

PROPOSED DIRECTIVE ANTENNA FOR
STATION K T R H - HOUSTON, TEXAS
FIFTY KILOWATTS - 740 KILOCYCLES
OCTOBER, 1940

PAGE & DAVIS
MUNSEY BUILDING
WASHINGTON, D. C.

PAGE 8 DAVIS

PROPOSED DIRECTIVE ANTENNA

FOR RADIO STATION KTRH

HOUSTON, TEXAS

FIFTY KILOWATTS - 740 KC.

FULL TIME

OCTOBER, 1940

City of Washington)
)
District of Columbia) ss:

E. C. Page, being duly sworn upon his oath,
deposes and says:

That he is a consulting radio engineer, member
of the firm of Page & Davis, Consulting Radio Engineers of
Washington, D. C., and

That the facts stated in the following report
and all exhibits attached thereto are true of his own knowledge
except as to such statements as are therein stated on information
and belief, and as to such statements, he believes them to be
true.

E. C. Page

E. C. Page

Subscribed and sworn to before me this 24th day of October, 1940.

Carl W. Cogswell

Notary Public

My Commission expires May 1, 1944.

Number of elements - Six

Type of elements - Tapered cross-section, self-supporting insulated at base.

Height above insulators - 275 feet

Height above ground - 280 feet

Height above sea level - 360 feet (approximately)

Orientation of array - See attached sketch

Spacing -

663 feet or 180 degrees between towers in approximately east and west direction. 626 feet or 170 degrees between adjacent towers in approximately north and south line.

Field ratio -

Each tower of the north and south pairs will produce equal fields. Each tower of the center pair will produce twice the field produced by any of the end towers.

Phasing -

Northeast	104°	Center east	74°
Northwest	60°	Southeast	44°
Center west	30°	Southwest	0°

Ground system -

120 radials 300 feet long and a 32 foot square ground screen for each tower.

Adjustment of array -

This array has been designed so that skywave signal exceeded ten per cent of the time in Canada east of the State of Montana will not exceed .025 mv/m. This requirement is satisfied if the signal in the ground plane does not exceed the following values in the indicated directions.

- 2 -

N - 35 degrees E	95 mv/m
N - 53 degrees E	440 mv/m
N - 342 degrees E	180 mv/m

The array will be adjusted so that the above values of field in the horizontal plane are not exceeded.

The signal on the ground plane toward Jovellanos, Cuba will not exceed 400 mv/m, which will produce a limit of less than 2.5 mv/m with the vertical section computed in this direction. Toward San Francisco the signal will not exceed 1000 mv/m which will produce a limit not exceeding 1.75 mv/m to any station operating on 740 kilocycles there.

Method of Computation

The computation of the radiation patterns assumes sinusoidal current distribution on the radiators, and perfectly conducting plane earth in the vicinity of the array.

In computing this pattern any pair of towers in an east-west line are first considered. The usual formula is

$$E_1 = K_1 \cos (90 \cos A \cos V + 22)$$

90 = $\frac{1}{2}$ the spacing in degrees

22 = $\frac{1}{2}$ the phasing in degrees

A = Azimuth angle from line of towers, in this case N- 83° E.

V = Vertical angle from the horizontal plane.

A set of three towers in a north-south line are then considered.

The usual formula is

$$E_2 = K_2 \cos^2 (85 \sin A \cos V + 15)$$

The present coverage of Station KTRH is based upon a survey furnished to Page & Davis by KTRH.

The proposed coverage is based upon the effective fields computed for the attached directive array. The following conductivities were used, based upon a study of the F.C.C. Conductivity Map, the present coverage of KTRH, and soil maps of the area. The greatest departure from the F.C.C. map is in the use of a much higher conductivity along the coast than shown on the map. Whereas the conductivity map shows a value of 6×10^{-14} e.m.u., the present coverage of KTRH indicates a value in excess of 4×10^{-13} e.m.u.

For the 250 and 25 mv/m - uniform 1.25×10^{-13} e.m.u.

For the 5 mv/m (and 5.3 mv/m)

1.5×10^{-13} e.m.u. - east

1.25×10^{-13} e.m.u. from north of east through north and counter-clockwise to N- 110 degrees W.

N - 117 degrees W - 2×10^{-13} e.m.u.

N - 120 degrees W to Gulf of Mexico 3×10^{-13} e.m.u.

East along coast - 2×10^{-13} e.m.u. The same values were used for the 2.5 and 2 mv/m contours as were used for the 5 mv/m contour.

For the 0.5 mv/m contour 10^{-13} e.m.u. was used east along the coast. 8×10^{-13} e.m.u. was used from N - 70 degrees E to North. 1.25×10^{-13} e.m.u. was used from North to N - 120 degrees West. Along the coast to southwest a value of 2.5×10^{-13} e.m.u. was used.

The night limit to KTRH on 740 kilocycles is 5.3 mv/m, caused by a field of 1770 mv/m from a fifty kilowatt station in Toronto, Canada.

- 2 -

The 5.3 mv/m contour is not shown on the map, as the maximum distance between the 5 and the 5.3 mv/m contours is three miles. Areas and population have been computed separately for the 5 and 5.3 mv/m contours.

In computing population, cities of over 2,500 have not been included if they lie outside the 2 mv/m contour.

- 3 -

Sin A rather than cos A is used so that A may be measured in a counter-clockwise direction from N- 83 degrees E.

Combining these two equations and the usual expression for the vertical section of a single element, we have:

$$E = 5000 \cos (90 \cos A \cos V + 22) \cos^2 (85 \sin A \cos V + 15) \\ \times \frac{\cos 75 - \cos (75 \sin V)}{(\cos 75 - 1) \cos V}$$

75 degrees is the electrical height of the radiators proposed for the array.

5000 is a constant which adjusts the area of the horizontal plane pattern to equal the area of the circular pattern produced by a single element operating with the same power. An r.m.s. field of 1250 mv/m for fifty kilowatts (177 mv/m/kw) has been used in these computations.

As a sample calculation compute the field in the large lobe at an angle ten degrees above the horizon.

$$A = 210 \text{ degrees}$$

$$V = 10 \text{ degrees}$$

$$\cos (90 \cos 210 \cos 10 + 22) = \cos 54.8$$

$$\cos (85 \sin 210 \cos 10 + 15) = \cos 26.85$$

$$\frac{\cos 75 - \cos (75 \sin 10)}{(\cos 75 - 1) \cos 10} = 0.98$$

$$E = 5000 \cos 54.8 \cos^2 26.85 \times 0.98 = 2240 \text{ mv/m}$$

TABULATION OF POPULATION AND AREA DATA
FOR STATION K T R H - HOUSTON, TEXAS

(a) Number of persons residing within the contours required by Section 18 (a) (1).

	<u>250 mv/m</u>	<u>25 mv/m</u>	<u>5 mv/m</u>	<u>2 mv/m</u>
Present:				
Night	150	22,000	432,000	474,000
Day	750	260,000	445,000	606,000
Proposed:				
Day & Night	340	366,000	744,000	988,000

(b) Areas and number of persons residing within the contours required by Section 18 (a) (2).

	<u>Contour (mv/m)</u>	<u>Areas (sq.mi.)</u>	<u>Persons</u>
Night	2.5	4,750	471,000
Day	0.5	14,150	730,000

(c) Areas and number of persons residing within the contours required by Section 18 (a) (3).

	<u>Contour(mv/m)</u>	<u>Areas (sqmi)</u>	<u>Persons</u>
Night	2.5	20,900	908,000
Day	0.5	53,000	1,553,000

(d) Areas and number of persons residing within the contours required by Section 18 (a) (4).

