

U. S. DEPARTMENT OF COMMERCE
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WASHINGTON, D. C.

SUPPLEMENT TO REPORT
CRPL-1-2, 3-1

SUPPLEMENT TO REPORT CRPL-1-2, 3-1

Contents:

1. Tables I-VI. Azimuth and distance of the subsolar point for stations at various latitudes.
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Description and use of tables

The charts of Figures 1-108 of report CRPL-1-2, 3-1 give field intensity contours for transmitting stations at specified distances from the subsolar point, plotted for azimuths relative to that of the subsolar point. To use these charts, the distance of the subsolar point from the transmitting station must be known, as well as the azimuth of the transmission path between the transmitting station and the point at which it is desired to know the field intensity.

Tables I through VI* give the azimuth and distance of the subsolar point for each hour of the day (apparent solar time at the transmitting station) for stations located at each 10° of latitude on the earth's surface, and solar declinations of $+23^{\circ}$, 0° , and -23° .

Tables VII-XII present a somewhat more useful form of the information in tables I-VI. In tables VII-XII the local time "t" and the azimuth "a" of the subsolar point are tabulated for particular distances of the subsolar point corresponding to those represented in the charts of report CRPL-1-2, 3-1.

Tables VII-XII are in the nature of a guide for use in rapidly plotting field intensity as a function of time of day for a given transmission path. Given the latitude of the transmitting station and the azimuth of the path at that station, in degrees clockwise from north, the following procedure may be followed to determine the field intensity, relative to 1 kw radiated on an omnidirectional antenna.

*Tables I-VI are the same as those issued previously as a supplement to report CRPL-1-2, 3-1.

1. For the desired solar declination, select the latitude nearest that of the transmitter.
2. Using a form similar to that in the example below, write in:

Column 1, the distance to the subsolar point.
 Column 2, the local times t , both forenoon and afternoon.
 Column 3, the azimuths of the subsolar point a , both forenoon and afternoon.

3. In Column 4, enter the difference between the azimuth of the path and that of the subsolar point, without regard to sign.
4. Using the data of columns 1 and 4, and for the desired frequency, determine the field intensity for each local time from the appropriate chart of Figs. 1-108 of report CRPL 1-2, 3-1.
5. To obtain field intensities at other local times, plot the values found in step 4 as a function of local time, draw a smooth curve through the points, and read field intensity for desired local times from the curve.

Example. Latitude of station 39°N ; azimuth of path 40° ; frequency = 10 Mc. Solar declination $+23^{\circ}$ (northern hemisphere summer); distance = 6000 km; sunspot minimum. The data for 40°N will be used, from Table IX.

1	2	3	4	5	6
Distance to Subsolar point (Km)	Local Time t	Azimuth (deg.) a	Difference in Azimuths (deg.)	Field Intensity (uv/m)	Chart Used
12500	01.7	25	15	9.0	Fig. 64
10000	04.7	59	19	3.0	Fig. 52
7500	06.7	78	38	1.3	Fig. 40
5000	08.7	97	57	0.7	Fig. 28
2500	10.9	134	94	0.8	Fig. 16 (revised)
2500	13.1	226	186	1.5	Fig. 16 (revised)
5000	15.3	263	223	3.0	Fig. 28
7500	17.3	282	242	13.0	Fig. 40
10000	19.3	301	261	16.0	Fig. 52
12500	22.3	335	295	18.0	Fig. 64

It should be noted that, although the field intensity charts, Figures 1-108, of CRPL-1-2, 3-1 are nominally to be regarded as if the transmitting station were located at the center, because of the reciprocity relationship, the field intensity is the same if the locations of receiving and transmitting stations are interchanged. Thus the above procedure also gives the field intensity if all azimuths, distances, times, and the latitude are referred to the receiving location.

Revisions of Figures 3,4,9,10,15,16,21 and 22.

The attached field intensity charts, labeled Figures 3,4,9,10,15,16,21 and 22 (revised), replace the charts of the same figure numbers in report CRPL-1-2, 3-1.

Station Latitude	Station Local Time											
	00	01	02	03	04	05	06	07	08	09	10	11
90	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
80	0	15	30	45	60	75	90	105	120	135	150	165
70	11110	11070	10960	10780	10550	10290	10000	9710	9450	9220	9040	8930
60	0	16	32	47	61	76	90	104	119	133	148	164
50	12220	12140	11910	11560	11090	10560	10000	9440	8910	8440	8090	7860
40	0	17	34	49	63	77	90	103	117	131	146	163
30	13330	13210	12850	12300	11610	10830	10000	9170	8390	7700	7150	6720
20	0	19	37	52	66	73	90	102	114	128	143	161
10	14440	14260	13760	13000	12080	11060	10000	8940	7920	7000	6240	5740
0	0	23	42	57	70	80	90	100	110	123	138	157
	15560	15300	14620	13640	12500	11270	10000	8730	7500	6360	5380	4700
	0	28	49	63	74	82	90	98	106	117	131	152
	16670	16310	15400	14200	12850	11440	10000	8560	7150	5800	4600	3690
	0	38	59	71	79	85	90	95	101	109	121	142
	17780	17240	16050	14630	13110	11560	10000	8440	6890	5370	3950	2760
	0	57	73	80	84	87	90	93	96	100	107	123
	18890	18000	16500	14900	13280	11640	10000	8360	6720	5100	3500	2000
	-	90	90	90	90	90	90	90	90	90	90	90
0	20000	18330	16670	15000	13330	11670	10000	8330	6670	5000	3330	1670

Station Latitude	Station Local Time											
	12	13	14	15	16	17	18	19	20	21	22	23
90	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
80	180	195	210	225	240	255	270	285	300	315	330	345
70	8890	8930	9040	9220	9450	9710	10000	10290	10550	10780	10960	11070
60	180	196	212	227	241	256	270	284	299	313	328	344
50	7780	7860	8090	8440	8910	9440	10000	10560	11090	11560	11910	12140
40	180	197	214	229	243	257	270	283	297	311	326	343
30	6670	6790	7150	7700	8390	9170	10000	10830	11610	12300	12850	13210
20	180	199	217	232	246	253	270	282	294	308	323	341
10	5560	5740	6240	7000	7920	8940	10000	11060	12080	13000	13760	14260
0	180	203	222	237	250	260	270	280	290	303	318	337
	4440	4700	5380	6360	7500	8730	10000	11270	12500	13640	14620	15300
	180	208	229	243	254	262	270	278	286	297	311	332
	3330	3690	4600	5300	7150	8560	10000	11440	12850	14200	15400	16310
	180	218	239	251	259	265	270	275	281	289	301	322
	2220	2760	3950	5370	6890	8440	10000	11560	13110	14630	16050	17240
	180	237	253	260	264	267	270	273	276	280	287	303
	1110	2000	3500	5100	6720	8360	10000	11640	13280	14900	16500	18000
	-	270	270	270	270	270	270	270	270	270	270	270
0	0	1670	3330	5000	6670	8330	10000	11670	13330	15000	16670	18330

Table I. Azimuth in degrees clockwise from north (upper number) and distance in kilometers (lower number) of the subsolar point from a station in the northern hemisphere. Solar declination 0°.

Station Latitude	Station Local Time												
	00	01	02	03	04	05	06	07	08	09	10	11	
	-90	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
		180	165	150	135	120	105	90	75	60	45	30	15
	-80	11110	11070	10960	10780	10550	10290	10000	9710	9450	9220	9040	8930
		180	164	148	133	119	104	90	76	61	47	32	16
	-70	12220	12140	11910	11560	11090	10560	10000	9440	8910	8440	8090	7860
		180	163	146	131	117	103	90	77	63	49	34	17
	-60	13330	13210	12850	12300	11610	10830	10000	9170	8390	7700	7150	6790
		180	161	143	128	114	102	90	78	66	52	37	19
	-50	14440	14260	13760	13000	12080	11060	10000	8940	7920	7000	6240	5740
		180	157	138	123	110	100	90	80	70	57	42	23
-40	15560	15300	14620	13640	12500	11270	10000	8730	7500	6360	5380	4700	
	180	152	131	117	106	98	90	82	74	63	49	28	
-30	16670	16310	15400	14200	12850	11440	10000	8560	7150	5800	4600	3690	
	180	142	121	109	101	95	90	85	79	71	59	38	
-20	17780	17240	16050	14630	13110	11560	10000	8440	6890	5370	3950	2760	
	180	123	107	100	96	93	90	87	84	80	73	57	
-10	18890	18000	16500	14900	13280	11640	10000	8360	6720	5100	3500	2000	
		90	90	90	90	90	90	90	90	90	90	90	
0	20000	18330	16670	15000	13330	11670	10000	8330	6670	5000	3330	1670	

		Station Local Time											
		12	13	14	15	16	17	18	19	20	21	22	23
Station Latitude	-90	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
		0	345	330	315	300	285	270	255	240	225	210	195
	-80	8890	8930	9040	9220	9450	9710	10000	10290	10550	10780	10960	11070
		0	344	328	313	299	284	270	256	241	227	212	196
	-70	7780	7860	8090	8440	8910	9440	10000	10560	11090	11560	11910	12140
		0	343	326	311	297	283	270	257	243	229	214	197
	-60	6670	6790	7150	7700	8390	9170	10000	10830	11610	12300	12850	13210
		0	341	323	308	294	282	270	258	246	232	217	199
	-50	5560	5740	6240	7000	7920	8940	10000	11060	12080	13000	13760	14260
		0	337	318	303	290	280	270	260	250	237	222	203
	-40	4440	4700	5380	6360	7500	8730	10000	11270	12500	13640	14620	15300
		0	332	311	297	286	278	270	262	254	243	229	208
	-30	3330	3690	4600	5800	7150	8560	10000	11440	12850	14200	15400	16310
		0	322	301	289	281	275	270	265	259	251	239	218
	-20	2220	2760	3950	5370	6890	8440	10000	11560	13110	14630	16050	17240
		0	303	287	280	276	273	270	267	264	260	253	237
	-10	1110	2000	3500	5100	6720	8360	10000	11640	13280	14900	16500	18000
		---	270	270	270	270	270	270	270	270	270	270	270
0	0	1670	3330	5000	6670	8330	10000	11670	13330	15000	16670	18330	

Table II. Azimuth in degrees clockwise from north (upper number) and distance in kilometers (lower number) of the subsolar point from a station in the southern hemisphere. Solar declination 0°.

