

PROOF OF PERFORMANCE
KTOK NIGHTTIME ANTENNA

1000 kc 5 kw-U-DA-2

OKLAHOMA CITY OKLAHOMA

MARCH, 1962

K T O K PROOF OF PERFORMANCE
NIGHTTIME ANTENNA READJUSTMENT

1000 kc 5 kw-DA-2-U

OKLAHOMA CITY OKLAHOMA

MARCH, 1962

The purpose of this report is to show that the K T O K nighttime antenna system is readjusted within the terms of construction permit BP-8108, issued August 20, 1952. No change was made to the adjustment of the daytime antenna system.

Readjustment was necessitated by repair and partial replacement of the sampling systems for towers one and five, which are employed only during nighttime operation, and compensation for the minor effects of construction in the area. Tower one sampling system was damaged by vandals, tower five sampling system was destroyed when this tower was blown down in 1960. The accumulation of these small errors over the years reached a condition where adjustment of the antenna system to the indicated parameters of the original April, 1953 Proof of Performance did not yield the licensed pattern. Further adjustment was carried on by use of two-way radio (KSH-749) between the K T O K transmitter and required tune-up points to arrive at the present adjustment within the terms of construction permit, BP-8108, upon which the present license was based.

There have been no circuit changes in the phasing system for this nighttime pattern.

Nineteen radials were run to determine pattern shape and RMS. The radials were run at the same bearings as those of the original Proof of Performance of the K T O K nighttime antenna systems. The radial points are numbered the same as the points of the April, 1953 Proof of Performance, with the additional points measured this time numbered serially. Where conductivity enters the interpretation of field data the conductivities of the original non-directional and the 1953 directional Proofs of Performance were used as a guide.

The original Proofs of Performance and the license for the K T O K antenna systems specified the operating phase values as the progressive phase difference between adjacent towers rather than the conventional phasing with respect to a single reference tower. For that reason and because the day operation is unchanged, this proof of performance follows that precedent.

The following is a summary of the performance of the readjusted K T O K nighttime antenna system.

OPERATING CONSTANTS - K T O K NIGHTTIME ANTENNA SYSTEM

Tower 2 leads Tower 1	Tower 3 leads Tower 2		Tower 4 leads Tower 3		Tower 5 leads Tower 4
48°	51°		69°		58.5°
Tower Number	1	2	3	4	5
Mon. Amps.	41%	101%	94%	117%	44%
Mon. Ratio	0.35	0.865	0.804	1.0	0.376
Base current	2.87	6.51	3.69	7.2	3.13
Base Ratio	0.399	0.905	0.514	1.0	0.435
Common Point Resistance Night	48.1 ohms(52 x 0.925)				
Common Point Current Night	10.2 amperes				

Night D.C. Input

Plate Voltage = 4800 volts; Plate Current = 1.39 amperes

Power input = 6,690 watts

Efficiency = $5,400 / 6,690 = 80.6\%$

<u>Azimuth</u>	<u>C.P. Limit</u>	<u>Proof Measured</u>
26.1°	60 mv/m	36 mv/m
48.0°	23	17
62.0	26	25
95.0	39	38
162	94	80
175	58	30
189	50	50
210	40	31
230	160	100
242	180	160
311	62	47

Broadcast Application				FEDERAL COMMUNICATIONS COMMISSION				Section II - A									
LICENSE APPLICATION ENGINEERING DATA STANDARD BROADCAST				Name of applicant K T O K, Inc.													
Purpose of authorization applied for: (Check one) <u>Answer Paragraphs</u> ☒ Station license 1 thru 13 ☐ Direct measurement of power 2,6,7,8,9,14								7. Operating constants: (If directional system, give current at point of resistance measurement.) RF common point or antenna current without modulation for night power in amperes 10.2 RF common point or antenna current without modulation for day power in amperes On file No change									
1. Facilities authorized in construction permit Call letters K T O K File No. of construction permit BP-8108								Actual measured antenna or common point resistance (in ohms) at operating frequency NO				Actual measured antenna or common point reactance (in ohms) at operating frequency NO					
Frequency 1000 Kc		Hours of operation Unlimited		Power in kilowatts Night 5.0 Day 5.0		Night 52 Day change Night +2 Day change											
2. Station location State Oklahoma City or town Oklahoma City								Currents, and phases for directional operation									
3. Transmitter location State Oklahoma County Cleveland								Tower		Phase reading in degrees		Antenna base current		Remote indication of antenna current			
Night		Day		Night		Day				Night		Day					
City or Town Oklahoma City Street Address (or other identification) 0.75 east of intsx. 104th and Eastern Ave.								1 leads 1		48°		N.C. 2.87		N.C. 41		N.C.	
								3 leads 2		51°		N.C. 6.51		N.C. 101		N.C.	
								4 leads 3		69°		N.C. 3.69		N.C. 94		N.C.	
								5 leads 4		58.5°		N.C. 7.20		N.C. 117		N.C.	
								5				3.13		N.C. 44		N.C.	
4. Main studio location State Oklahoma County Oklahoma								Manufacturer and type of phase monitor used in taking above readings: RCA WM-30-A									
City or Town Oklahoma City Street and number 1800 West Main								Describe equipment used for remote indication of antenna currents (phase monitor or other method) Phase Monitor									
5. Remote control point location State None City or town None								8. Description of antenna system (If directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary. Height figures should not include obstruction lighting.)									
6. Transmitter installed Make RCA Type No. BTA-54 Rated Power 5.0 Kw.								Type radiator Uniform cross section steel guyed.		Height in feet of complete radiator above base insulator, or above base if grounded. 1, 2, 4, 5 = 240' 3 = 406'							
Last radio stage Total unmodulated plate current 1.39 A Plate voltage 4800 V.								Overall height in feet above ground.		If antenna is either top loaded or sectionalized, describe fully as Exhibit No.							
Night												Excitation		Series ☒ Shunt. ☐			
Day																	
Operation of last radio frequency amplifier stage A ☒ B ☐ C ☐ D ☐ BC ☐												Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.					
								North latitude 35, 21 29		West longitude 97 27 48							
Manufacturer's recommended operating efficiency for the last radio frequency amplifier stage in percent. On file Is inverse feedback utilized? Yes ☒ No ☐ If "Yes", to what value of feedback power is transmitter adjusted (in db) On file Efficiency of the last radio frequency amplifier stage as now adjusted 80.6%												If not fully described above, give further details and dimensions including any other antennas mounted on tower and associated isolation circuits as Exhibit No. FM antenna on #3					
(use formula $\frac{I_p^2 R_p}{E_p^2 P}$)												Details and dimensions of ground system: (Attach sketch as Exhibit No. if necessary for complete description) On file- No change					

9. Antenna resistance measurement

Attach as Exhibit No.

the following:

See attached engineering statement

a. Qualifications of engineers taking measurements

b. Schematic diagram showing clearly all components of coupling circuits, point of resistance measurement, location of antenna ammeter, connections to and characteristics of all tower lighting isolation circuits, static drains, and any other fixtures, lines, etc., connected to or supported by the antenna, including other antennas and associated circuits.

c. Full description of method used to make measurements.

d. Manufacturer's name of each calibrated instrument used and manufacturer's rated accuracy.

e. Date, accuracy, and by whom each instrument was last calibrated.

f. Table of complete data taken.

g. The graph drawn of 10 to 12 readings in a band 50 to 60 kilocycles wide with the operating frequency near the center.

10. Modulation monitor

Make

On file-no change

Type No.

11. Frequency monitor

Make

On file-No change

Type No.

By what method and how often will regular checks of the calibration of the frequency monitor be repeated?

Outside frequency measuring service checks frequency monthly

Give the following data on the checks of the frequency

Date and time

3/4/62 12:30p

Name of checking agency or

Radio Eng. Co.

2/4/62 3:45p

Radio Eng. Co.

1/7/62 1:35p

" " "

12/3/62 8:15a

" " "

Frequency measured by such agency or method

1. 1 cps low

Monitor reading high or low

0 dev.

2. 1.7 cps low

0 dev.

3. 0.1 cps low

0 dev.

4. 0.6 cps low

-1 dev.

12. Give method of varying power to compensate for variation of line voltage.

On file-No change

18. In what respect, if any does the apparatus constructed differ from that described in the application for construction permit or in the permit?

Does not apply-No change, readjustment of antenna system due to aging of equipment and change in characteristics of some monitoring points.

14. Give reason for the change in antenna or common point resistance.

No change

I certify that I am the Technical Director, Chief Engineer or Consulting Engineer for the applicant of the radio station for which this application is submitted and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief. (This signature may be omitted provided the engineer's original signed report of the data from which the information contained herein has been obtained is attached hereto.)

Date

March 20, 1962

George M. Sklom
Technical Director, Chief Engineer or Consulting Engineer

30°
330°20°
340°10°
350°350°
10°340°
20°330°
30°

MEASURED RADIAL

MEASURED NIGHT
HORIZONTAL PLANE PATTERN
KTOK 5KW-DA-2 1000KC
OKLAHOMA CITY OKLAHOMA
MARCH 1962

35° 21' 29" NO. LAT.
97° 27' 48" W. LONG.

WALTER F. KEAN
CONSULTING RADIO ENGINEERS
NINETEEN EAST QUINCY STREET
RIVERSIDE, ILLINOIS

1000 MV/M

750

500

250

RMS = 428 MV/M

THEO. .298 / 117.5 760 / 61.4 1.0 / 0 760 / -61.4 298 / -117.5
MEAS. .846 / 127.5 1.950 / 69 1.0 / 0 1.760 / -51 778 / -99

S = 57.4° = 210°

G₁ = G₂ = G₄ = G₅ = 90° G₃ = 151°150°
210°160°
200°170°
190°180°
180°190°
170°200°
160°210°
150°

WRN

Information required by paragraphs 3.151,
a-1 through a-3 is shown on the horizontal
plane radiation pattern attached.

Section 3.151(a-4)

This section includes information relating to the field intensity measurements which were performed and analysed in the manner set forth in Section 3.186(a) of the FCC Rules and Regulations. Complete data taken in conjunction with the field intensity measurements as specified in Section 3.186(b) follows herein.

Radial measurements of the field intensity were made in nineteen directions. Measurement locations are shown plotted on the attached maps and are the same as the locations measured in the April, 1953 Proof of Performance for the K T O K night-time antenna system. Additional points measured for this Proof of Performance are also shown on these maps with numbers added serially to the previous numbering system.

Wherever possible, measuring locations were chosen to be free of obstructions and when necessary the field intensity meter was carried into open fields to avoid electrical distortion of the measured signal. All accessible and acceptable measuring locations were employed. At each location the maximum field intensity is recorded regardless of the orientation of the meter lopp with respect to the transmitter. The result of this procedure is that the highest possible interpretation of radiation is obtained from the plot and any error results in greater protection. Field intensity measurements were made with WX-2d and 120-E Field intensity meters.

2° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
120	115 mv/m	3.78 miles
119	135	4.23
118	132	4.64
117	75	5.37
116	92	5.9
121	54	7.85
115	53	9.0
114	49	9.93
113	48	10.4
112	42	11.0
111	31	12.4
110	33	12.85
109	28	13.3
108	23.0	14.3
107	24.0	15.3
106	19.0	16.3
105	17.0	17.4
104	16.0	18.3
103	12.0	19.2
102	5.0	20.3
101	11.0	21.2

Measured 3-7-62

26.1° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
201	11.0 mv/m	2.7 miles
202	8.2	3.6
203	2.0	4.93
204	1.8	5.83
205	3.8	6.98
206	4.2	7.18
207	2.5	8.1
208	1.5	9.68
209	0.92	10.7
210	1.3	11.7
211	1.5	12.7
212	0.85	13.7
213	1.2	14.0
214	0.55	14.85
215	0.8	16.0
216	0.6	16.2
217	0.65	17.0
218	0.83	18.2
219	0.7	19.3
220	0.6	20.7
221	0.58	21.5
222	0.7	22.5

Measured 3-4-62

48° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
301	4.3 mv/m	2.93 miles
303	4.1	4.25
304	3.05	4.33
305	2.6	4.87
306	1.8	7.08
307	2.1	7.88
308	0.8	8.02
309	0.8	8.4
310	1.2	9.38
311	0.5	9.6
312	1.1	10.9
313	1.1	11.0
314	0.8	12.3
315	0.75	12.5
316	0.6	13.7
317	0.47	14.3
318	0.63	15.7
319	0.9	16.3
320	0.8	18.3
321	0.56	18.9
322	0.54	19.9
323	0.45	20.35
324	0.1	21.4

Measured 3-4-62

62° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
401	3.5 mv/m	2.6 miles
402	4.5	2.88
403	5.9	3.63
404	4.0	4.1
405	4.5	4.75
406	3.6	4.92
407	5.6	5.84
408	3.0	6.47
409	3.05	7.07
410	2.55	8.12
411	2.3	9.3
412	1.9	10.3
413	1.6	11.3
414	1.0	11.5
415	1.3	12.7
416	1.3	13.8
417	1.3	15.6
418	1.5	15.9
419	0.84	17.1
420	0.75	17.7
421	1.8	20.0

Measured 3-4-62

95° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
521	8.5 mv/m	2.10 miles
520	8.0	2.30
519	---	2.60
518	---	2.90
517	9.0	3.25
516	10.5	4.13
515	---	4.52
525	7.6	4.9
514	6.0	5.30
522	5.8	5.4
523	6.2	5.5
524	4.7	5.9
513	5.1	6.10
512	1.85	6.22
511	---	6.53
510	4.4	6.71
509	3.5	7.20
508	1.7	7.63
507	0.98	8.25
506	1.35	9.25
505	0.8	11.3
504	---	14.2
503	0.55	14.3
502	---	15.30
501	0.98	17.35
526	0.5	19.35

Measured 3-5-62

122° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
601	180 mv/m	2.66 miles
602	155	3.04
603	175	3.23
604	155	3.82
605	120	4.92
606	83	5.12
607	85	6.18
608	86	6.33
609	60	7.02
610	66	8.44
611	50	8.92
612	52	9.69
613	40.5	10.70
614	35.5	10.90
615	41.5	12.0
616	28	12.60
617	27.5	12.80
618	38	13.20
619	27.5	14.40
620	29	14.60
621	22.5	16.75
622	19.5	19.30

Measured 3-5-62

138° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
701	330 mv/m	3.30 miles
702	295	3.64
703	200	4.78
704	185	5.00
705	140	6.40
706	105	7.61
707	115	7.89
708	86	8.98
709	86	9.33
710	62	10.30
711	62	10.80
712	62	11.80
713	56	12.20
714	61	12.60
715	47.5	13.10
720	52.0	14.60
716	28.5	15.30
717	30	16.80
718	39	17.20
719	18	21.50

Measured 3-4-62

WALTER F. KEAN

RIVERSIDE, ILLINOIS

154° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
820	100 mv/m	4.0 miles
319	80	5.0
318	59	6.4
817	65	6.9
816	63	7.2
815	42	7.5
814	29	8.5
813	31.5	9.5
812	28	9.8
811	39	10.8
310	31	11.9
309	23.9	12.1
308	23.0	13.2
307	20.5	14.4
806	20.5	15.3
305	18.0	16.2
304	21.0	17.5
303	16.0	13.5
802	16.0	19.75
801	13.0	20.8

Measured 3-4-62

162° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
901	24.0 mv/m	3.78 miles
902	27.5	4.85
903	12.5	6.00
904	7.6	7.40
905	8.1	8.10
906	8.0	9.2
907	7.1	10.2
908	3.0	10.7
909	5.0	11.3
910	3.7	12.4
911	5.6	13.5
912	4.55	14.5
913	3.1	15.6
914	3.7	16.7
915	4.0	17.7
916	2.0	18.7
917	2.5	19.8
918	2.5	20.8
919	2.0	23.3

