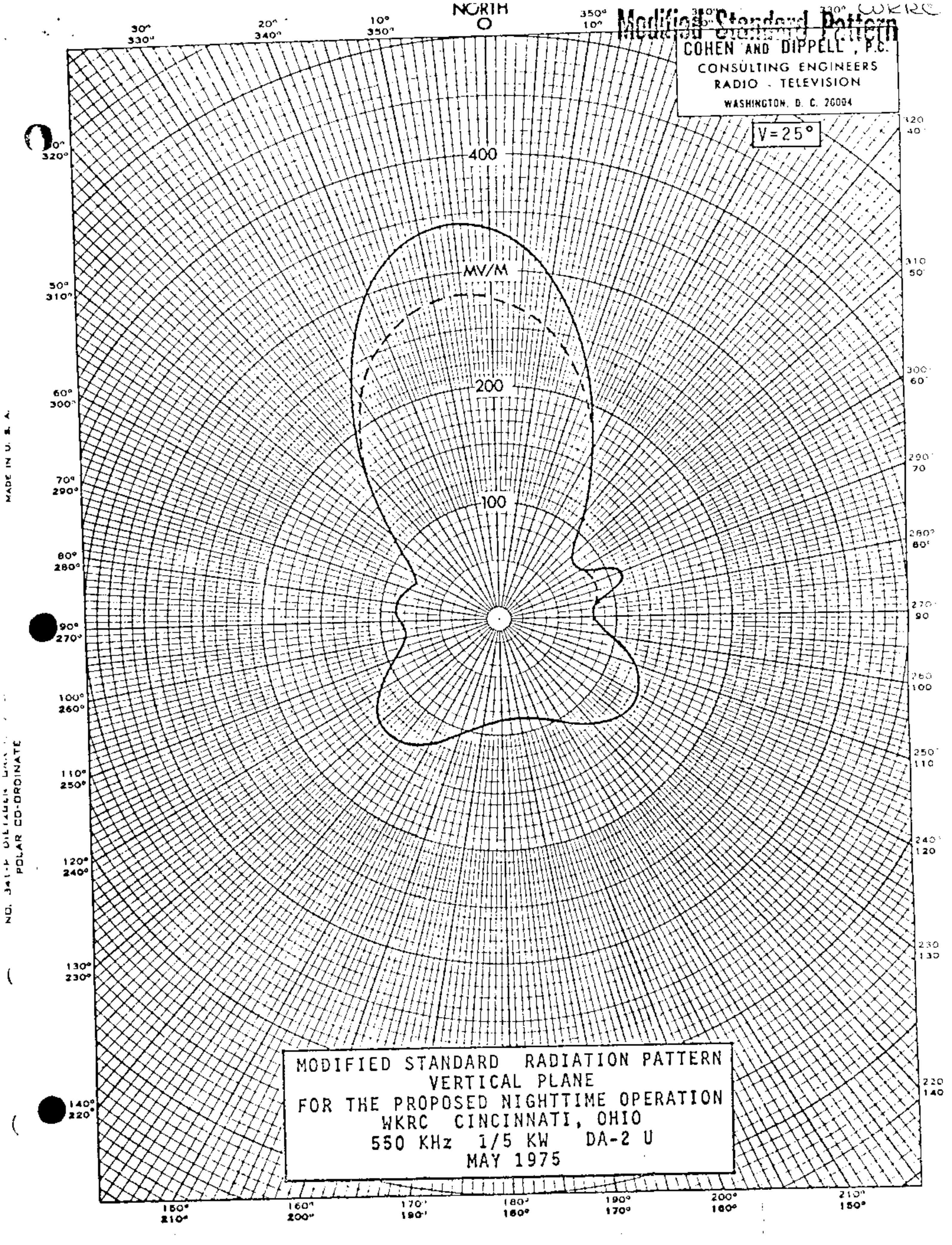
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004

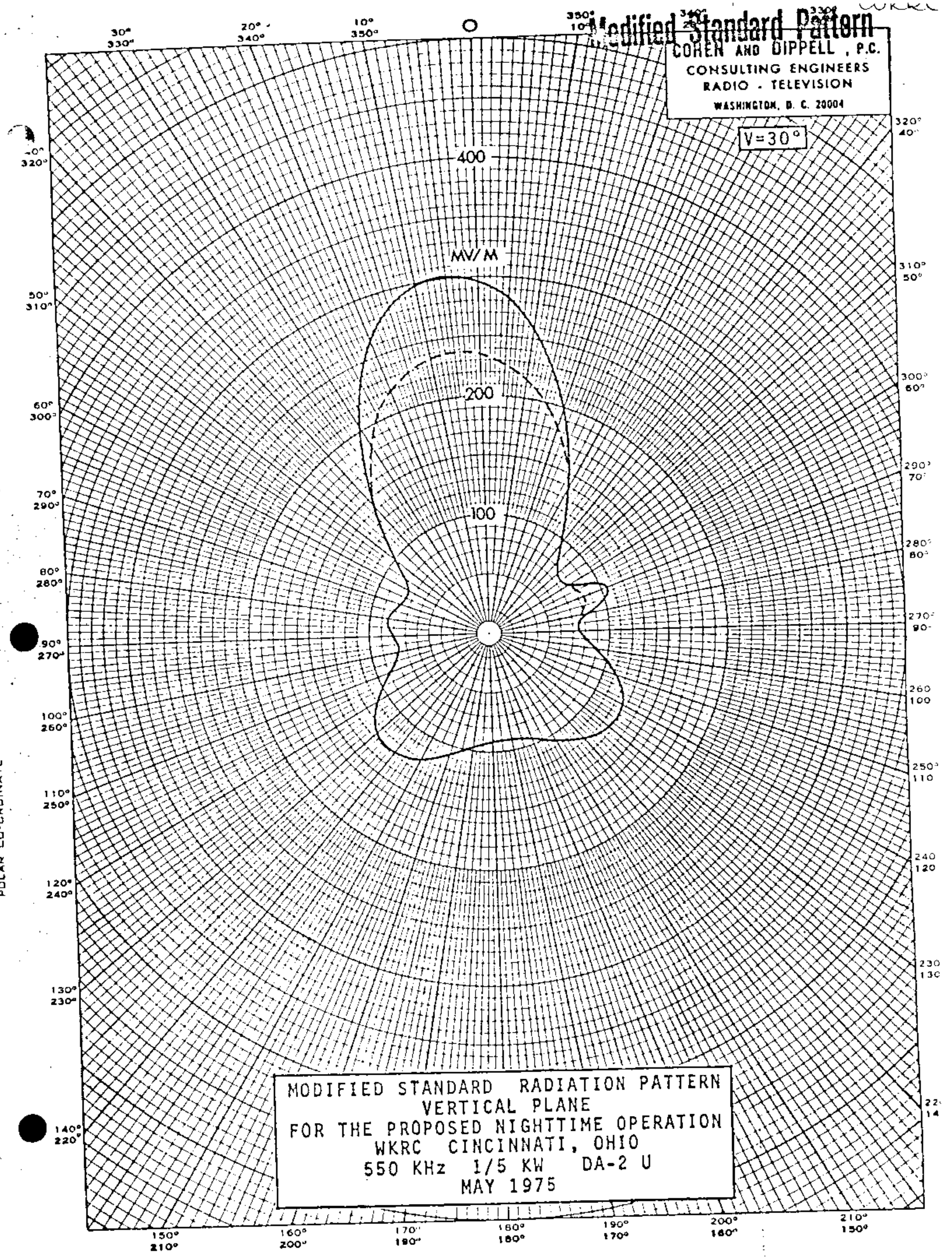


MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975

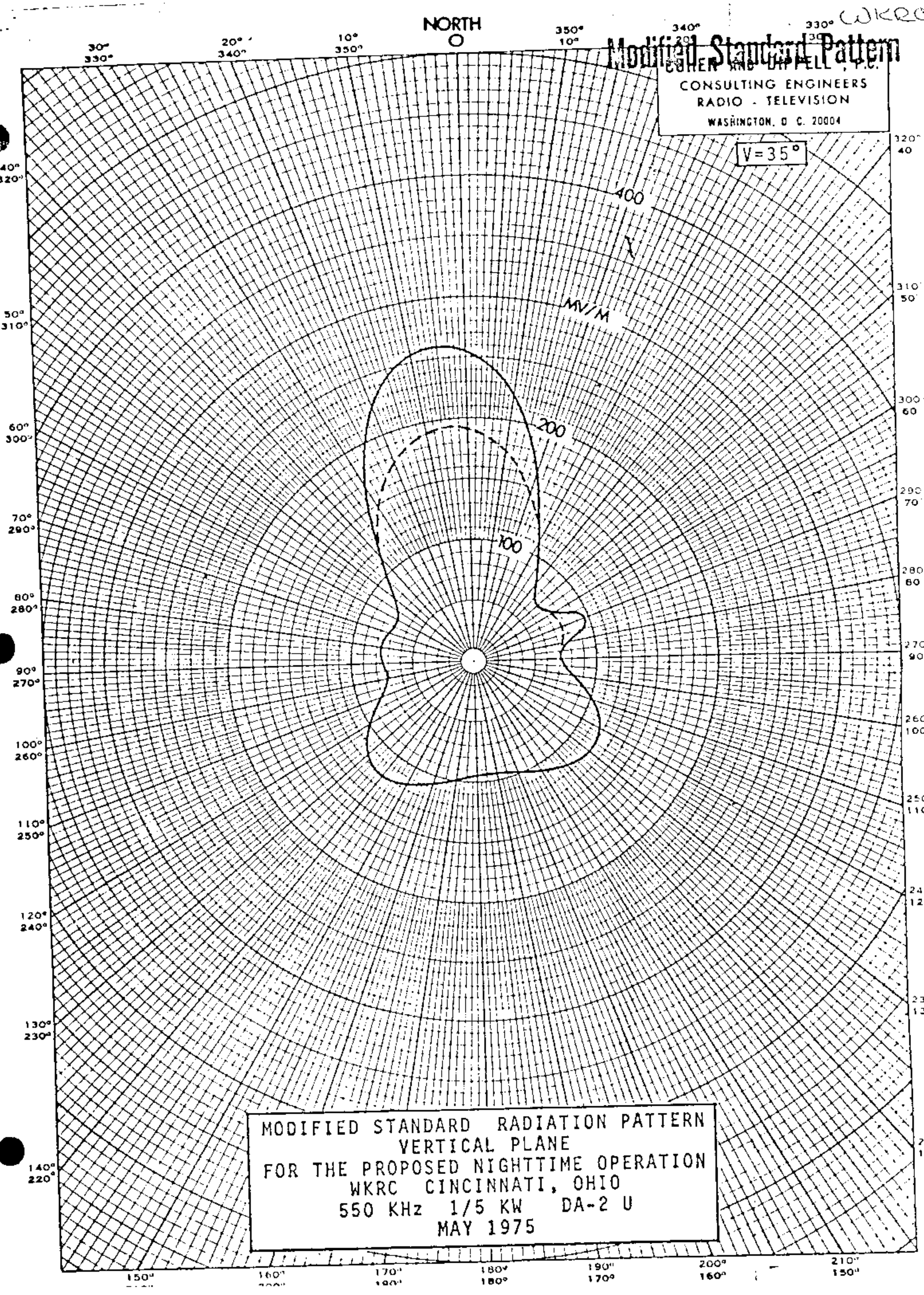


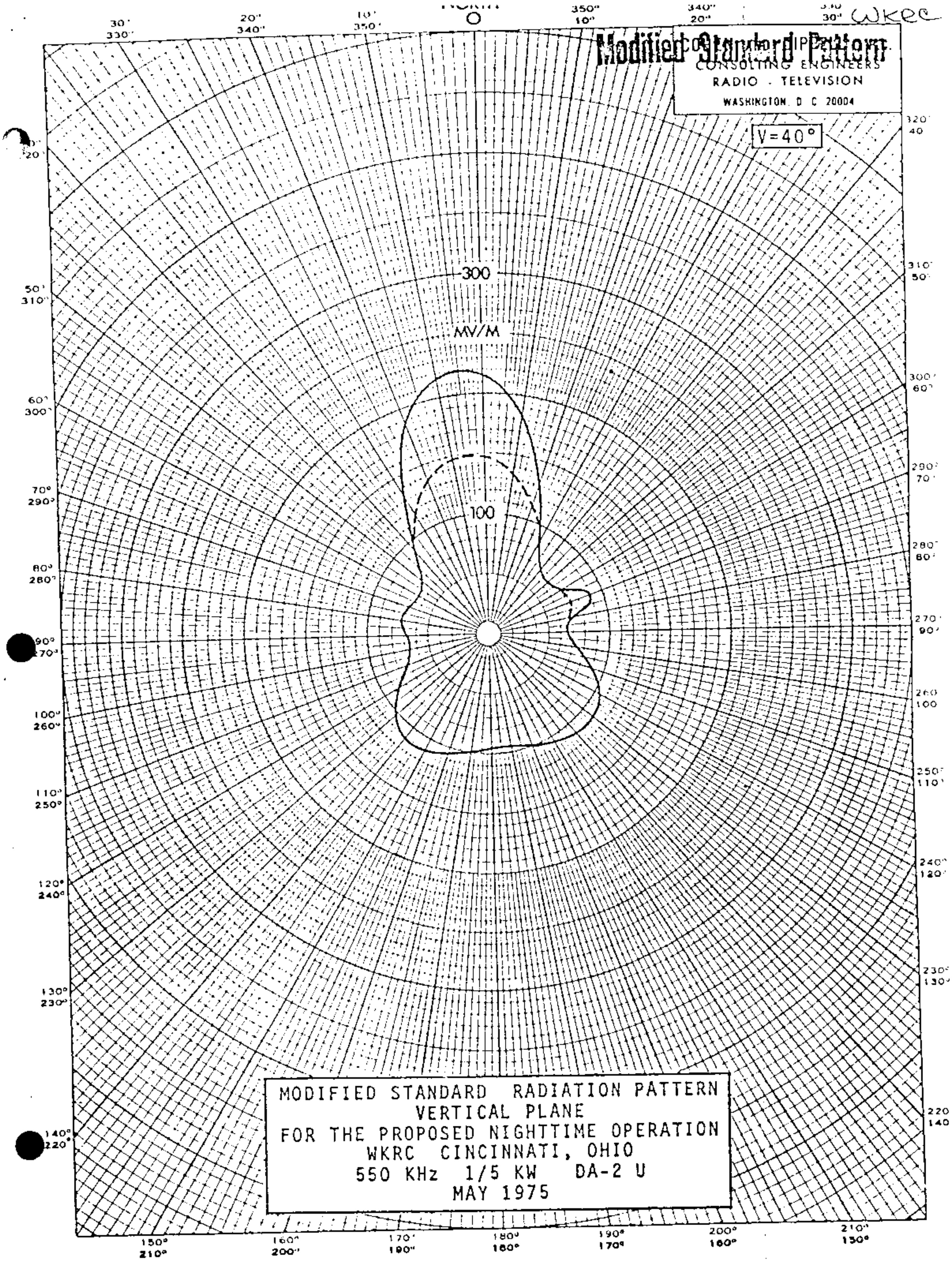
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975


Modified Standard Pattern
WKRC
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
V=25°
NORTH
400
MV/M
200
100
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975
MADE IN U. S. A.
POLAR CO-ORDINATE