	Station Local Time											
	00	01	02	03	04	05	06	07	08	09	10	11
Station Latitude	90	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440
		0	14	28	43	57	71	86	101	116	131	147
	80	8560	8520	8410	8250	8030	7770	7490	7200	6920	6690	6500
		0	14	27	41	55	68	82	96	111	126	143
	70	9670	9600	9400	9080	8660	8160	7610	7040	6490	5990	5580
		0	14	27	41	53	66	78	91	104	119	137
	60	10780	10680	10380	9920	9310	8590	7800	6970	6150	5386	4720
		0	14	28	41	53	64	75	86	97	110	128
	50	11890	11760	11370	10760	10020	9070	8060	7010	5940	4900	3970
		0	15	30	42	53	63	72	81	90	100	115
	40	13000	12830	12340	11590	10650	9560	8380	7140	5880	4600	3390
		0	17	32	44	55	63	70	76	82	89	97
	30	14110	13900	13300	12400	11300	10070	8750	7370	5950	4510	3070
		0	20	36	48	57	63	68	72	75	77	78
	20	15220	14950	14220	13170	11930	10580	9150	7670	6170	4650	3110
		0	24	41	53	60	64	67	69	69	67	62
	10	16230	15990	15090	13890	12520	11070	9570	8040	6510	4990	3500
		0	31	50	59	64	66	67	66	64	59	50
	0	17440	16970	15870	14510	13040	11530	10000	8470	6960	5490	4130
												3030

	Station Local Time											
	12	13	14	15	16	17	18	19	20	21	22	23
Station Latitude	90	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440
		180	196	213	229	244	259	274	289	303	317	332
	80	6330	6380	6500	6690	6920	7200	7490	7770	8030	8250	8410
		180	199	217	234	249	264	278	292	305	319	333
	70	5220	5320	5580	5990	6490	7040	7610	8160	8660	9080	9400
		180	203	223	241	256	269	282	294	307	319	333
	60	4111	4270	4720	5380	6150	6970	7800	8590	9310	9920	10380
		180	209	232	250	263	274	285	296	307	319	332
	50	3000	3270	3970	4900	5940	7010	8060	9070	10020	10760	11370
		180	221	245	260	270	279	288	297	307	318	330
	40	1890	2360	3390	4600	5880	7140	8380	9560	10650	11590	12340
		180	246	263	271	278	284	290	297	305	316	328
	30	780	1680	3070	4510	5950	7370	8750	10070	11300	12400	13300
		0	285	282	283	285	288	292	297	303	312	324
	20	330	1590	3110	4650	6170	7670	9150	10580	11930	13170	14220
		0	314	298	293	291	291	293	296	300	307	319
	10	1440	2150	3500	4990	6510	8040	9570	11070	12520	13890	15090
		0	329	310	301	296	294	293	294	296	301	310
	0	2560	3030	4130	5490	6960	8470	10000	11530	13040	14510	15870
												16970

Table III. Azimuth in degrees clockwise from north (upper number) and distance in kilometers (lower number) of the subsolar point from a station in the northern hemisphere. Solar declination $+23^\circ$.

	Station Local Time											
	00	01	02	03	04	05	06	07	08	09	10	11
Station Latitude	-90	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560
		180	164	147	131	116	101	86	71	57	43	28
	-80	13670	13620	13500	13310	13080	12800	12510	12230	11970	11730	11480
		180	161	143	126	111	96	82	68	55	41	27
	-70	14780	14680	14420	14010	13510	12960	12390	11840	11340	10920	10600
		180	157	137	119	104	91	78	66	53	41	27
	-60	15890	15720	15280	14620	13850	13030	12200	11410	10690	10080	9620
		180	151	128	110	97	86	75	64	53	41	28
	-50	17000	16730	16030	15100	14060	12990	11940	10930	9980	9240	8630
		180	139	115	100	90	81	72	63	53	42	30
	-40	18110	17640	16610	15400	14120	12860	11620	10440	9350	8410	7660
		180	114	97	89	82	76	70	63	55	44	32
	-30	19220	18320	16930	15490	14050	12630	11250	9930	8700	7600	6700
		0	75	78	77	75	72	68	63	57	48	36
	-20	19670	18410	16890	15350	13830	12330	10850	9420	8070	6830	5780
		0	46	62	67	69	69	67	64	60	53	41
	-10	18560	17850	16500	15010	13490	11960	10430	8930	7480	6110	4910
		0	31	50	59	64	66	67	66	64	59	50
	0	17440	16970	15870	14510	13040	11530	10000	8470	6960	5490	4130

	Station Local Time											
	12	13	14	15	16	17	18	19	20	21	22	23
Station Latitude	-90	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560
		0	346	332	317	303	289	274	259	244	229	213
	-80	11440	11480	11590	11750	11970	12230	12510	12800	13080	13310	13500
		0	346	333	319	305	292	278	264	249	234	217
	-70	10330	10400	10600	10920	11340	11840	12390	12960	13510	14010	14420
		0	346	333	319	307	294	282	269	256	241	223
	-60	9220	9320	9620	10080	10690	11410	12200	13030	13850	14620	15280
		0	346	332	319	307	296	285	274	263	250	232
	-50	8110	8240	8630	9240	9980	10930	11940	12990	14060	15100	16030
		0	345	330	318	307	297	288	279	270	260	245
	-40	7000	7170	7660	8410	9350	10440	11620	12860	14120	15400	16610
		0	343	328	316	305	297	290	284	278	271	263
	-30	5890	6100	6700	7600	8700	9930	11250	12630	14050	15490	16930
		0	340	324	312	303	297	292	288	285	283	282
	-20	4780	5050	5780	6830	8070	9420	10850	12330	13830	15350	16890
		0	336	319	307	300	296	293	291	291	293	298
	-10	3670	4010	4910	6110	7480	8930	10430	11960	13490	15010	16500
		0	329	310	301	296	294	293	294	296	301	310
	0	2560	3030	4130	5490	6960	8470	10000	11530	13040	14510	15870

Table IV. Azimuth in degrees clockwise from north (upper number) and distance in kilometers (lower number) of the subsolar point from a station in the southern hemisphere. Solar declination $+23^{\circ}$.

	Station Local Time											
	00	01	02	03	04	05	06	07	08	09	10	11
Station Latitude	90	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560
	0	16	33	49	64	79	94	109	123	137	152	166
	80	13670	13620	13500	13310	13080	12800	12510	12230	11970	11730	11480
	0	19	37	54	69	84	98	112	125	139	153	166
	70	14780	14680	14420	14010	13510	12960	12390	11840	11340	10920	10600
	0	23	43	61	76	89	102	114	127	139	153	166
	60	15890	15720	15280	14620	13850	13030	12200	11410	10690	10080	9620
	0	29	52	70	83	94	105	116	127	139	152	166
	50	17000	16730	16030	15100	14060	12990	11940	10930	9980	9240	8630
	0	41	65	80	90	99	108	117	127	138	150	165
	40	18110	17640	16610	15400	14120	12860	11620	10440	9350	8410	7660
	0	66	83	91	98	104	110	117	125	136	148	163
Station Latitude	30	19220	18320	16930	15490	14050	12630	11250	9930	8700	7600	6700
	180	105	102	103	105	108	112	117	123	132	144	160
	20	19670	18410	16890	15350	13830	12330	10850	9420	8070	6830	5780
	180	134	118	113	111	111	113	116	120	127	139	156
	10	18560	17850	16500	15010	13490	11960	10430	8930	7480	6110	4910
	180	149	130	121	116	114	113	114	116	121	130	149
	0	17440	16370	14870	13310	11700	10000	8470	6960	5490	4130	3030

	Station Local Time											
	12	13	14	15	16	17	18	19	20	21	22	23
Station Latitude	90	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560	12560
	180	194	208	223	237	251	266	281	296	311	327	344
	80	11440	11480	11590	11750	11970	12230	12510	12800	13080	13310	13500
	180	194	207	221	235	248	262	276	291	306	323	341
	70	10330	10400	10600	10920	11340	11840	12390	12960	13510	14010	14420
	180	194	207	221	233	246	258	271	284	299	317	337
	60	9220	9320	9620	10080	10690	11410	12200	13030	13850	14620	15280
	180	134	208	221	233	244	255	266	277	290	308	331
	50	8110	8240	8630	9240	9980	10930	11940	12990	14060	15100	16030
	180	195	210	222	233	243	252	261	270	280	295	319
	40	7000	7170	7660	8410	9350	10440	11620	12860	14120	15400	16610
	180	197	212	224	235	243	250	256	262	269	277	294
Station Latitude	30	5890	6100	6700	7600	8700	9930	11250	12630	14050	15490	16930
	180	200	216	228	237	243	248	252	255	257	258	255
	20	4780	5050	5780	6830	8070	9420	10850	12330	13830	15350	16890
	180	204	221	233	240	244	247	249	249	247	242	226
	10	3670	4010	4910	6110	7480	8930	10430	11960	13490	15010	16500
	180	211	230	239	244	246	247	246	244	239	230	211
	0	2560	3030	4130	5490	6960	8470	10000	11530	13040	14510	15870

Table V. Azimuth in degrees clockwise from north (upper number) and distance in kilometers (lower number) of the subsolar point from a station in the northern hemisphere. Solar declination -23° .

	Station Local Time											
	00	01	02	03	04	05	06	07	08	09	10	11
Station Latitude	-90	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440
	-80	180	166	152	137	123	109	94	79	64	49	33
	-70	180	166	153	139	125	112	98	84	69	54	37
	-60	180	166	153	139	127	114	102	89	76	61	43
	-50	180	166	152	139	127	116	105	94	83	70	52
	-40	180	165	150	138	127	117	108	99	90	80	65
	-30	180	163	148	136	125	117	110	104	98	91	83
	-20	180	160	144	132	123	117	112	108	105	103	102
	-10	180	156	139	127	120	116	113	111	111	113	118
	0	180	149	130	121	116	114	113	114	116	121	130
		17440	16970	16570	16150	15800	15530	15300	15100	14900	14730	14580

	Station Local Time											
	12	13	14	15	16	17	18	19	20	21	22	23
Station Latitude	-90	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440	7440
	-80	0	344	327	311	296	281	266	251	237	223	208
	-70	0	341	323	306	291	276	262	248	235	221	207
	-60	0	337	317	299	284	271	258	246	233	221	207
	-50	0	331	308	290	277	266	255	244	233	221	208
	-40	0	319	295	280	270	261	252	243	233	222	210
	-30	0	294	277	269	262	256	250	243	235	224	212
	-20	180	255	258	257	255	252	248	243	237	228	216
	-10	180	226	242	247	249	249	247	244	240	233	221
	0	180	211	230	239	244	246	247	246	244	239	230
		2560	3030	4130	5490	6960	8470	10000	11530	13040	14510	15870

Table VI. Azimuth in degrees clockwise from north (upper number) and distance in kilometers (lower number) of the subsolar point from a station in the southern hemisphere. Solar declination -23° .