Measured 3-5-62

175° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1001	3.4 mv/m	3.27 miles
1002	2.1	3.71
1003	2.75	4.27
1004	5.5	4.74
1005	---	5.50
1006	---	5.75
1023	5.2	6.05
1007	3.65	6.77
1008	2.85	7.72
1009	2.4	7.82
1010	2.65	7.92
1011	2.35	8.22
1012	2.9	8.90
1013	1.15	9.70
1014	4.0	10.30
1015	2.7	12.90
1016	1.2	15.10
1017	0.3	15.30
1018	0.46	16.80
1019	0.45	17.30
1020	0.2	18.90
1021	0.62	19.70
1022	0.54	20.80

Measured 3-6&7-62

139° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1101	22.0 mv/m	2.72 miles
1102	18.0	2.82
1103	14.0	3.3
1104	14.0	3.4
1105	16.0	3.5
1106	15.0	3.7
1107	8.9	4.45
1108	9.8	5.03
1109	9.5	5.7
1110	8.05	6.25
1111	4.9	6.71
1112	5.0	7.78
1113	4.7	8.75
1114	4.3	9.87
1115	4.6	10.6
1116	3.6	12.2
1117	3.0	12.9
1118	2.6	13.7
1119	2.5	14.9
1120	2.0	16.1
1121	1.6	17.9
1122	1.7	19.2
1123	1.6	20.1

Measured 3-5-62

210° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1201	3.25 mv/m	2.5 miles
1202	2.0	3.0
1203	7.1	3.5
1204	8.0	4.2
1205	2.55	5.5
1206	1.7	6.5
1207	2.4	7.3
1208	1.95	8.3
1209	1.8	9.8
1210	2.65	11.2
1211	2.35	11.5
1212	2.15	12.3
1213	2.45	14.0
1214	1.1	15.4
1215	1.3	16.7
1216	1.1	17.5
1217	1.0	18.2

Measured 3-6-62

230° TRUM

K T O K 1000 Ks.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1301	38.0 mv/m	2.80 miles
1302	18.5	3.51
1303	20.0	4.08
1304	20.5	4.21
1305	16.5	4.30
1306	14.0	5.65
1307	17.0	6.31
1308	-----	8.68
1309	9.4	9.44
1310	9.5	10.50
1311	8.7	11.40
1312	6.9	12.00
1313	4.6	13.40
1314	5.6	14.10
1315	5.4	15.00
1316	2.6	16.50
1317	2.8	18.00
1318	2.2	19.20
1319	2.6	20.10
1320	2.4	22.00

Date measured: 3-6-62

242° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1401	55 mv/m	3.04 miles
1402	36	3.36
1403	35	3.60
1404	38	4.13
1405	35	4.31
1406	28	5.31
1407	29	5.70
1408	18.5	6.56
1409	14.0	8.74
1410	10.5	9.73
1411	9.3	10.0
1412	11.0	11.9
1413	6.0	12.2
1414	7.2	13.4
1415	3.8	14.0
1416	7.0	15.3
1417	6.0	16.2
1418	5.3	16.7
1419	4.9	17.7
1420	4.0	18.4
1421	3.1	21.2

Measured 3-5-62

274° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1501	4.9 mv/m	2.3 miles
1502	3.75	2.69
1503	5.1	3.25
1504	3.1	3.8
1505	4.7	4.25
1506	3.5	4.8
1507	2.5	5.25
1508	2.5	5.78
1509	2.0	6.25
1510	1.2	6.82
1511	2.5	7.25
1512	3.0	7.7
1513	1.55	9.75
1514	1.5	10.8
1515	1.55	12.6
1516	1.5	12.8
1517	---	13.2
1518	1.1	13.7
1519	1.1	14.8
1520	1.4	15.7
1521	1.5	16.8
1522	1.3	18.8
1523	0.74	19.8

Measured 3-7-62

295° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1620	17.5 mv/m	2.4 miles
1619	15.5	2.97
1618	8.6	3.46
1617	7.6	4.18
1616	4.4	5.22
1615	3.5	5.53
1614	8.7	6.38
1613	6.4	7.32
1612	3.5	7.92
1611	4.5	8.43
1610	4.6	10.2
1609	2.5	10.7
1608	2.6	11.8
1607	3.05	12.9
1606	3.2	14.0
1605	2.45	15.1
1604	1.75	16.2
1603	2.75	17.2
1602	2.05	17.6
1601	1.6	18.3
1621	1.6	19.4
1622	1.4	20.0

Measured 3-6-62

311° TRUE

X T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1724	34 mv/m	2.3 miles
1723	38	2.4
1701	12.0	3.29
1702	14.0	3.66
1703	11.0	4.22
1704	7.1	4.35
1705	10.0	5.63
1706	6.0	6.05
1707	4.4	6.45
1708	6.4	6.89
1709	3.9	7.2
1710	3.8	7.57
1711	5.3	8.29
1712	4.1	8.8
1722	3.4	10.2
1713	3.9	11.0
1714	2.2	11.6
1715	2.9	12.6
1716	1.7	13.2
1717	1.3	14.3
1718	2.0	15.0
1719	2.2	16.4
1720	2.0	18.0
1721	2.0	20.75

Measured 3-6-62

330° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

Location Number	Directional Field Intensity	Distance From Antenna
1801	205 mv/m	2.59 miles
1802	270	3.55
1803	105	3.87
1804	54	4.42
1805	78	4.95
1806	78	5.26
1807	52	5.6
1808	68	6.1
1809	33.5	6.6
1810	23.5	8.67
1811	38.5	9.39
1812	24.5	11.0
1813	20.5	11.7
1814	23.0	12.2
1815	24.5	13.4
1816	21.5	14.2
1817	10.5	17.15
1818	--	18.85
1819	13.0	20.0
1820	11.5	21.35

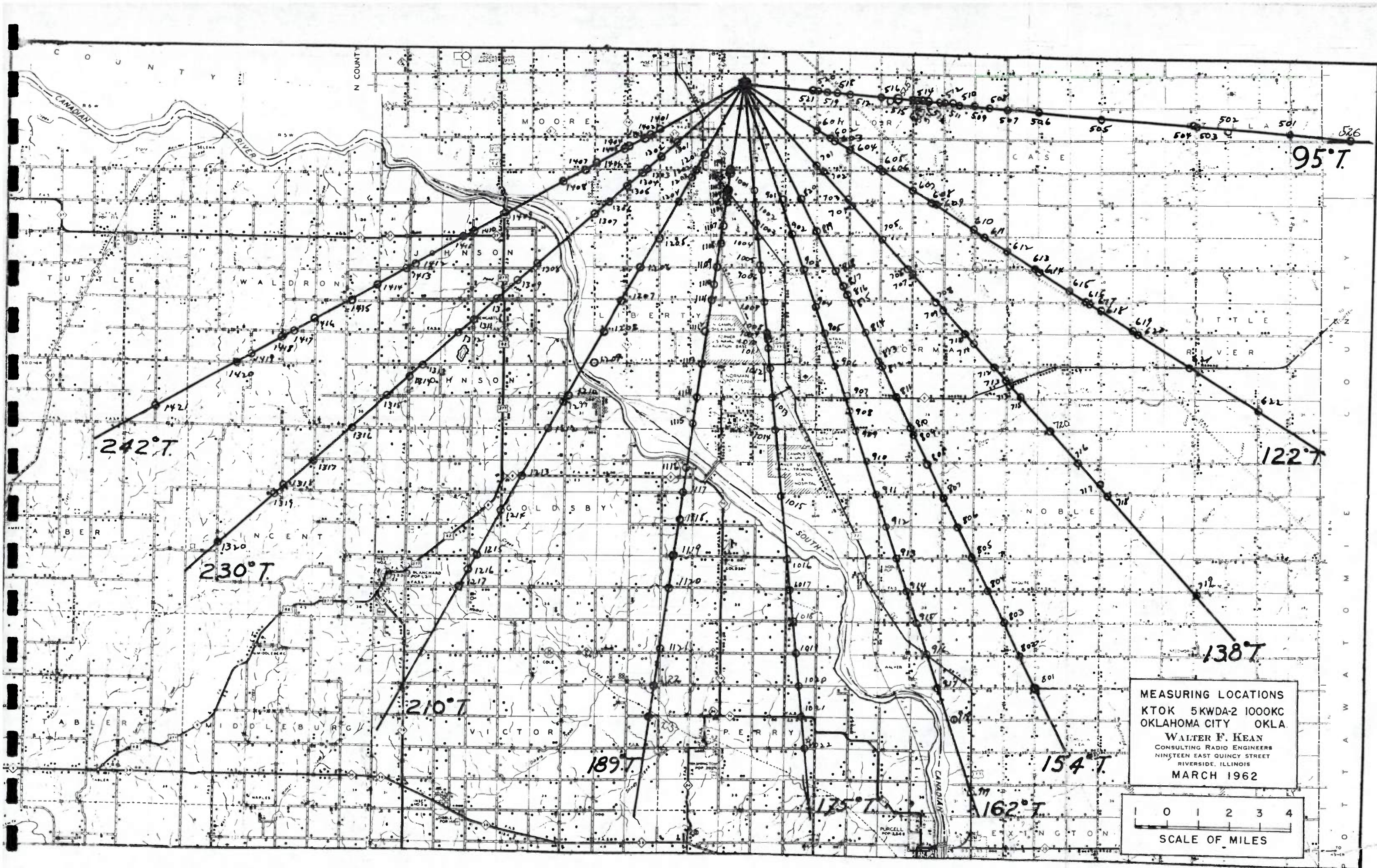
Measured 3-7-62

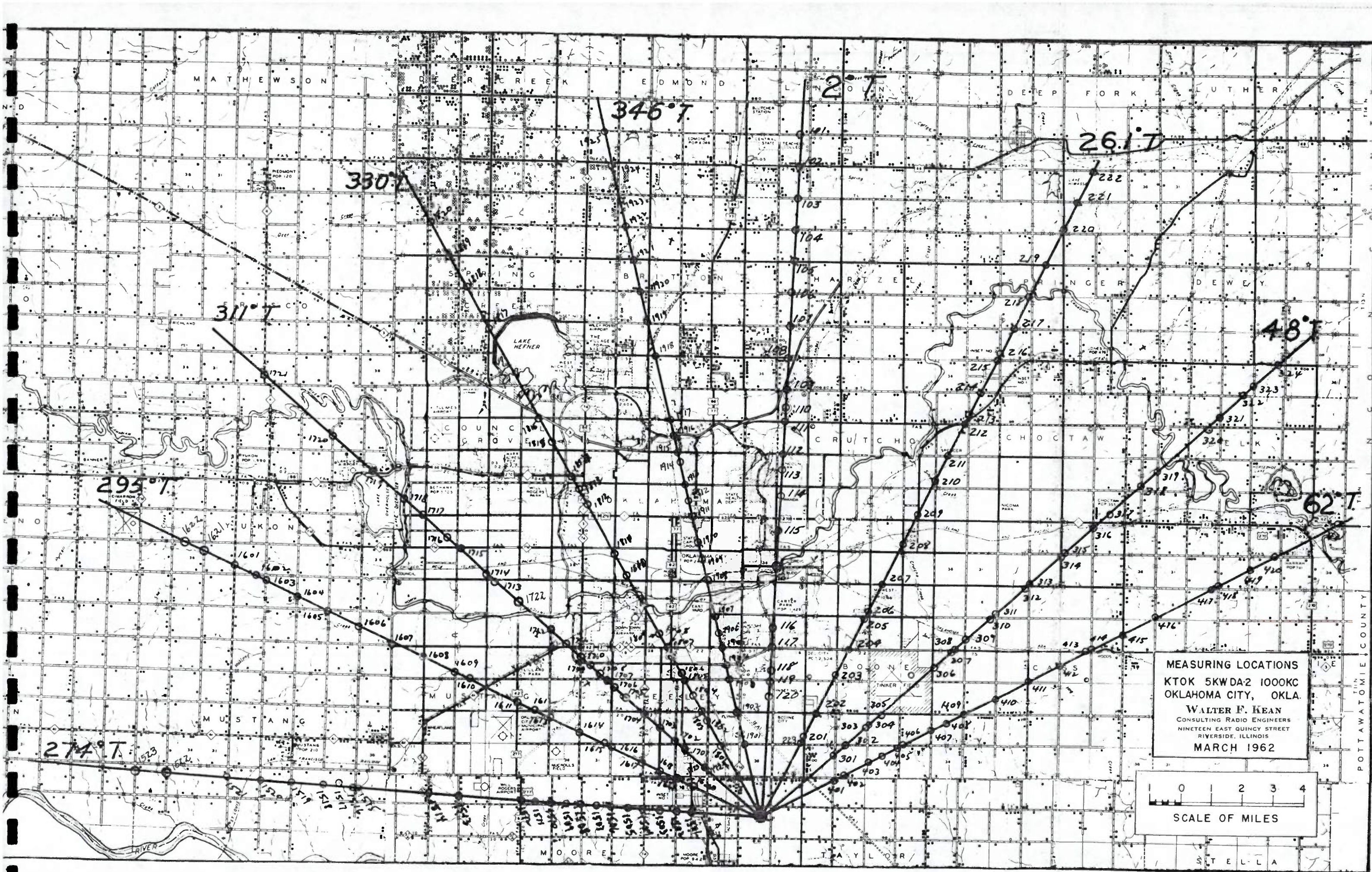
346° TRUE

K T O K 1000 Kc.
NIGHT DIRECTIONAL

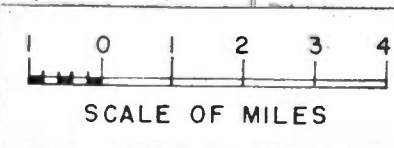
Location Number	Directional Field Intensity	Distance From Antenna
1901	420 mv/m	2.4 miles
1902	250	3.4
1903	185	4.3
1904	173	4.9
1905	199	5.4
1906	155	5.9
1907	138	6.3
1908	125	7.5
1909	112	8.3
1910	103	8.7
1911	92	9.6
1912	80	10.1
1913	80	10.6
1914	58	11.3
1915	56	11.6
1916	70	12.2
1917	71	12.7
1918	53	14.7
1919	52	15.8
1920	38	16.8
1921	43	17.8
1922	40	18.9
1923	39.5	19.6
1924	31.5	20.9
1925	32	21.9