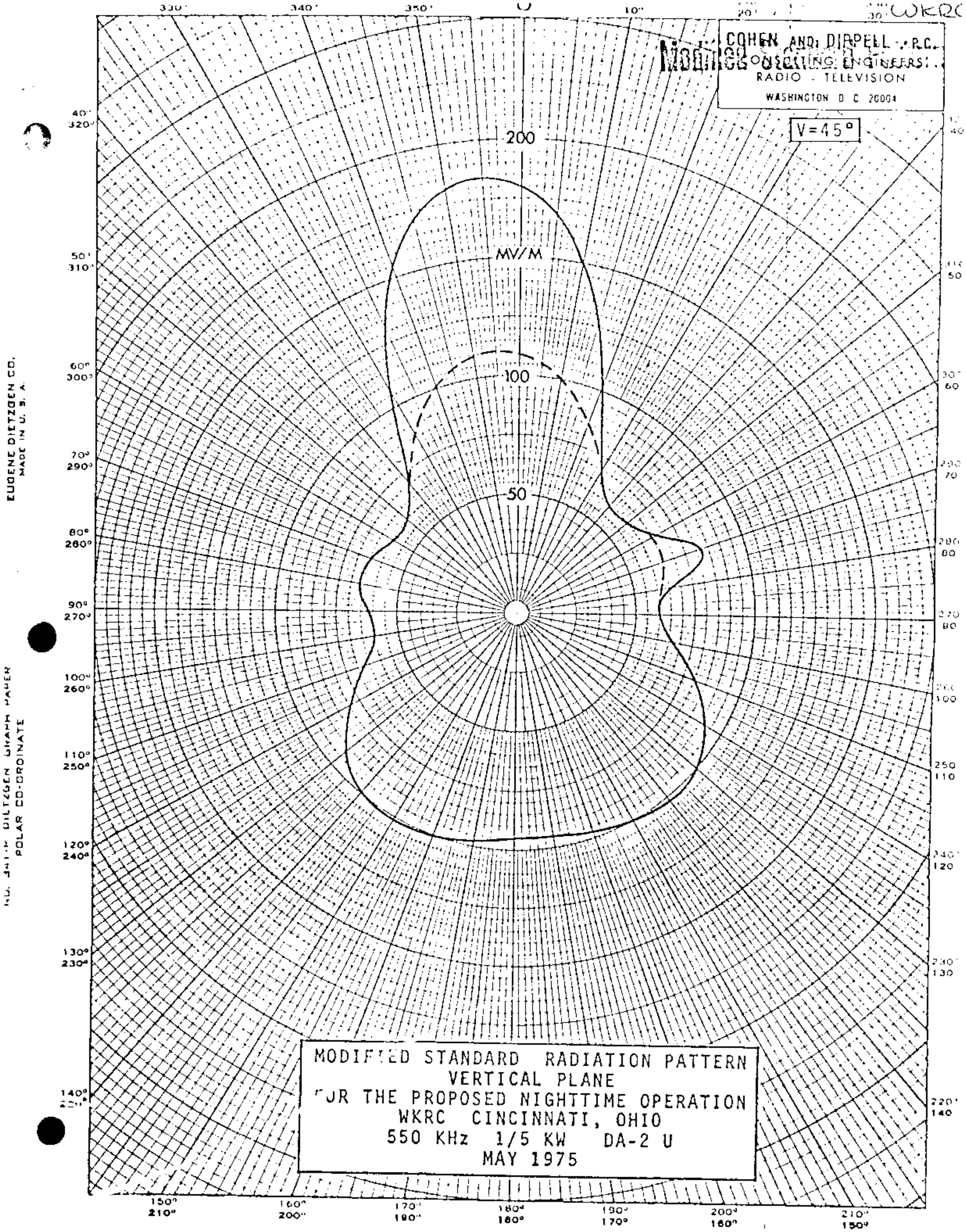


MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975

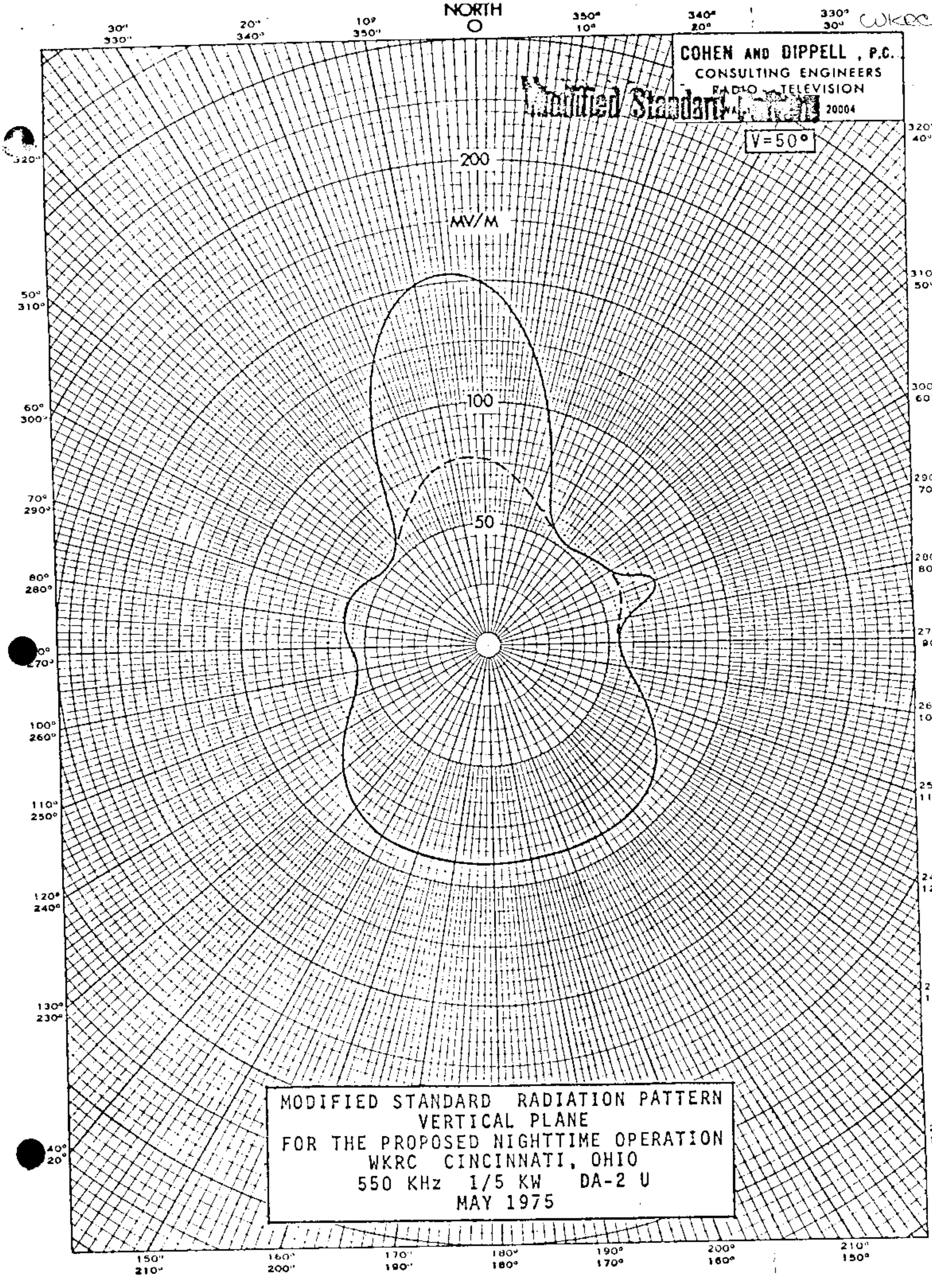

WKRC
Modified Standard Pattern
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
NORTH
0
V=35°
400
MV/M
200
100
POLAR CO-ORDINATE
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975



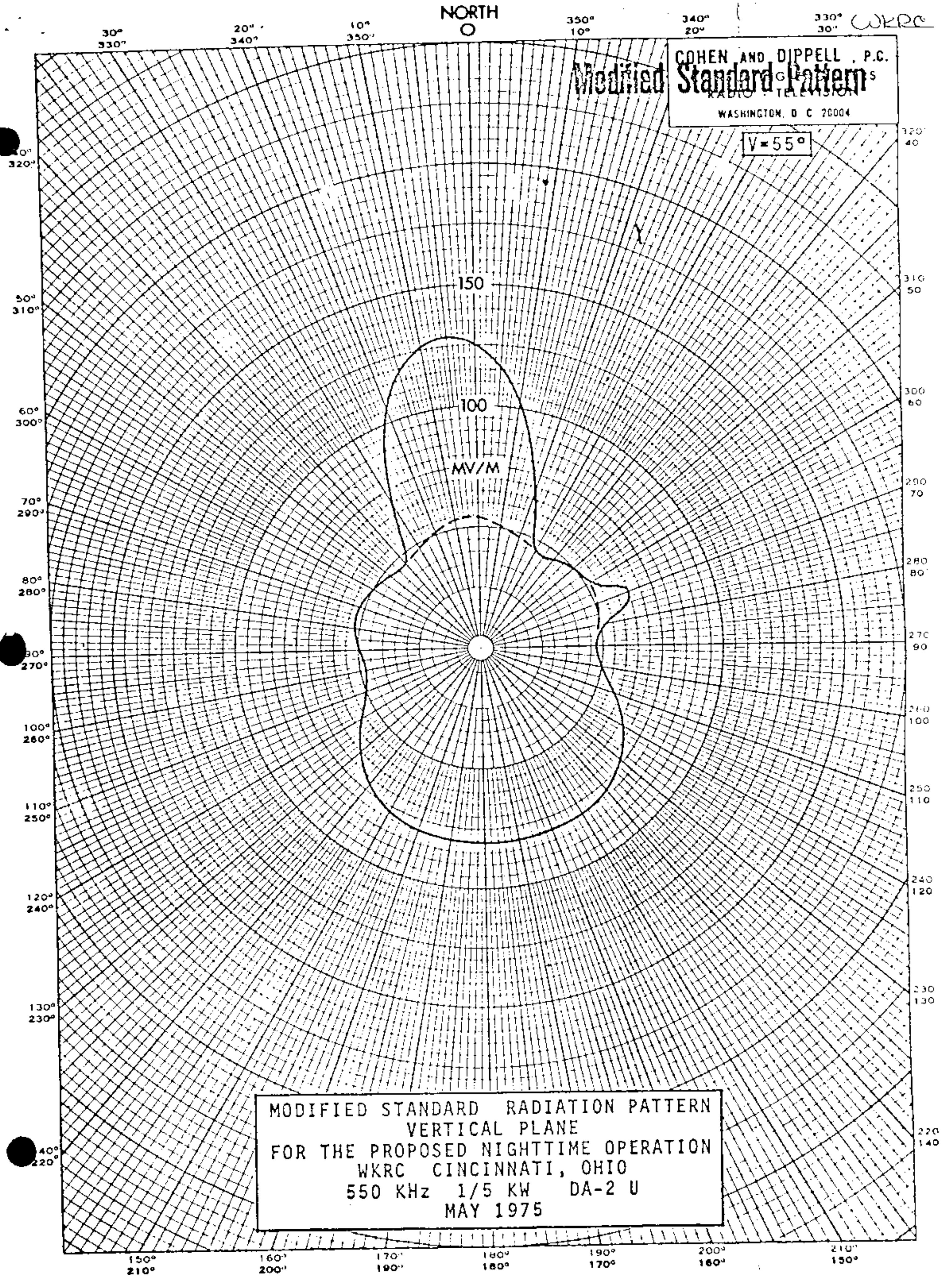
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975



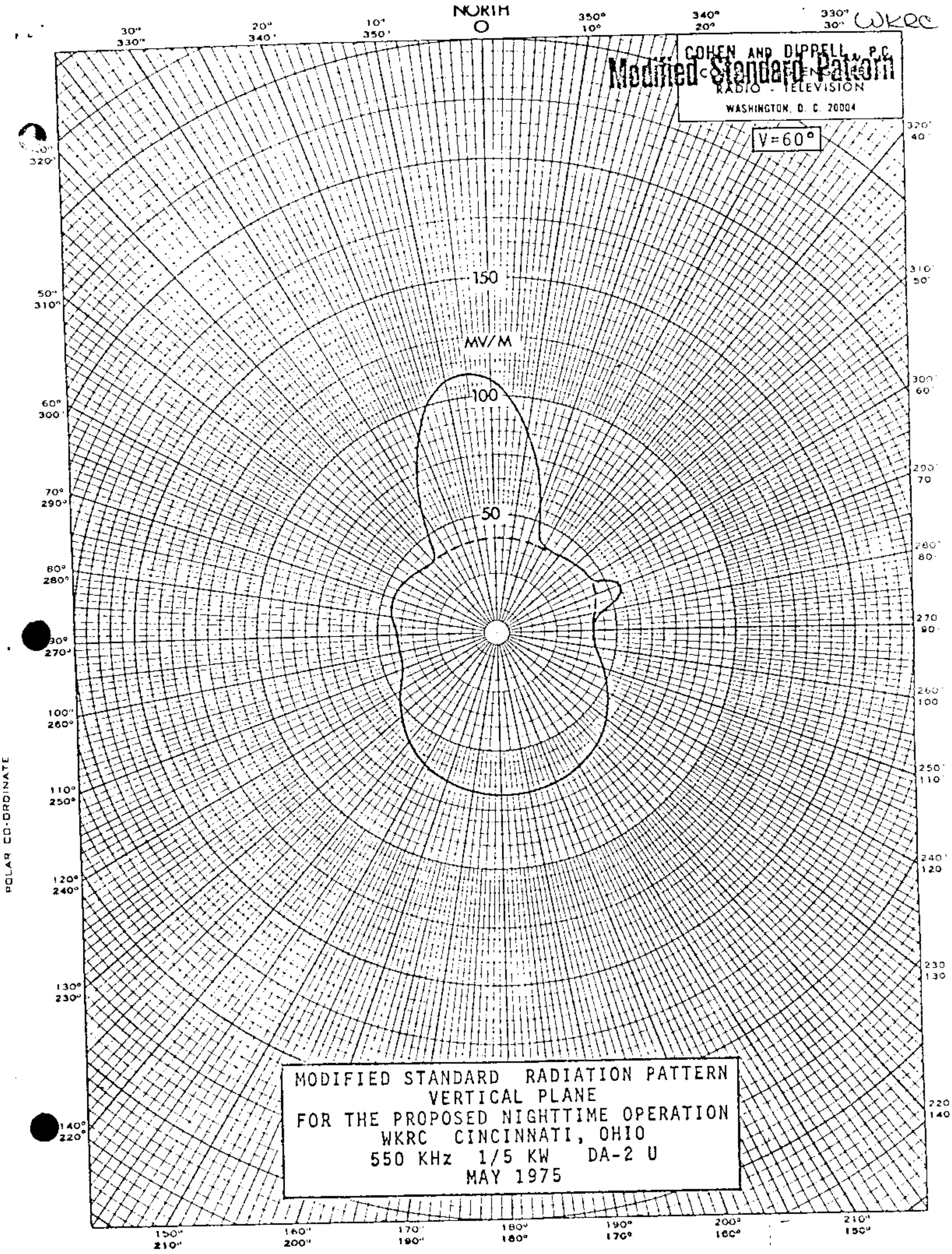
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975



WKRC
NORTH
0
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO — TELEVISION
20004
Modified Standard
V=50°
200
MV/M
100
50
POLAR CO-ORDINATE
MADE IN U.S.A.
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975

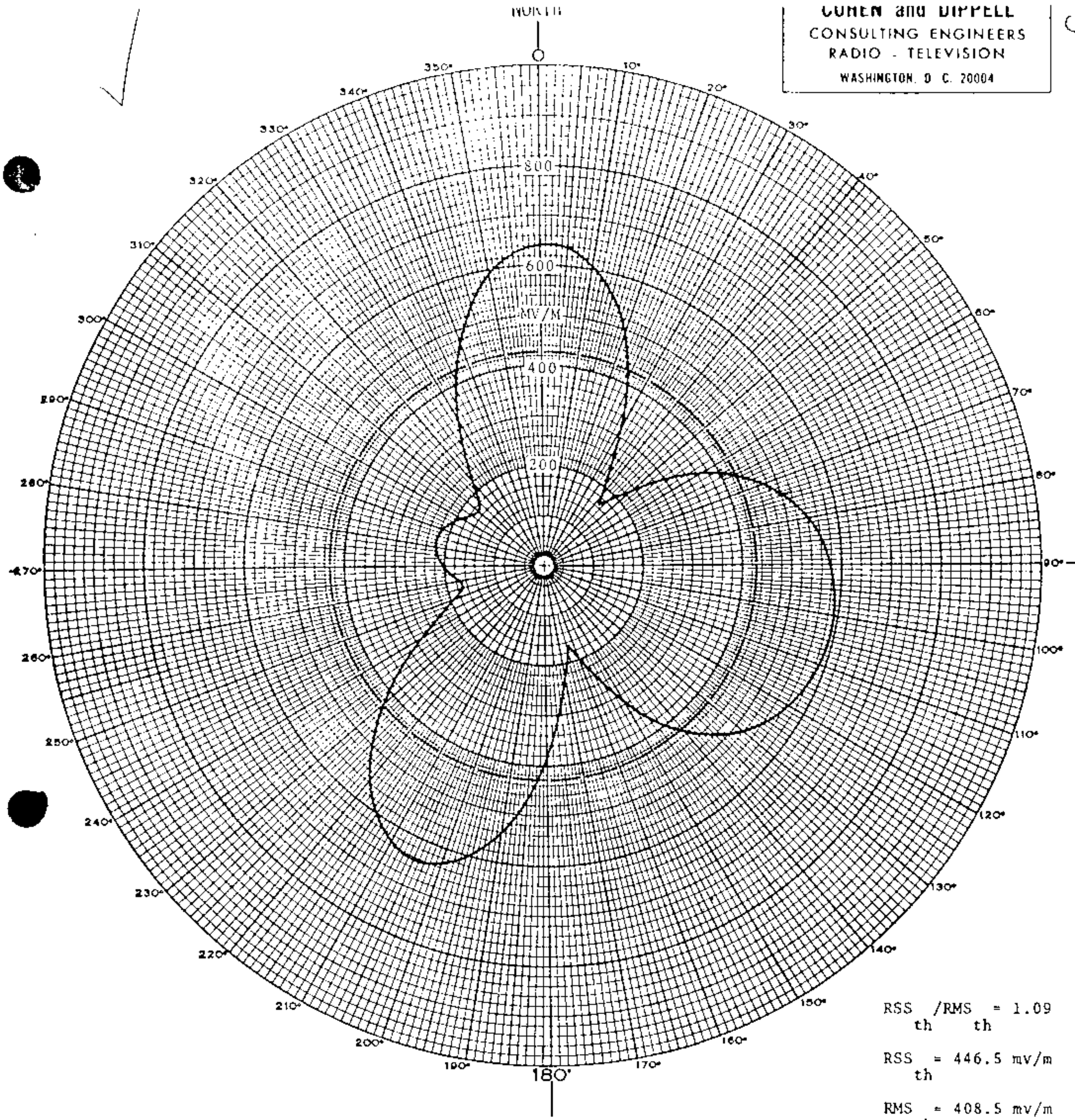


MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975


WKRC
COHEN AND DIPPELL, P.C.
RADIO - TELEVISION
WASHINGTON, D. C. 20004
Modified Standard Pattern
V=60°
NORTH
0
150
MV/M
100
50
POLAR CO-ORDINATE
MODIFIED STANDARD RADIATION PATTERN
VERTICAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC CINCINNATI, OHIO
550 KHz 1/5 KW DA-2 U
MAY 1975