Table VII

Solar declination = 0°

Lat.	Distance from transmitting station to subsolar point.													
	2500 km		5000 km		7500 km		10000 km		12500 km		15000 km		17500 km	
	t	a	t	a	t	a	t	a	t	a	t	a	t	a
							06.0	90						
+70°	-	-	-	-	-	-	18.0	270	-	-	-	-	-	-
					10.3	153	06.0	90	01.7	27				
+65°	-	-	-	-	13.7	207	18.0	270	22.3	333	-	-	-	-
					09.3	136	06.0	90	02.7	44				
+60°	-	-	-	-	14.7	224	18.0	270	21.3	316	-	-	-	-
					08.8	128	06.0	90	03.2	52				
+55°	-	-	-	-	15.2	232	18.0	270	20.8	308	-	-	-	-
					08.5	121	06.0	90	03.5	59				
+50°	-	-	-	-	15.5	239	18.0	270	20.5	301	-	-	-	-
			12.0	180	08.3	115	06.0	90	03.7	65	00.0	00		
+45°	-	-	12.0	180	15.7	245	18.0	270	20.3	295	24.0	360	-	-
			10.5	147	08.1	110	06.0	90	03.9	70	01.5	33		
+40°	-	-	13.5	213	15.9	250	18.0	270	20.1	290	22.5	327	-	-
			09.9	137	07.9	107	06.0	90	04.1	73	02.1	43		
+35°	-	-	14.1	223	16.1	253	18.0	270	19.9	287	21.9	317	-	-
			09.6	126	07.8	104	06.0	90	04.2	76	02.4	54		
+30°	-	-	14.4	234	16.2	256	18.0	270	19.8	284	21.6	306	-	-
			09.4	118	07.7	101	06.0	90	04.3	79	02.6	62		
+25°	-	-	14.6	242	16.3	259	18.0	270	19.7	281	21.4	298	-	-
	11.3	150	09.2	112	07.6	98	06.0	90	04.4	82	02.8	68	00.7	30
+20°	12.7	210	14.8	248	16.4	262	18.0	270	19.6	278	21.2	292	23.3	330
	10.8	130	09.1	106	07.6	96	06.0	90	04.4	84	02.9	74	01.2	50
+15°	13.2	230	14.9	254	16.4	264	18.0	270	19.6	276	21.1	286	22.8	310
	10.6	114	09.1	100	07.5	94	06.0	90	04.5	86	02.9	80	01.4	66
+10°	13.4	246	14.9	260	16.5	266	18.0	270	19.5	274	21.1	280	22.6	294
	10.5	101	09.0	95	07.5	92	06.0	90	04.5	88	03.0	85	01.5	79
+ 5°	13.5	259	15.0	265	16.5	268	18.0	270	19.5	272	21.0	275	22.5	281
	10.5	90	09.0	90	07.5	90	06.0	90	04.5	90	03.0	90	01.5	90
0°	13.5	270	15.0	270	16.5	270	18.0	270	19.5	270	21.0	270	22.5	270

t = apparent solar time at the transmitting station.

a = azimuth of subsolar point from the transmitting station.

Table VIII

Solar declination = 0°

Lat.	Distance from transmitting station to subsolar point.													
	2500 km		5000 km		7500 km		10000 km		12500 km		15000 km		17500 km	
	t	a	t	a	t	a	t	a	t	a	t	a	t	a
							06.0	90						
-70°	-	-	-	-	-	-	18.0	270	-	-	-	-	-	-
					10.3	27	06.0	90	01.7	153				
-65°	-	-	-	-	13.7	333	18.0	270	22.3	207	-	-	-	-
					09.3	44	06.0	90	02.7	136				
-60°	-	-	-	-	14.7	316	18.0	270	21.3	224	-	-	-	-
					08.8	52	06.0	90	03.2	128				
-55°	-	-	-	-	15.2	308	18.0	270	20.8	232	-	-	-	-
					08.5	59	06.0	90	03.5	121				
-50°	-	-	-	-	15.5	301	18.0	270	20.5	239	-	-	-	-
-45°	-	-	12.0	00	08.3	65	06.0	90	03.7	115	00.0	180		
			12.0	360	15.7	295	18.0	270	20.3	245	24.0	180	-	-
-40°	-	-	10.5	33	08.1	70	06.0	90	03.9	110	01.5	147		
			13.5	327	15.9	290	18.0	270	20.1	250	22.5	213	-	-
-35°	-	-	09.9	43	07.9	73	06.0	90	04.1	107	02.1	137		
			14.1	317	16.1	287	18.0	270	19.9	253	21.9	223	-	-
-30°	-	-	09.6	54	07.8	76	06.0	90	04.2	104	02.4	126		
			14.4	306	16.2	284	18.0	270	19.8	256	21.6	234	-	-
-25°	-	-	09.4	62	07.7	79	06.0	90	04.3	101	02.6	118		
			14.6	298	16.3	281	18.0	270	19.7	259	21.4	242	-	-
-20°	11.3	30	09.2	68	07.6	82	06.0	90	04.4	98	02.8	112	00.7	150
	12.7	330	14.8	292	16.4	278	18.0	270	19.6	262	21.2	248	23.3	210
-15°	10.8	50	09.1	74	07.6	84	06.0	90	04.4	96	02.9	106	01.2	130
	13.2	310	14.9	286	16.4	276	18.0	270	19.6	264	21.1	254	22.8	230
-10°	10.6	66	09.1	80	07.5	86	06.0	90	04.5	94	02.9	100	01.4	114
	13.4	294	14.9	280	16.5	274	18.0	270	19.5	266	21.1	260	22.6	246
-5°	10.5	79	09.0	85	07.5	88	06.0	90	04.5	92	03.0	95	01.5	101
	13.5	281	15.0	275	16.5	272	18.0	270	19.5	268	21.0	265	22.5	259
0°	10.5	90	09.0	90	07.5	90	06.0	90	04.5	90	03.0	90	01.5	90
	13.5	270	15.0	270	16.5	270	18.0	270	19.5	270	21.0	270	22.5	270

t = apparent solar time at the transmitting station.

a = azimuth of subsolar point from the transmitting station.

Table IX

Solar declination = + 23°

Lat.	Distance from transmitting station to subsolar point.													
	2500 km		5000 km		7500 km		10000 km		12500 km		15000 km		17500 km	
	t	a	t	a	t	a	t	a	t	a	t	a	t	a
+70°	-	-	-	-	06.2	85	-	-	-	-	-	-	-	-
					17.8	275								
+65°	-	-	10.5	152	06.2	84	01.7	24	-	-	-	-	-	-
			13.5	208	17.8	276	22.3	336						
+60°	-	-	09.6	129	06.3	83	02.8	39	-	-	-	-	-	-
			14.4	231	17.7	277	21.2	321						
+55°	-	-	09.1	117	06.4	82	03.5	48	-	-	-	-	-	-
			14.9	243	17.6	278	20.5	312						
+50°	-	-	08.9	109	06.5	81	04.0	53	-	-	-	-	-	-
			15.1	251	17.5	279	20.0	307						
+45°	11.8	164	08.8	103	06.6	79	04.3	56	00.0	00	-	-	-	-
	12.2	196	15.2	257	17.4	281	19.7	304	24.0	360				
+40°	10.9	134	08.7	97	06.7	78	04.7	59	01.7	25	-	-	-	-
	13.1	226	15.3	263	17.3	282	19.3	301	22.3	335				
+35°	10.5	116	08.7	92	06.8	77	04.9	61	02.4	35	-	-	-	-
	13.5	244	15.3	268	17.2	283	19.1	299	21.6	325				
+30°	10.4	102	08.7	87	06.9	75	05.1	63	02.9	43	-	-	-	-
	13.6	258	15.3	273	17.1	285	18.9	297	21.1	317				
+25°	10.3	90	08.7	82	07.0	74	05.3	64	03.3	48	-	-	-	-
	13.7	270	15.3	278	17.0	286	18.7	296	20.7	312				
+20°	10.4	77	08.8	77	07.1	72	05.4	65	03.6	53	00.8	16	-	-
	13.6	283	15.2	283	16.9	288	18.6	295	20.4	307	23.2	344		
+15°	10.5	65	08.9	72	07.2	71	05.6	66	03.8	57	01.6	32	-	-
	13.5	295	15.1	288	16.8	289	18.4	294	20.2	303	22.4	328		
+10°	10.7	52	09.0	68	07.4	69	05.7	66	04.1	60	02.1	42	-	-
	13.3	308	15.0	292	16.6	291	18.3	294	19.9	300	21.9	318		
+ 5°	11.1	34	09.2	63	07.5	67	05.9	67	04.2	63	02.4	50	-	-
	12.9	326	14.8	297	16.5	293	18.1	293	19.8	297	21.6	310		
0°	12.0	00	09.4	57	07.7	65	06.0	67	04.4	65	02.6	57	00.0	00
	12.0	360	14.6	303	16.3	295	18.0	293	19.6	295	21.4	303	24.0	360

t = apparent solar time at the transmitting station.

a = azimuth of subsolar point from the transmitting station.