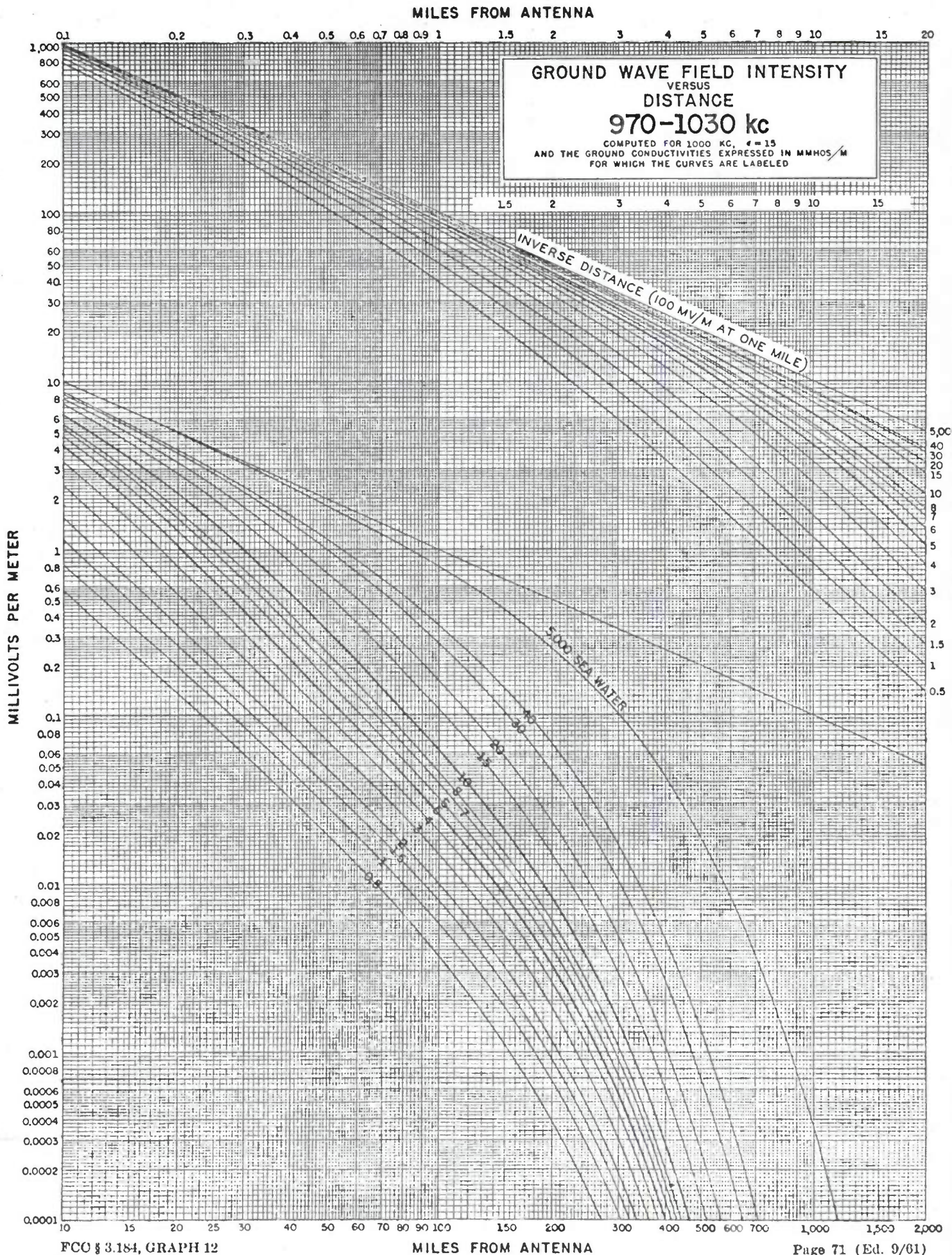
Measured 3-7-62



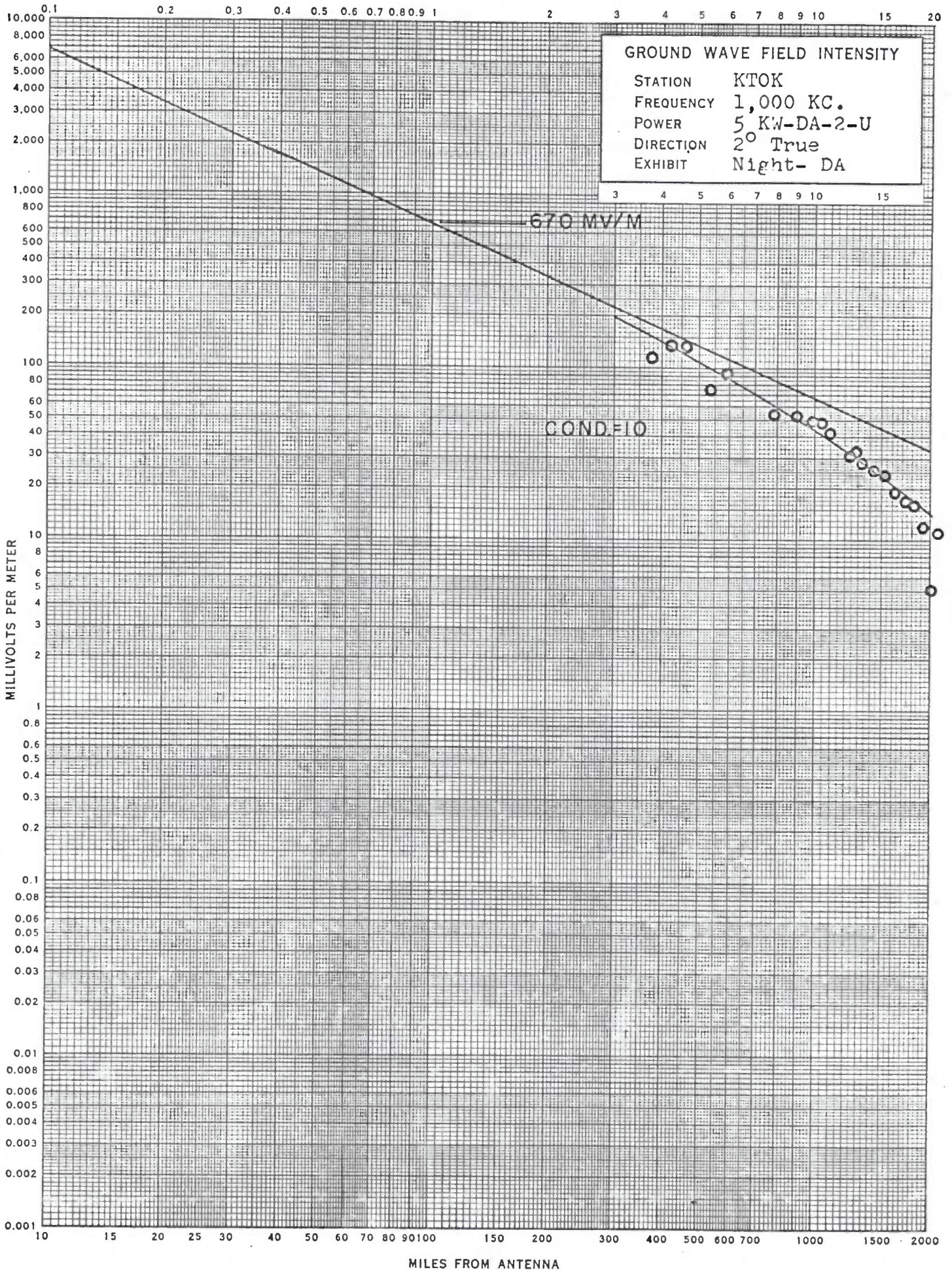


MEASURING LOCATIONS
KTOK 5KWDA2 1000KC
OKLAHOMA CITY, OKLA.
WALTER F. KEAN
CONSULTING RADIO ENGINEERS
NINETEEN EAST QUINCY STREET
RIVERSIDE, ILLINOIS
MARCH 1962