	<u>Contour (mv/m)</u>	<u>Areas (sq.mi.)</u>	<u>Persons</u>
Night	5.3	13,200	732,000
Day	0.5	53,000	1,553,000

K T R HTABULATION OF COMPUTATIONSHorizontal Pattern

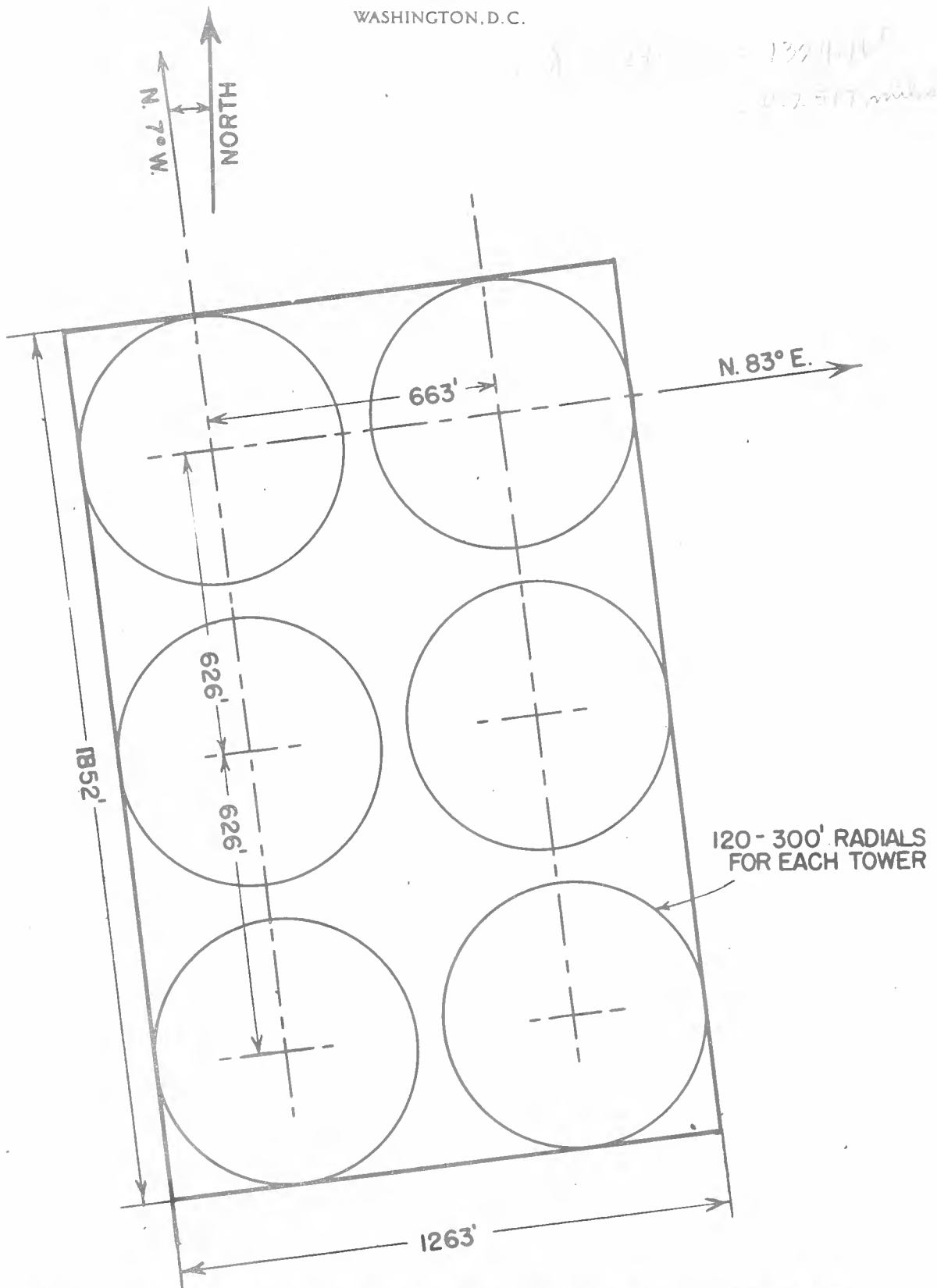
<u>Angle</u>	<u>Field Intensity</u> (uv/m)	<u>Angle</u>	<u>Field Intensity</u> (mv/m)
0	1750	190	1985
10	1330	200	2160
20	738	210	2200
30	249	220	2090
40	105	230	1665
50	36	240	1250
60	1.2	250	925
70	22	260	655
80	89	270	545
90	140	280	515
100	114	290	565
110	36	300	530
120	8.9	310	359
130	120	320	48
140	456	330	676
150	810	340	1380
160	1185	350	1760
170	1500	360	1750
180	1750		

K T R H -TABULATION OF COMPUTATIONSVertical Sections

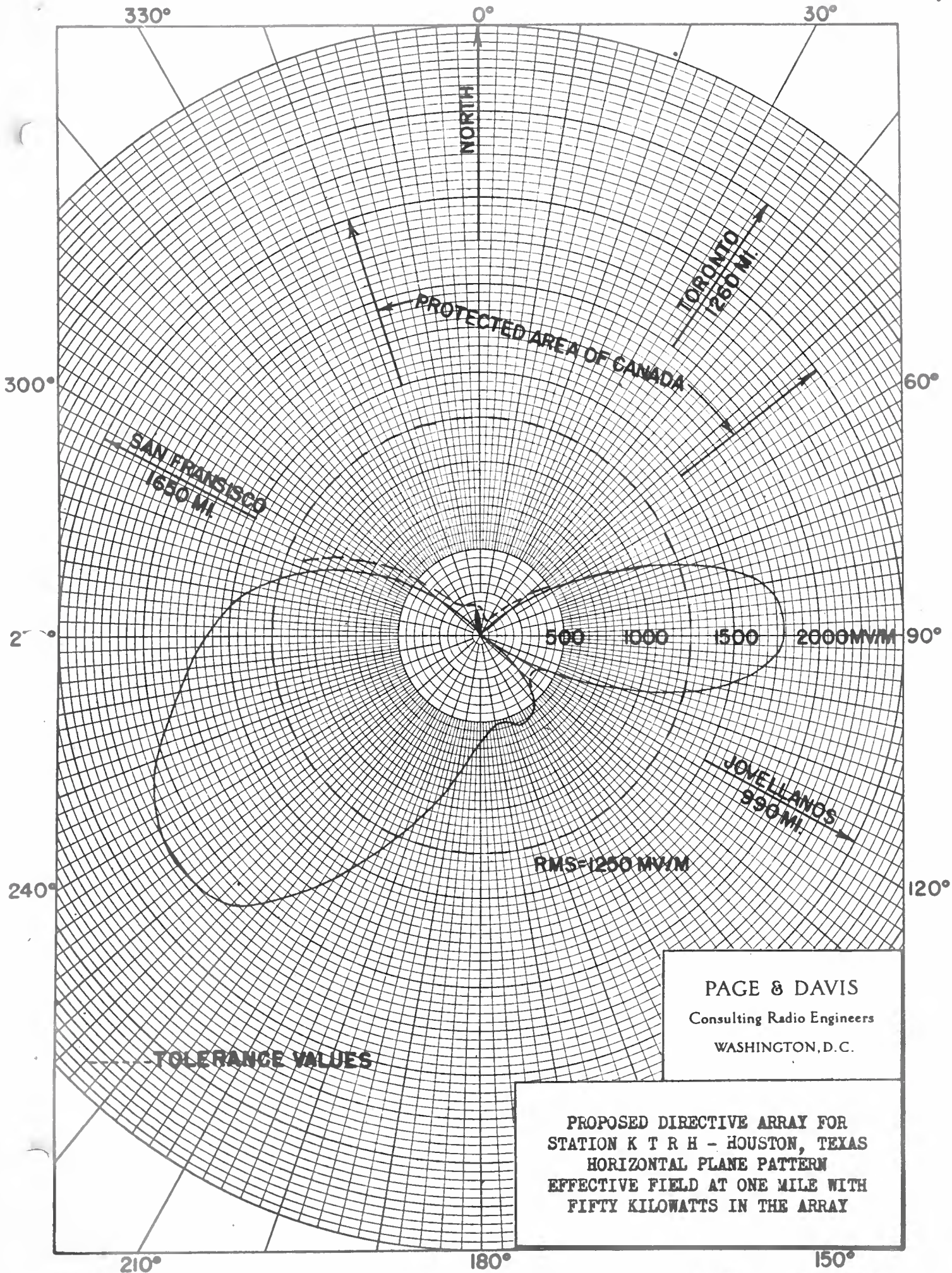
Angle	Line of towers		Null to SE	Jovellanos	Toronto	KSFO	Large Lobe
	East-West	North-South					
0	1750	140	0	354	27	645	2200
10	1610	106	50.5	150	34.3	681	2240
20	1230	30.4	206	62	67.2	782	2380
30	684	22.8	427	242	146	1190	2540
40	5.1	95.4	787	628	287	1250	2630
50	492	324	1080	971	487	1320	2560
60	824	576	1200	1330	675	1310	2120
70	857	689	1050	1050	720	1090	1480
80	553	502	618	622	430	626	657
90	0	0	0	0	0	0	0
100	699	651					
110	1402	1230					
120	1930	1570					
130	2260	1590					
140	2330	1340					
150	2200	1020					
160	1980	773					
170	1820	603					
180	1750	545					

Signal in mv/m.