Table X

Solar declination = + 23°

Lat.	Distance from transmitting station to subsolar point.													
	2500 km		5000 km		7500 km		10000 km		12500 km		15000 km		17500 km	
	t	a	t	a	t	a	t	a	t	a	t	a	t	a
-70°	-	-	-	-	-	-	-	-	05.8 85		-	-	-	-
									18.2 275					
-65°	-	-	-	-	-	-	10.3 24	05.8 84	01.5 152				-	-
							13.7 336	18.2 276	22.5 208				-	-
-60°	-	-	-	-	-	-	09.2 39	05.7 83	02.4 129				-	-
							14.8 321	18.3 277	21.6 231				-	-
-55°	-	-	-	-	-	-	08.5 48	05.6 82	02.9 117				-	-
							15.5 312	18.4 278	21.1 243				-	-
-50°	-	-	-	-	-	-	08.0 53	05.5 81	03.1 109				-	-
							16.0 307	18.5 279	20.9 251				-	-
-45°	-	-	-	-	12.0 00	07.7 56	05.4 79	03.2 103	00.2 164					
					12.0 360	16.3 304	18.6 281	20.8 257	23.8 196					
-40°	-	-	-	-	10.3 25	07.3 59	05.3 78	03.3 97	01.1 134					
					13.7 335	16.7 301	18.7 282	20.7 263	22.9 226					
-35°	-	-	-	-	09.6 35	07.1 61	05.2 77	03.3 92	01.5 116					
					14.4 325	16.9 299	18.8 283	20.7 268	22.5 244					
-30°	-	-	-	-	09.1 43	06.9 63	05.1 75	03.3 87	01.6 102					
					14.9 317	17.1 297	18.9 285	20.7 273	22.4 258					
-25°	-	-	-	-	08.8 48	06.7 64	05.0 74	03.3 82	01.7 90					
					15.2 312	17.3 296	19.0 286	20.7 278	22.3 270					
-20°	-	-	11.2 16	08.5 53	06.6 65	04.9 72	03.2 77	01.6 77						
			12.8 344	15.5 307	17.4 295	19.1 288	20.8 283	22.4 283						
-15°	-	-	10.4 32	08.2 57	06.4 66	04.7 71	03.1 72	01.5 65						
			13.6 328	15.8 303	17.6 294	19.3 289	20.9 288	22.5 295						
-10°	-	-	09.9 42	08.0 60	06.3 66	04.6 69	03.0 68	01.3 52						
			14.1 318	16.0 300	17.7 294	19.4 291	21.0 292	22.7 308						
-5°	-	-	09.6 50	07.8 63	06.1 67	04.5 67	02.8 63	00.9 34						
			14.4 310	16.2 297	17.9 293	19.5 293	21.2 297	23.1 326						
0°	12.0 00	09.4 57	07.7 65	06.0 67	04.4 65	02.6 57	00.0 00							
	12.0 360	14.6 303	16.3 295	18.0 293	19.6 295	21.4 303	24.0 360							

t = apparent solar time at the transmitting station.

a = azimuth of subsolar point from the transmitting station.

Table XI

Solar declination = - 23°

Lat.	Distance from transmitting station to subsolar point.													
	2500 km		5000 km		7500 km		10000 km		12500 km		15000 km		17500 km	
	t	a	t	a	t	a	t	a	t	a	t	a	t	a
+70°	-	-	-	-	-	-	-	-	05.8 95					
									18.2 265		-	-	-	-
+65°	-	-	-	-	-	-	10.3 156	05.8 96	01.5 28					
							13.7 204	18.2 264	22.5 332		-	-	-	-
+60°	-	-	-	-	-	-	09.2 141	05.7 97	02.4 51					
							14.8 219	18.3 263	21.6 309		-	-	-	-
+55°	-	-	-	-	-	-	08.5 132	05.6 98	02.9 63					
							15.5 228	18.4 262	21.1 297		-	-	-	-
+50°	-	-	-	-	-	-	08.0 127	05.5 99	03.1 71					
							16.0 233	18.5 261	20.9 289		-	-	-	-
+45°	-	-	-	-	12.0 180	07.7 124	05.4 101	03.2 77	00.2 16					
					12.0 180	16.3 236	18.6 259	20.8 283	23.8 344					
+40°	-	-	-	-	10.3 155	07.3 121	05.3 102	03.3 83	01.1 46					
					13.7 205	16.7 239	18.7 258	20.7 277	22.9 314					
+35°	-	-	-	-	09.6 145	07.1 119	05.2 103	03.3 88	01.5 64					
					14.4 215	16.9 241	18.8 257	20.7 272	22.5 296					
+30°	-	-	-	-	09.1 137	06.9 117	05.1 105	03.3 93	01.6 78					
					14.9 223	17.1 243	18.9 255	20.7 267	22.4 282					
+25°	-	-	-	-	08.8 132	06.7 116	05.0 106	03.3 98	01.7 90					
					15.2 228	17.3 244	19.0 254	20.7 262	22.3 270					
+20°	-	-	11.2 164	08.5 127	06.6 115	04.9 108	03.2 103	01.6 103						
			12.8 196	15.5 233	17.4 245	19.1 252	20.8 257	22.4 257						
+15°	-	-	10.4 148	08.2 123	06.4 114	04.7 109	03.1 108	01.5 115						
			13.6 212	15.8 237	17.6 246	19.3 251	20.9 252	22.5 245						
+10°	-	-	09.9 138	08.0 120	06.3 114	04.6 111	03.0 112	01.3 128						
			14.1 222	16.0 240	17.7 246	19.4 249	21.0 248	22.7 232						
+ 5°	-	-	09.6 130	07.8 117	06.1 113	04.5 113	02.8 117	00.9 146						
			14.4 230	16.2 243	17.9 247	19.5 247	21.2 243	23.1 214						
0°	12.0 180		09.4 123	07.7 115	06.0 113	04.4 115	02.6 123	00.0 180						
	12.0 180		14.6 237	16.3 245	18.0 247	19.6 245	21.4 237	24.0 180						

t = apparent solar time at the transmitting station.

a = azimuth of subsolar point from the transmitting station.

Table XII

Solar declination = - 23°

Lat.	Distance from transmitting station to subsolar point.													
	2500 km		5000 km		7500 km		10000 km		12500 km		15000 km		17500 km	
	t	a	t	a	t	a	t	a	t	a	t	a	t	a
					06.2	95								
-70°	-	-	-	-	17.8	265	-	-	-	-	-	-	-	-
			10.5	28	06.2	96	01.7	156						
-65°	-	-	13.5	332	17.8	264	22.3	204	-	-	-	-	-	-
			09.6	51	06.3	97	02.8	141						
-60°	-	-	14.4	309	17.7	263	21.2	219	-	-	-	-	-	-
			09.1	63	06.4	98	03.5	132						
-55°	-	-	14.9	297	17.6	262	20.5	228	-	-	-	-	-	-
			08.9	71	06.5	99	04.0	127						
-50°	-	-	15.1	289	17.5	261	20.0	233	-	-	-	-	-	-
	11.8	16	08.8	77	06.5	101	04.3	124	00.0	180				
-45°	12.2	344	15.2	283	17.4	259	19.7	236	24.0	180	-	-	-	-
	10.9	46	08.7	83	06.7	102	04.7	121	01.7	155				
-40°	13.1	314	15.3	277	17.3	258	19.3	239	22.3	205	-	-	-	-
	10.5	64	08.7	88	06.8	103	04.9	119	02.4	145				
-35°	13.5	296	15.3	272	17.2	257	19.1	241	21.6	215	-	-	-	-
	10.4	78	08.7	93	06.9	105	05.1	117	02.9	137				
-30°	13.6	282	15.3	267	17.1	255	18.9	243	21.1	223	-	-	-	-
	10.3	90	08.7	98	07.0	106	05.3	116	03.3	132				
-25°	13.7	270	15.3	262	17.0	254	18.7	244	20.7	228	-	-	-	-
	10.4	103	08.8	103	07.1	108	05.4	115	03.6	127	00.8	164		
-20°	13.6	257	15.2	257	16.9	252	18.6	245	20.4	233	23.2	196	-	-
	10.5	115	08.9	108	07.2	109	05.6	114	03.8	123	01.6	148		
-15°	13.5	245	15.1	252	16.8	251	18.4	246	20.2	237	22.4	212	-	-
	10.7	128	09.0	112	07.4	111	05.7	114	04.1	120	02.1	138		
-10°	13.3	232	15.0	248	16.6	249	18.3	246	19.9	240	21.9	222	-	-
	11.1	146	09.2	117	07.5	113	05.9	113	04.2	117	02.4	130		
- 5°	12.9	214	14.8	243	16.5	247	18.1	247	19.8	243	21.6	230	-	-
	12.0	180	09.4	123	07.7	115	06.0	113	04.4	115	02.6	123	00.0	180
0°	12.0	180	14.6	237	16.3	245	18.0	247	19.6	245	21.4	237	24.0	180

t = apparent solar time at the transmitting station.

a = azimuth of subsolar point from the transmitting station.