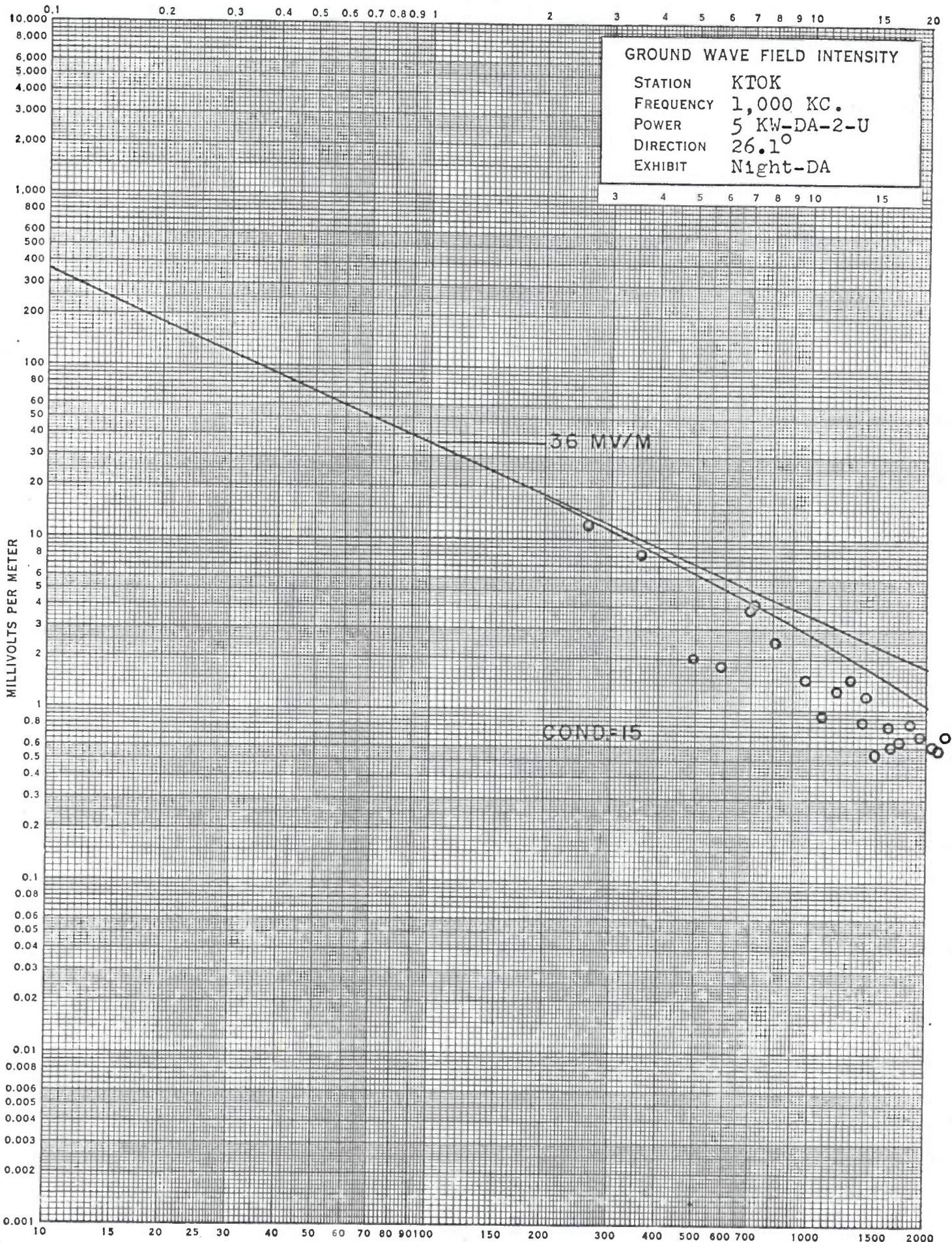




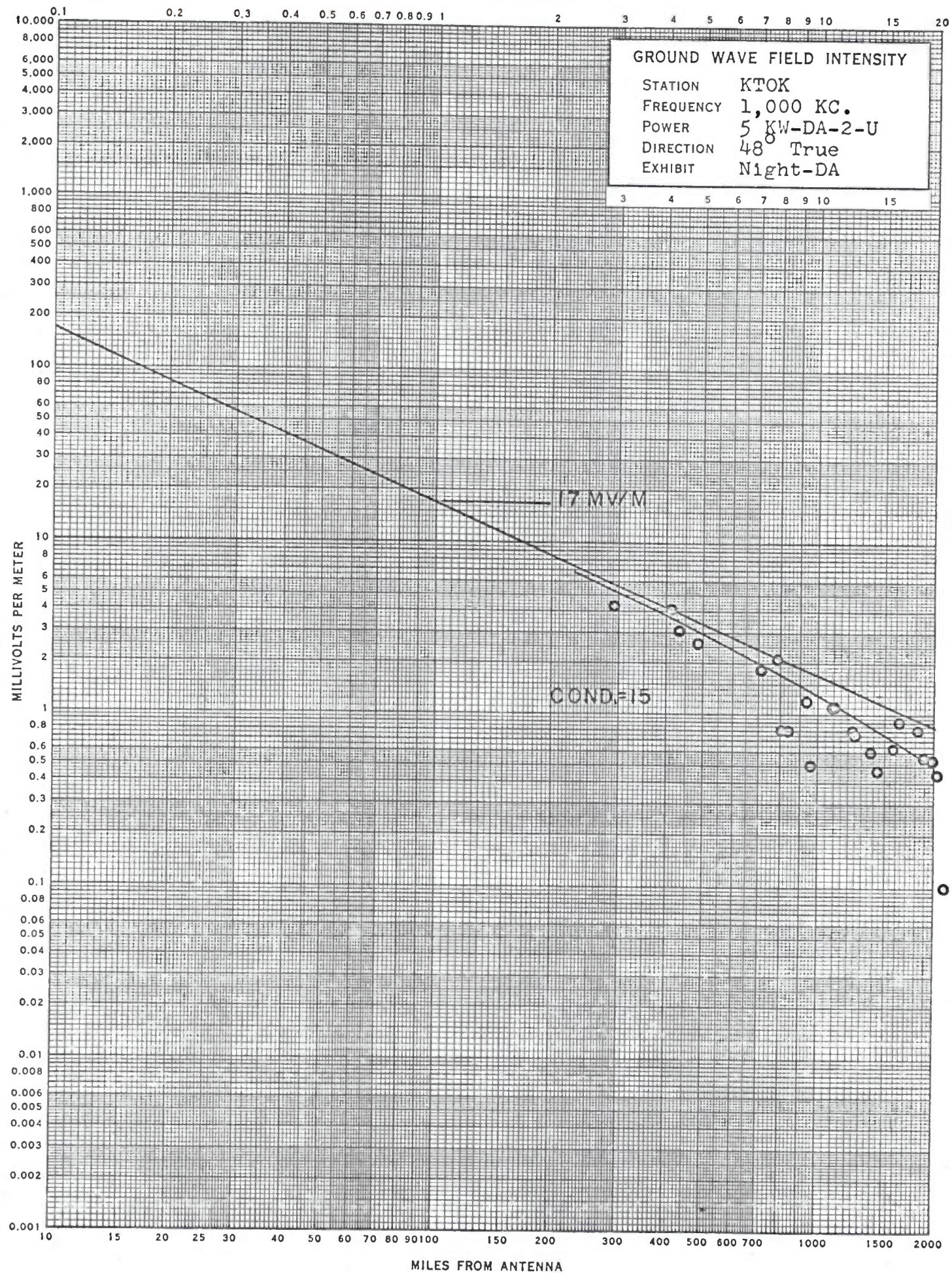
MILES FROM ANTENNA



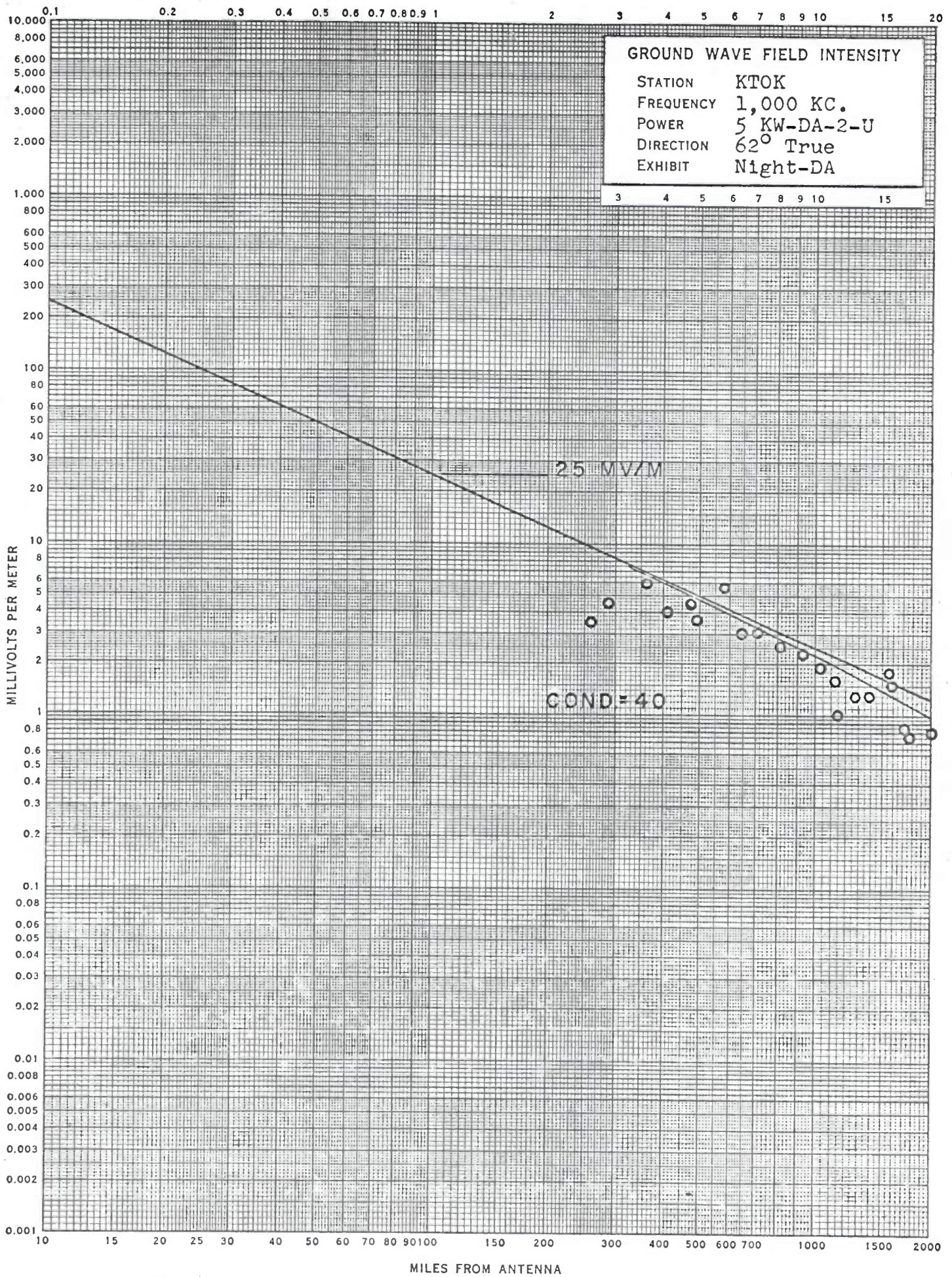
MILES FROM ANTENNA



MILES FROM ANTENNA



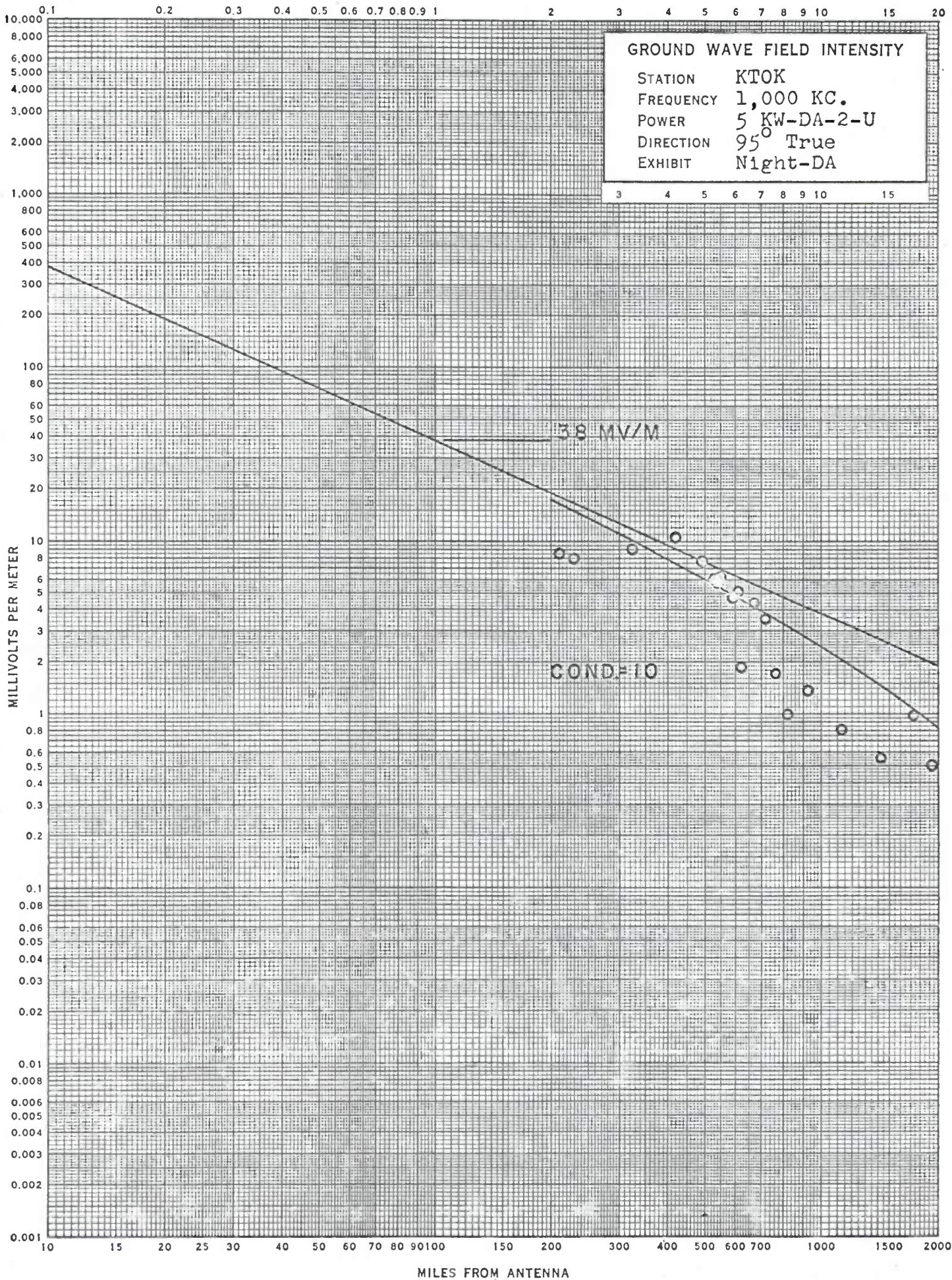
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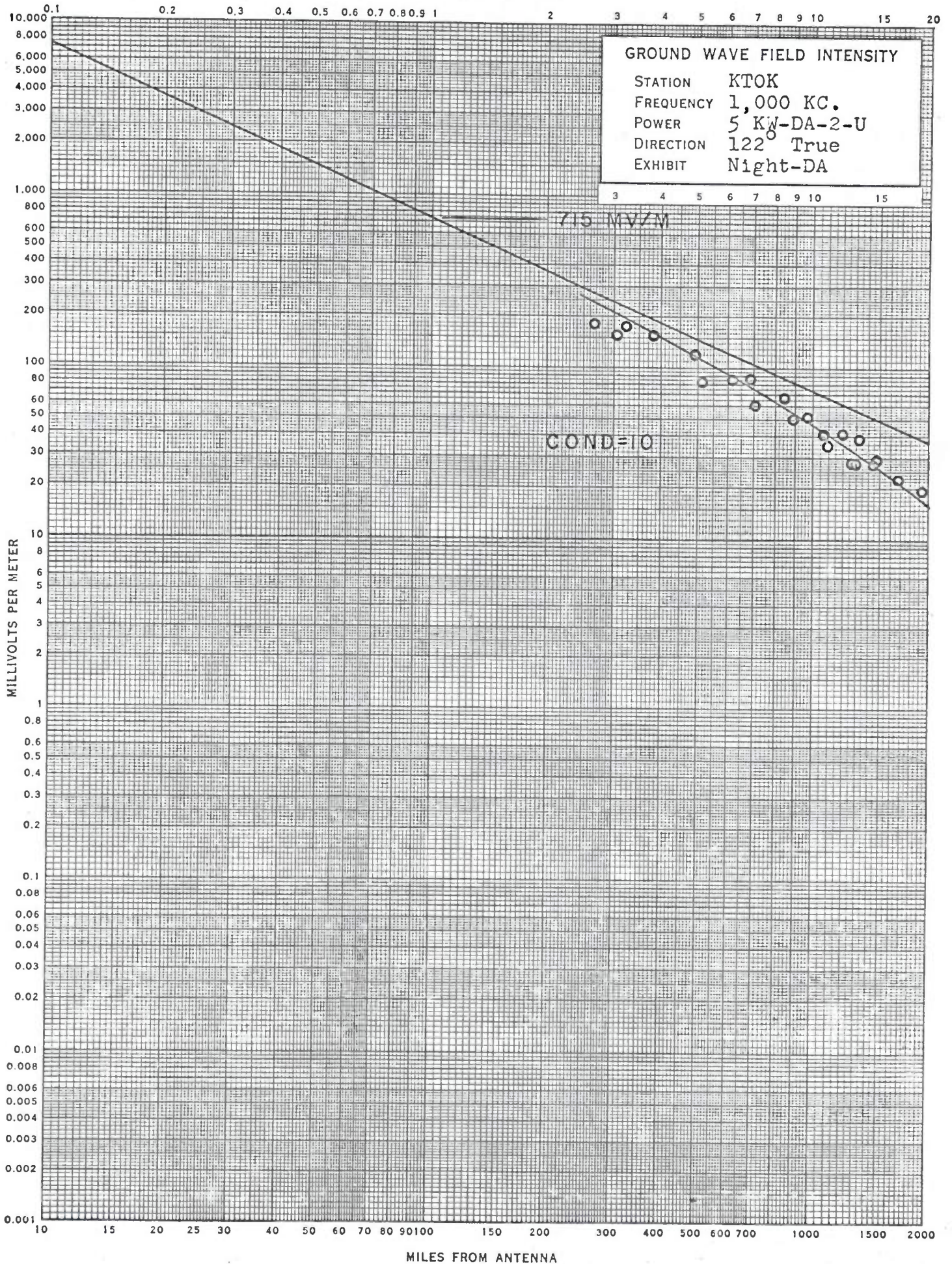
MILES FROM ANTENNA

GROUND WAVE FIELD INTENSITY

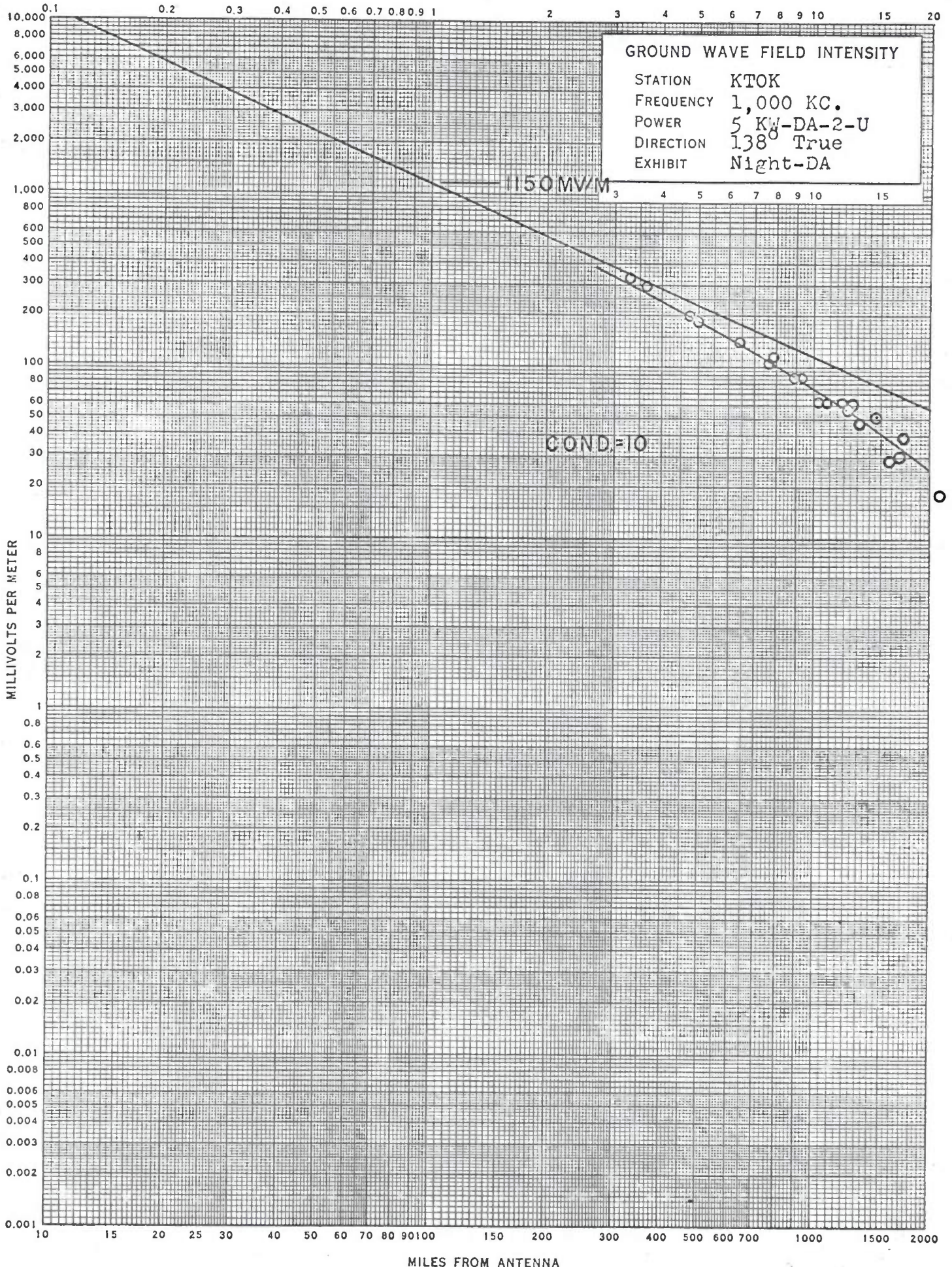
STATION KTOK
 FREQUENCY 1,000 KC.
 POWER 5 KW-DA-2-U
 DIRECTION 95° True
 EXHIBIT Night-DA