1324-11
0.2517 miles



GROUND LAYOUT FOR PROPOSED 50 KW DIRECTIVE
ARRAY FOR KTRH
APPROXIMATELY 55 ACRES



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PROPOSED DIRECTIVE ARRAY FOR
 STATION K T R H - HOUSTON, TEXAS
 HORIZONTAL PLANE PATTERN
 EFFECTIVE FIELD AT ONE MILE WITH
 FIFTY KILOWATTS IN THE ARRAY

330°

0°

30°

300°

60°

210°

90°

240°

120°

210°

180°

150°

TORONTO

JOWELLANOS

100

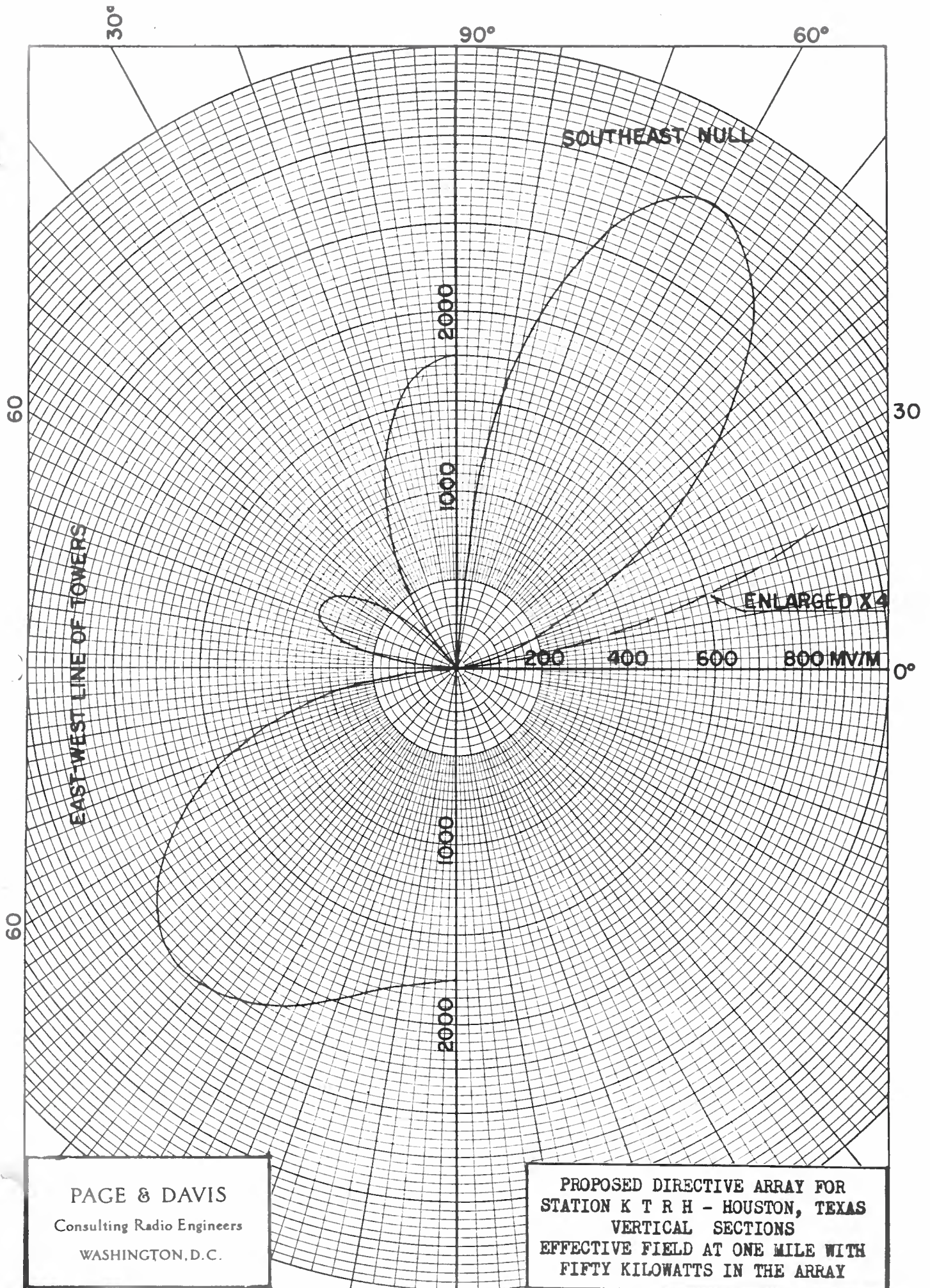
200 MV/M

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PROPOSED DIRECTIVE ARRAY FOR
STATION K T R H - HOUSTON, TEXAS
ENLARGED VIEW OF NULLS
EFFECTIVE FIELD AT ONE MILE WITH
FIFTY KILOWATTS IN THE ARRAY