COHEN and DIPPELL
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004

WKRC



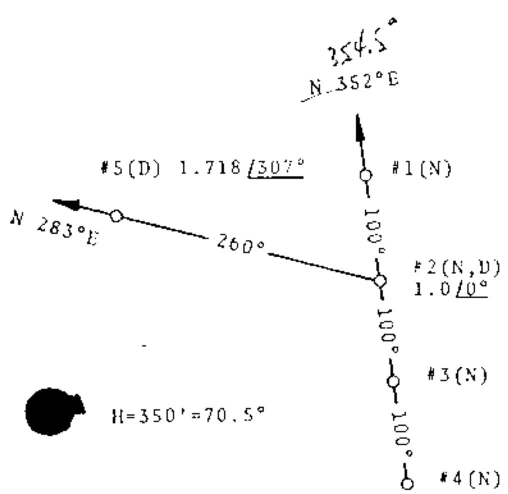
$RSS_{th}/RMS_{th} = 1.09$

$RSS_{th} = 446.5$ mv/m

$RMS_{th} = 408.5$ mv/m

$RMS_{std} = 429.1$ mv/m

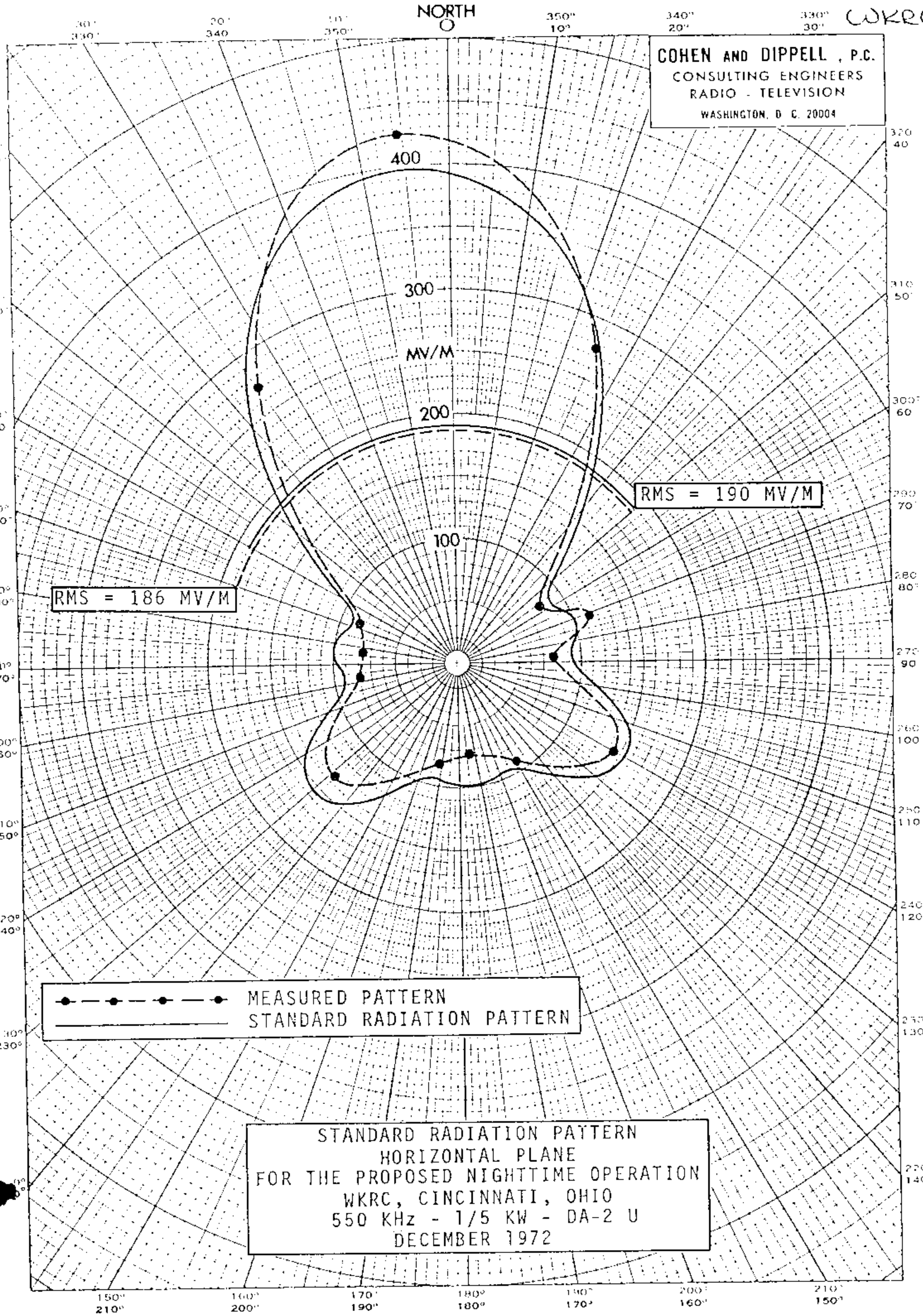
1.5 OHM LOSS USED



TOWERS No.1,No.3 & No.4
DETUNED FOR DAY OPERATION

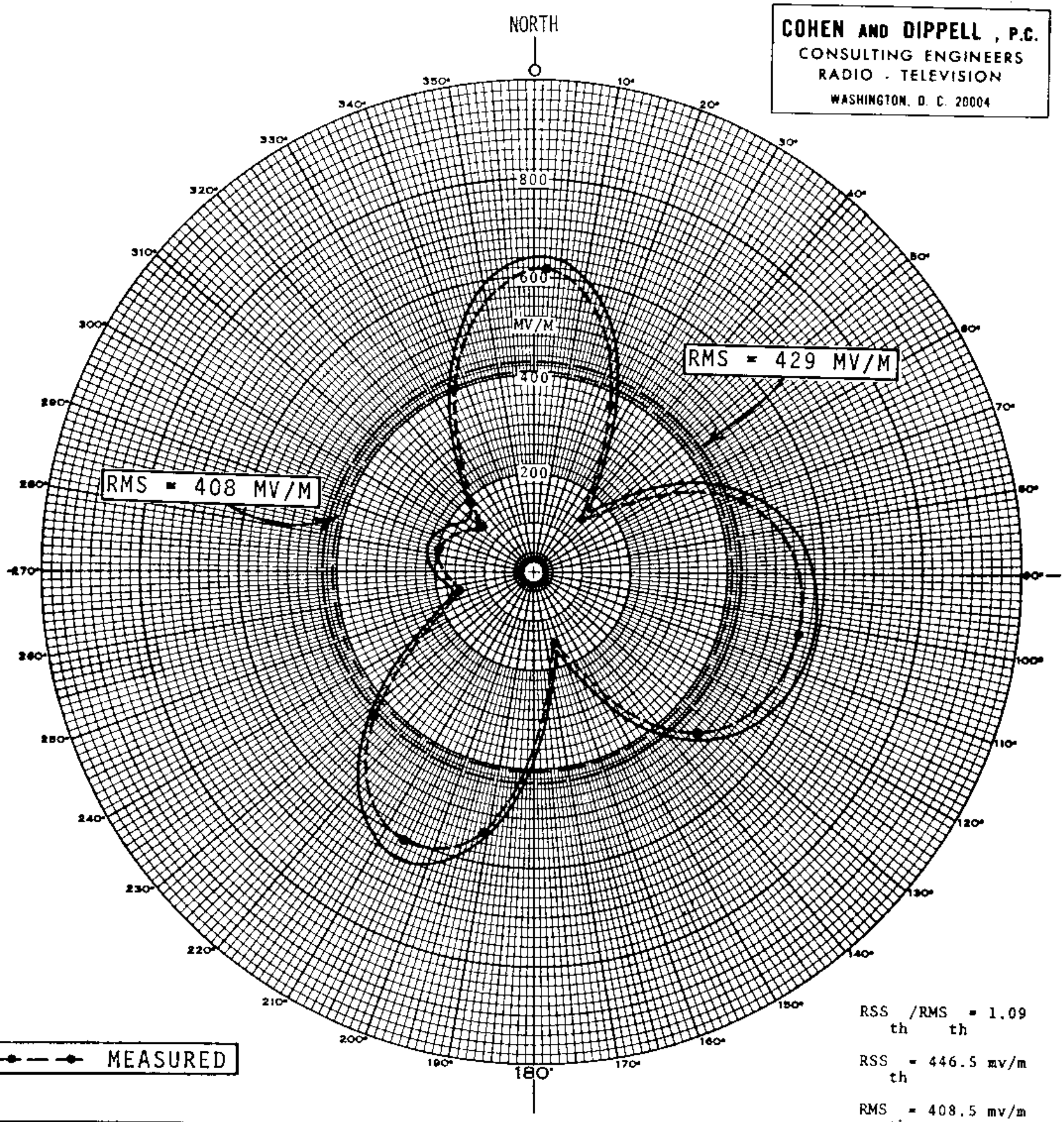
STANDARD RADIATION PATTERN
HORIZONTAL PLANE
FOR THE PROPOSED DAYTIME OPERATION
WKRC, CINCINNATI, OHIO
550 KHz - 1/5 KW - DA-2 U
MARCH 1972

WKRC


NORTH
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
400
300
MV/M
200
100
RMS = 190 MV/M
RMS = 186 MV/M
MEASURED PATTERN
STANDARD RADIATION PATTERN
STANDARD RADIATION PATTERN
HORIZONTAL PLANE
FOR THE PROPOSED NIGHTTIME OPERATION
WKRC, CINCINNATI, OHIO
550 KHz - 1/5 KW - DA-2 U
DECEMBER 1972