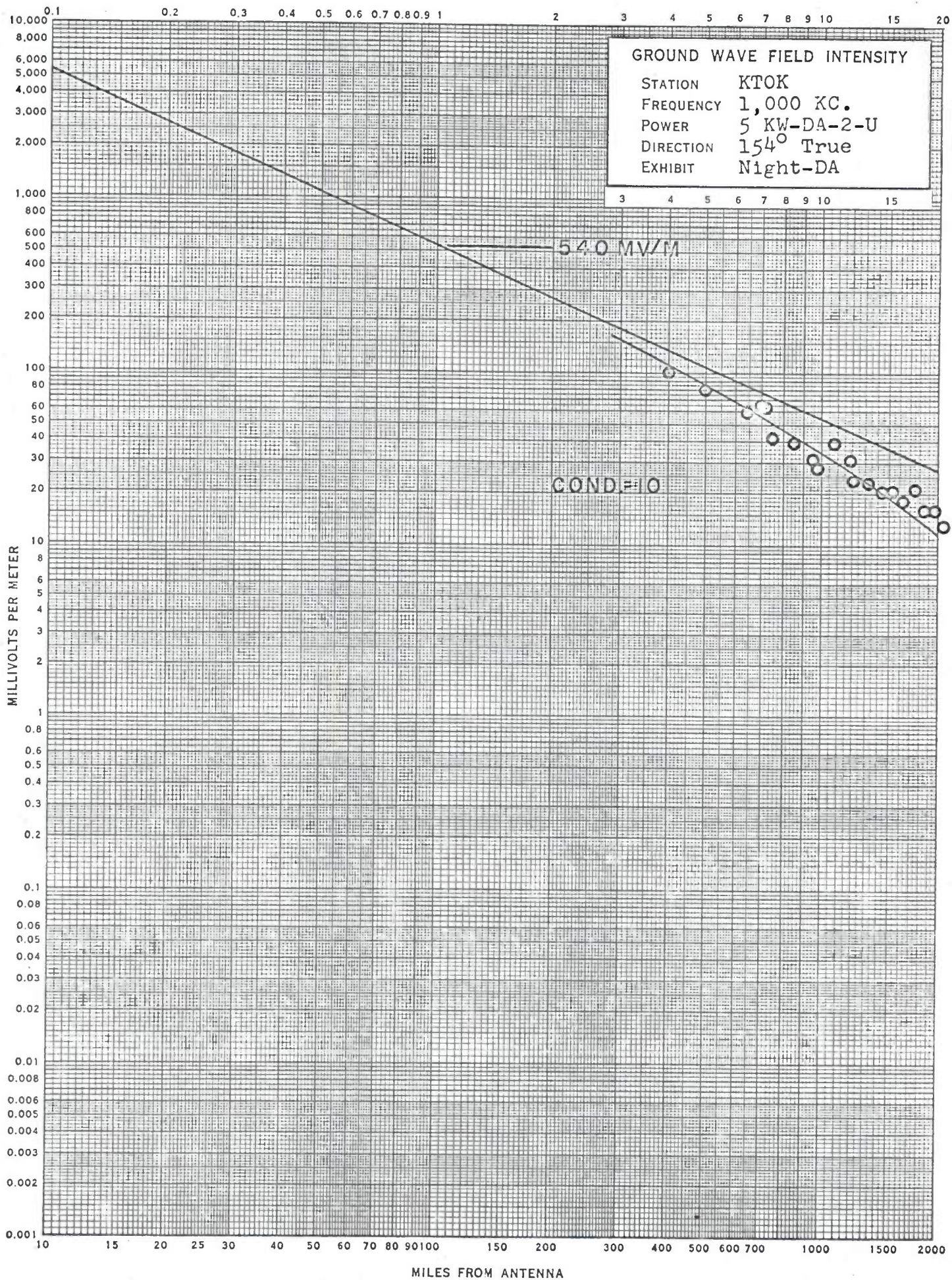
MILES FROM ANTENNA



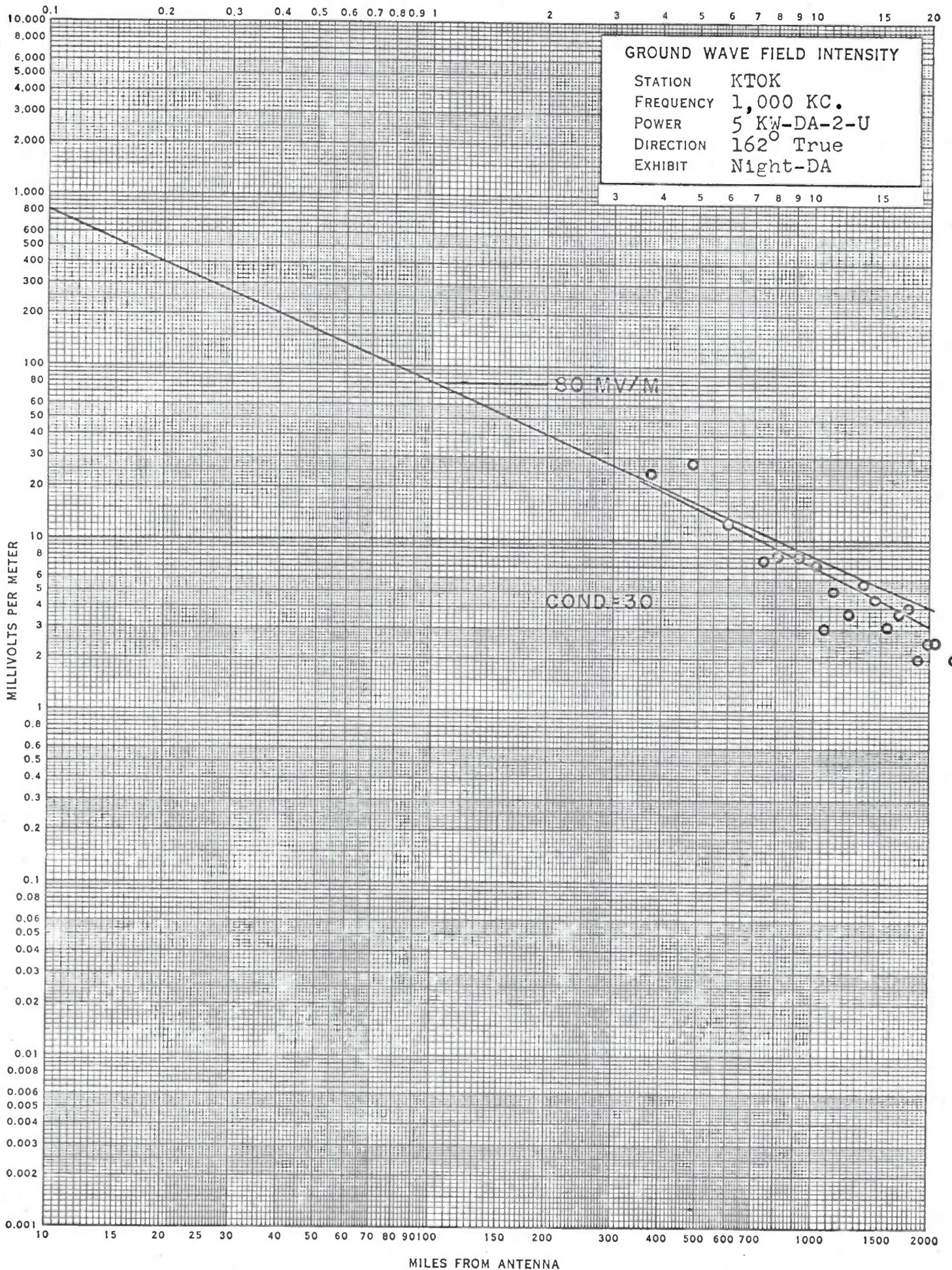
MILES FROM ANTENNA



MILES FROM ANTENNA



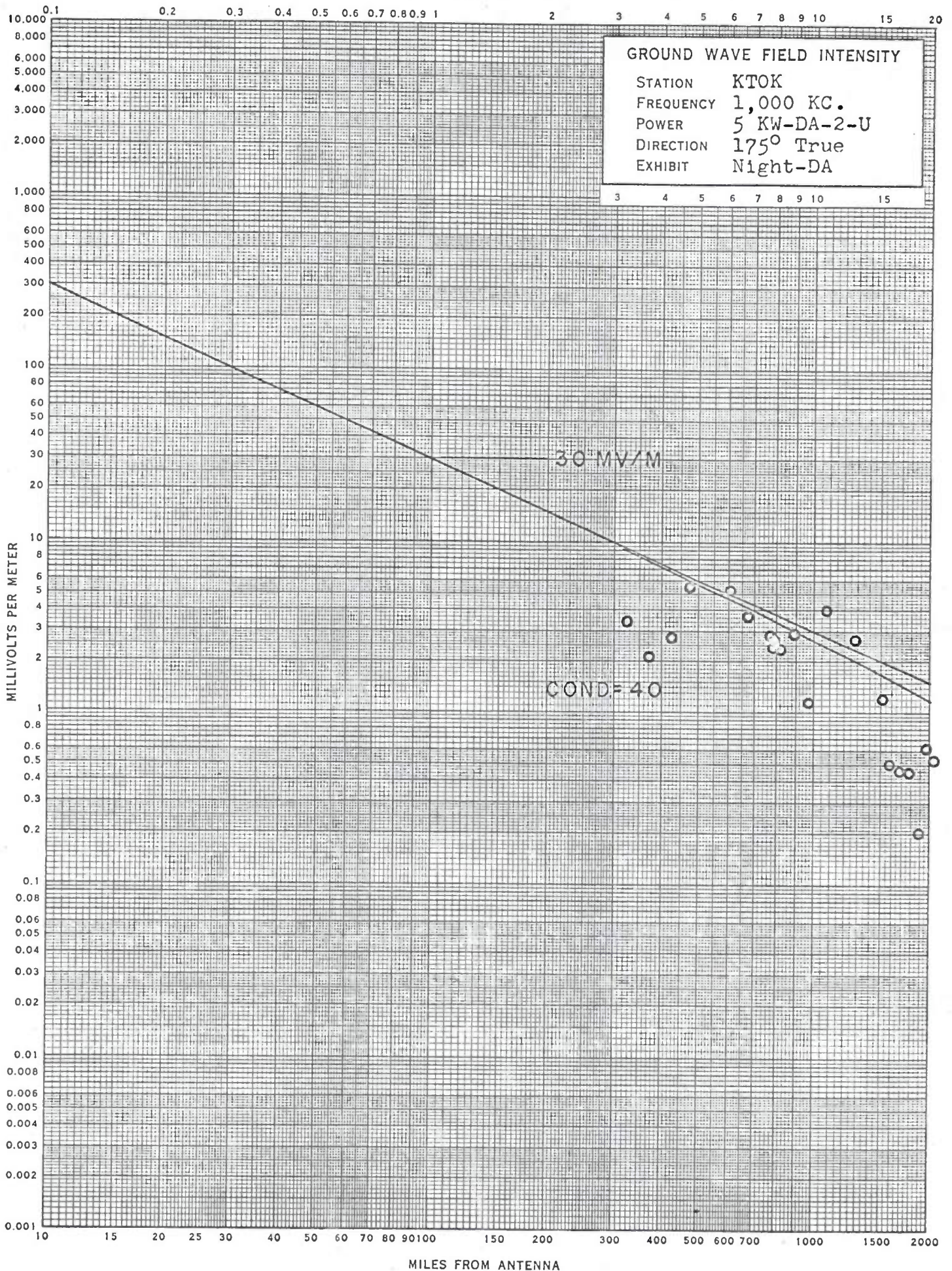
MILES FROM ANTENNA



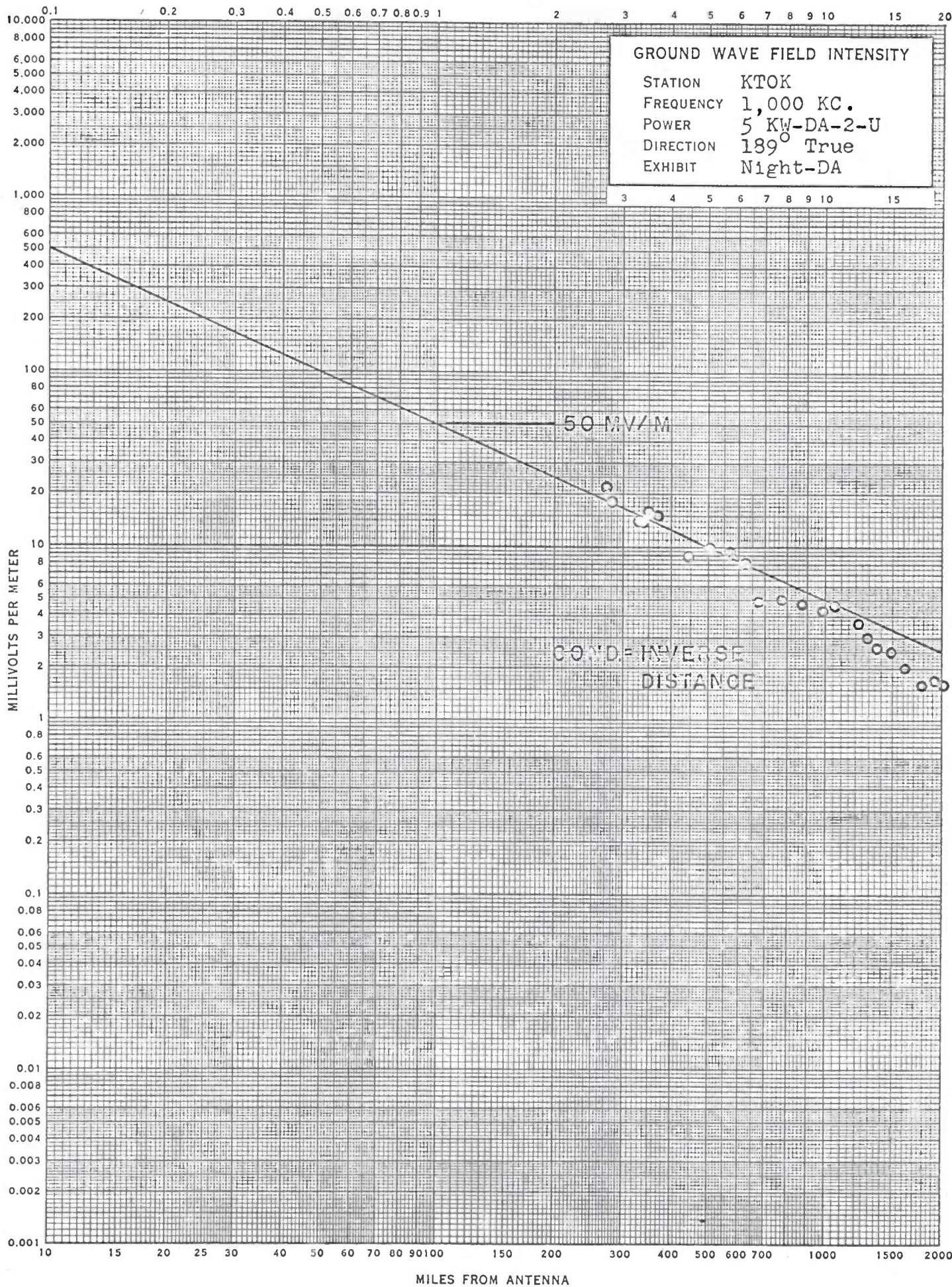
MILES FROM ANTENNA

GROUND WAVE FIELD INTENSITY

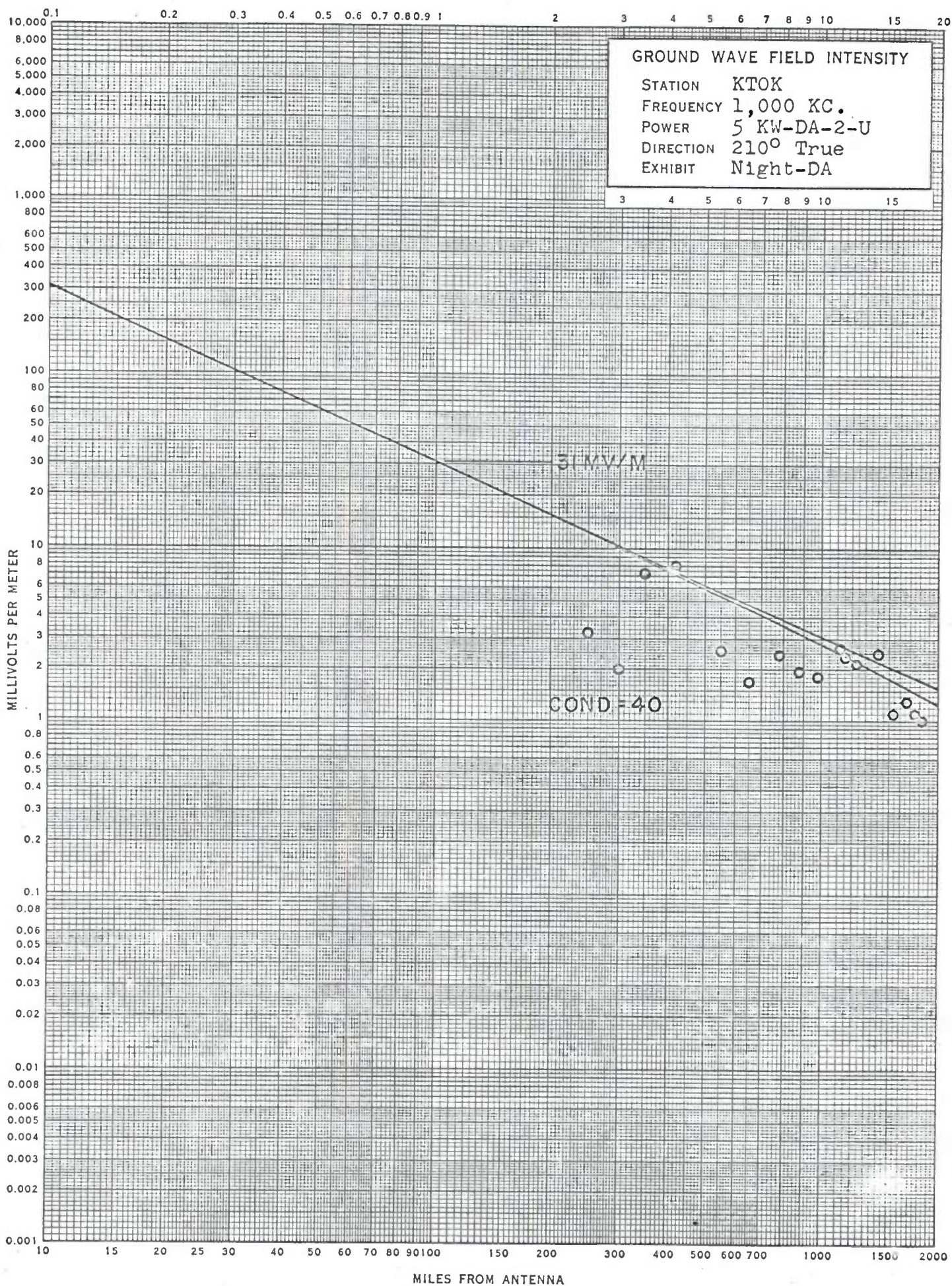
STATION KTOK
 FREQUENCY 1,000 KC.
 POWER 5 KW-DA-2-U
 DIRECTION 175° True
 EXHIBIT Night-DA