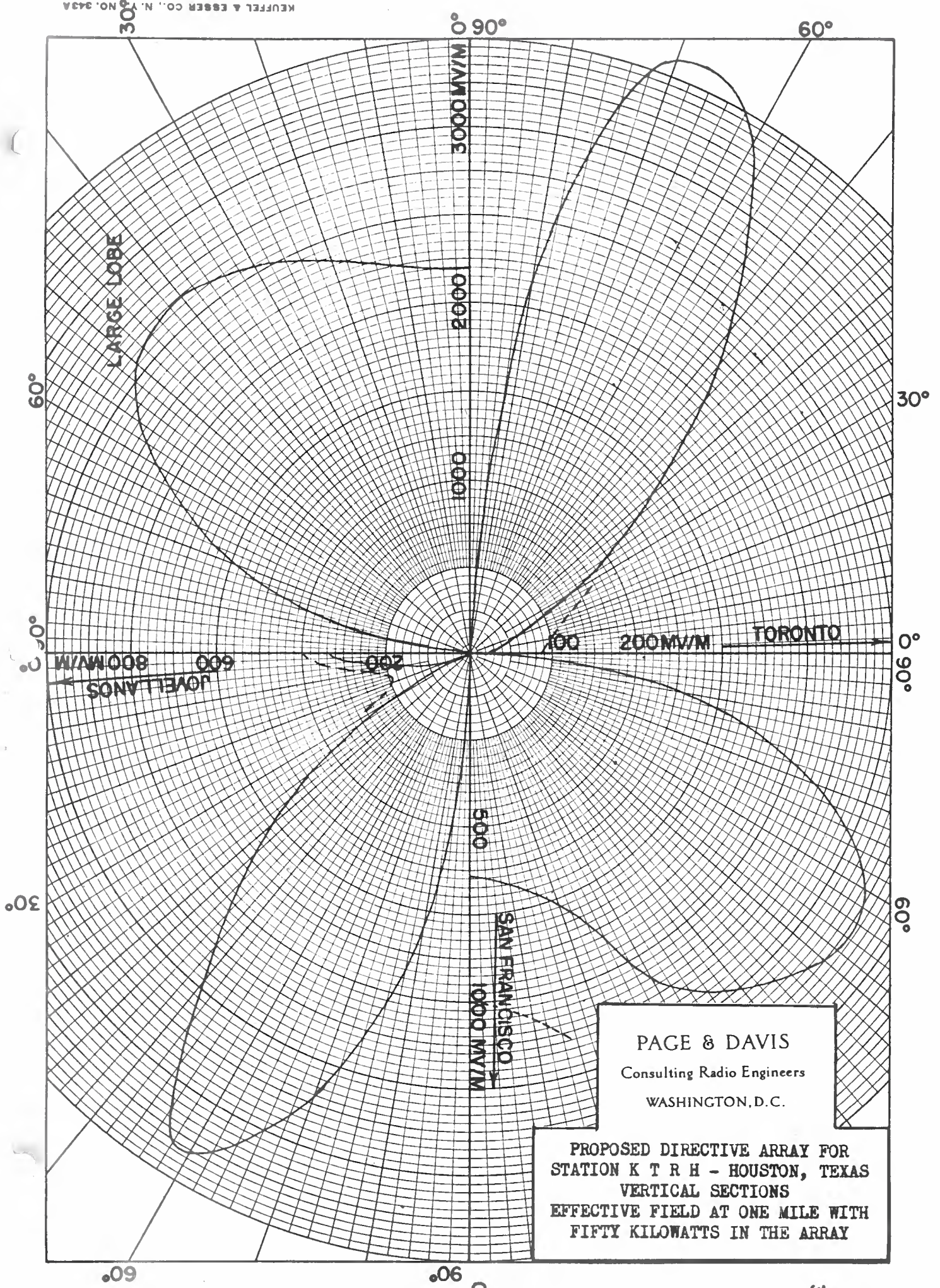


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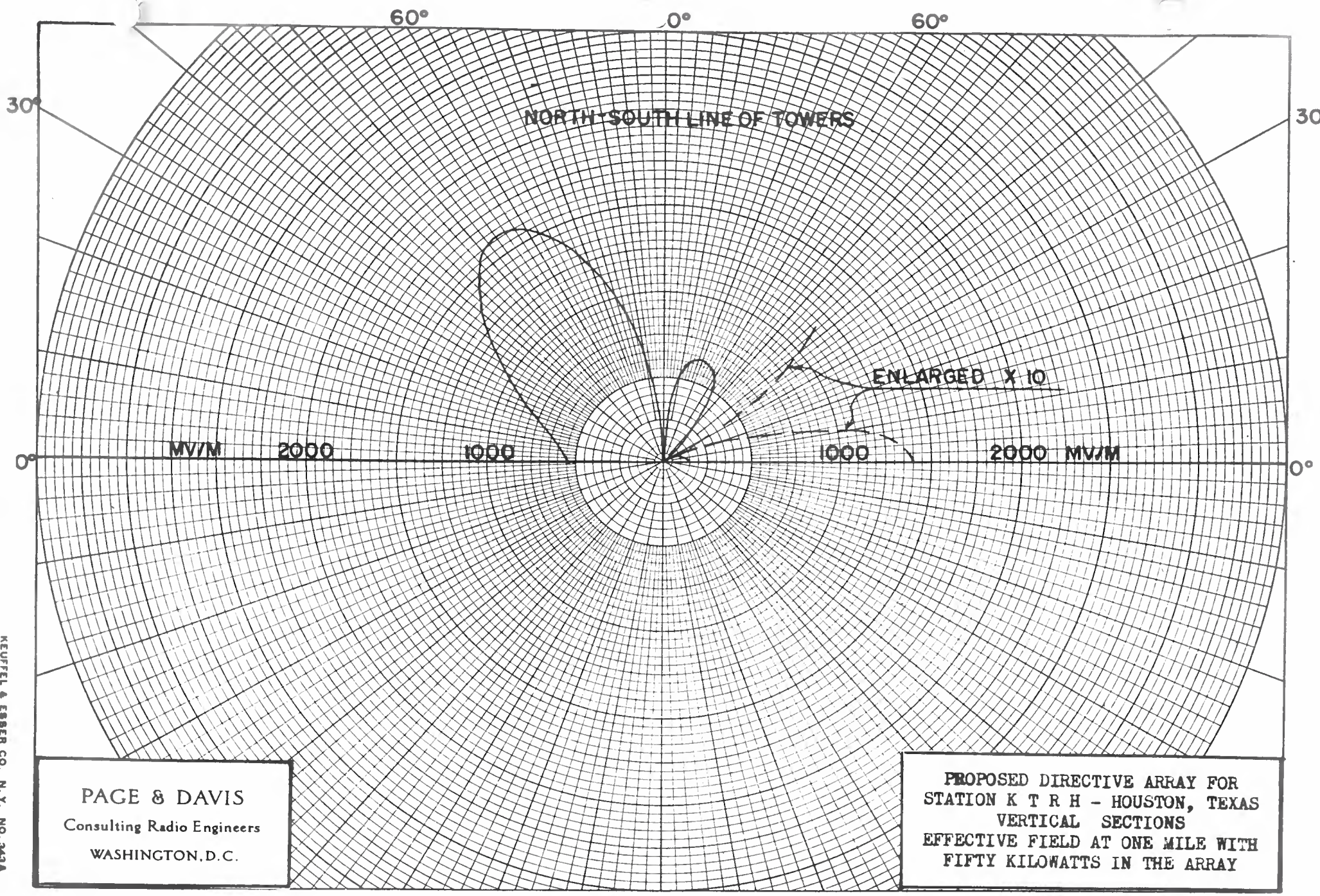
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PROPOSED DIRECTIVE ARRAY FOR
 STATION K T R H - HOUSTON, TEXAS
 VERTICAL SECTIONS
 EFFECTIVE FIELD AT ONE MILE WITH
 FIFTY KILOWATTS IN THE ARRAY



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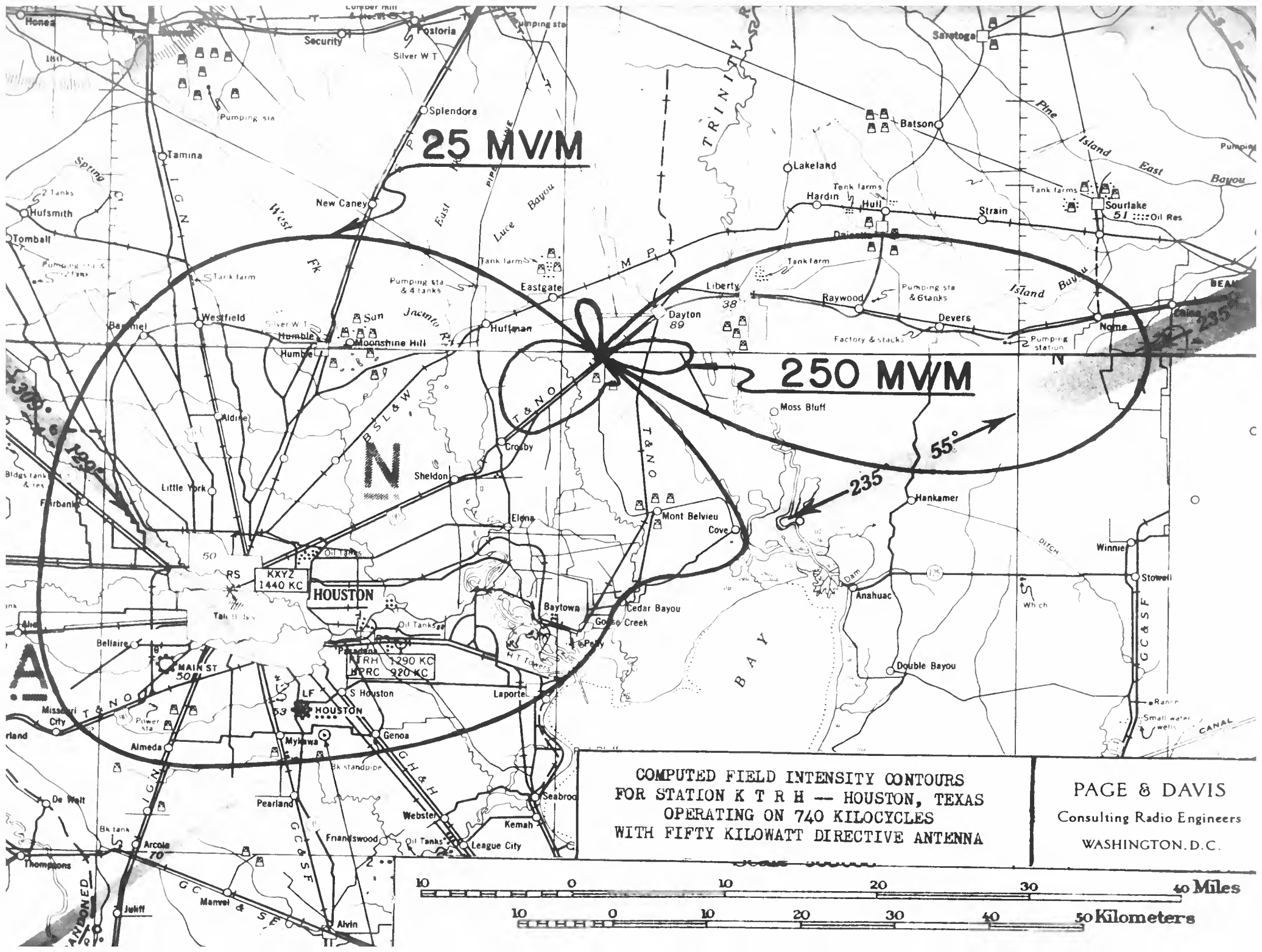
PROPOSED DIRECTIVE ARRAY FOR
 STATION K T R H - HOUSTON, TEXAS
 VERTICAL SECTIONS
 EFFECTIVE FIELD AT ONE MILE WITH
 FIFTY KILOWATTS IN THE ARRAY