WKRC

COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004



RSS$_{th}$ /RMS$_{th}$ = 1.09

RSS$_{th}$ = 446.5 mv/m

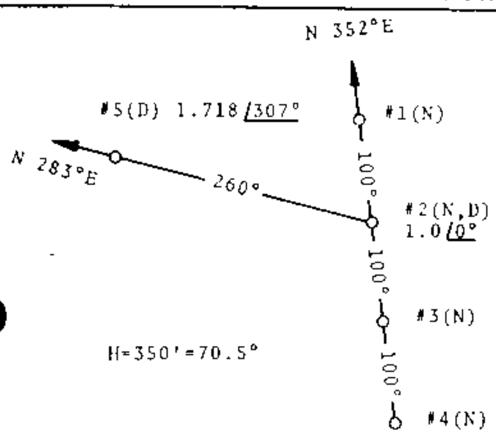
RMS$_{th}$ = 408.5 mv/m

RMS$_{std}$ = 429.1 mv/m

1.5 OHM LOSS USED

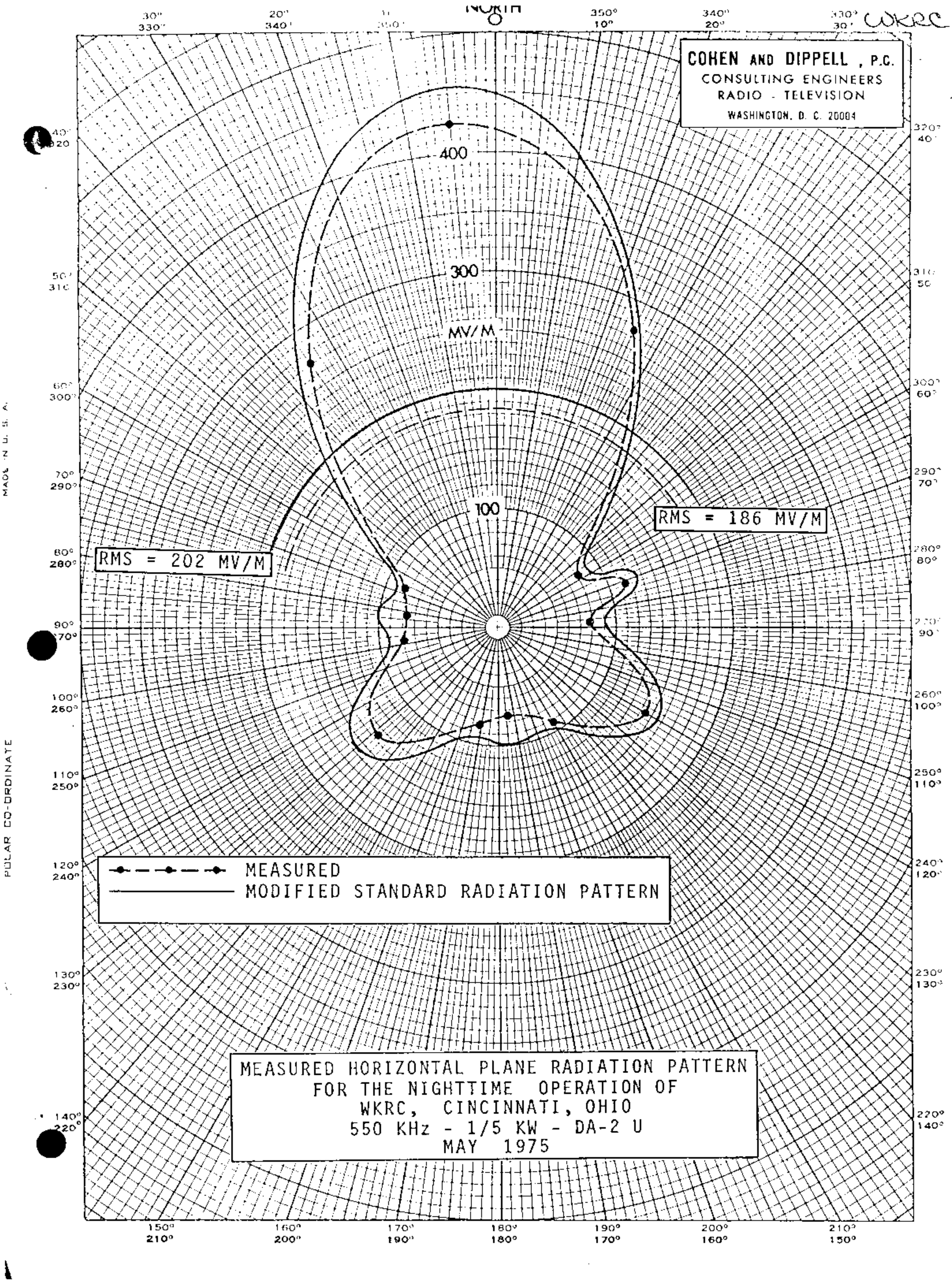
—•—•—•— MEASURED

——————— STANDARD RADIATION PATTERN

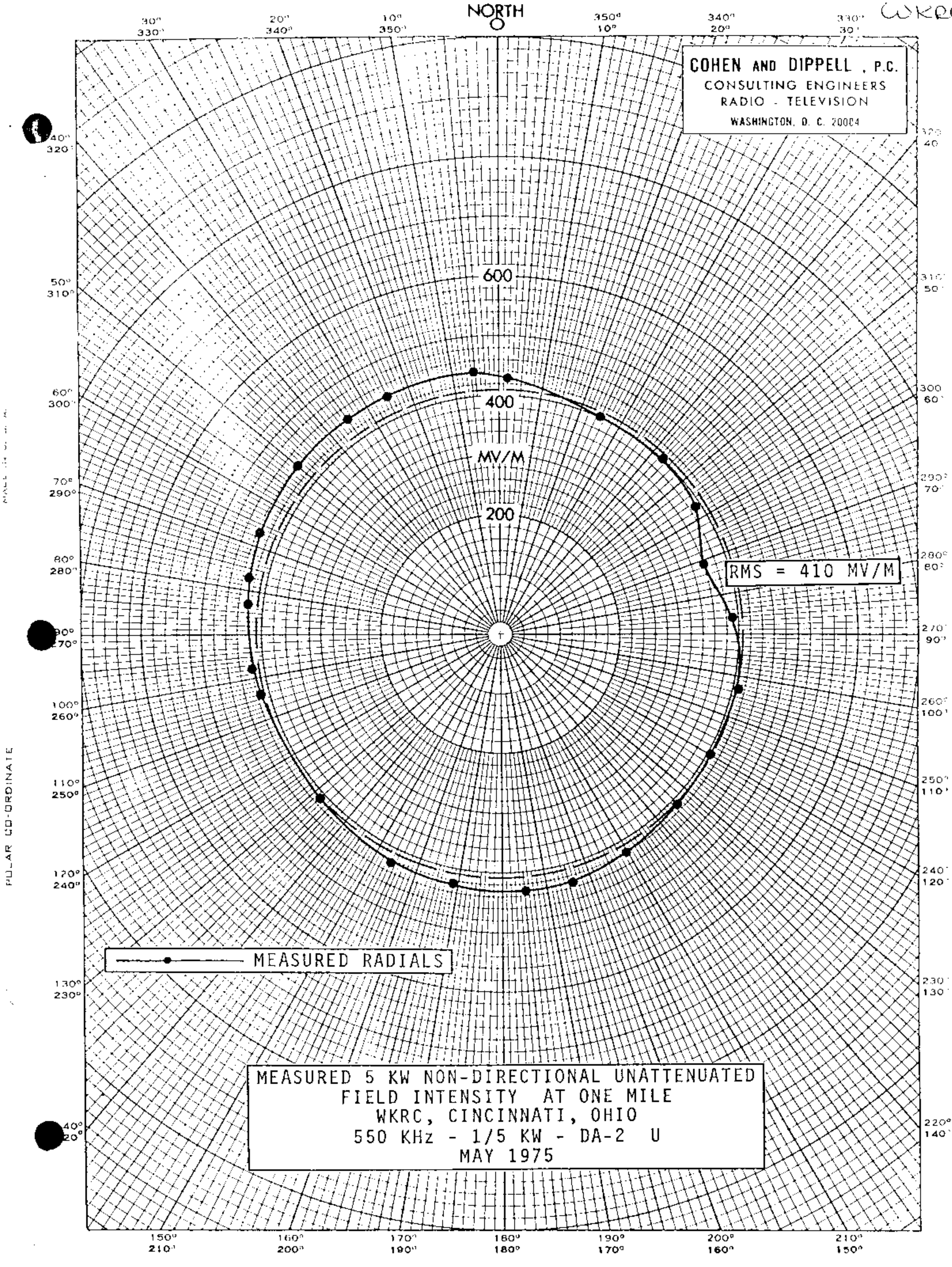


TOWERS No.1, No.3 & No.4
DETUNED FOR DAY OPERATION
THEORETICAL (PARAMETERS)

MEASURED HORIZONTAL PLANE RADIATION PATTERN
FOR THE DAYTIME OPERATION OF
WKRC, CINCINNATI, OHIO
550 KHz - 1/5 KW - DA-2 U
MAY 1975


NORTH
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
WKRC
400
300
MV/M
100
RMS = 186 MV/M
RMS = 202 MV/M
MEASURED
MODIFIED STANDARD RADIATION PATTERN
MEASURED HORIZONTAL PLANE RADIATION PATTERN
FOR THE NIGHTTIME OPERATION OF
WKRC, CINCINNATI, OHIO
550 KHz - 1/5 KW - DA-2 U
MAY 1975
POLAR CO-ORDINATE
MADE IN U.S.A.

WKRC


NORTH
COHEN AND DIPPELL, P.C.
CONSULTING ENGINEERS
RADIO - TELEVISION
WASHINGTON, D. C. 20004
600
400
MV/M
200
RMS = 410 MV/M
MEASURED RADIALS
POLAR CO-ORDINATE
MEASURED 5 KW NON-DIRECTIONAL UNATTENUATED
FIELD INTENSITY AT ONE MILE
WKRC, CINCINNATI, OHIO
550 KHz - 1/5 KW - DA-2 U
MAY 1975

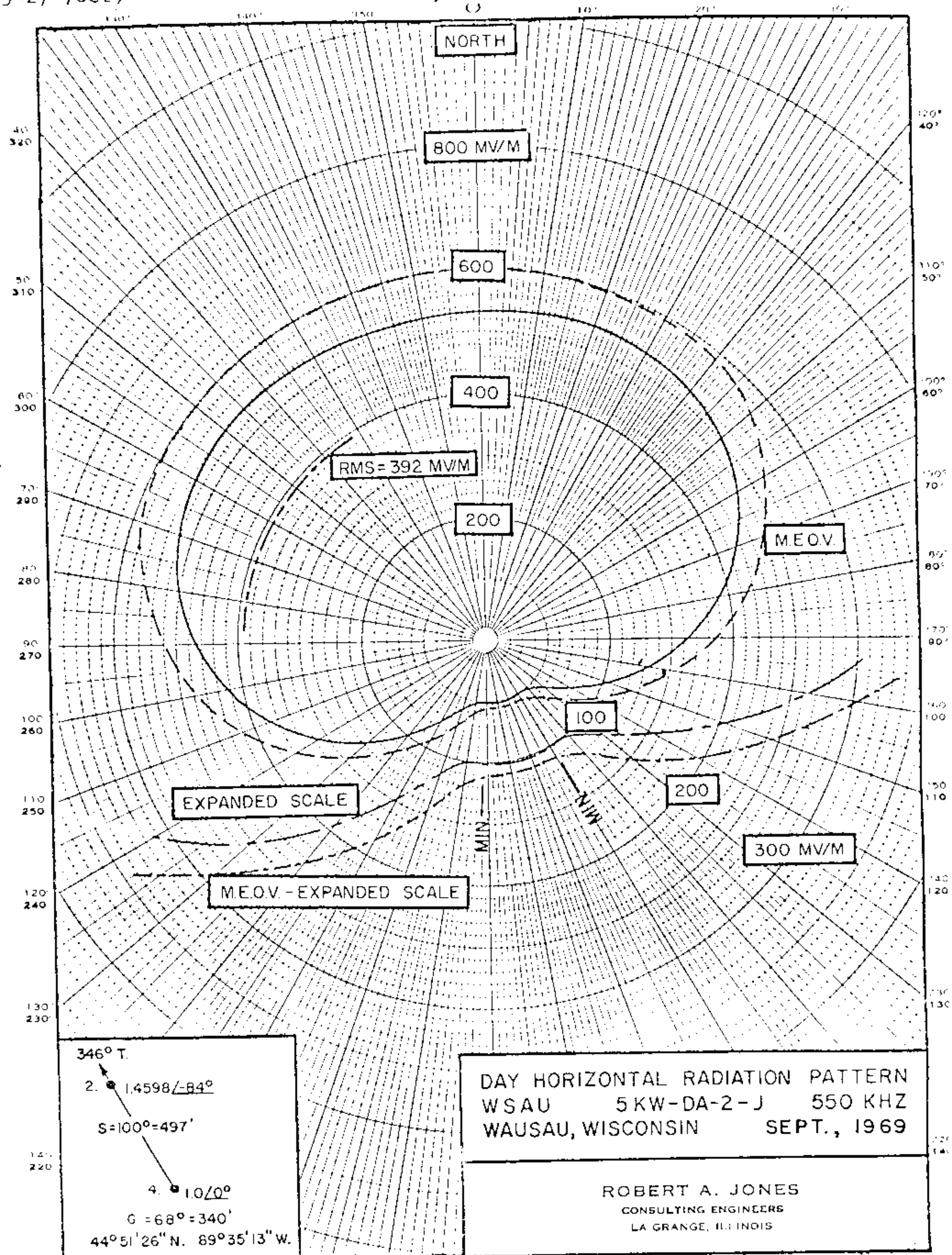
BMP 12908
Granted Mod. of CP To Change Tower Heights

WSAU

Proposed Day
(3-27-70ct)

Station WSAU
Wausau, Wisconsin

5kw,DA-2,U
550 kc



FCC File No.BMP-12908
Accepted 2-25-70

Station WSAU
Wausau, Wisconsin

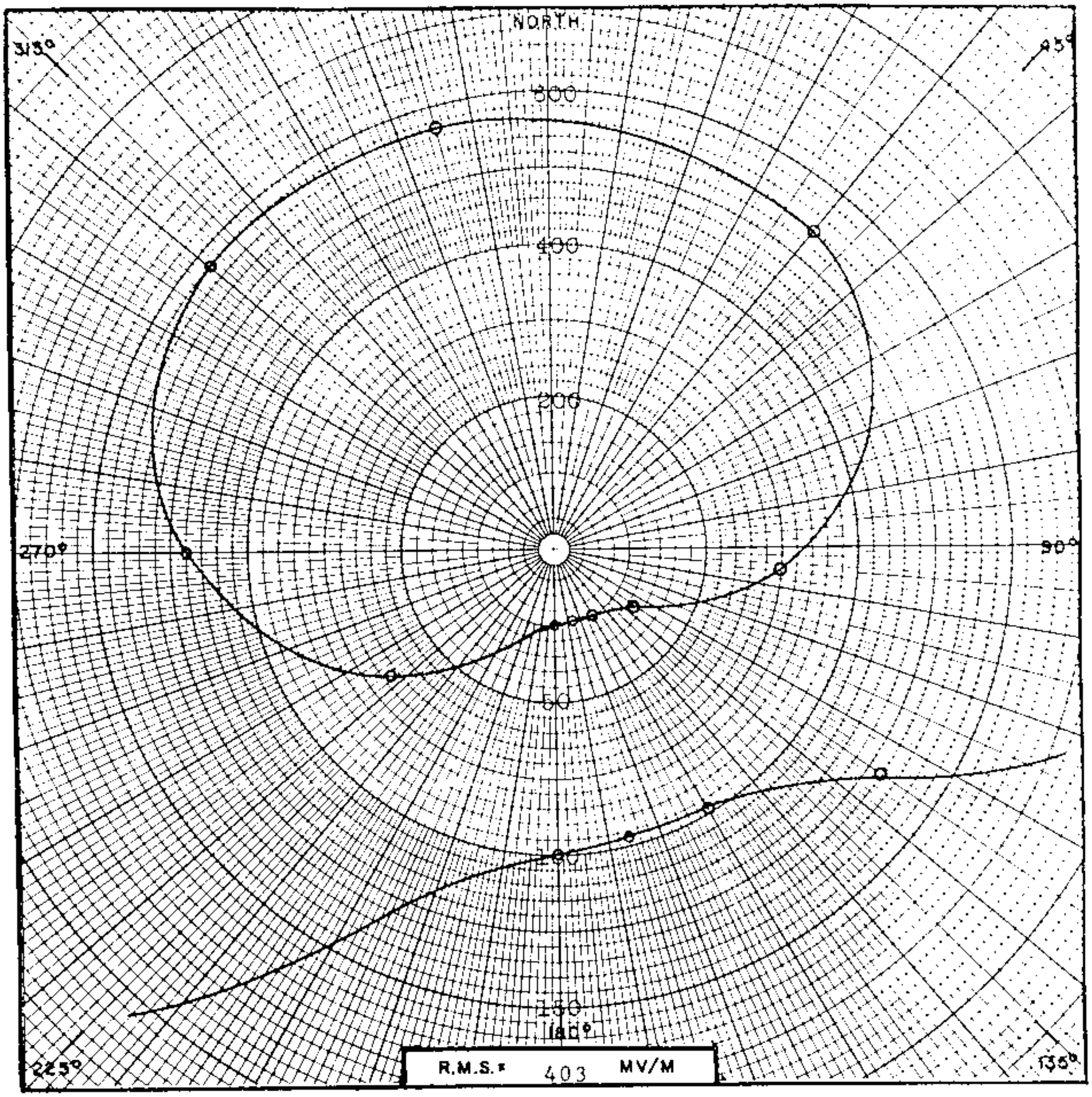
550 kc

BL 128[illegible] WSAU

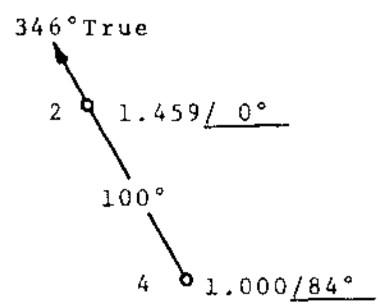
Measured Day
(1-22-71ct)

Station WSAU
Wausau, Wisconsin

5kw, DA-2, U
550 kc



PATTERN PARAMETERS



G = 68° = 340'

DIRECTIONAL RADIATION PATTERN

FORWARD COMMUNICATIONS CORP.

[X] MEASURED [ ] PROPOSED

FREQ: 550 (KHZ) POWER 5 (KW) [X] DA-D

N. LAT. 44 ° 51 ' 26 " [ ] DA-N

W. LONG. 89 ° 35 ' 13 " [ ] N-D

LOCATION: Wausau, Wisconsin

DATE: November, 1970

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No. BL-12836
Accepted 1-7-71

Station WSAU
Wausau, Wisconsin

550 kc

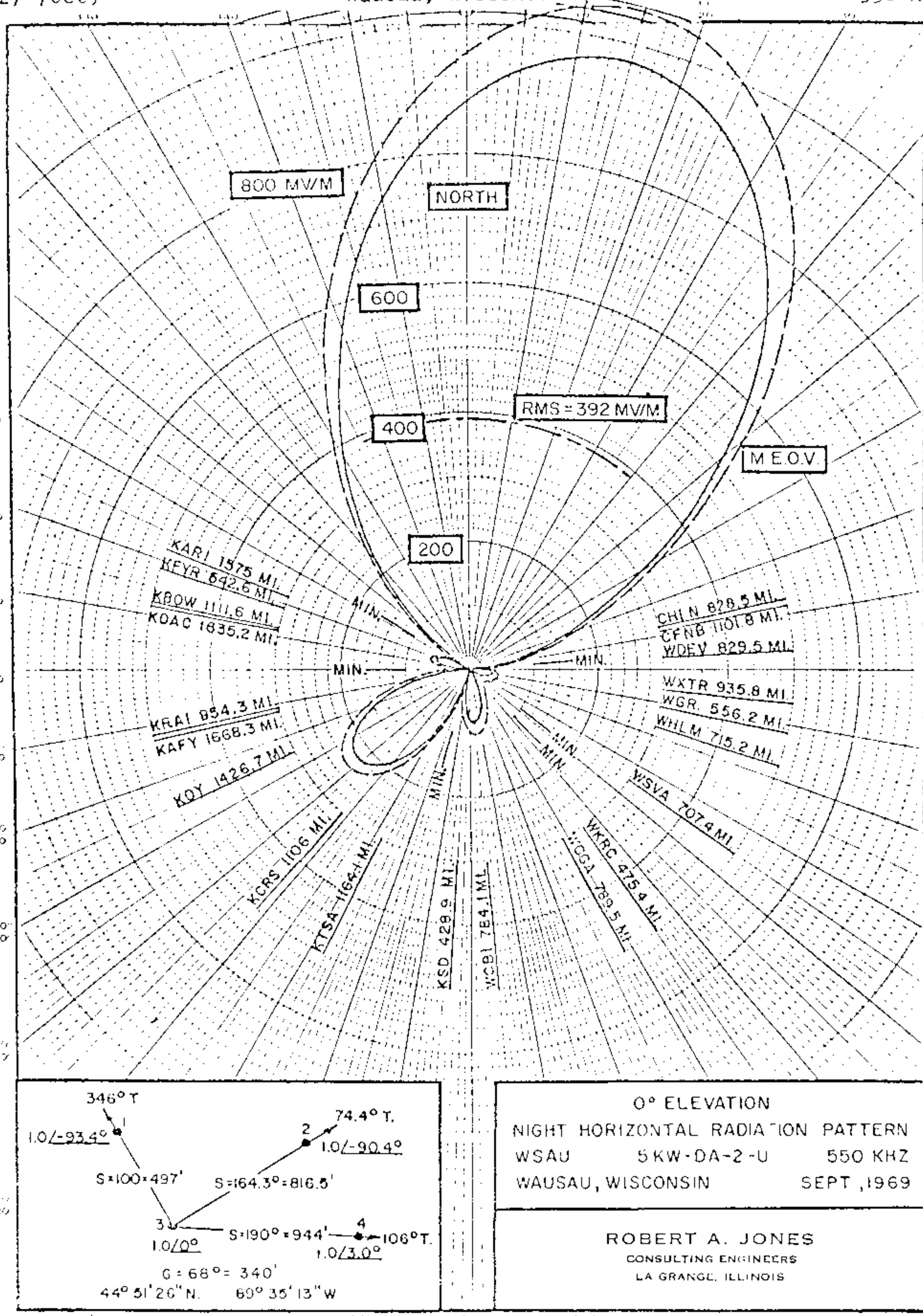
Granted Mod. of C.P. to Change Tower Heights