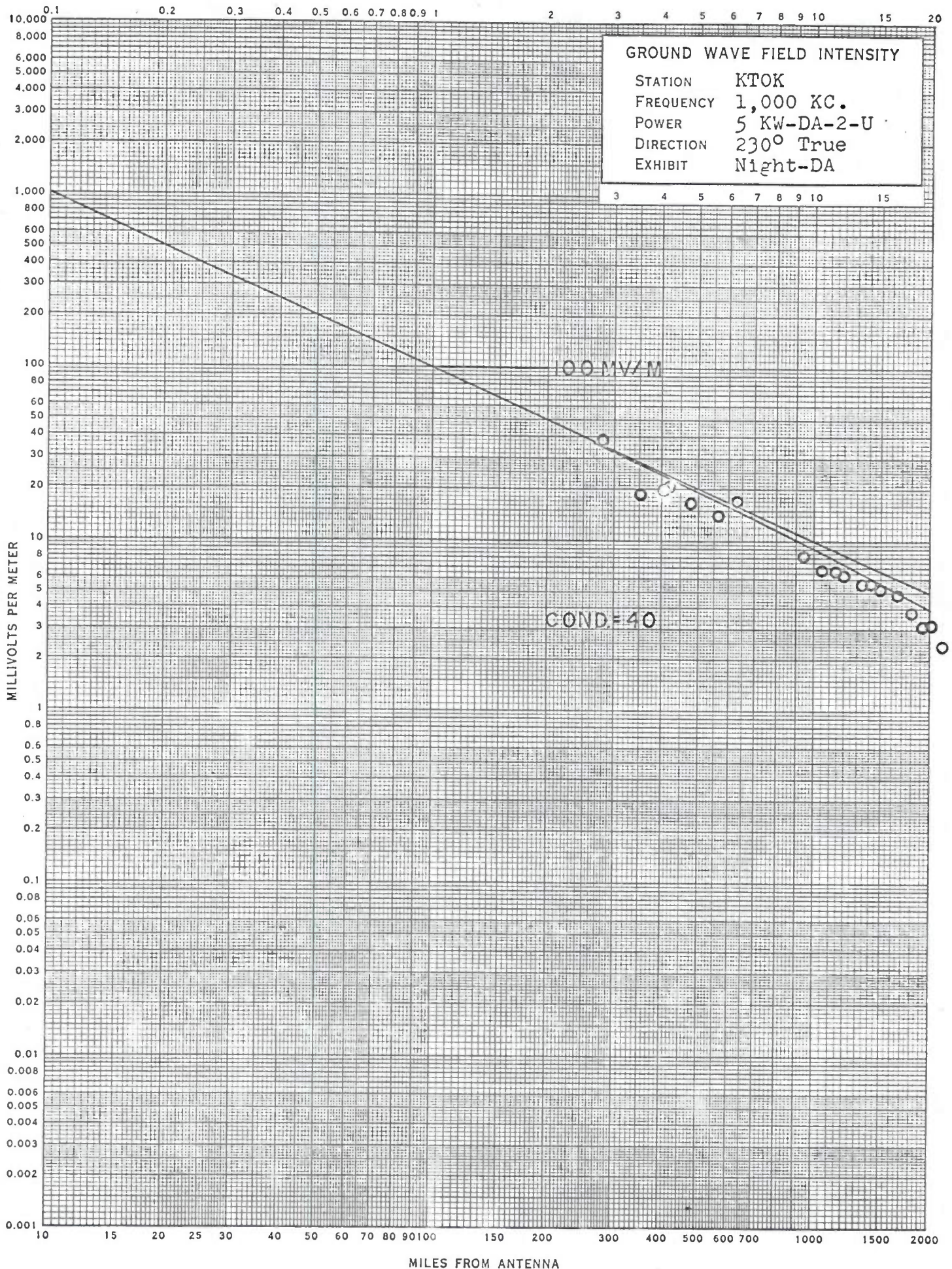
MILES FROM ANTENNA



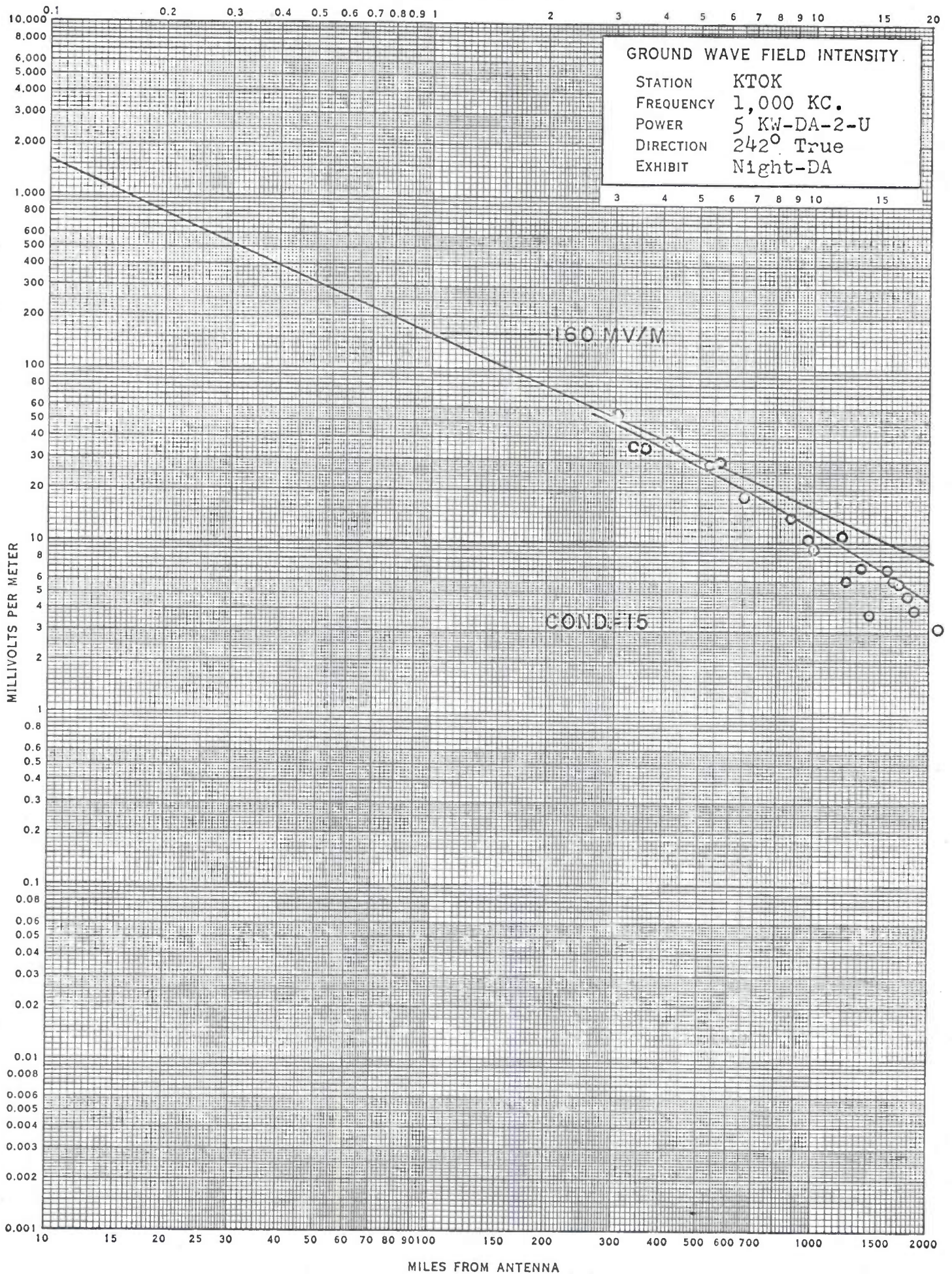
MILES FROM ANTENNA



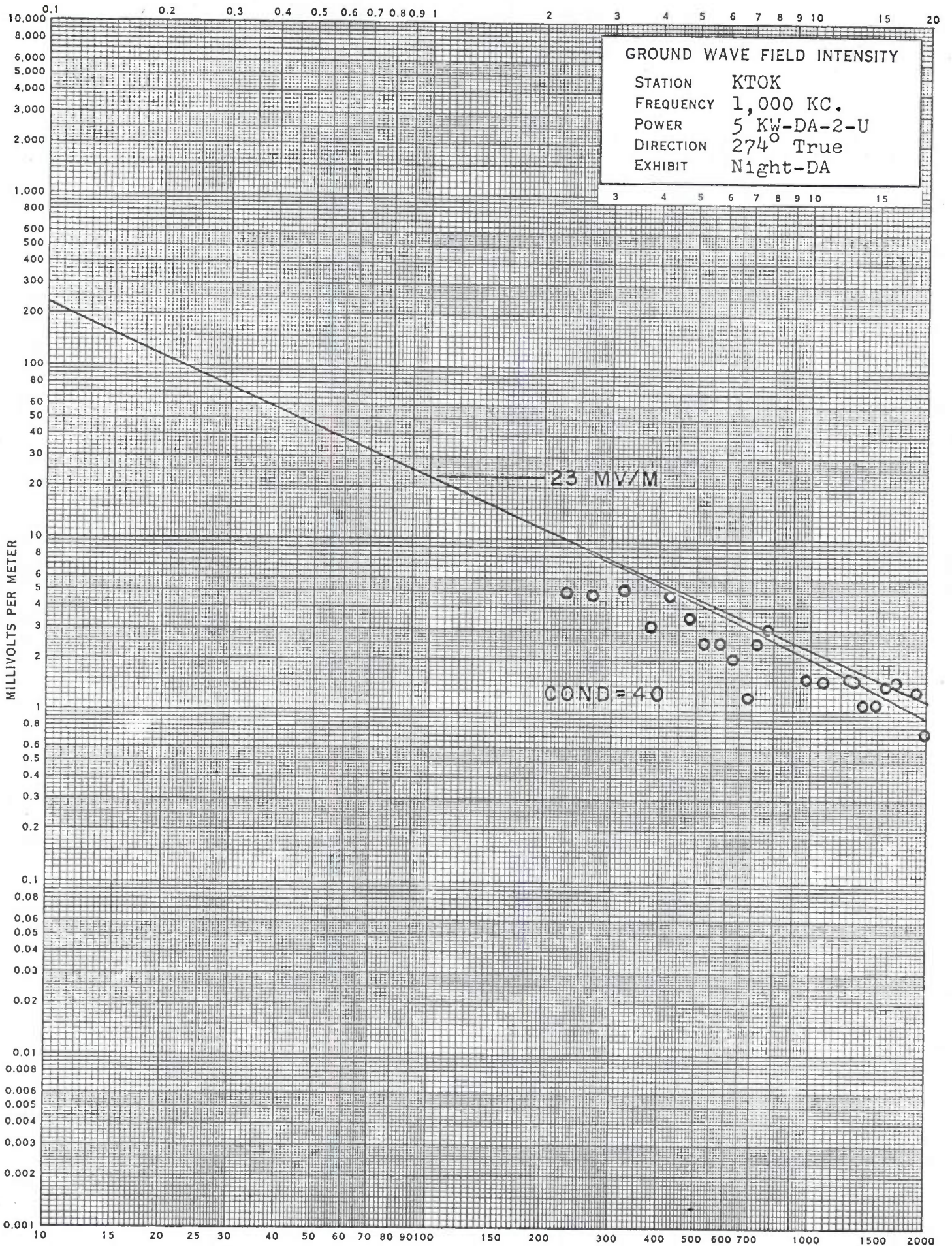
MILES FROM ANTENNA



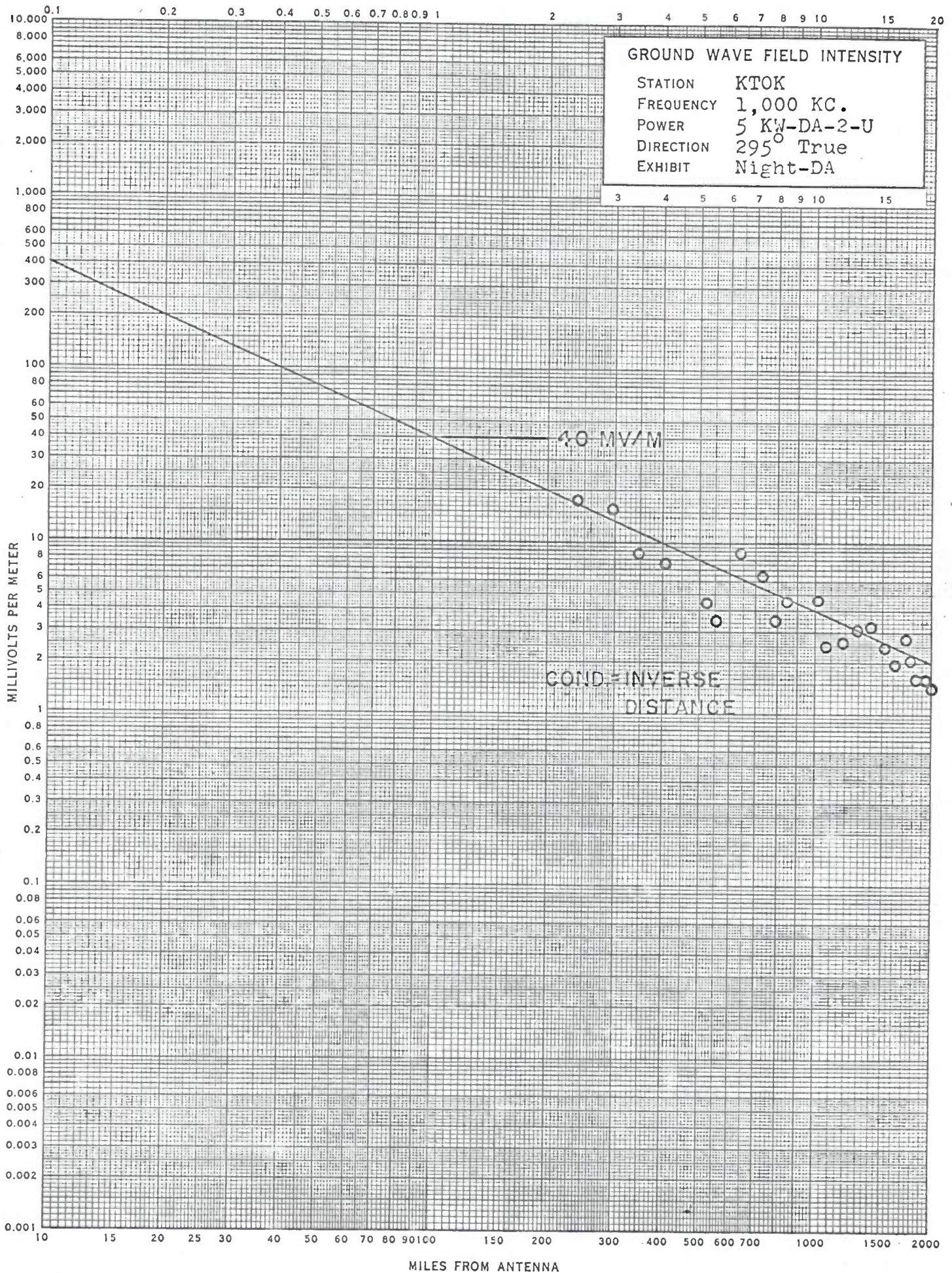
MILES FROM ANTENNA



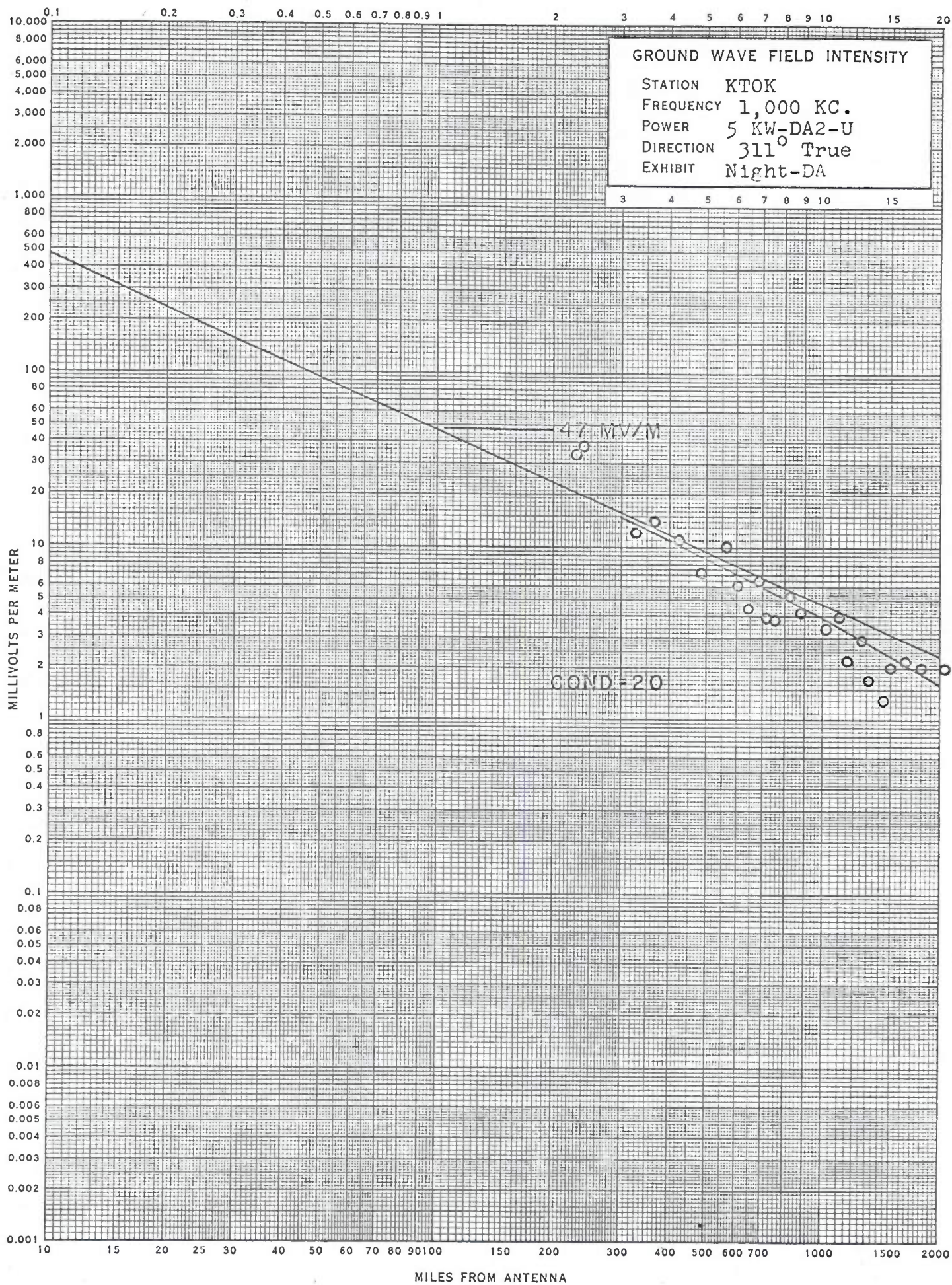
MILES FROM ANTENNA



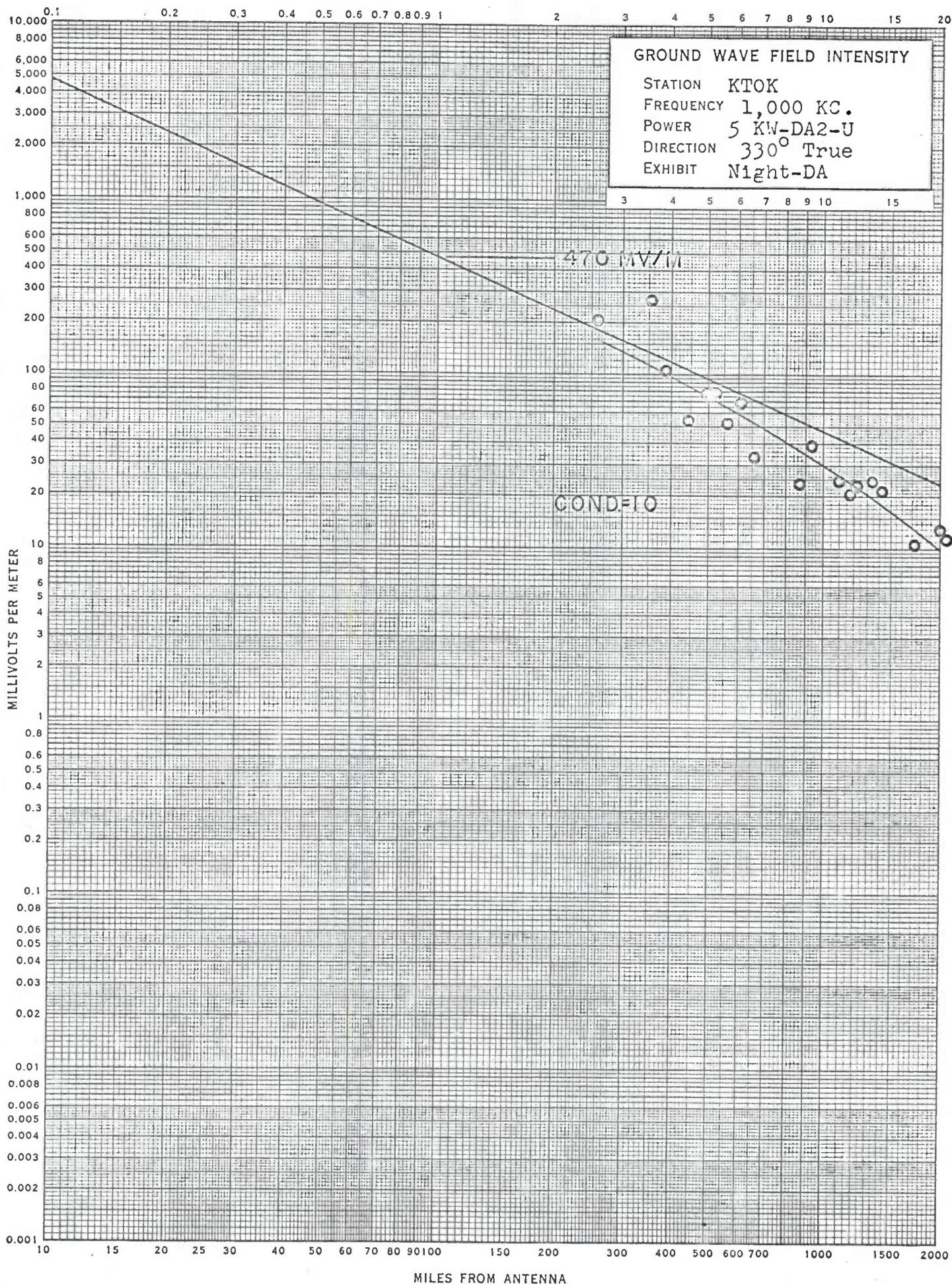
MILES FROM ANTENNA



MILES FROM ANTENNA



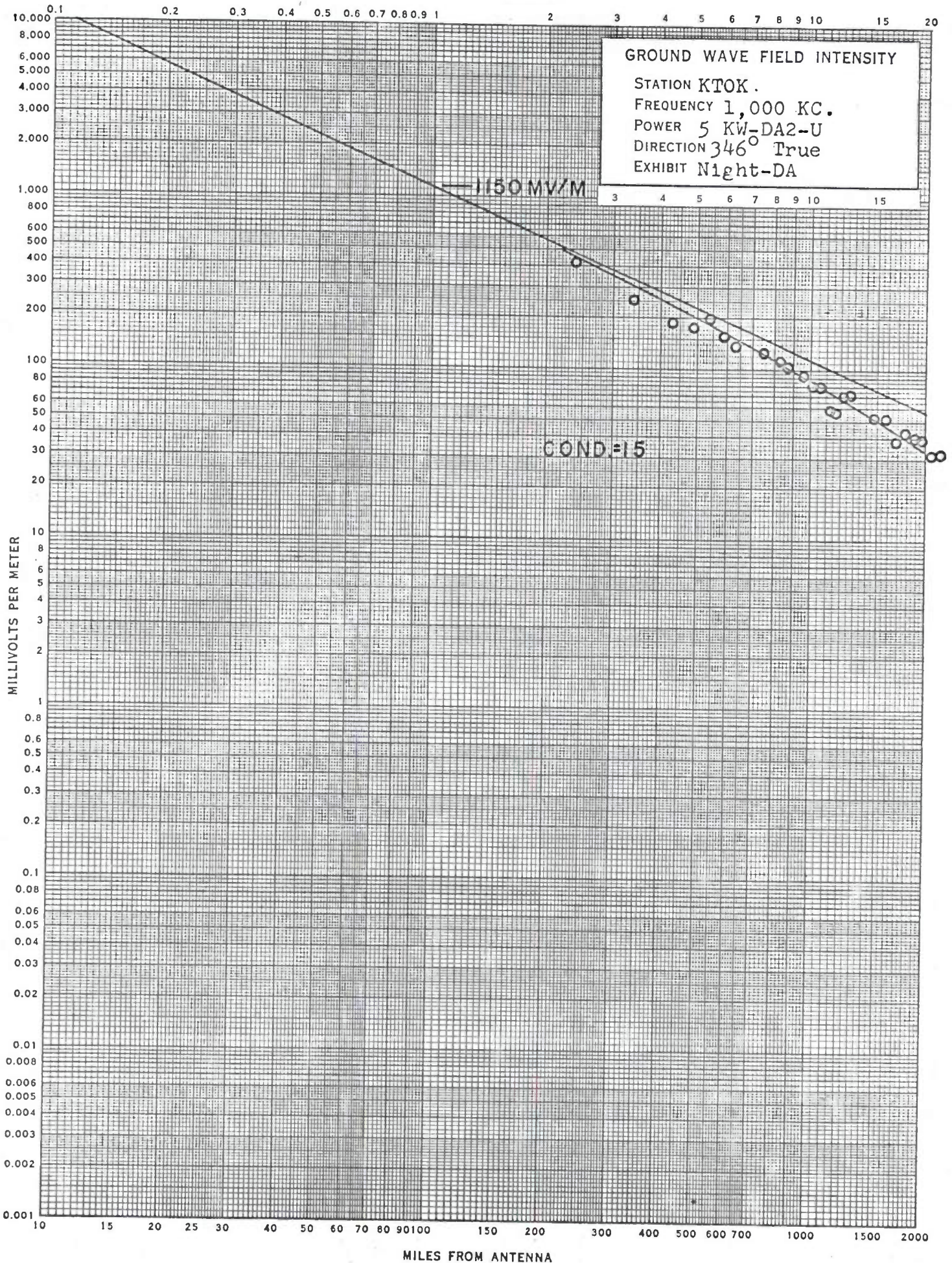
MILES FROM ANTENNA



MILES FROM ANTENNA

GROUND WAVE FIELD INTENSITY

STATION KTOK.
 FREQUENCY 1,000 KC.
 POWER 5 KW-DA2-U
 DIRECTION 346° True
 EXHIBIT Night-DA



Section 3.186(b-6)

The measured resistance of the nighttime antenna common point is 52 ohms.

The common point impedance was measured at the lead normally connected to the output side of the common point ammeter.

Stray inductance and capacitance in the bridge leads were effectively cancelled in the initial bridge balance.