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PROPOSED DIRECTIVE ARRAY FOR
 STATION K T R H - HOUSTON, TEXAS
 VERTICAL SECTIONS
 EFFECTIVE FIELD AT ONE MILE WITH
 FIFTY KILOWATTS IN THE ARRAY

KEUFFEL & ESSER CO., N. Y., NO. 343A



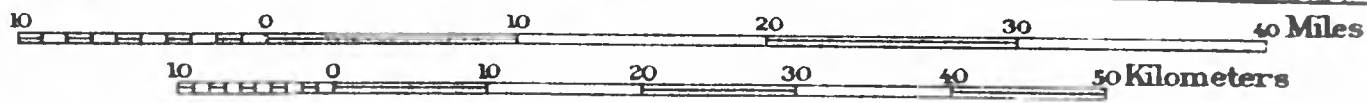
25 MV/M

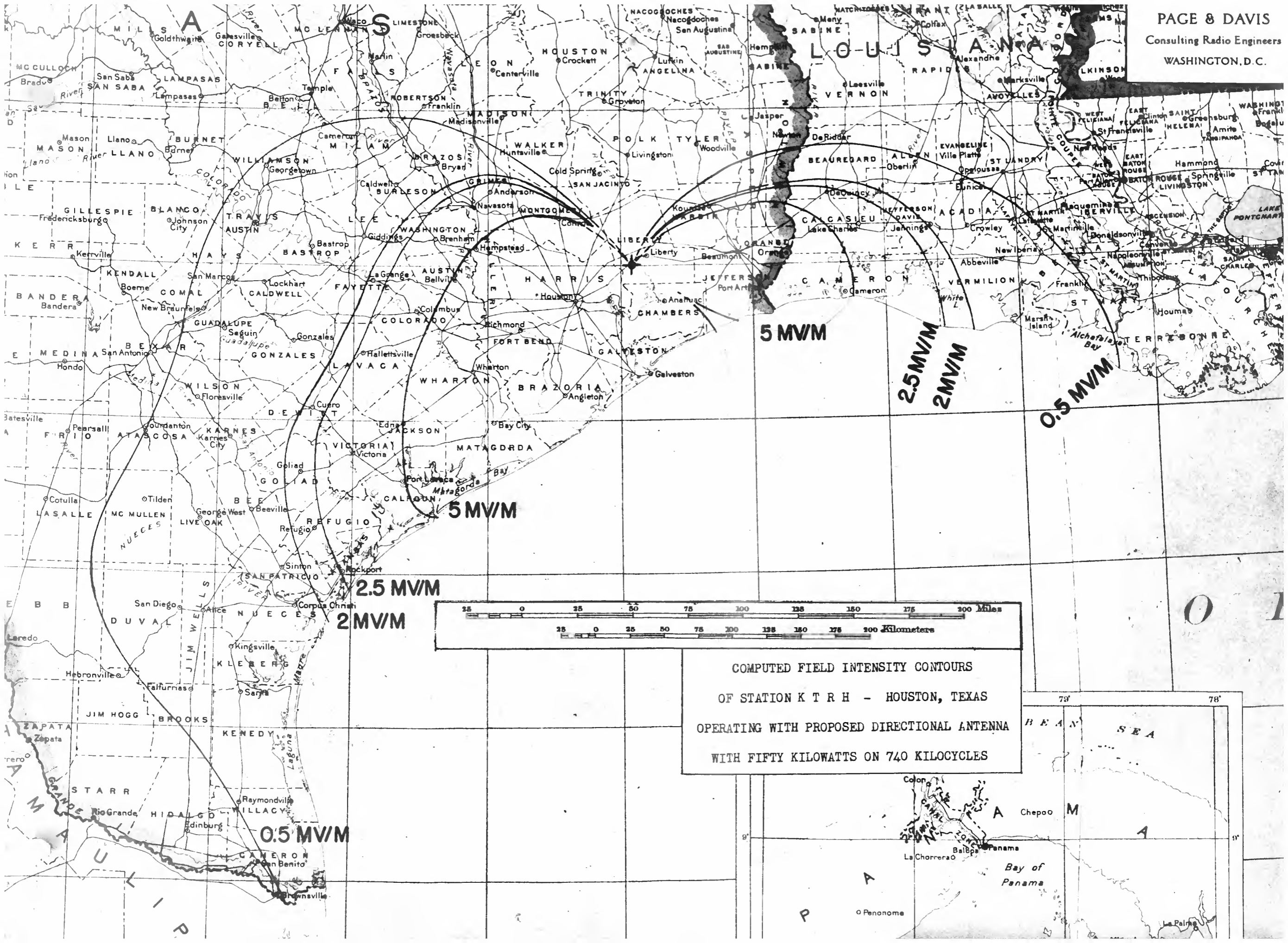
250 MV/M

55°

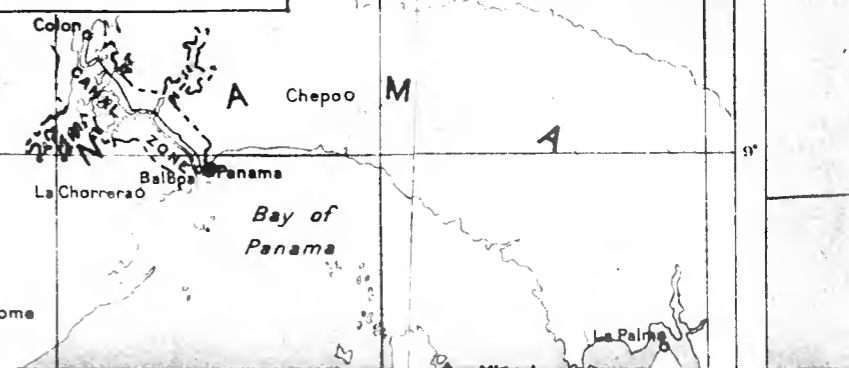
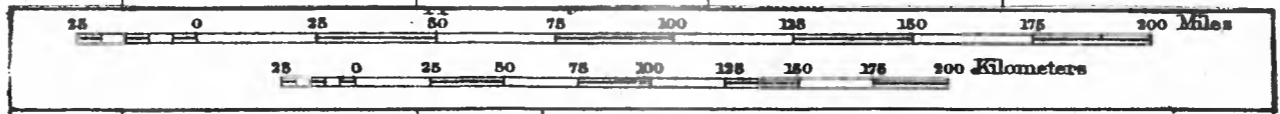
COMPUTED FIELD INTENSITY CONTOURS
 FOR STATION K T R H — HOUSTON, TEXAS
 OPERATING ON 740 KILOCYCLES
 WITH FIFTY KILOWATT DIRECTIVE ANTENNA