WSAU

Proposed Night
(3-27-70ct)

Station WSAU
Wausau, Wisconsin

5kw,DA-2,U
550 kc



0° ELEVATION
NIGHT HORIZONTAL RADIATION PATTERN
WSAU 5KW-DA-2-U 550 KHZ
WAUSAU, WISCONSIN SEPT, 1969

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No. BMP-12908
Accepted 2-25-70

Station WSAU
Wausau, Wisconsin

550 kc

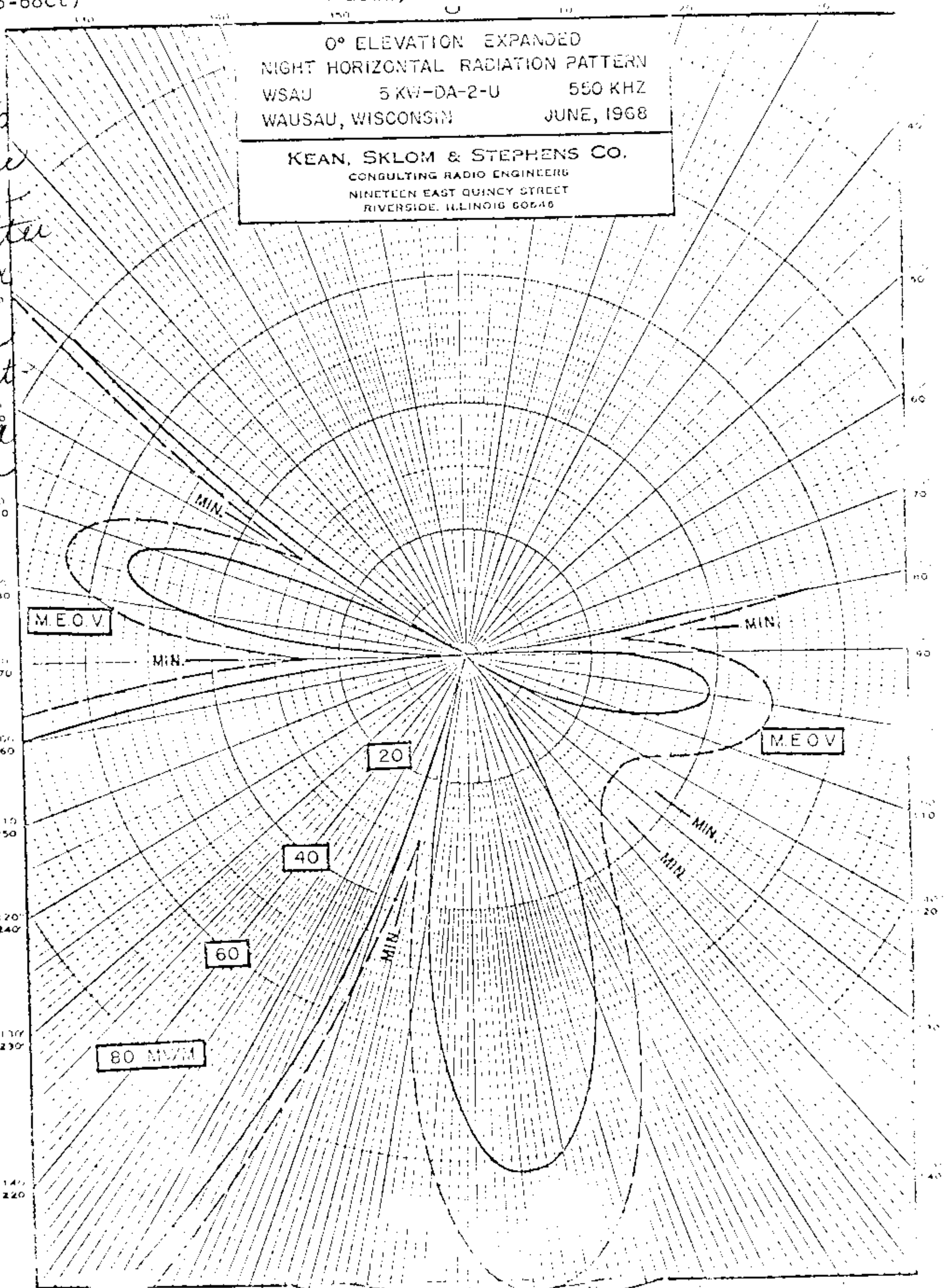
WSAU

Proposed Night Nulls
(9-26-68ct)

Station WSAU
Wausau, Wisconsin

5kw,DA-2,U
550 kc

BP-18269
Granted
5/19/69 CP
to change
antenna +
transmitter
location
+ make
changes
in direct-
ional
antenna
system



FCC File No.BP-18269
Accepted 9-11-68

Station WSAU
Wausau, Wisconsin

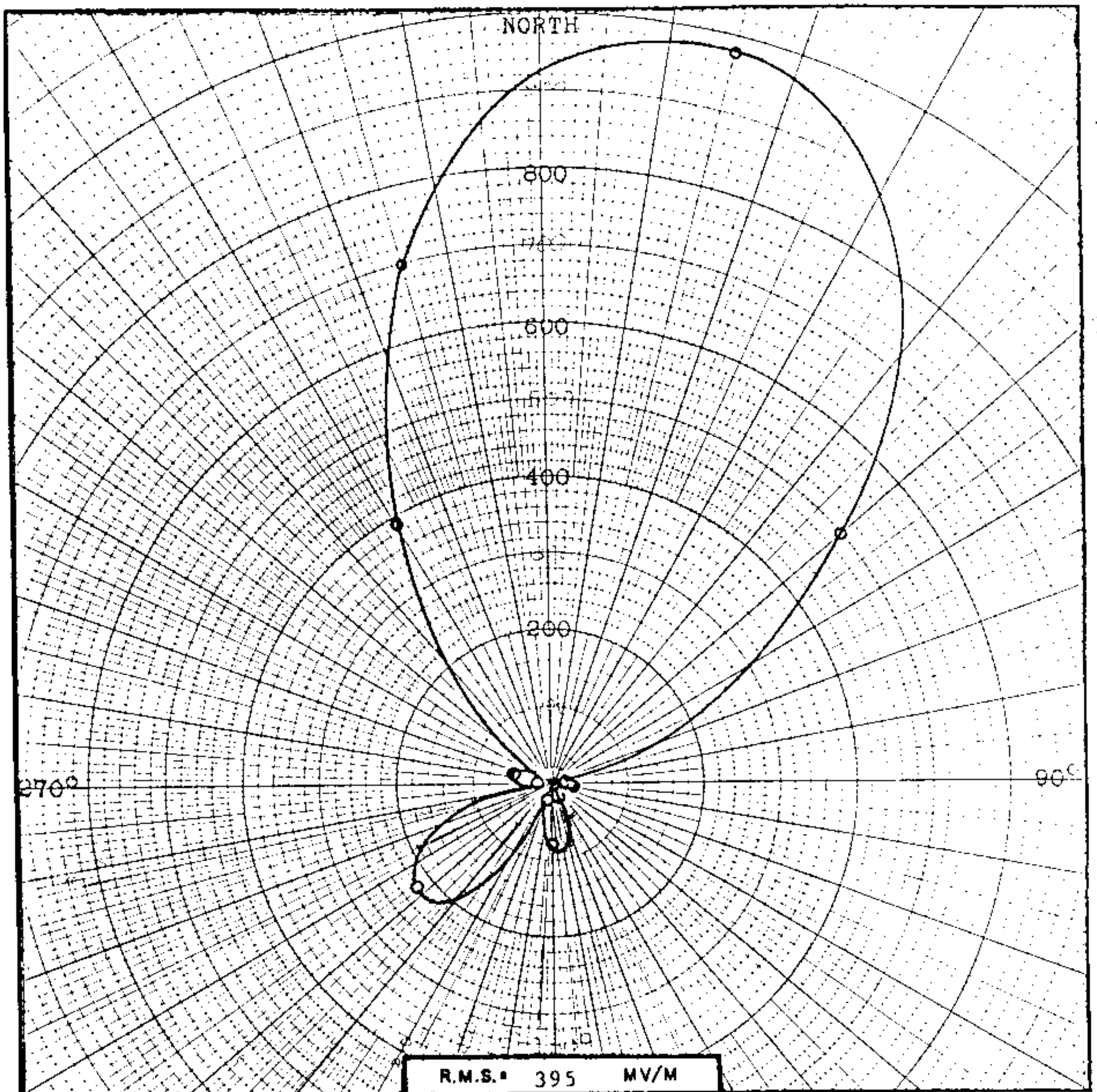
550 kc

BL-12836 WSAU

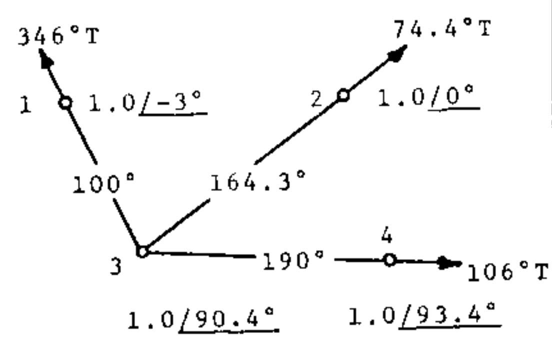
Measured Night
(1-22-71ct)

Station WSAU
Wausau, Wisconsin

5kw,DA-2,U
550 kc



PATTERN PARAMETERS



G = 68° = 340'

DIRECTIONAL
RADIATION PATTERN

FORWARD COMMUNICATIONS CORP.

[X] MEASURED	[ ] PROPOSED
FREQ. 550 (KHZ) POWER 5 (KW)	[ ] DA-D
N. LAT. 44 ° 51 ' 26 "	[X] DA-N
W. LONG. 89 ° 35 ' 13 "	[ ] N-D

LOCATION: Wausau, Wisconsin

DATE: November, 1970

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No.BL-12836
Accepted 1-7-71

Station WSAU
Wausau, Wisconsin

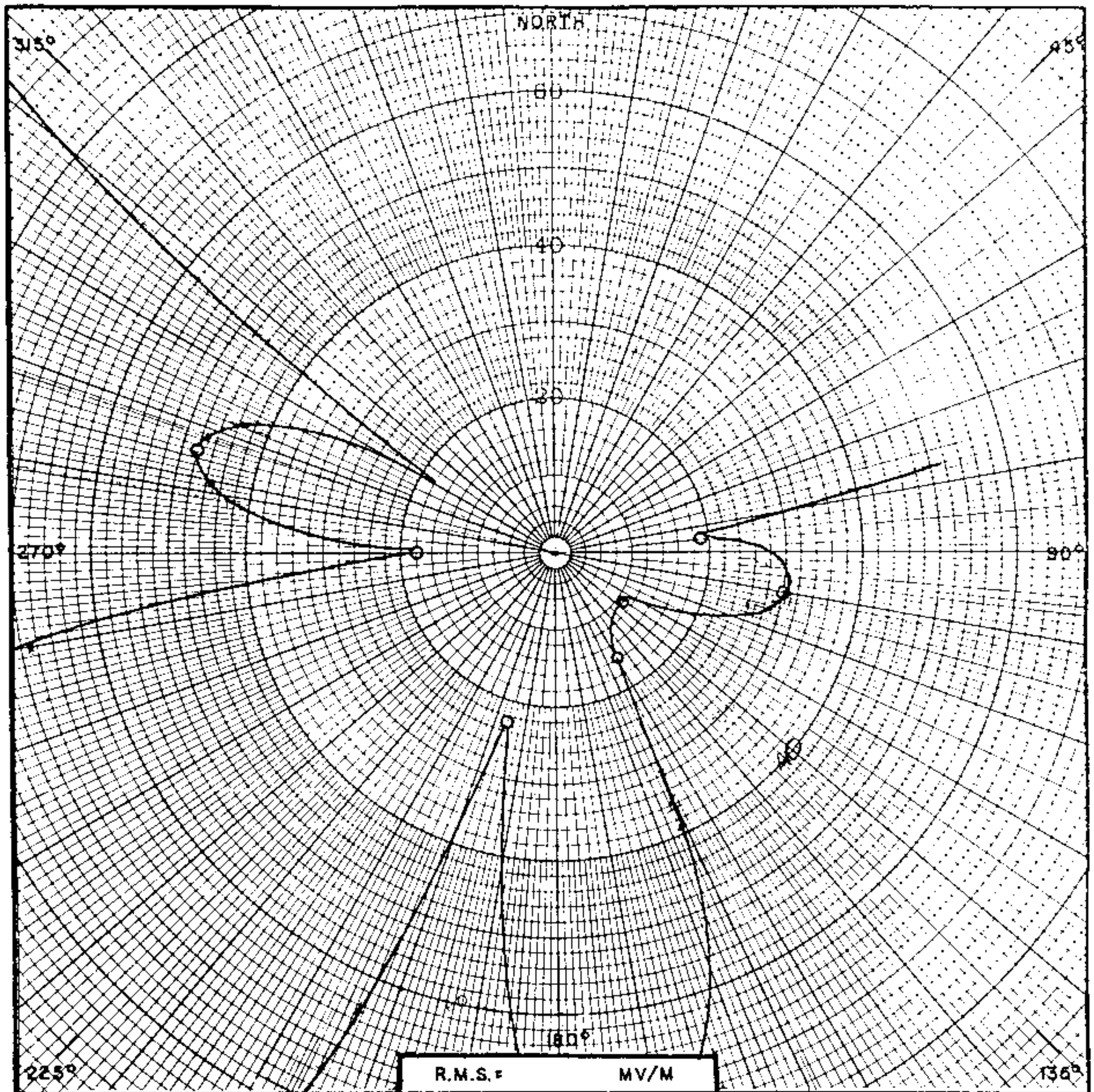
550 kc

BL-12836 WSAU

Measured Night Nulls
(1-22-71ct)

Station WSAU
Wausau, Wisconsin

5kw,DA-2,U
550 kc



PATTERN PARAMETERS

EXPANDED VIEW OF NULLS

DIRECTIONAL RADIATION PATTERN

FORWARD COMMUNICATIONS CORP.

[X] MEASURED [ ] PROPOSED

FREQ: 550 (KHZ) POWER 5 (KW) [ ] DA-D

N. LAT. 44 ° 51 ' 28 " [X] DA-N

W. LONG. 89 ° 35 ' 15 " [ ] N-D

LOCATION: Wausau, Wisconsin

DATE: November, 1970

ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

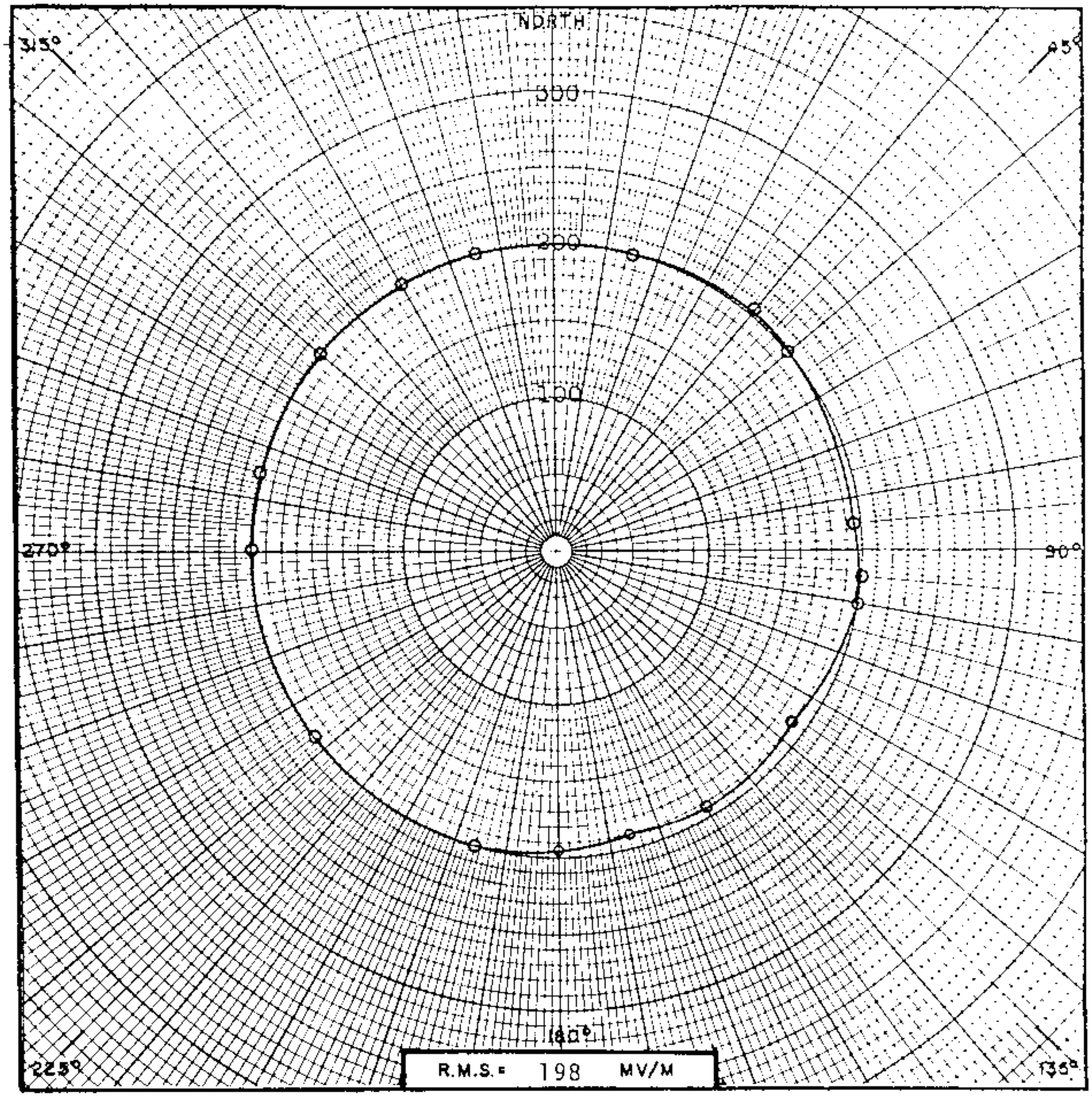
FCC File No.BL-12836
Accepted 1-7-71

Station WSAU
Wausau, Wisconsin

550 kc

W/SAU

Measured Non-DA (1-22-71ct)	Station WSAU Wausau, Wisconsin	5kw,DA-2,U 550 kc



PATTERN PARAMETERS

DIRECTIONAL RADIATION PATTERN

FORWARD COMMUNICATIONS CORP.