COMMON POINT IMPEDANCE MEASUREMENTS

NIGHT PATTERN

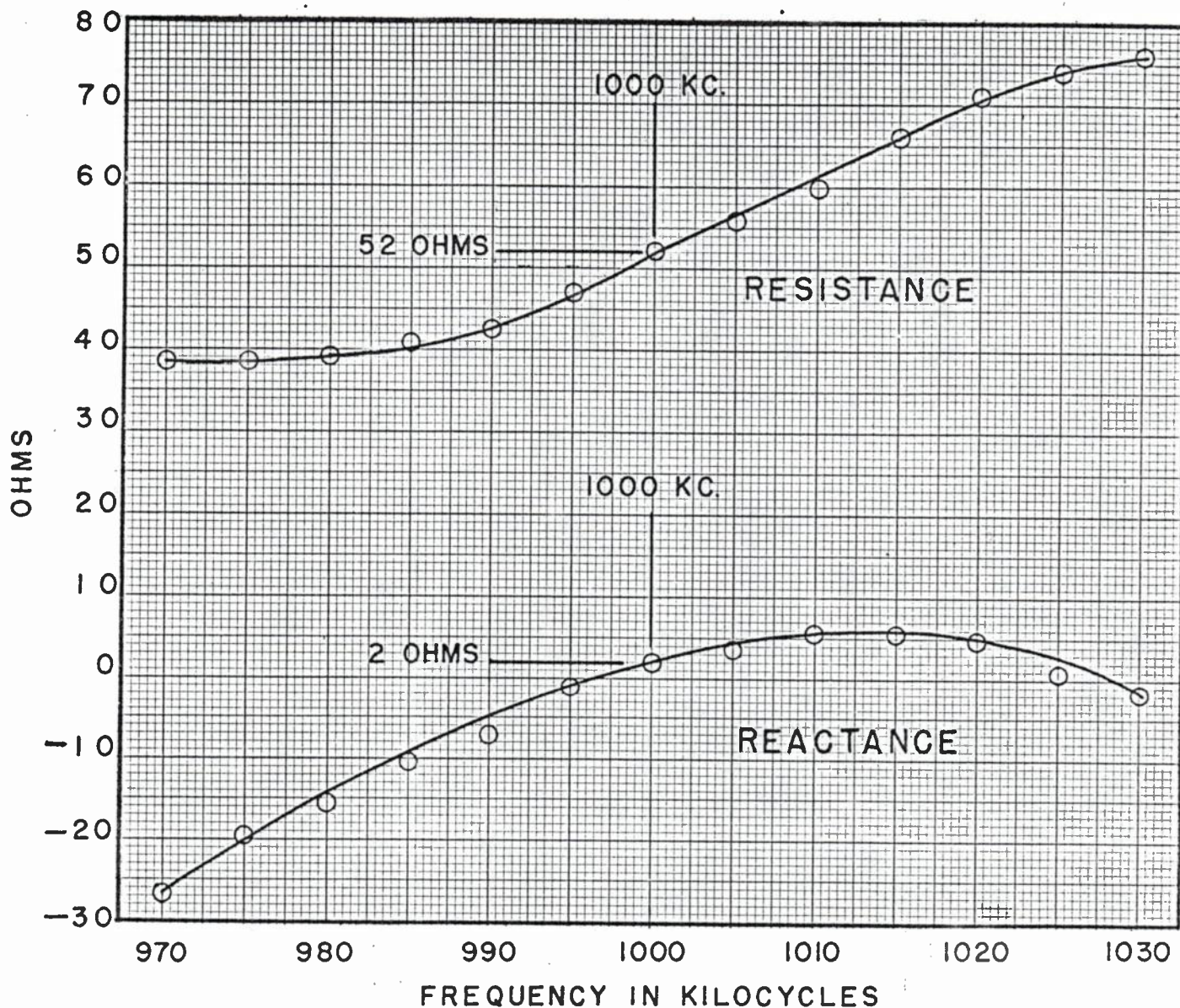
K T O K 1000 Kc. 5 Kw. DA-2-U

OKLAHOMA CITY

OKLAHOMA

<u>Frequency</u>	<u>Resistance</u>	<u>Reactance</u>
970 Kc	38.5 Ohms	-j 26.8 Ohms
975	38.5	-j 19.5
980	39.0	-j 15.3
985	41.0	-j 10.14
990	42.5	-j 7.09
995	47.0	-j 1.005
1000	52.0	+j 2.00
1005	56.0	+j 3.98
1010	60.0	+j 5.95
1015	66.0	+j 5.91
1020	71.0	+j 4.90
1025	74.0	+j .98
1030	76.0	-j 1.94

Date of measurement: March 3, 1962.



FREQUENCY IN KILOCYCLES

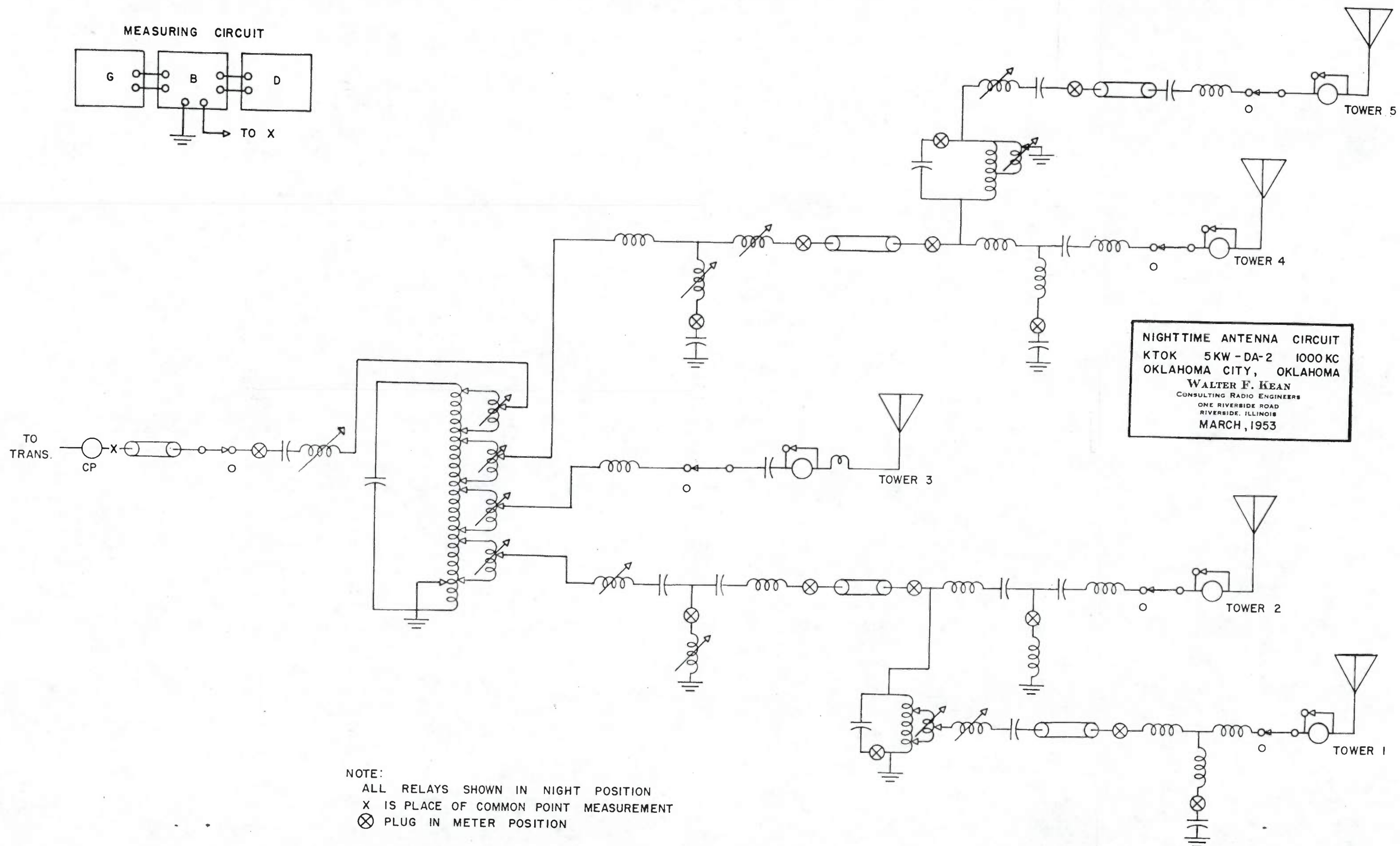
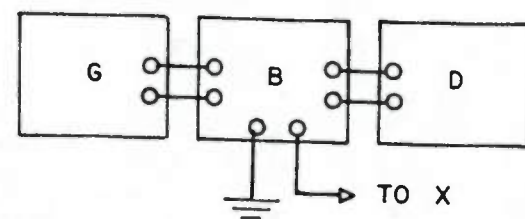
REACTANCE AND RESISTANCE
 NIGHT COMMON POINT
 KTOK 5 KW DA-2 1000 KC
 OKLAHOMA CITY OKLAHOMA
 MARCH 1962

WALTER F. KEAN
 CONSULTING RADIO ENGINEERS
 NINETEEN EAST QUINCY STREET
 RIVERSIDE, ILLINOIS

Section 3.186(b-7)

For nighttime directional operation the common point current was maintained at 10.2 amperes.

MEASURING CIRCUIT



NIGHTTIME ANTENNA CIRCUIT
 KTOK 5KW - DA-2 1000 KC
 OKLAHOMA CITY, OKLAHOMA
 WALTER F. KEAN
 CONSULTING RADIO ENGINEERS
 ONE RIVERSIDE ROAD
 RIVERSIDE, ILLINOIS
 MARCH, 1953

NOTE:
 ALL RELAYS SHOWN IN NIGHT POSITION
 X IS PLACE OF COMMON POINT MEASUREMENT
 ⊗ PLUG IN METER POSITION

Section 3.186(b-8)

120-E Field Intensity Meter, Serial No. 779, accuracy within 5%, Factory calibration made April 7, 1961.

WX-2D Field Intensity Meter, Serial No. 1402, accuracy within 5%. Factory calibration made September 25, 1958.

Calibration of the above meters is checked by comparison to other meters in the field as well as measurements of known fields at a test location. Meters Serial Numbers 779 and 1402 were checked against an RCA WX-2E Field Intensity Meter, Serial No. 1428, calibrated by the factory October 14, 1959. This instrument was purchased new by this firm and is not used for field work but is kept in our office for comparative calibration checks of the instruments used for field work.

All above checks show the field intensity instruments used for these measurements to be operating within rated accuracy.

The signal generator is a General Radio Type 1530-A.

The detector is a HQ-129-X Communications receiver.

The frequency for impedance measurements is determined within 0.1% by zero beating the signal generator against known broadcast carriers and using visual and aural interpolation between these frequencies.

General Radio Type 1606-A Radio Frequency Bridge, Serial No. 775 was checked for accuracy at time of measurement by use of General Radio Standard Resistors of 50 and 100 ohms. The accuracy is better than 1% on resistance and 2% on reactance.

Section 3.151(a-5)

MEASURED SERVICE CONTOURS

Section 3.151(a-6)

There are at present eleven monitor points specified for use with the K T O K nighttime antenna system for which photographs and descriptions are on file with the Commission.

In some cases the monitor points have been rendered unreliable due to changes in the area, have become fenced in on private property or otherwise made inaccessible. It is proposed herein to change seven of the nighttime monitor points. A diligent search was made along each radial for more readily accessible monitor points and where found these points were observed during antenna adjustment to determine which points most reliably indicated changes in radiation in these directions. Photographs of, and directions for proceeding to, each of the changed monitor points follow. A map showing all of the K T O K nighttime monitor points is also attached.

It will be noted that several of the points specified are more than the usual four miles from the antenna. It is the opinion of the writer that the monitor points chosen represent the optimum and it is respectfully requested that the four mile limit be waived for this case.

LOCATION #202
K T O K 1000 kc. 5 kw. DA-2-U
26.1° TRUE
OKLAHOMA CITY OKLAHOMA



From transmitter road proceed east on 104th Street 1.3 miles to Sunnylane. Turn north on Sunnylane three miles to 59th Street. Turn east on 59th Street .25 mile to South Epperly Drive. Turn north on Epperly to 5906, the second house north on the east side of the street.

The monitoring point is on the west side of the street in front of the house.

The distance from the antenna to this point is 3.6 miles.

The measured field intensity of the night pattern is 8.2 Mv/m.

LOCATION #303
K T O K 1000 kc. 5 kw. DA-2-U
48° TRUE
OKLAHOMA CITY OKLAHOMA



From transmitter road proceed east on 104th Street 1.3 miles to Sunnyslane. Turn north on Sunnyslane two miles to 74th Street then east on 74th Street three miles. At this intersection turn north .5 mile.

The monitoring point is in the center of the road opposite the lone tree on the fence line to the east of road.

The distance from the antenna to this point is 4.25 miles.

The measured field intensity of the night pattern is 4.1 mv/m.

LOCATION #403
K T O K 1000 Kc. 5 kw. DA-2-U
62° TRUE
OKLAHOMA CITY OKLAHOMA



Two QPP
From transmitter road proceed east on 104th Street 1.3 miles to Sunnyslane. Turn north on Sunnyslane two miles to 74th Street. Turn east on 74th Street three miles. At this intersection turn south .5 mile. The monitoring point is in the bottom of the gulley in the center of the road by the lone tree on the east edge of the road.

The distance to this point from the antenna is 3.63 miles.

The measured field intensity of the night pattern is 5.9 Mv/m.

LOCATION #521
K T O K 1000 kc. 5 kw. DA-2-U
95° TRUE
OKLAHOMA CITY OKLAHOMA

No change in the location of this monitoring point.

Picture and description on file.

The measured field intensity of the night pattern is 8.5 Mv/m.

LOCATION #902
K T O K 1000 kc. 5 kw. DA-2-U
162° TRUE
OKLAHOMA CITY OKLAHOMA



From the transmitter road proceed east 1.3 miles to Sunnyslane. Turn south on Sunnyslane five miles to the intersection with the sign "Lazy Days Lake". At this intersection turn east .4 mile.

The monitoring point is on the north edge of the road at the entrance to the clearing to the north.

The distance to this point from the antenna is 4.85 miles.

The measured field intensity of the night pattern is 27.5 Mv/m.

LOCATION #1003
K T O K 1000 kc. 5 kw. DA-2-U
175° TRUE
OKLAHOMA CITY OKLAHOMA



From the transmitter road proceed east .25 miles to the first cross road, then south 4.55 miles.

The monitoring point is by the seventeenth fence post east of the road in the farm road to the south of the fence.

The distance to this point from the antenna is 4.27 miles.

The measured field intensity of the night pattern is 2.75 Mv/m.

LOCATION
K T O K 1000 kc. 5 kw. DA-2-U
189° TRUE
OKLAHOMA CITY OKLAHOMA

No change in this monitoring point.

Pictures and description on file.

The measured field intensity of the night pattern is 15 Mv/m.

LOCATION #1202
K T O K 1000 kc. 5 kw. DA-2-U
210° TRUE
OKLAHOMA CITY OKLAHOMA

No change in this monitoring point.

Pictures and description on file.

The measured field intensity of the night pattern is 1.8 Mv/m.

LOCATION #1303
K T O K 1000 kc. 5 kw. DA-2-U
230° TRUE
OKLAHOMA CITY OKLAHOMA

No change in this monitoring point.

Picture and description on file.

The measured field intensity of the night pattern is 20 Mv/m.

LOCATION #1404
K T O K 1000kc. 5 kw-DA-2-U
242° True
OKLAHOMA CITY, OKLAHOMA



From the transmitter road proceed west 0.75 miles, 2 miles south, 3 miles west and 0.3 south to a road marked "Nash Oil Lease". Turn into drive headed east and measuring location is approximately 150 east of road, directly south of east edge of stone house to the north.

The distance from antenna to this point is 4.18 miles.

The measured field intensity of the night pattern is 38 mv/m.

LOCATION #1723
K T O K 1000 kc. 5 kw. DA-2-U
311° TRUE
OKLAHOMA CITY OKLAHOMA



From the transmitter road proceed west on 104th Street 1.8 miles to the west frontage road of Interstate 35. Turn north on this frontage road 1.25 miles.

The monitoring point is on the east edge of the road in line with the farm access road running east from the east frontage road.

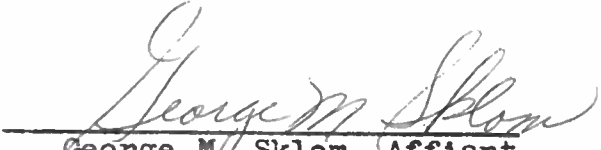
The distance to this point from the antenna is 2.4 miles.

The measured field intensity of the night pattern is 38 Mv/m.

State of Illinois)
County of Cook) ss
)

George M. Sklom, being first duly sworn upon his oath,
deposes and says that:

- 1) He is an associate of the firm of Walter F. Kean,
Consulting Radio Engineers, 19 East Quincy Street,
Riverside, Illinois, which has been retained by
K T O K Incorporated, Oklahoma City, Oklahoma,
to prepare the foregoing engineering statement.
- 2) His qualifications as a consulting radio engineer have
been presented to the Federal Communications Commission
in Hearing, have been accepted, and are a matter of
record.
- 3) The foregoing measurements, statements, exhibits and
calculations were made by him or under his direct
supervision and that he believes them to be correct.
The facts stated are true of his knowledge except those
statements which are stated on information or belief,
and he believes those statements to be true.


George M. Sklom, Affiant

Subscribed and sworn to before me this 20 day of March,
1962.

My commission expires _____

Notary Public