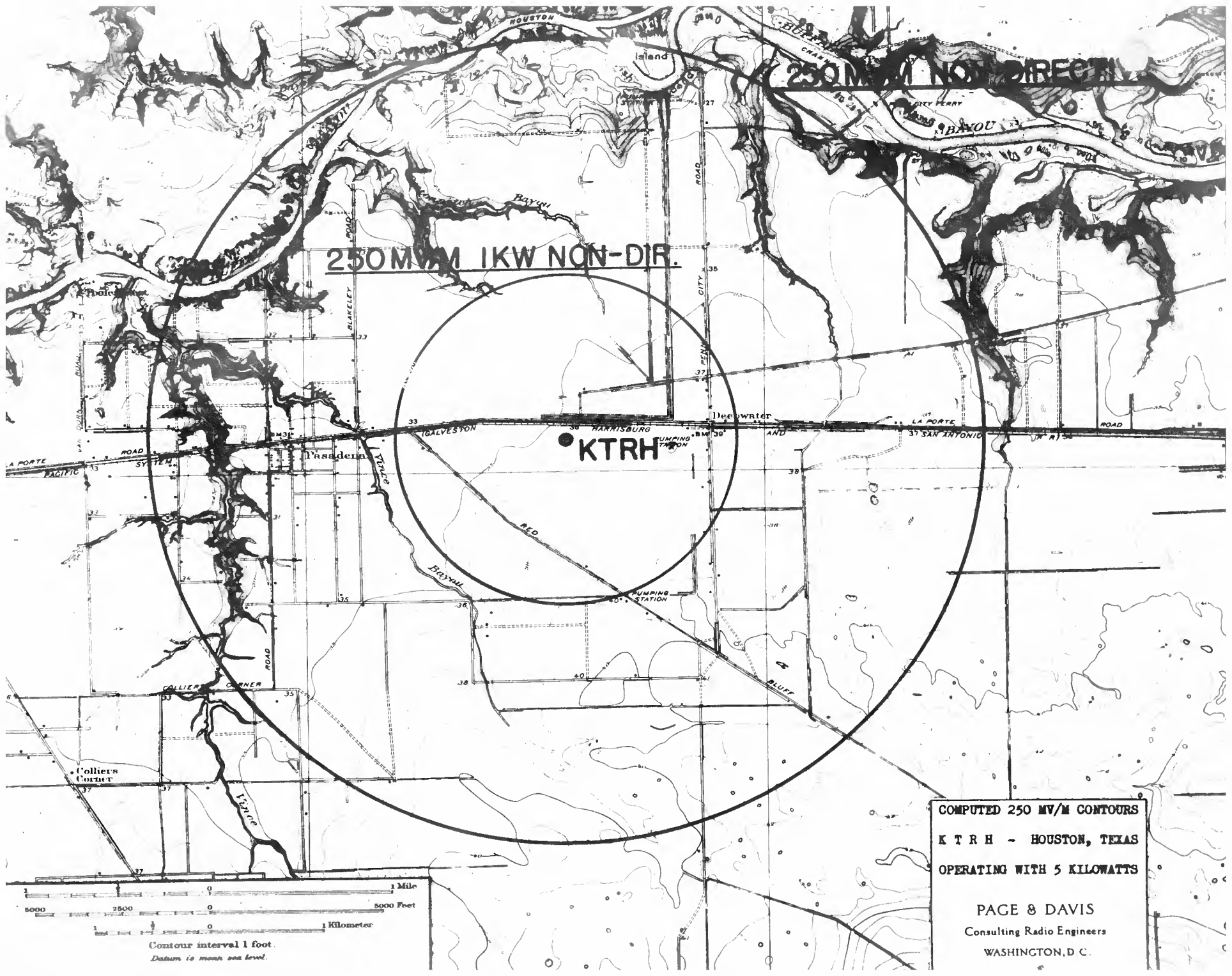
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COMPUTED FIELD INTENSITY CONTOURS
OF STATION K T R H - HOUSTON, TEXAS
OPERATING WITH PROPOSED DIRECTIONAL ANTENNA
WITH FIFTY KILOWATTS ON 740 KILOCYCLES





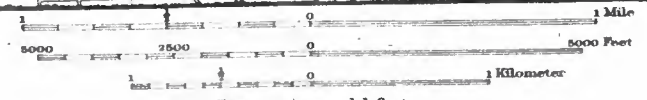
250 MV/M IKW NON-DIR.

250 MV/M NON-DIRECTIV.

KTRH

COMPUTED 250 MV/M CONTOURS
K T R H - HOUSTON, TEXAS
OPERATING WITH 5 KILOWATTS

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Contour interval 1 foot.
Datum is mean sea level.



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ROBERTSON

AUSTIN

COLORADO

ANAHUAC

JEFFERSON

CAMERON

ROBERTSON

WARRANTON

BERNARD

GALVESTON

JEFFERSON

CAMERON

ROBERTSON

JACKSON

BRAZORIA

GALVESTON

JEFFERSON

CAMERON

ROBERTSON

CALHOUN

MATAGORDA

GALVESTON

JEFFERSON

CAMERON

ROBERTSON

ENGINEERING EXHIBITS FOR
KTRH BROADCASTING COMPANY
DOCKET 8753
JANUARY 1948

GEORGE C. DAVIS
MUNSEY BUILDING
WASHINGTON, 4, D. C.

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ENGINEERING EXHIBITS FOR
KTRH BROADCASTING COMPANY

DOCKET 8753

JANUARY 1948

SPECIFICATIONS FOR DIRECTIVE
ANTENNA

Number of Elements

Two

Type of Elements

Self-supporting, tapered steel towers, insulated at the base.

Height of Elements

Above insulators	-	275 ft.
Above ground	-	280 ft.
Above mean sea level	-	314 ft.
Electrical height	-	75 degrees

Orientation of the Array

On a line bearing true north 120 degrees east

Spacing between Elements

374.5 feet, or 101.4 electrical degrees

Phasing of Elements

50 degrees, southwest tower leading

Field Ratio

Both towers will produce equal fields

Ground System

120 radials for each tower, 300 feet long, or to connecting copper straps. A 42 foot ground screen is formed by inter radials at the base of each tower.