[X] MEASURED [ ] PROPOSED

FREQ: 550 (KHZ) POWER 1.12 (KW) [ ] DA-D

N. LAT. 55° 51 ' 28 " [ ] DA-N

W. LONG. 89 ° 35 ' 13 " [X] N-D

LOCATION: Wausau, Wisconsin

DATE: November, 1970

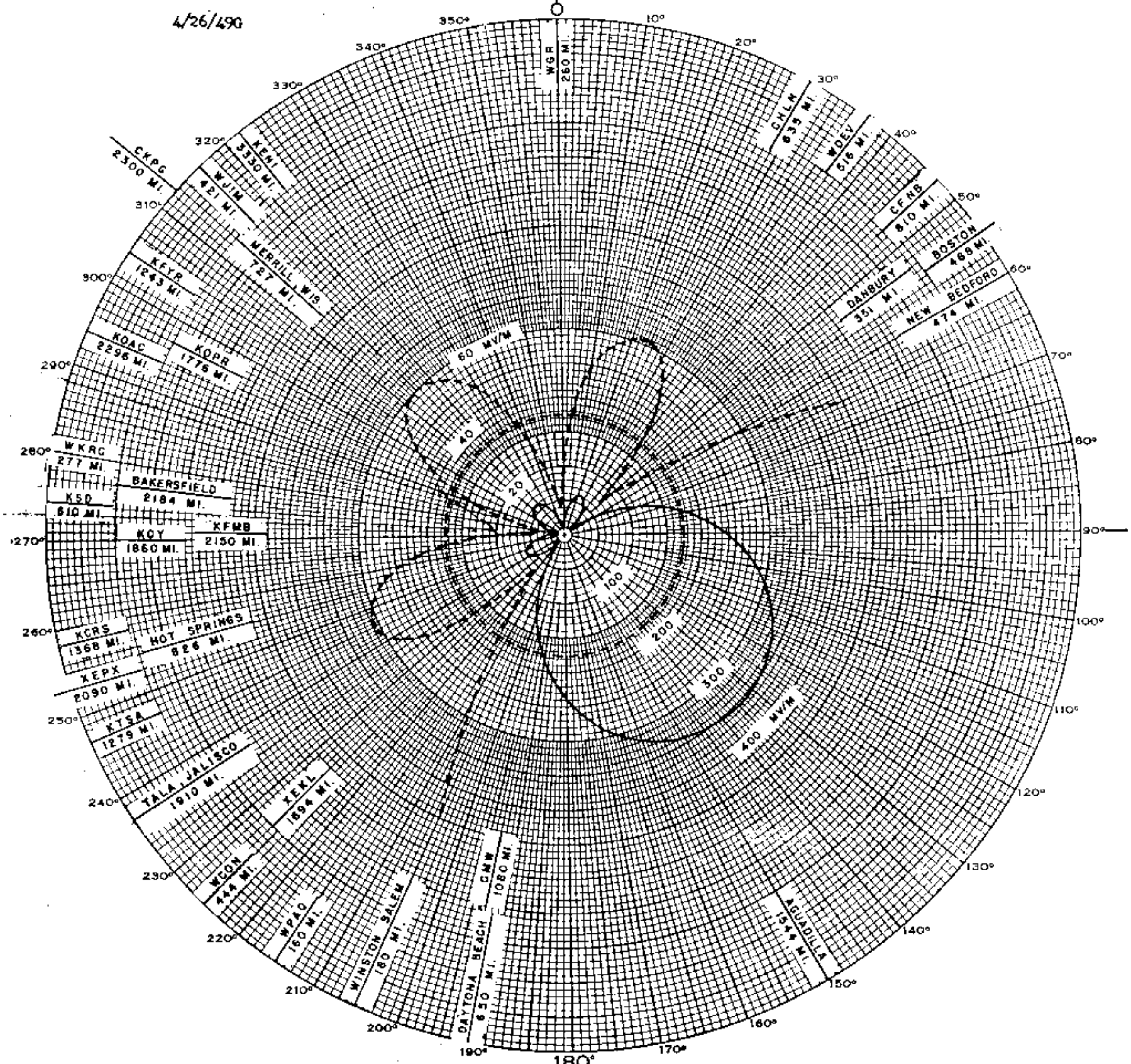
ROBERT A. JONES
CONSULTING ENGINEERS
LA GRANGE, ILLINOIS

FCC File No.BL-12836 Accepted 1-7-71	Station WSAU Wausau, Wisconsin	550 kc

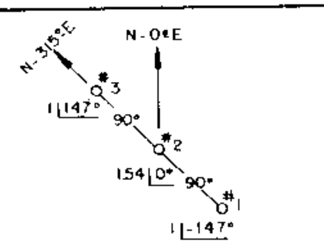
WSVA

PROPOSED NIGHT WSVA, HARRISONBURG, VA. 4-22-49 1kw, DAN 550 kc

4/26/49G



TOWER PLACEMENT SKETCH



PATTERN PARAMETERS

TOWER No.	ELECTRICAL HEIGHT $G°$	TRUE TOWER ORIENTATION $\phi°$	SPACING $S°$	PHASING $\psi°$	HORIZONTAL FIELD mv/m E	FIELD RATIO F	ELEV. ANGLE $\theta°$	ELEVATION RMS FIELD mv/m E_θ
1	70	315.	90	-147		1	0	175.4
2	70	315	90	0		1.54	10	
3	70	315	90	147		1	20	
4							30	
5							40	
6							50	
7							60	
8							70	
9							80	
10							E_r =	mvm
							P_r =	kw

DAYTIME OPERATION ☐ NIGHTTIME OPERATION ☒

STATION DATA

CALL	WSVA
FREQUENCY	550 kc
POWER	1 kw
TIME OF OPERATION	U
TYPE OF OPERATION	DA-N
DAYTIME TOWERS	3
NIGHTTIME TOWERS	1, 2, 3
No. RADIALS PER TOWER	120
LENGTH OF RADIALS	90° 447 ft.
GROUND SCREEN DIMENSION	48'
LAT.	38° 27' 03"
LONG.	78° 54' 31"
SUPERSEDES	
PATTERN No.	490418

FIG. 12

Consulting Radio Engineers

DIXIE B. McKEY & ASSOCIATES

RADIO STATION WSVA
HARRISONBURG, VA.

NIGHT HORIZONTAL RADIATION PATTERN

WSVA
BL-4215

MEASURED
NIGHT

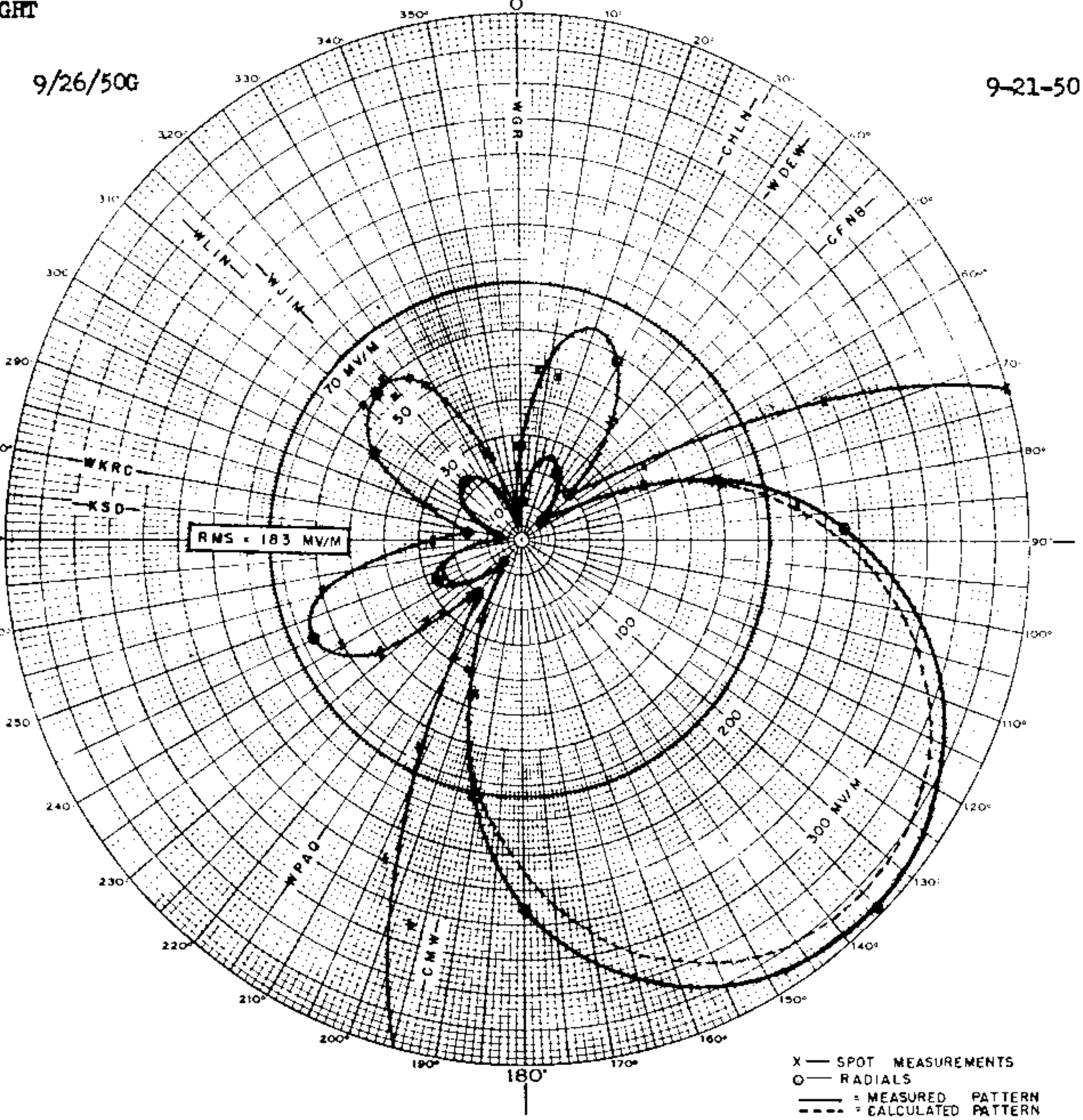
WSVA, HARRISONBURG, VA.

1kw, DA-N

550 kc

9/26/50G

9-21-50



STATION DATA

CALL	WSVA
FREQUENCY	550 kc
POWER	1 kw
TIME OF OPERATION	UNLIMITED
TYPE OF OPERATION	DA-N
DAYTIME TOWERS	2
NIGHTTIME TOWERS	1, 2, 3
No RADIALS PER TOWER	120
LENGTH OF RADIALS	90 - 447 ft
GROUND SCREEN DIMENSION	48 SQ'
LAT.	38° 27' 03"
LONG	78° 54' 51"
SUPERSEDES	490418
PATTERN No	500920

Consulting Radio Engineers

DIXIE B. McKEY
&
ASSOCIATES

MEASURED NIGHTTIME
HORIZONTAL PATTERN

WSVA, Harrisonburg, Va. 550 kc

MEASURED
DAY (NON-DA)

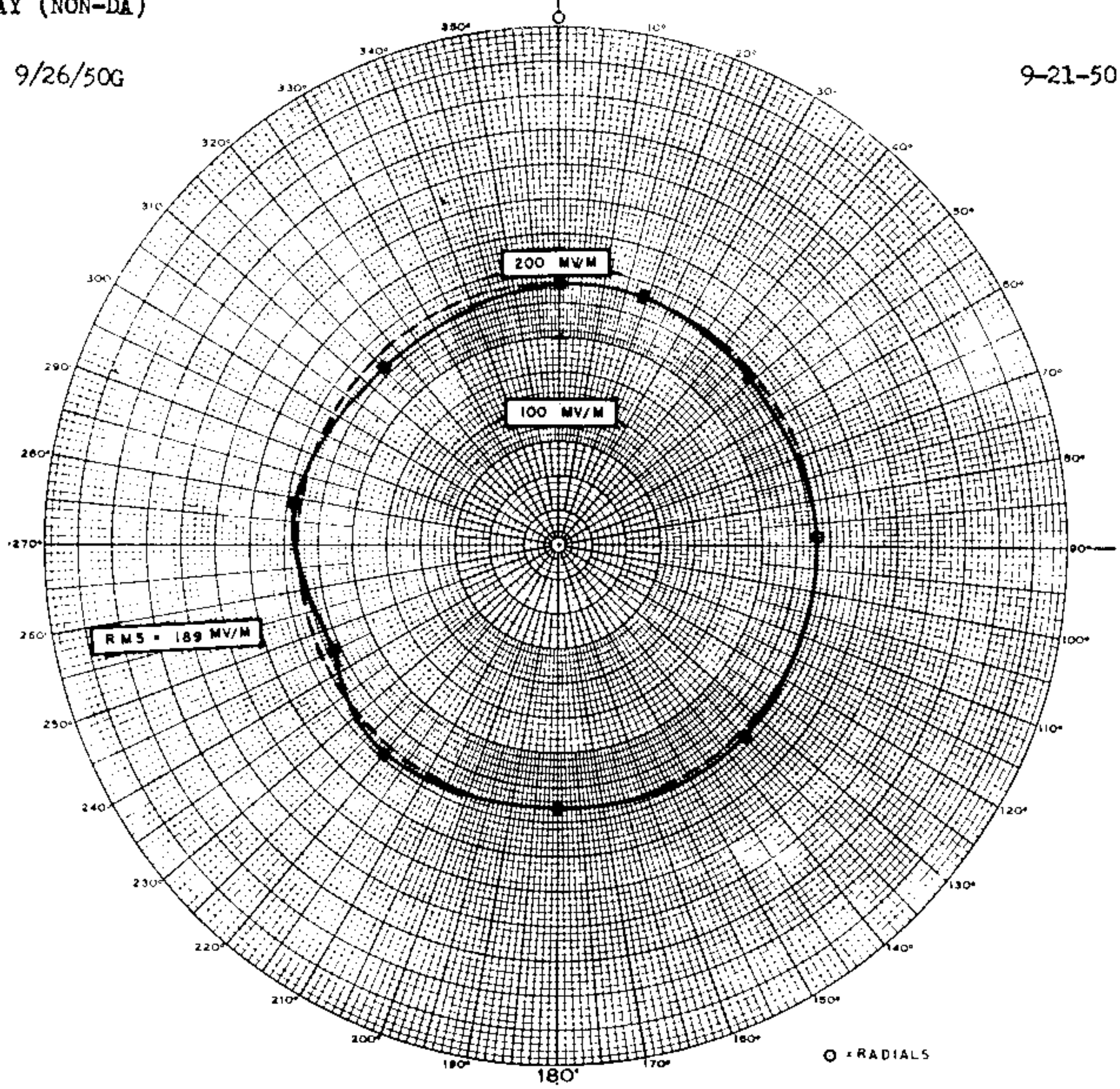
WSVA, HARRISONBURG, VA.