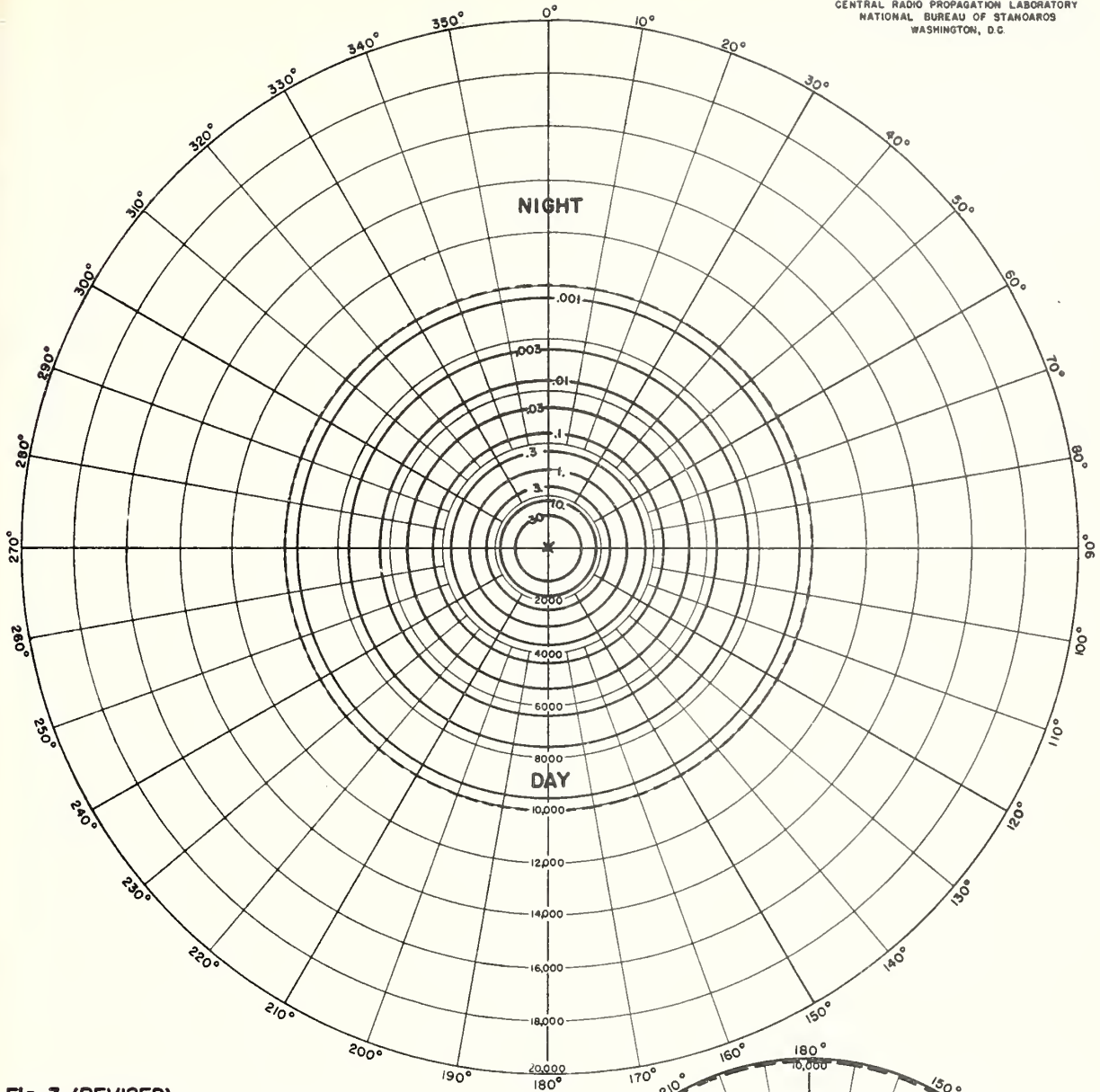
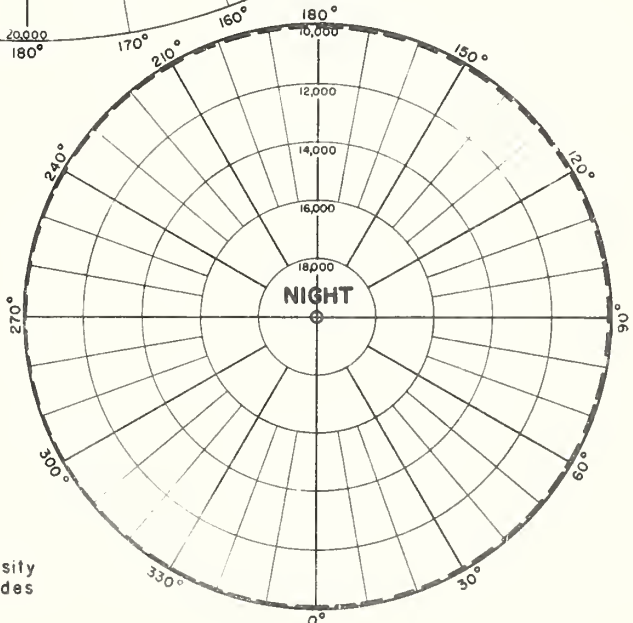


Fig. 3 (REVISED)
FIELD INTENSITY, $\mu\text{V}/\text{m}$, 1 KW, 7 Mc
SUBSOLAR DISTANCE, 0 km (0°)
SUNSPOT MINIMUM

- * SUBSOLAR POINT
- o POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes

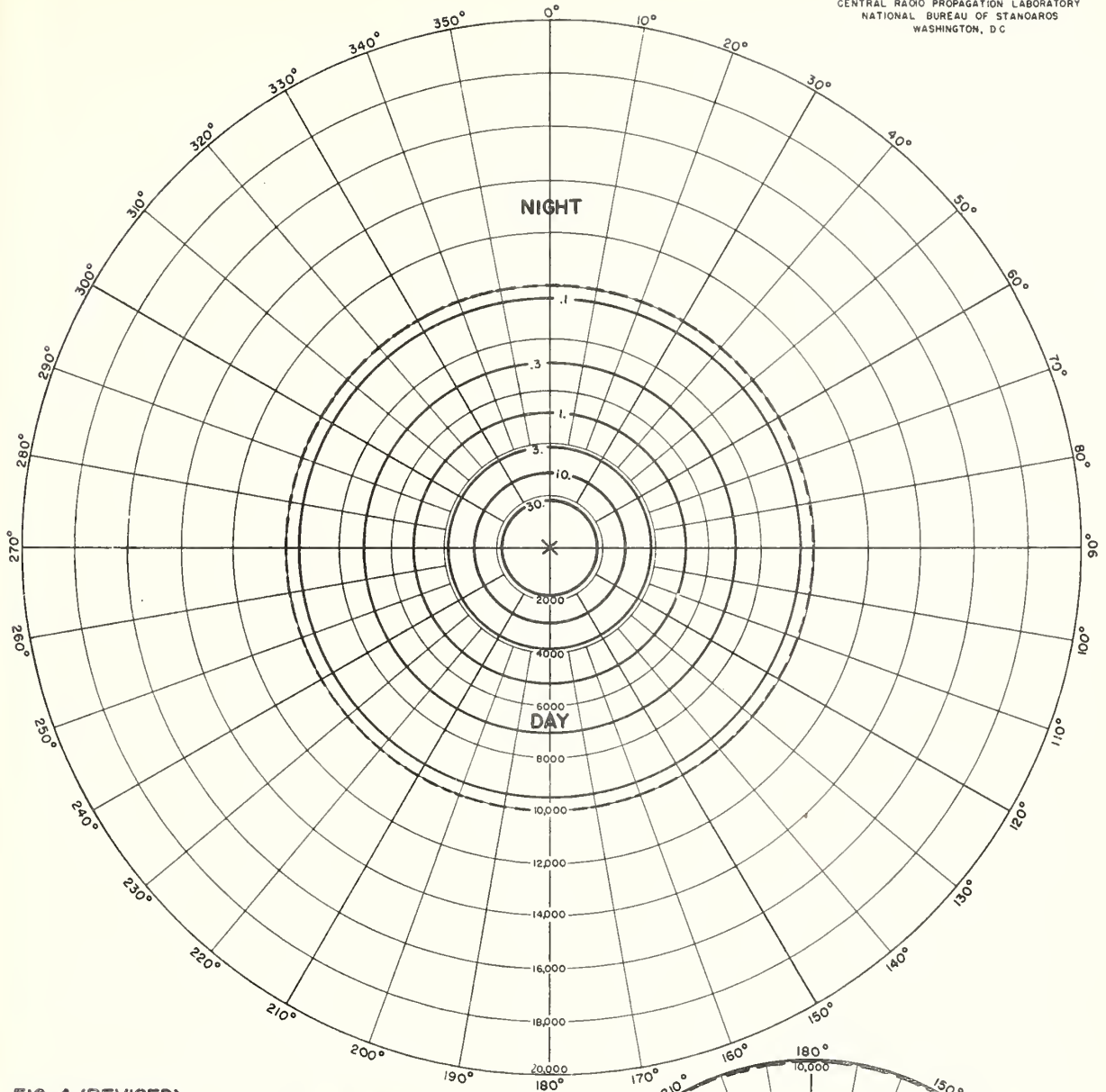
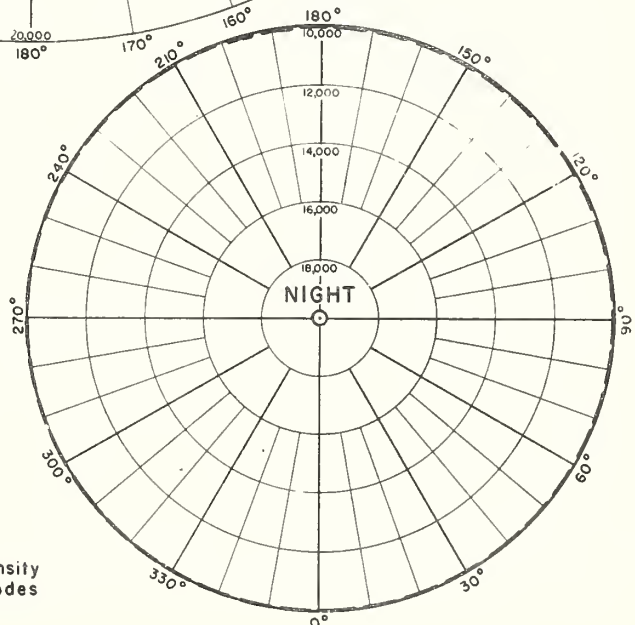