Time of Use

Until local sunset at Houston, Texas

Adjustment of the Array

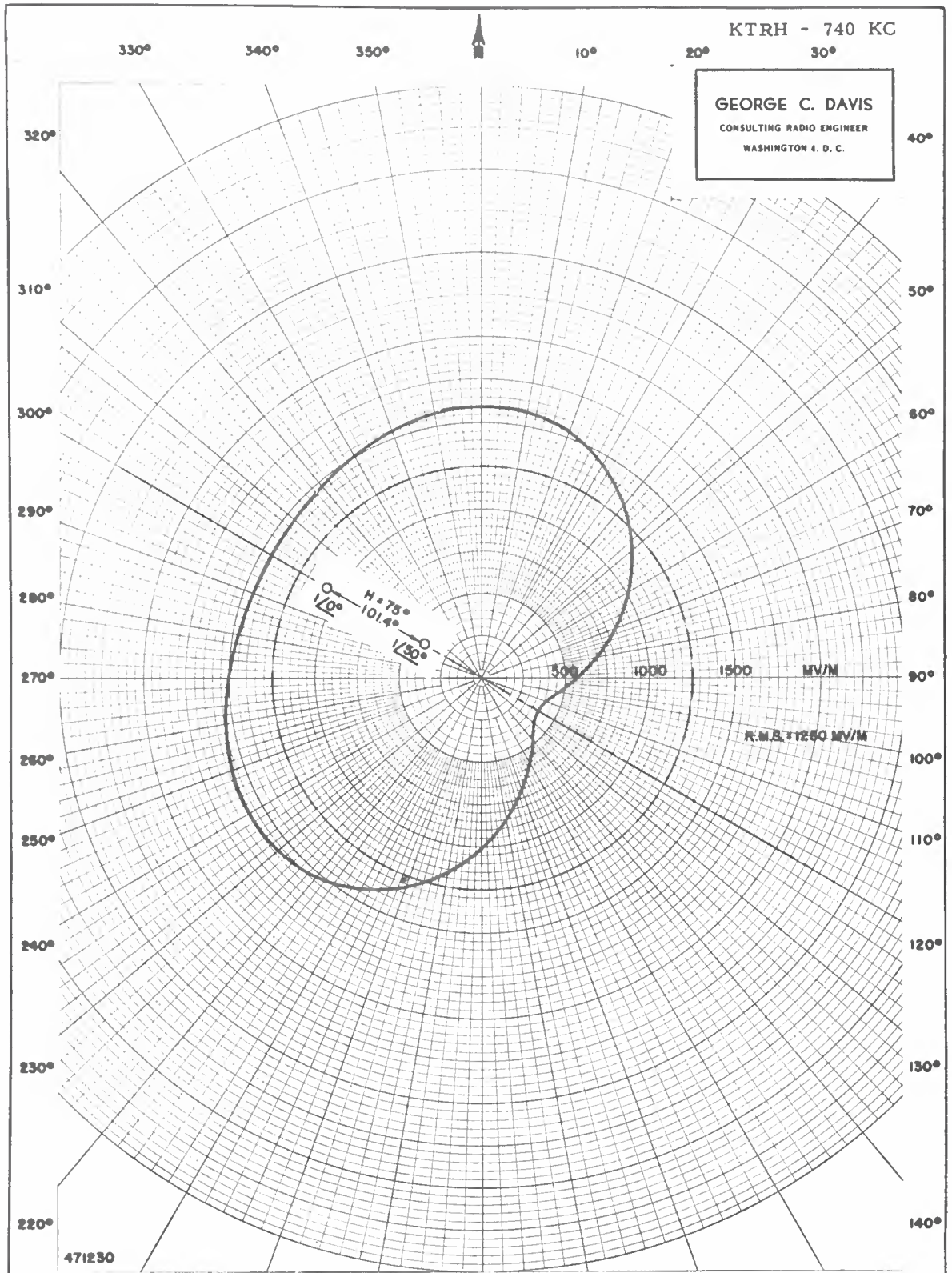
The array will be adjusted so that the pattern will be within 10% of the computed values.

KTRH - 740 KC

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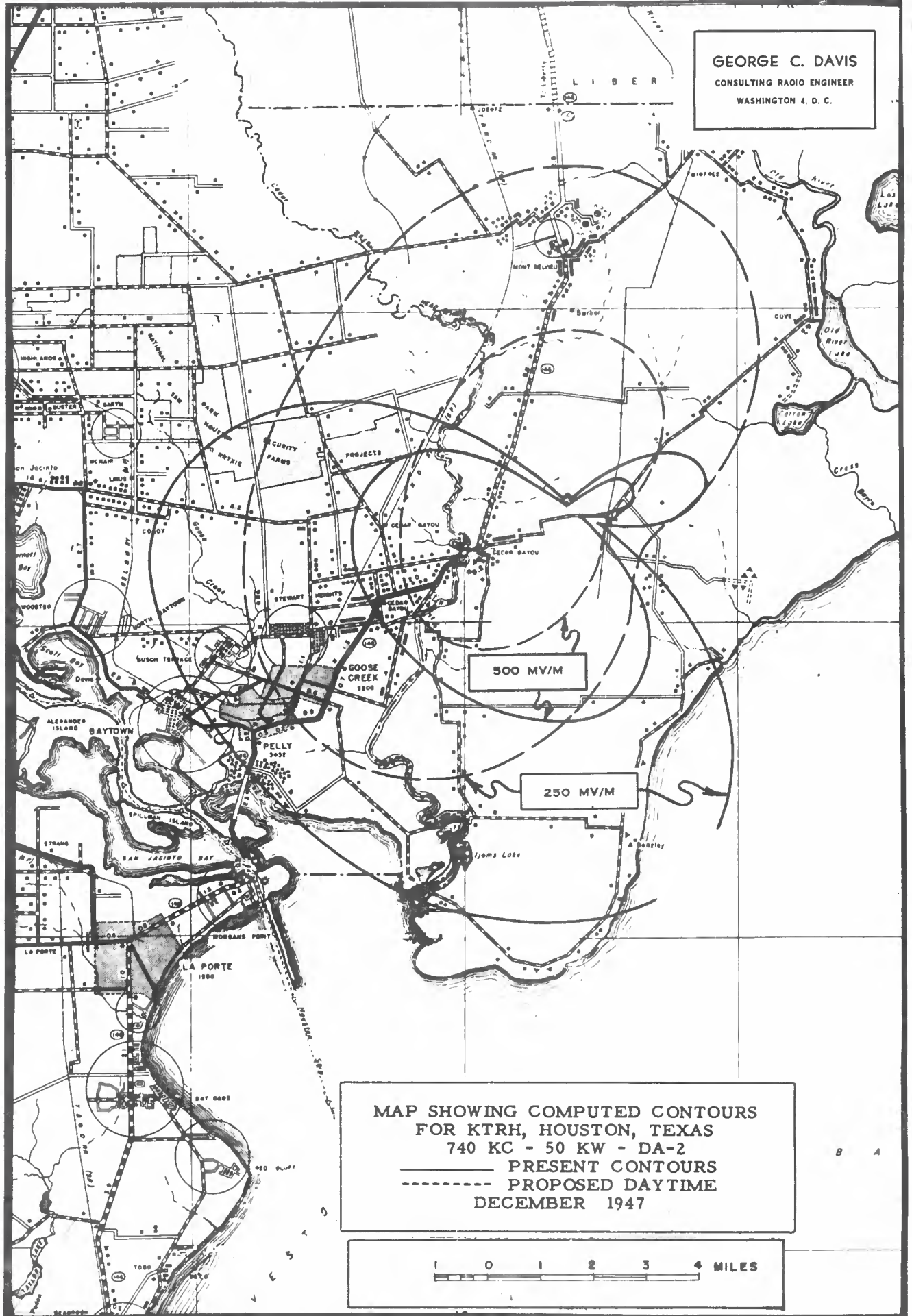
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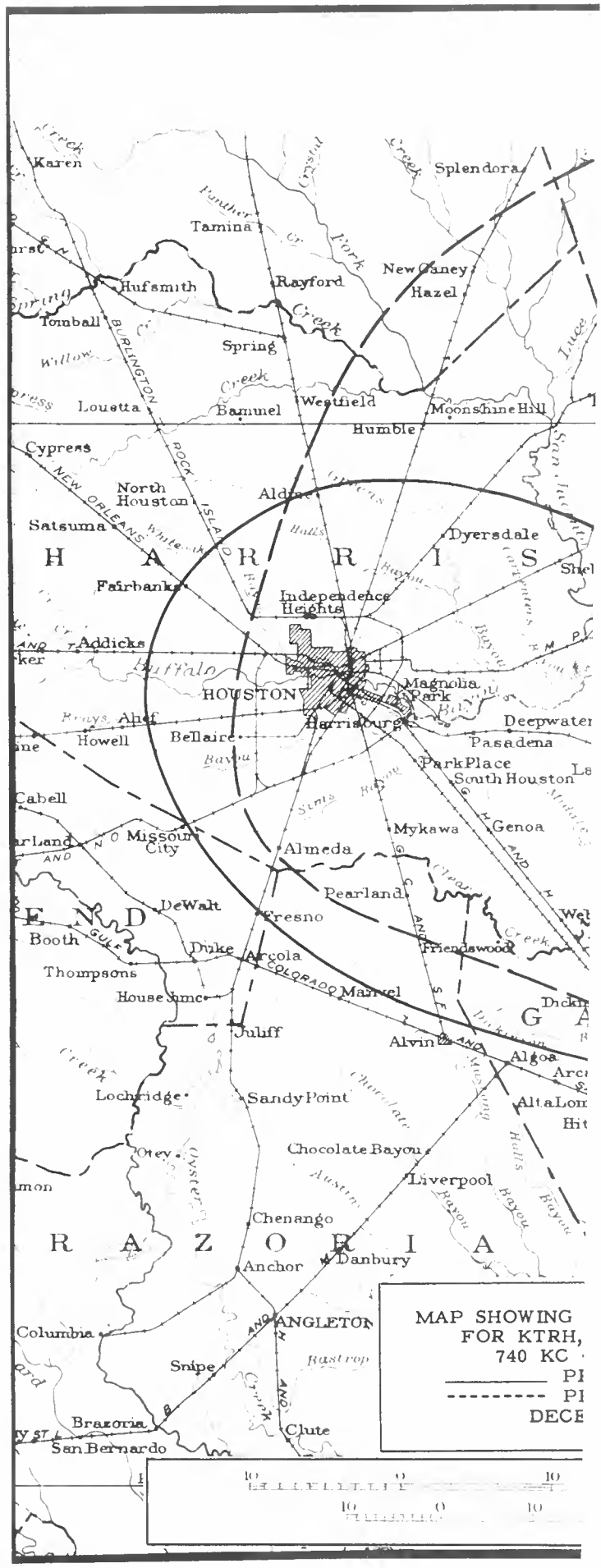
DAYTIME HORIZONTAL PLANE PATTERN
 FOR PROPOSED OPERATION AT
 KTRH, HOUSTON, TEXAS
 740 KC - 50 KW - DA-2
 DECEMBER 1947