1kw, DA-N

550 kc

9/26/50G

9-21-50



STATION DATA

CALL	WSVA
FREQUENCY	550 KC
POWER	1 kw
TIME OF OPERATION	UNLIMITED
TYPE OF OPERATION	DA - N
DAYTIME TOWERS	2
NIGHTTIME TOWERS	1, 2, 3
No RADIALS PER TOWER	120
LENGTH OF RADIALS	90 - 447 ft
GROUND SCREEN DIMENSION	48 60
LAT	38° 27' 03"
LONG	78° 54' 31"
SUPERSEDES	
PATTERN No	

Consulting Radio Engineers
DIXIE B. McKEY & ASSOCIATES

MEASURED DAYTIME HORIZONTAL PATTERN

WSVA, Harrisonburg, Va. 550 kc

XEQW
550 Kc

OFFICIAL COPY
REC'D 8/29/52 ACC. 9/11/52

Oficina Interamericana de Radio (OIR)
OIR/NARBA 12 X 8 México P. 13/5
La Habana, 13. VIII. 52.-

DESCRIPCION DEL SISTEMA DIRECCIONAL DE RADIACION

ESTACION XEQW

ESTUDIOS EN Mérida, Yuc.

FRECUENCIA 550 KC/s

POTENCIA 5 KW

LISTA DE NOTIFICACION ____

CLASE III-A

FECHA ____

LOCALIZACION GEOGRAFICA DEL CENTRO DEL SISTEMA RADIADOR: LAT. NORTE 20°59'04'' LONG. OESTE 89°38'40''

CARACTERISTICAS DEL SISTEMA

AUTORIZADO PARA OPERACION NOCTURNA DA-N

NUMERO DE ELEMENTOS RADIADORES DOS

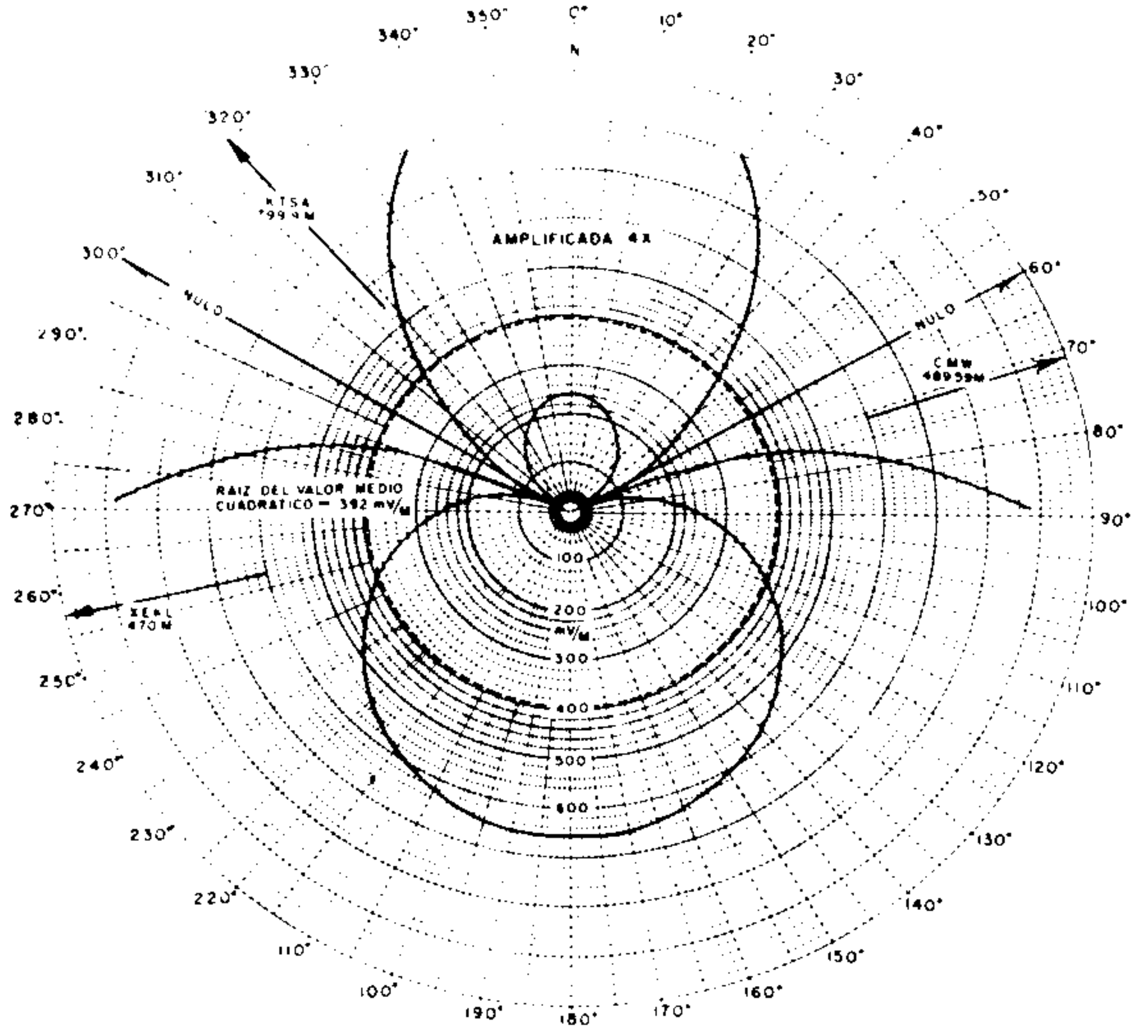
TIPO DE ELEMENTOS RADIADORES TORRES VERTICALES DE ACERO SOPORTADAS POR RETENIDAS. ALIMENTACION TIPO SERIE

TORRES	NORTE	SUR
ALTURA SOBRE LOS AISLADORES	98.45 M	98.45 M
ESPACIAMIENTO	90.92 M	
DEFASAMIENTO	150°	0°
MAGNITUDES RELATIVAS DE CORRIENTES	1	1
ORIENTACION	INDICADA EN EL PATRON HORIZONTAL DE RADIACION	

RAIZ DEL VALOR MEDIO CUADRATICO CALCULADA 392 mV/M

REVISO:

APROBO:



PATRON HORIZONTAL DE RADIACION CALCULADO EN mV/M A UNA MILLA

POSICION RELATIVA DE LAS TORRES

RADIODIFUSORA

550 Kc

XEQW

Merida, Yuc

5000 Watts

CLASE III-A, DA-N

MANUEL ZORRILLA C.
INGENIERO CONSULTOR
CEDULA Nº 36227

D. E. SESMA

XETNC

DIRECTIONAL ANTENNA DESCRIPTION SHEET

Station: XETNC Main Studio: Tepic, Nayarit

Frequency: 550 kHz Power: 0.15 kW Night 10 kW Day

Notification List No. 277 Date: November 30, 1976 Class: III

GEOGRAPHICAL LOCATION OF THE CENTER OF THE ANTENNA SYSTEM:
North Latitude: 21 ° 31 ' 10 "
West Longitude: 104 ° 52 ' 28 "

ANTENNA CHARACTERISTICS

Authorized for Daytime operation. (DA-D)
Number of elements: 2
Type of elements: Series excited, uniform cross-section, guyed, vertical steel towers.

TOWER:	NW(#1)	SE(#2)	
HEIGHT ABOVE INSULATORS:	446'	446'	(90°)
DAY PHASING:	0°	+96°	
DAY FIELD RATIO:	1	1	

SPACING AND ORIENTATION: Towers are spaced 446' (90°) on a line bearing 120° true.

GROUND SYSTEM: 120-446 equally spaced copper radials about each tower. Radials are shortened and bonded to a transverse strap along intersections between towers. Centers of system are bonded together.

PREDICTED EFFECTIVE FIELDS AT RATED POWER:

	THEORETICAL RMS
Day	603.7 mv/m

FCC Note: This supplementary information was transmitted by letter from Mexico dated March 28, 1978 and received April 19, 1978.

XETNC

XETNC

550 KHz. 10 KW AD D/150 W N

DESCRIPCION DEL SISTEMA DIRECCIONAL

TEPIC, NAY. DICIEMBRE de 1977.

XETNC

DESCRIPCION DEL SISTEMA RADIADOR DIRECCIONAL

1. LISTA DE CAMBIOS 277
2. FECHA ~~NOVIEMBRE 1977~~. 30-XI-76
3. FRECUENCIA 550 KHz.
4. DISTINTIVO XETNC.
5. POBLACION TEPIC, NAYARIT.
6. UBICACION EJIDO HERIBERTO CASAS
7. POTENCIA 10 KW AD-D/150 W N.
8. CLASE III

LAT. NORTE 21° 31' 10"
LONG. OESTE 104° 52' 28"

CARACTERISTICAS TECNICAS DEL RADIADOR

9. TIEMPO DE OPERACION AD-D.
10. SISTEMA DEL RADIADOR DIRECCIONAL-DIURNO.
11. NUMERO DE ELEMENTOS DOS.

TIPO DE ELEMENTOS RADIADIADORES

12. TIPO DE ALIMENTACION SERIE.
13. SECCION TRANSVERSAL: FORMA TRIANGULAR. DIMENSIONES 1.10 mt. POR SECC.
14. TIPO DE ELEMENTO RADIADOR VERTICAL.
15. TIPO DE SOPORTE RETENIDAS. ¿TIPO DE RETENES CABLE DE ACERO DE Ø 9.5 mm.
16. LONGITUD DE TOPETE CAPACITIVO NO HAY.
17. PERDIDAS DE IMPEDANCIA EN LA BASE EN SERIE $R_{b1} = R_{b2} = 45 + j30$
18. NUMERO DE ELEMENTOS 1 2 — $Z_{01} = 57.12 + j\,51.87$
19. ALTURA SOBRE EL AISLADOR 136 mts. 136 mts. — $Z_{02} = 28.6 + j\,11.13$
20. DEFASAMIENTO 0° 96°
21. RELACION DE CORRIENTE 1 1
22. DESCRIPCION DE LA ORIENTACION DEL SISTEMA RADIADOR EL EJE DE LAS TORRES SE ENCUENTRA A 120° RESPECTO DEL NORTE GEOGRAFICO; LA SEPARACION ENTRE TORRES ES DE 90°; LA FASE DE LAS CORRIENTES ES DE 96°, Y SU RELACION ES LA UNIDAD.

SISTEMA DE TIERRA

23. NUMERO DE RADIALES POR ELEMENTO 120.
24. LONGITUD DE LOS RADIALES 136 mts. (90°)
25. TIPO DEL RADIAL ALAMBRE DE COBRE Nº 10 Awg

A. [illegible]OBO

RADIACION DEL SISTEMA

26. INTENSIDAD DE CAMPO EFECTIVO TEORICO (OMNIDIRECCIONAL) DE LA POTENCIA RADIADA (RCM) 603.7768
27. INTENSIDAD DE CAMPO EFECTIVO TEORICO A 1600 mts POR KW. DE POTENCIA RADIADA 195.1 mV/m
28. NOTA PATRON NUEVO

XETNC

PATRON DE RADIACION HORIZONTAL TABULADO

OPERACION DIURNA

XETNC
550 KHz.

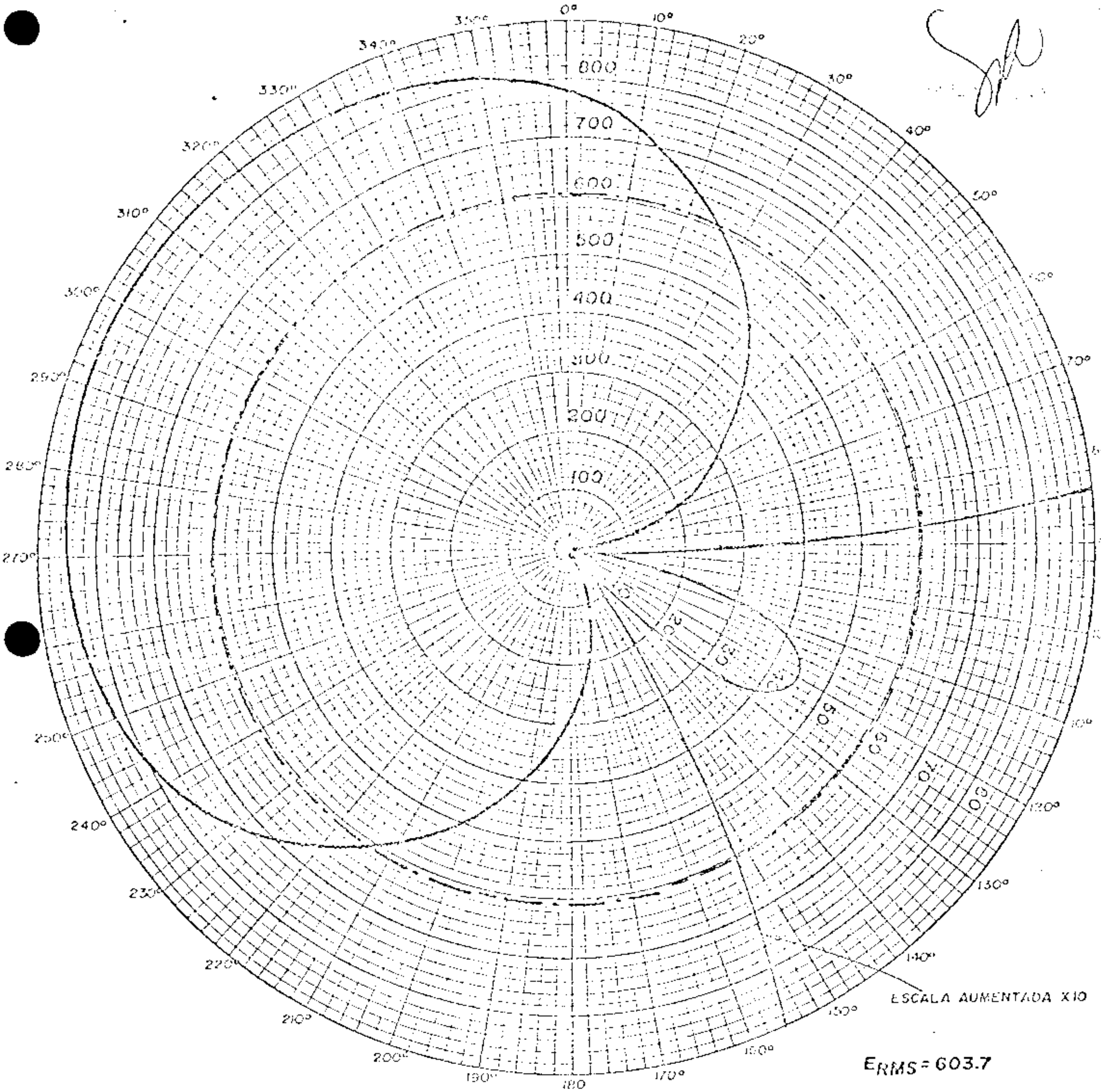
10,000 WATTS
TEPIC, NAY.

$$E_\Theta = 2E \cos\left[\frac{S}{2}\cos(120-\Theta) + \frac{\Psi}{2}\right]$$

$E_1 = 431.62$
$S = 90°$
$\Psi = 96°$

AZIMUT	A	B	C	D	F	E (mV./M)
Θ	$\cos(120-\Theta)$	$\frac{S}{2}A$	$B+\frac{\Psi}{2}$	cos C	2D	$\lvert 431.62 \cdot F \rvert$
0	– 0.5000	– 22.5000	25.5000	0.9026	1.8052	779.1477
10	– 0.3420	– 15.3909	32.6091	0.8424	1.6847	727.1648
20	– 0.1736	– 7.8141	40.1858	0.7639	1.5279	659.4770
30	0.0000	0.0000	48.0000	0.6691	1.3382	577.6203
40	0.1736	7.8141	55.8141	0.5618	1.1237	485.0362
50	0.0342	15.3909	63.3909	0.4779	0.8958	386.6460
60	0.5000	22.5000	70.5000	0.3338	0.6676	288.1554
70	0.6427	28.9254	76.9254	0.2262	0.4524	195.2811
80	0.7660	34.4720	82.4720	0.1310	0.2620	113.0936
90	0.8660	38.9711	86.9711	0.0528	0.1056	45.6126
100	0.9396	42.2861	90.2861	– 0.0049	– 0.0099	4.3115
110	0.9848	44.3163	92.3163	– 0.0404	– 0.0808	34.8894
120	1.0000	45.0000	93.0000	– 0.0523	– 0.1046	45.1784
130	0.9848	44.3163	92.3163	– 0.0404	– 0.0808	34.8894
140	0.9396	42.2861	90.2861	– 0.0049	– 0.0099	4.3115
150	0.8660	38.9711	86.9711	0.0528	0.1056	45.6126
160	0.7660	34.4720	82.4720	0.1310	0.2620	113.0936
170	0.6427	28.9254	76.9254	0.2262	0.4524	195.2811
180	0.5000	22.5000	70.5000	0.3383	0.6676	288.1554
190	0.3420	15.3909	63.3909	0.4479	0.8958	386.6460
200	0.1736	7.8141	55.8141	0.5618	1.1237	485.0362
210	0.0000	0.0000	48.0000	0.6691	1.3382	557.6203
220	– 0.1736	– 7.8141	40.1858	0.7639	1.5279	659.4770
230	– 0.3420	– 15.3909	32.6090	0.8423	1.6847	727.1647
240	– 0.5000	– 22.5000	25.0000	0.9025	1.8051	779.1477
250	– 0.6427	– 28.9254	19.0745	0.9450	1.8901	815.8430
260	– 0.7660	– 34.4720	13.5280	0.9722	1.9445	839.2900
270	– 0.8660	– 38.9711	9.0288	0.9876	1.9752	852.5439
280	– 0.9396	– 42.2861	5.7138	0.9950	1.9900	858.9510
290	– 0.9848	– 44.3163	3.6836	0.9979	1.9958	861.4565
300	– 1.0000	– 45.0000	3.0000	0.9986	1.9972	862.0569
310	– 0.9848	– 44.3163	3.6836	0.9979	1.9958	861.4565
320	– 0.9396	– 42.2861	5.7138	0.9950	1.9900	858.9510
330	– 0.8660	– 38.9711	9.0288	0.9876	1.9752	852.5439
340	– 0.7660	– 34.4720	13.5280	0.9722	1.9445	839.2900
350	– 0.6427	[illegible]8.9254	19.0745	0.9450	1.8901	815.8430

XETNC



$E_{RMS} = 603.7$

PATRON DE RADIACION HORIZONTAL CALCULADO EN mV./mt. A 1609 mts.