FIG. 4 (REVISED)
FIELD INTENSITY, $\mu\text{V}/\text{m}$, 1 KW, 10 Mc
SUBSOLAR DISTANCE, 0 km (0°)
SUNSPOT MINIMUM

* SUBSOLAR POINT
○ POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes



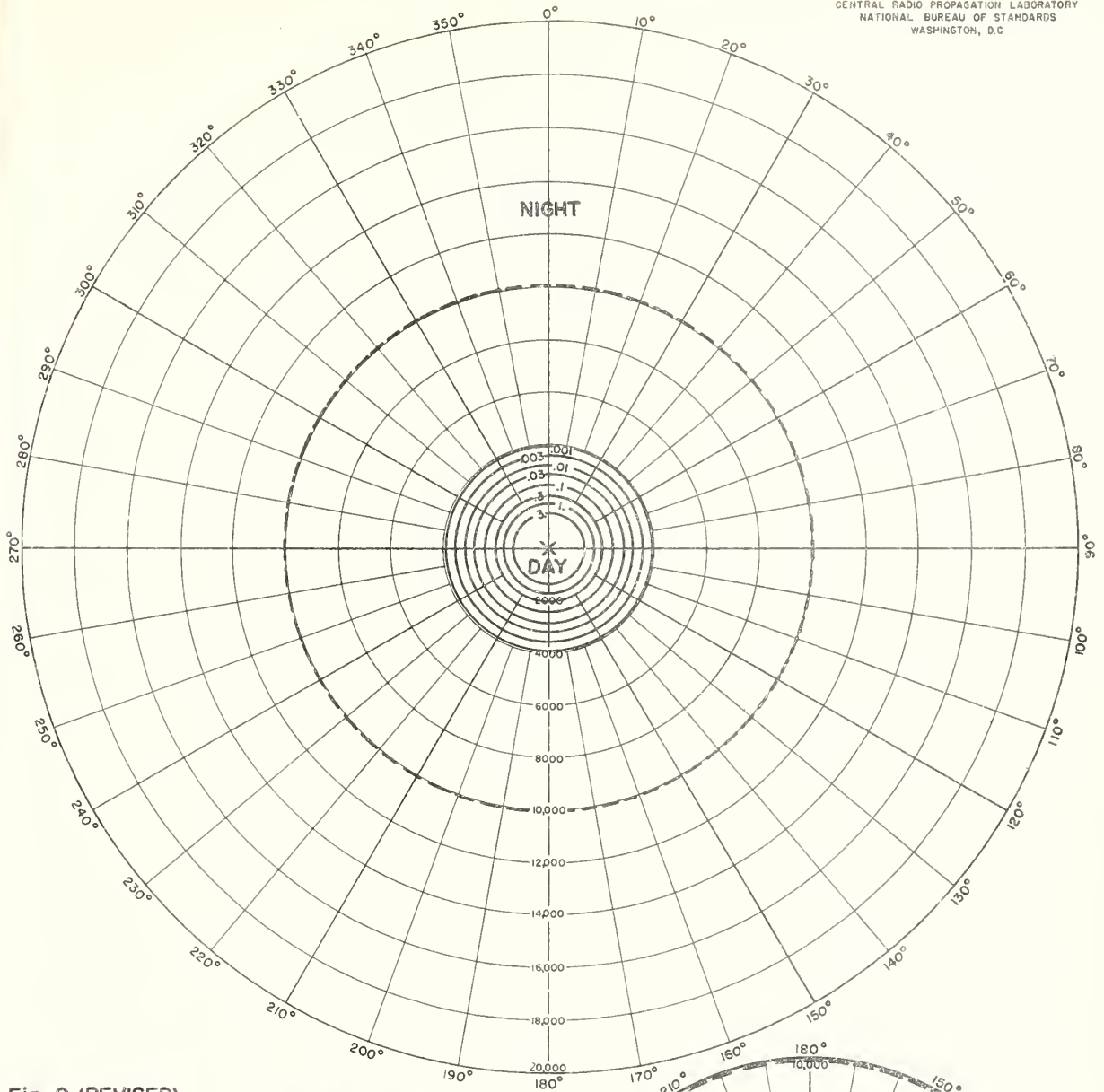
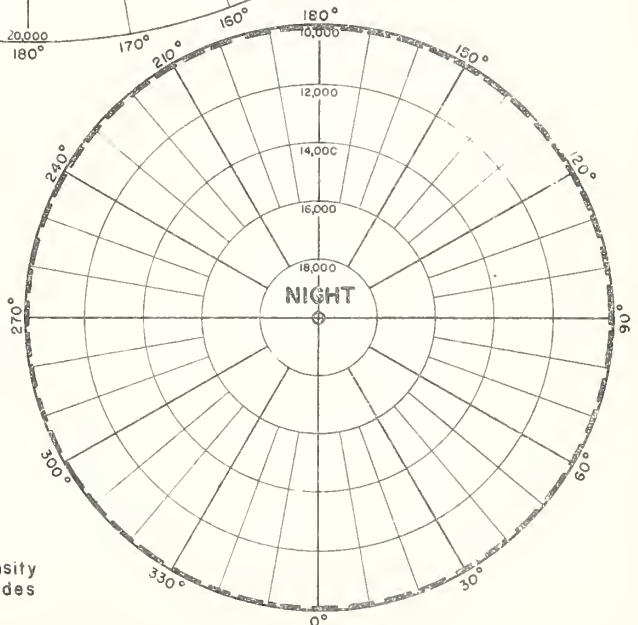


Fig. 9 (REVISED)
FIELD INTENSITY, $\mu\text{V}/\text{m}$, 1 KW, 7 Mc
SUBSOLAR DISTANCE, 0 km (0°)
SUNSPOT MAXIMUM

* SUBSOLAR POINT
⊙ POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes

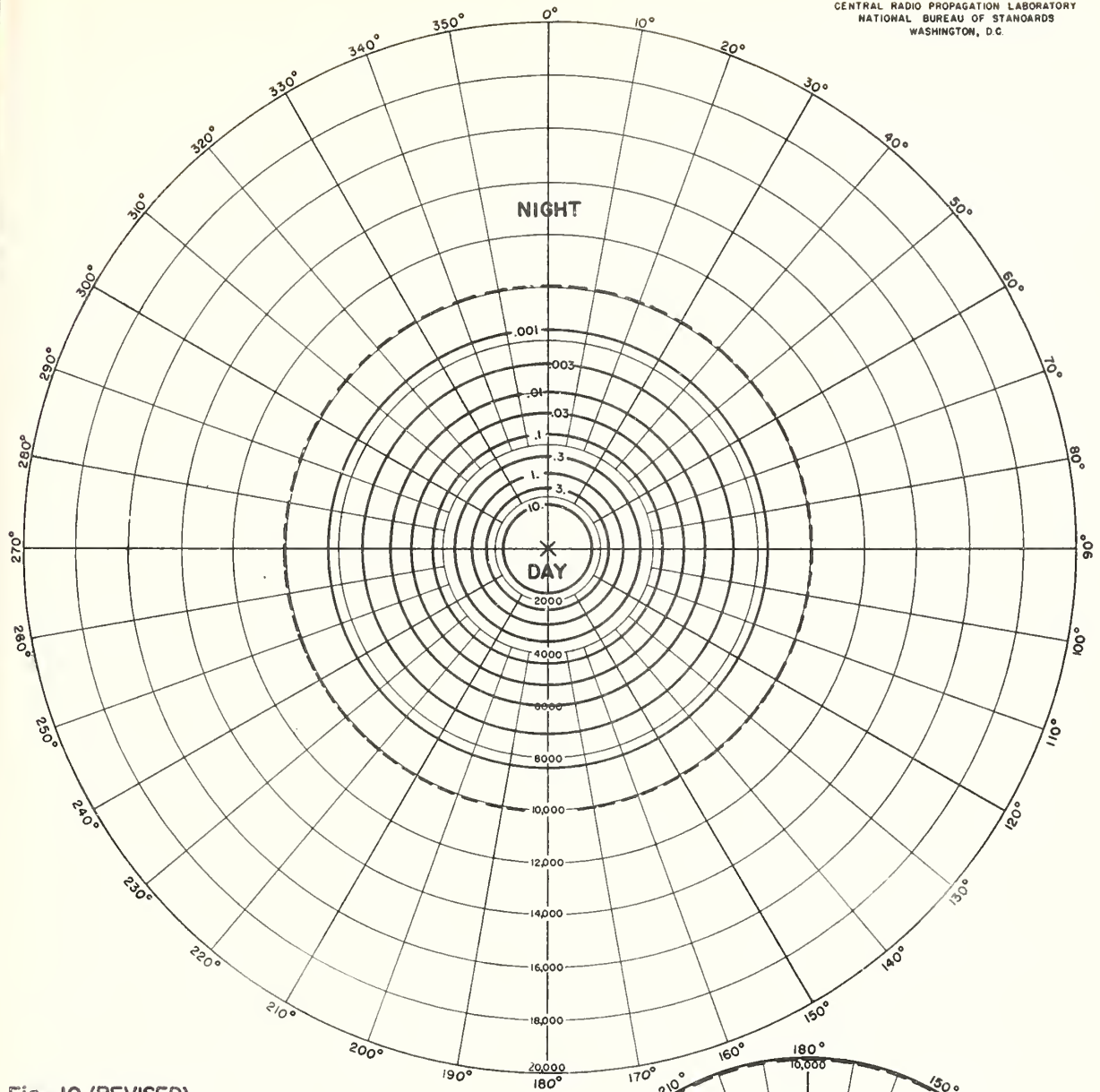
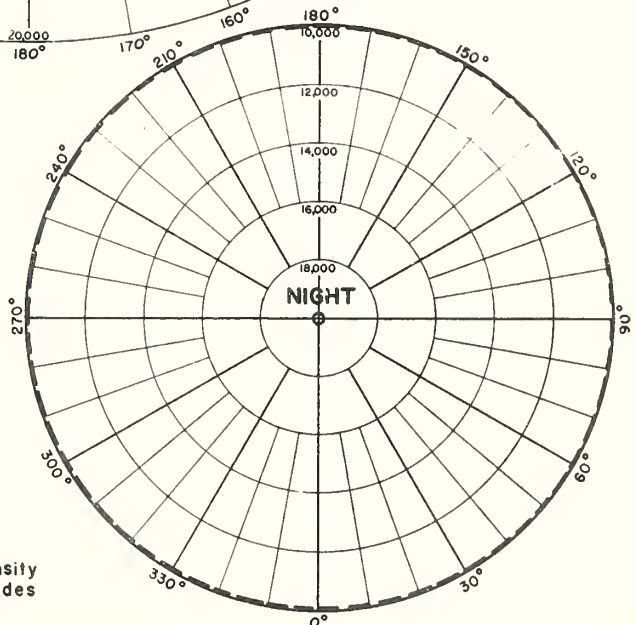