ESQUEMA DE LAS TORRES Y SU ORIENTACION CON RESPECTO AL NORTE ASTRONOMICO

N

120°

1

S=90°

2

$\Psi_2 = 196°$

DISTINTIVO DE LLAMADA

XETNC

FRECUENCIA

550 KHZ.

COORDENADAS GEOGRAFICAS

LN 21° 31' 10"

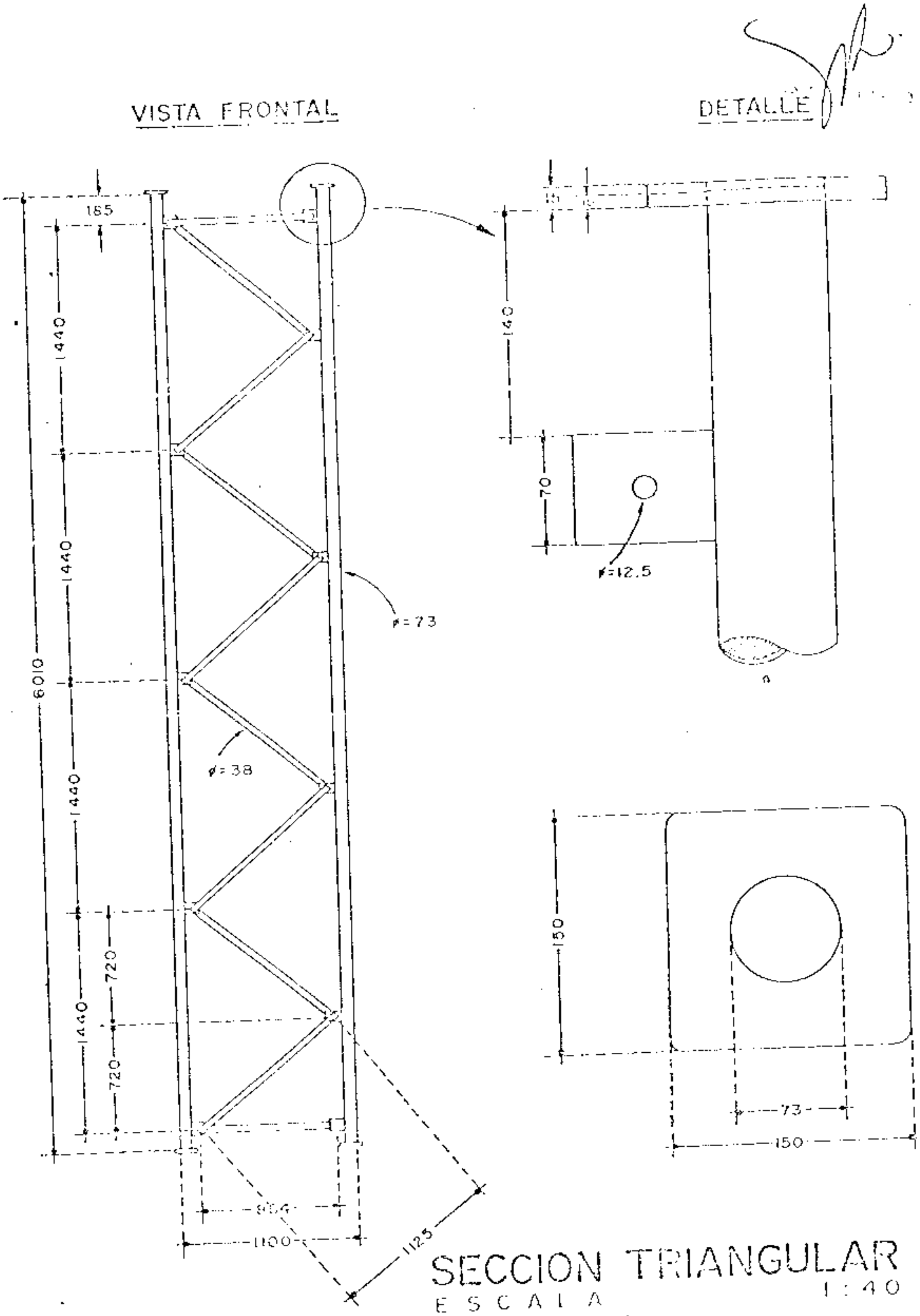
LW 104° 52' 28"

DISEÑO

Ing. ANTONIO DE AVILA S.

REGISTRO No. 7

XETNC



SECCION TRIANGULAR

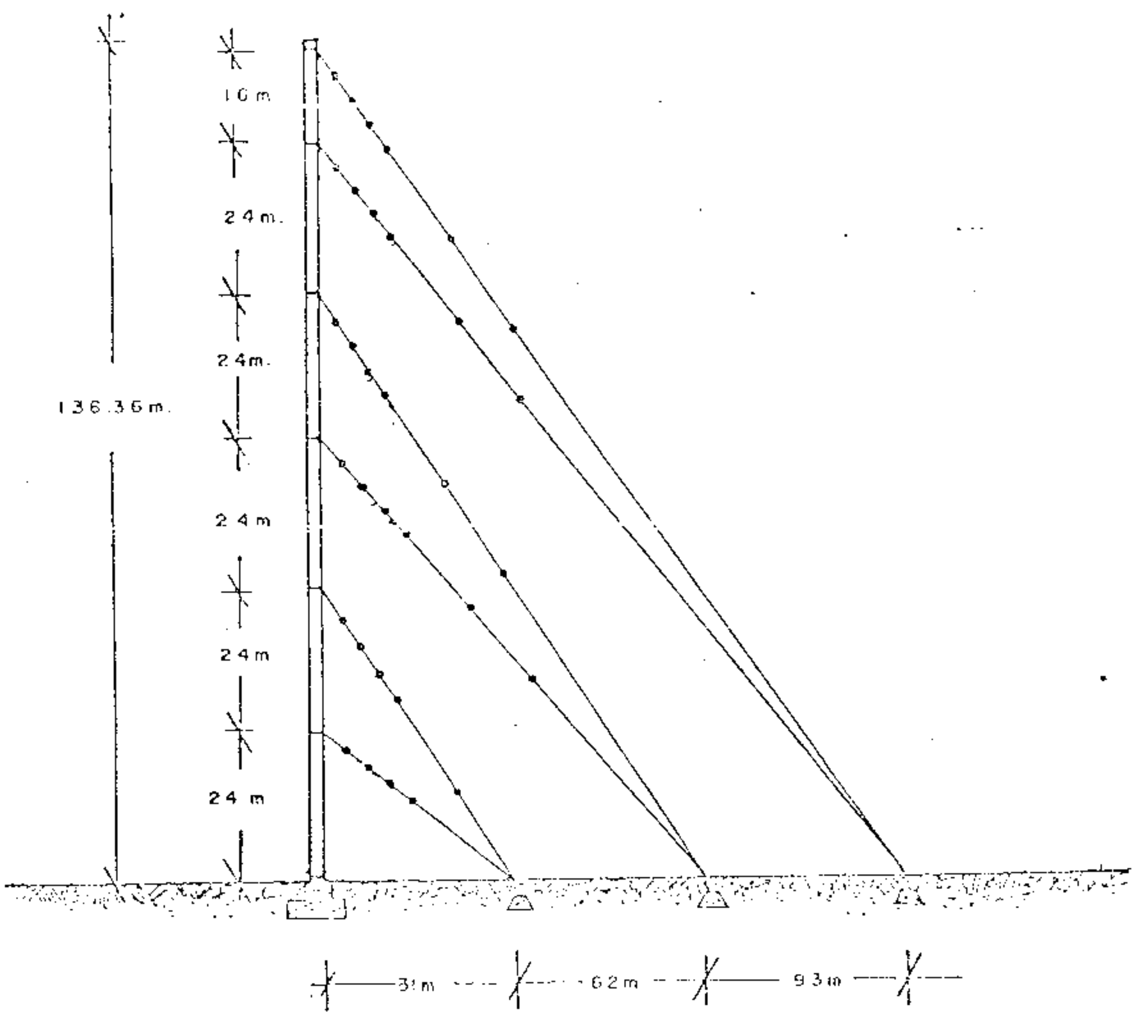
ESCALA 1:40

ACOTACIONES EN MILIMETROS

XETNC 550 KHz.

TEPIC, NAYARIT

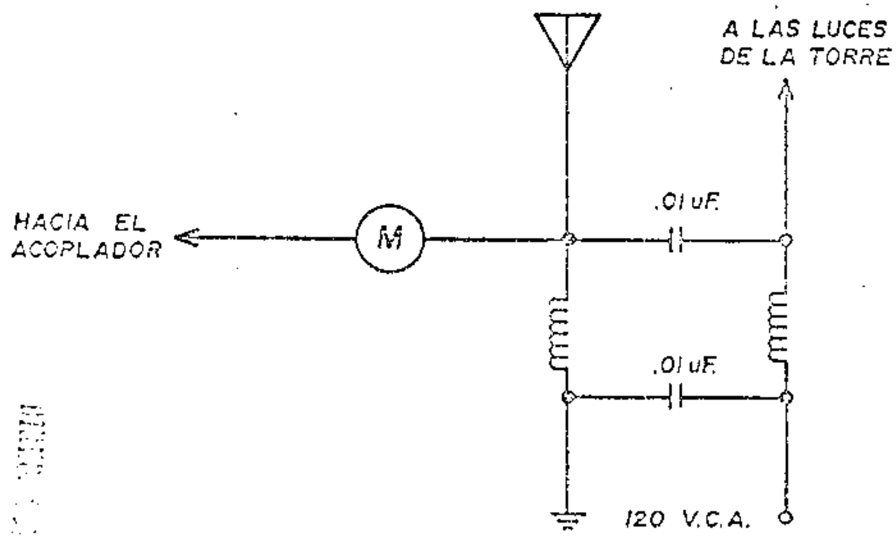
XETNC



DETALLE DE LA TORRE Y RETENIDAS

ESCALA 1:125

XETNC 550 KHz. TEPIC, NAYARIT



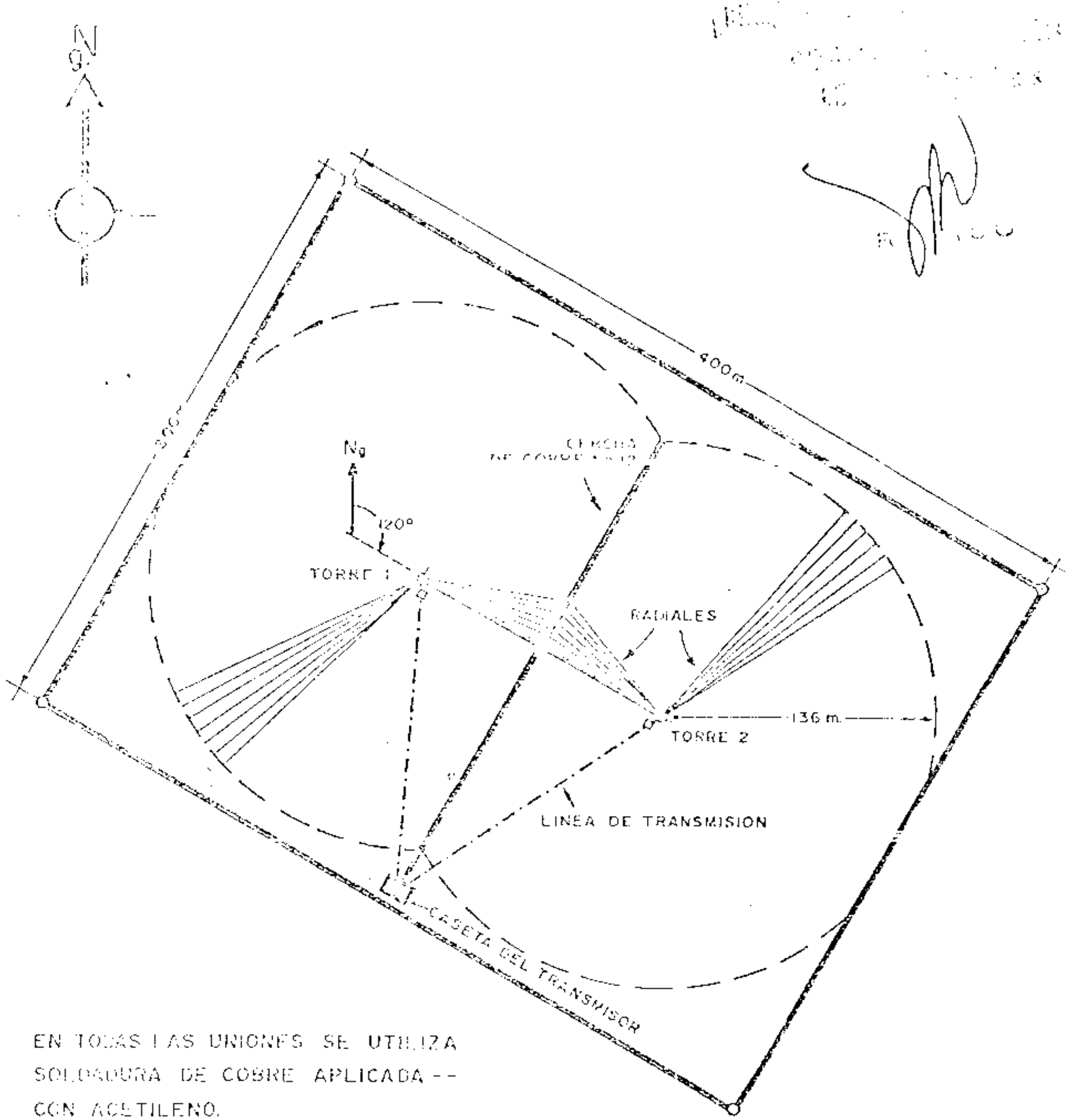
SISTEMA DE ALIMENTACION DE 120 V.C.A.
PARA EL ALUMBRADO DE LA TORRE

XETNC 550 KHz

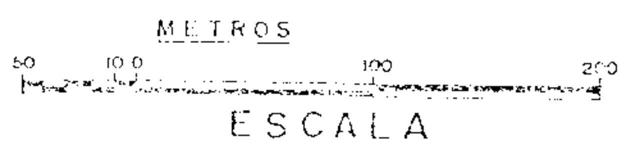
TEPIC, NAY.

XETNC

XEINC



EN TODAS LAS UNIONES SE UTILIZA SOLDADURA DE COBRE APLICADA -- CON ACETILENO.



SISTEMA DE TIERRA

[illegible]	[illegible]	FRECUENCIA
120 RADIALES POR TORRE RADIALMENTE ESPACIADAS [illegible] DE LA BASE DE CADA TORRE, 136 m DE DE LONGITUD DE ALAMBRE [illegible] ENTERRADOS A 30 cm DE PROFUNDIDAD.	XETNC	550 KHz.
	COORDENADAS GEOGRAFICAS	PERITO [illegible] RADIOCOMUNICACIONES
	LN 21° 31' 10"	Ing. ANTONIO DE AVILA S.
	LW 104° [illegible]' 28"	REGISTRO No. 7
		FECHA
		DIC. de 1977