Fig. 10 (REVISED)
FIELD INTENSITY, $\mu\text{V/m}$, 1 KW, 10 Mc
SUBSOLAR DISTANCE, 0 km (0°)
SUNSPOT MAXIMUM

* SUBSOLAR POINT
O POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes



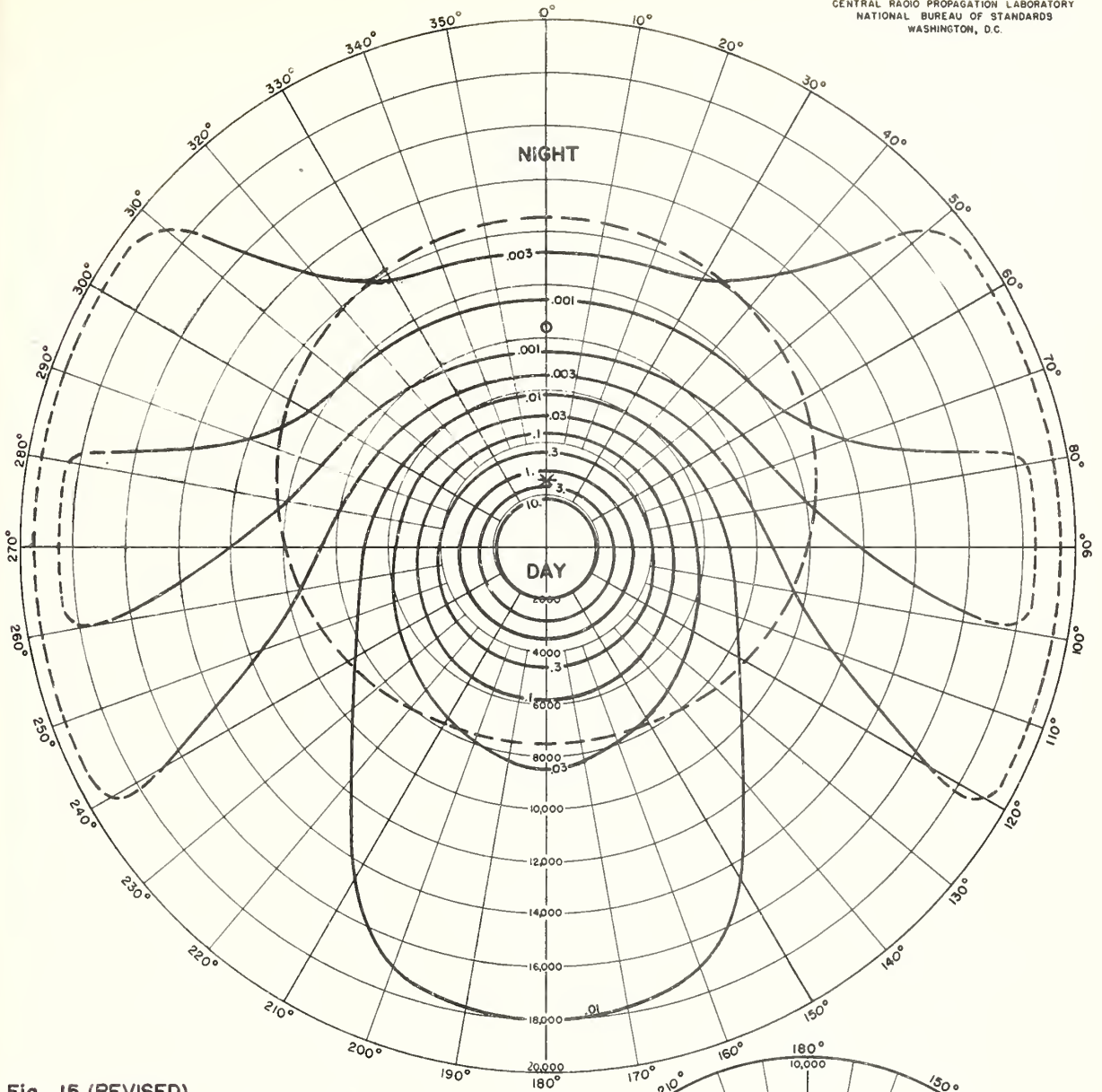
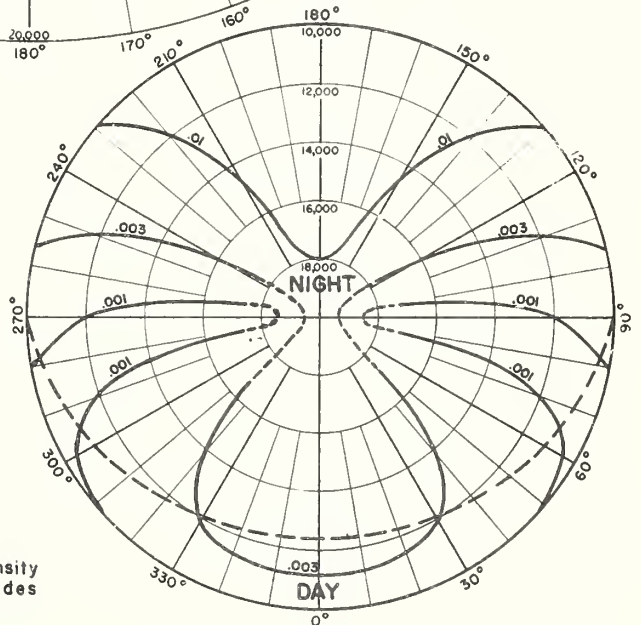


Fig. 15 (REVISED)
FIELD INTENSITY, $\mu\text{V/m}$, 1 KW, 7 Mc
SUBSOLAR DISTANCE, 2500 km ($22^\circ 30'$)
SUNSPOT MINIMUM

* SUBSOLAR POINT
O POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes



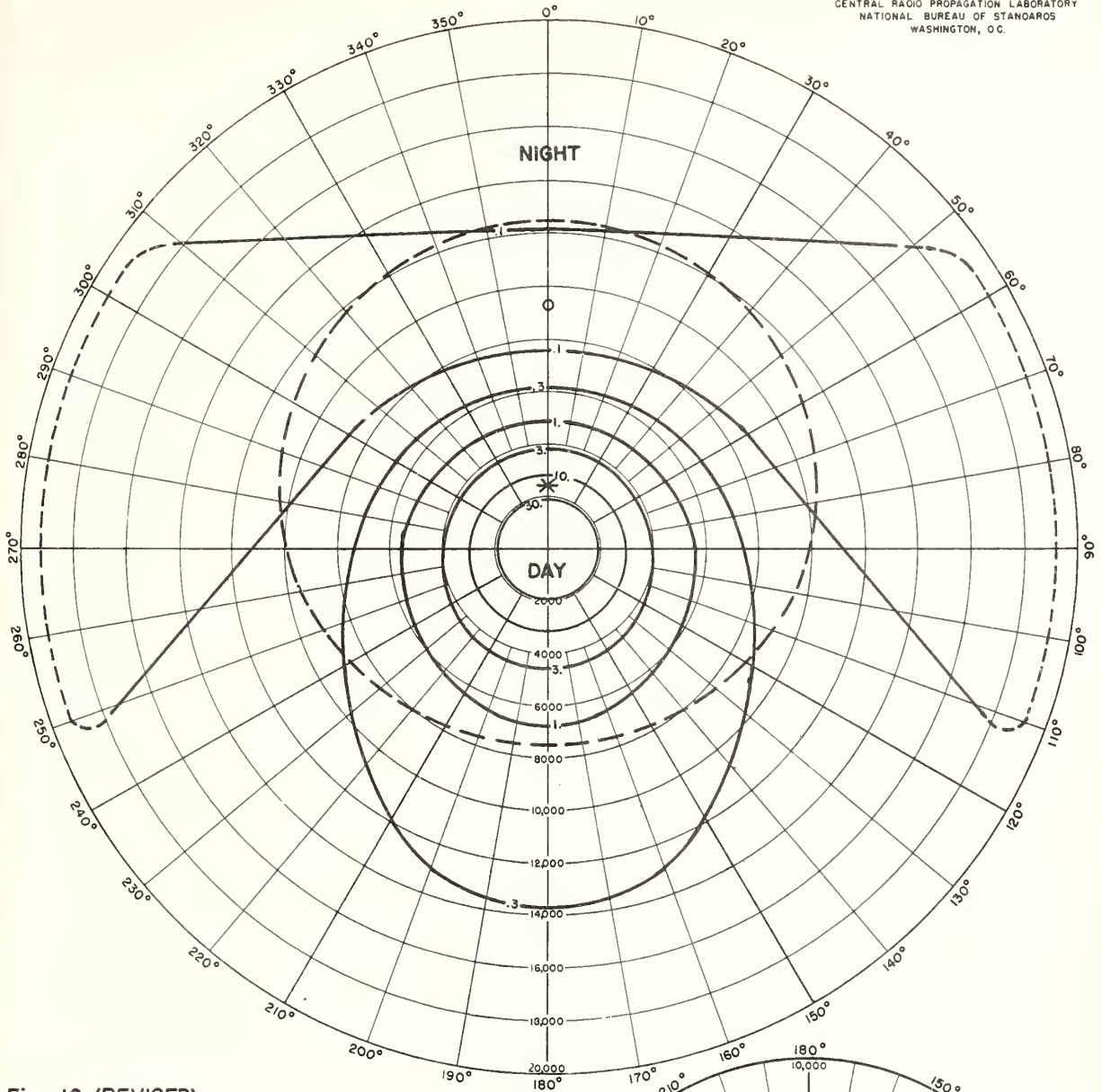
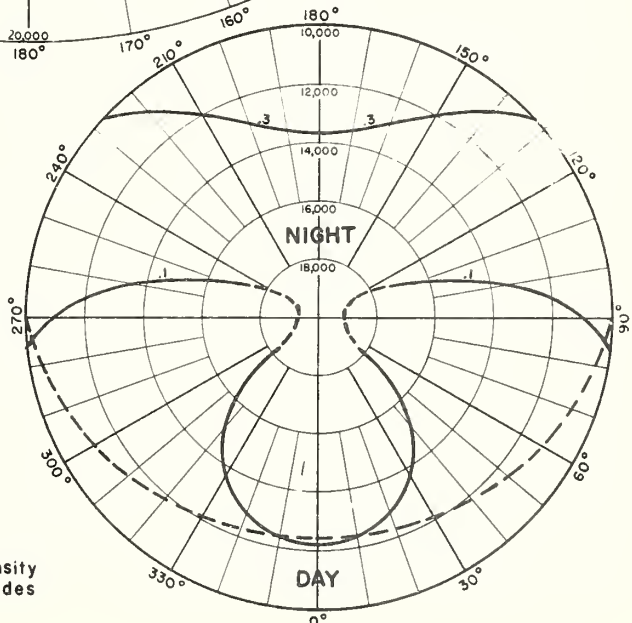


Fig. 16 (REVISED)
FIELD INTENSITY, $\mu\text{V}/\text{m}$, 1 KW, 10 Mc
SUBSOLAR DISTANCE, 2500 km ($22^\circ 30'$)
SUNSPOT MINIMUM

* SUBSOLAR POINT
○ POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes



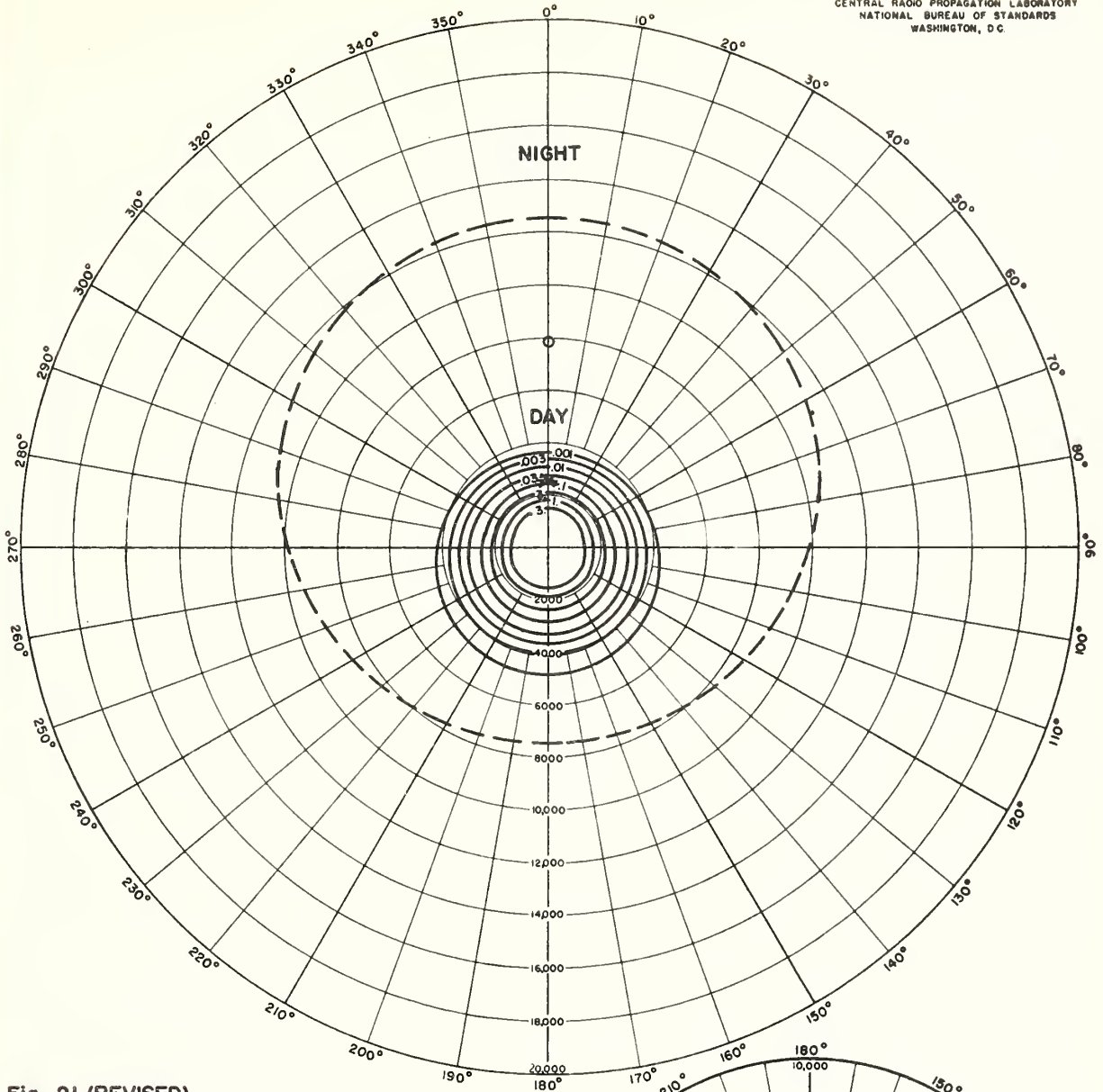
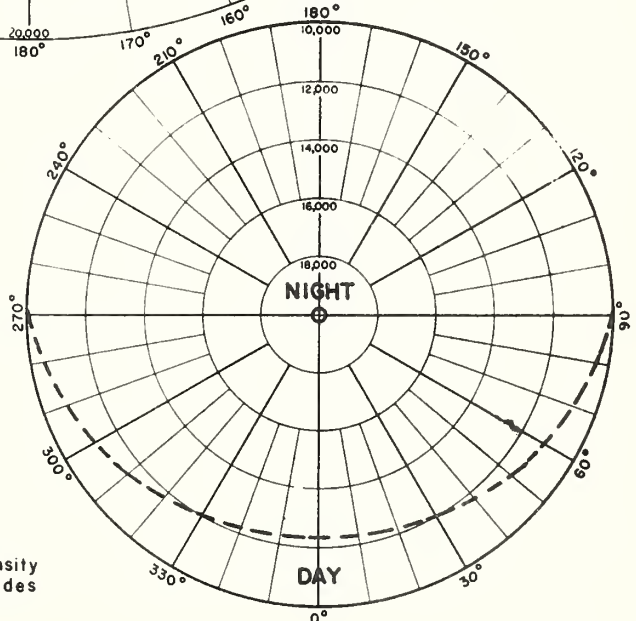


Fig. 21 (REVISED)
FIELD INTENSITY, $\mu\text{V/m}$, 1 KW, 7 Mc
SUBSOLAR DISTANCE, 2500 km ($22^\circ 30'$)
SUNSPOT MAXIMUM

* SUBSOLAR POINT
O POINT OF MINIMUM FIELD INTENSITY



Field Intensity
At Antipodes

* SUBSOLAR POINT
0 POINT OF MINIMUM FIELD INTENSITY



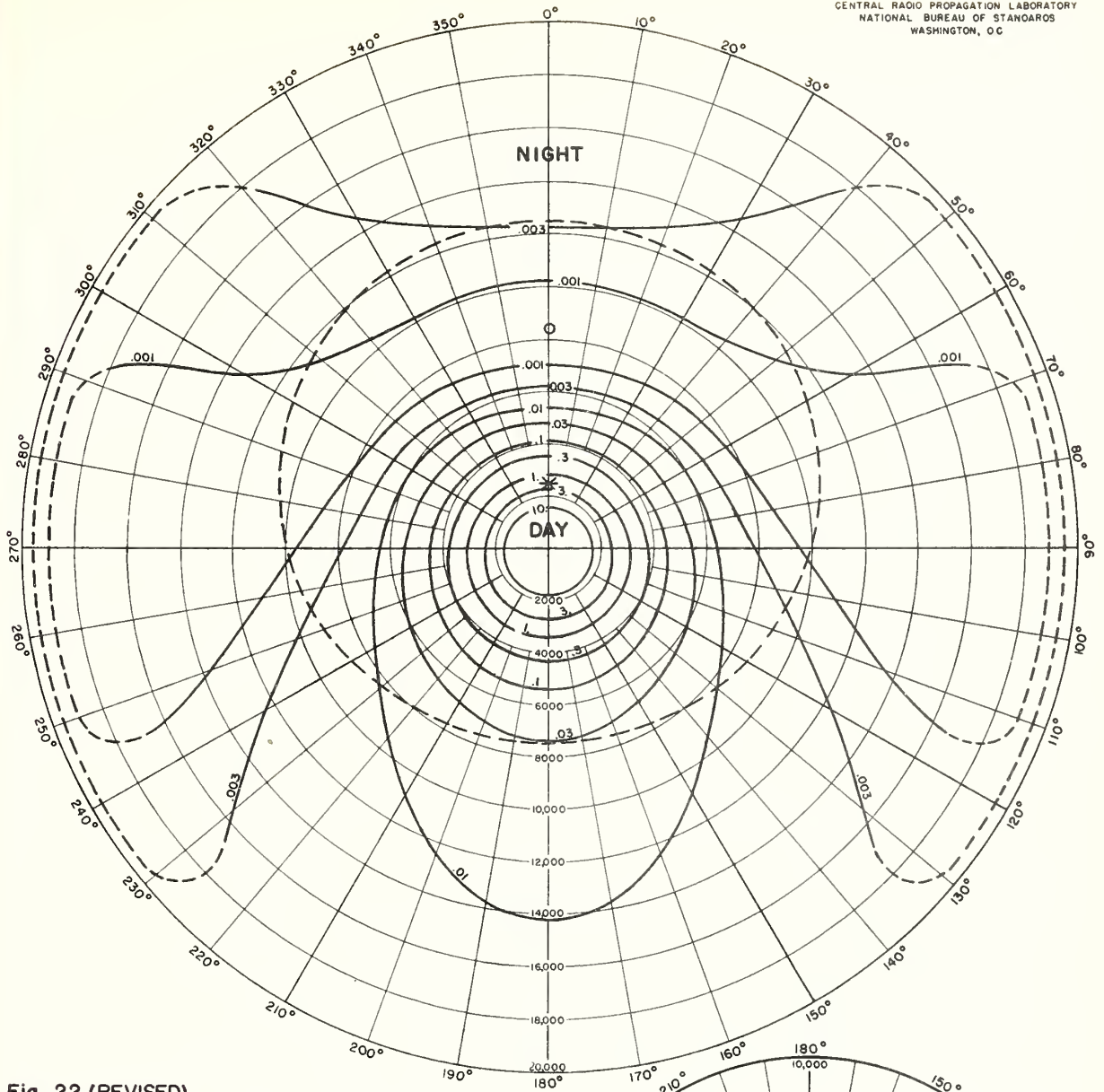
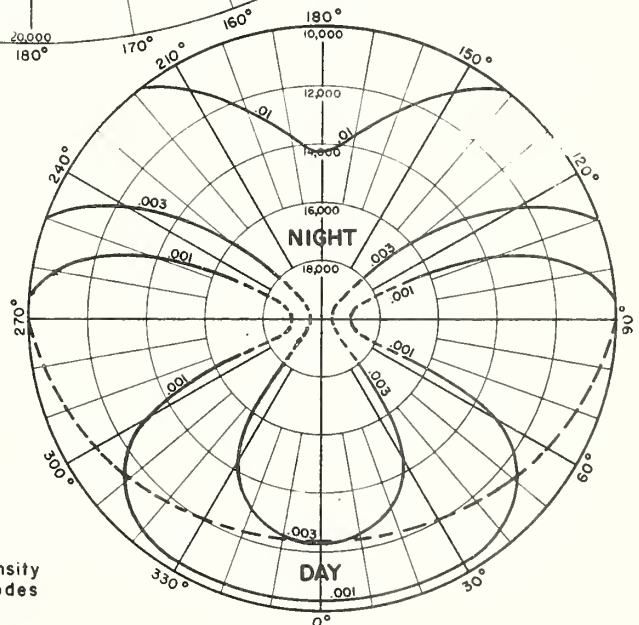


Fig. 22 (REVISED)
FIELD INTENSITY, $\mu\text{V}/\text{m}$, 1 KW, 10 Mc
SUBSOLAR DISTANCE, 2500 km ($22^{\circ}30'$)
SUNSPOT MAXIMUM

* SUBSOLAR POINT
0 POINT OF MINIMUM FIELD INTENSITY



Field Intensity At Antipodes