3
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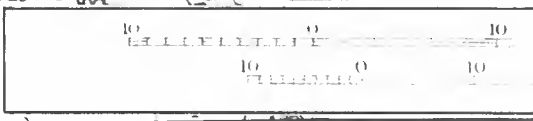


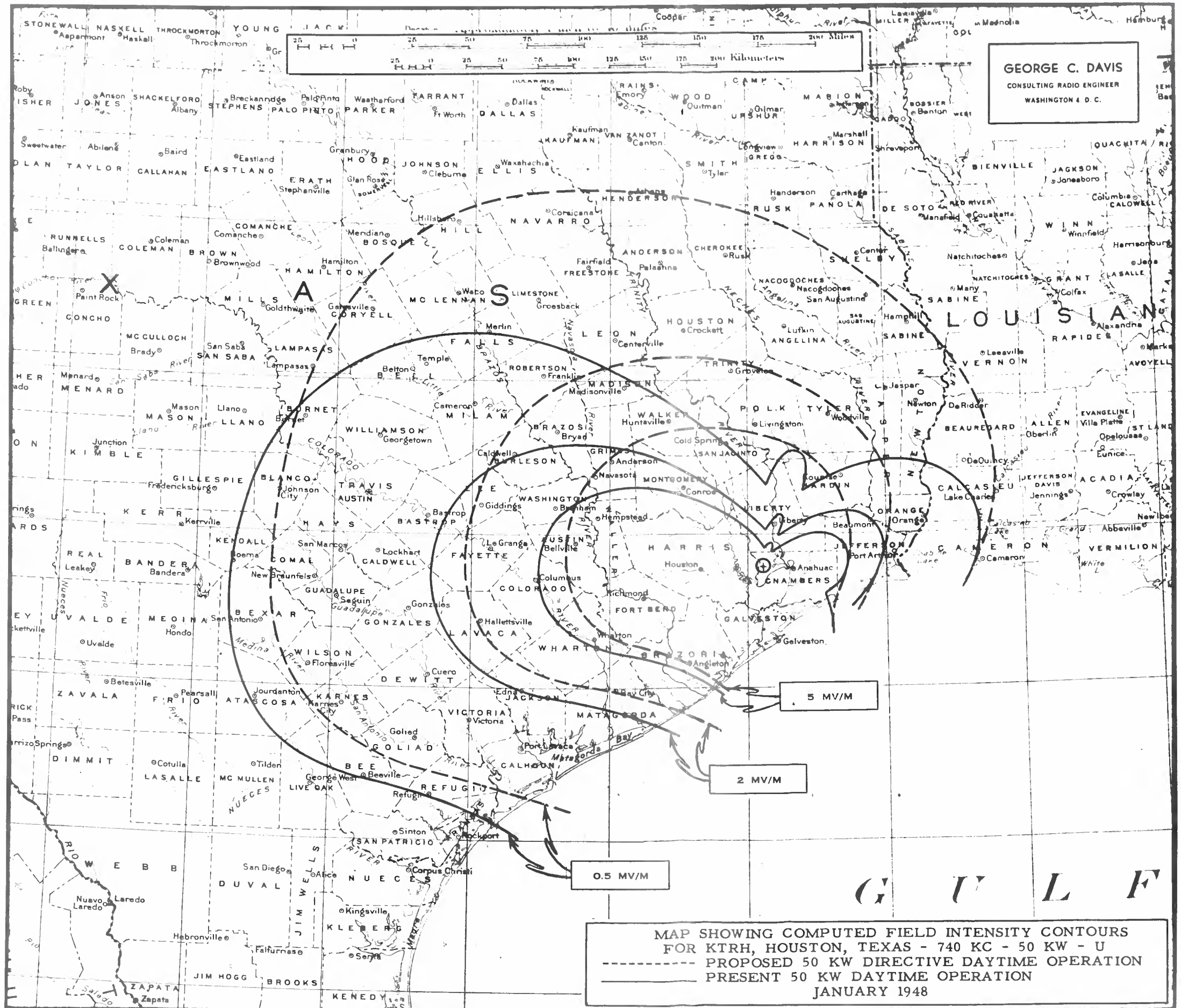
MAP SHOWING COMPUTED CONTOURS
FOR KTRH, HOUSTON, TEXAS
740 KC - 50 KW - DA-2
—— PRESENT CONTOURS
- - - - PROPOSED DAYTIME
DECEMBER 1947





MAP SHOWING
FOR KTRH,
740 KC
 ——— PI
 - - - - PI
 DECE





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**MAP SHOWING COMPUTED FIELD INTENSITY CONTOURS
 FOR KTRH, HOUSTON, TEXAS - 740 KC - 50 KW - U**
 ----- PROPOSED 50 KW DIRECTIVE DAYTIME OPERATION
 _____ PRESENT 50 KW DAYTIME OPERATION
 JANUARY 1948

Exhibit No. _____

Docket No. 8753

POPULATION AND AREA DATA FOR
PRESENT AND PROPOSED DAYTIME OPERATION
FOR STATION KTRH
HOUSTON, TEXAS
740 KC - 50 KW - DA(2)

<u>Contour</u>	<u>Population</u> ¹⁹⁴⁰		<u>Area (Sq. Mi.)</u>	
	<u>Present</u>	<u>Proposed</u>	<u>Present</u>	<u>Proposed</u>
500 mv/m	1,215	680	---	---
250 mv/m	14,590	10,560	---	---
25 mv/m	502,100	530,785	---	---
5 mv/m	737,400	782,085	---	---
2.0 mv/m	984,741	1,150,809	15,500	16,000
0.5 mv/m	1,547,413 *	1,974,610 *	42,400	59,800

* Does not include population in cities in excess of 2500 persons located outside the 2.0 mv/m contour.

(Faint handwritten notes and signatures at the bottom of the page)

TABULATION OF CHANGES IN KTRH SERVICE AREA
FROM PRESENT TO PROPOSED OPERATION

<u>Contour</u>	<u>Direction</u>	<u>Change</u>	<u>Population</u>	<u>Area (Sq. Mi.)</u>
0.5 mv/m	North	Gain	457,613	22,061
0.5 mv/m	West	Loss	83,321	3,674
TOTAL (Present to Proposed)				
NET GAIN			374,492	18,387
2 mv/m	North	Gain	197,831	7,504
2 mv/m	West	Loss	34,423	1,914
TOTAL (Present to Proposed)				
NET GAIN			163,408	5,590

Estech
Clearcopy Onion-Skin
MADE IN U.S.A.

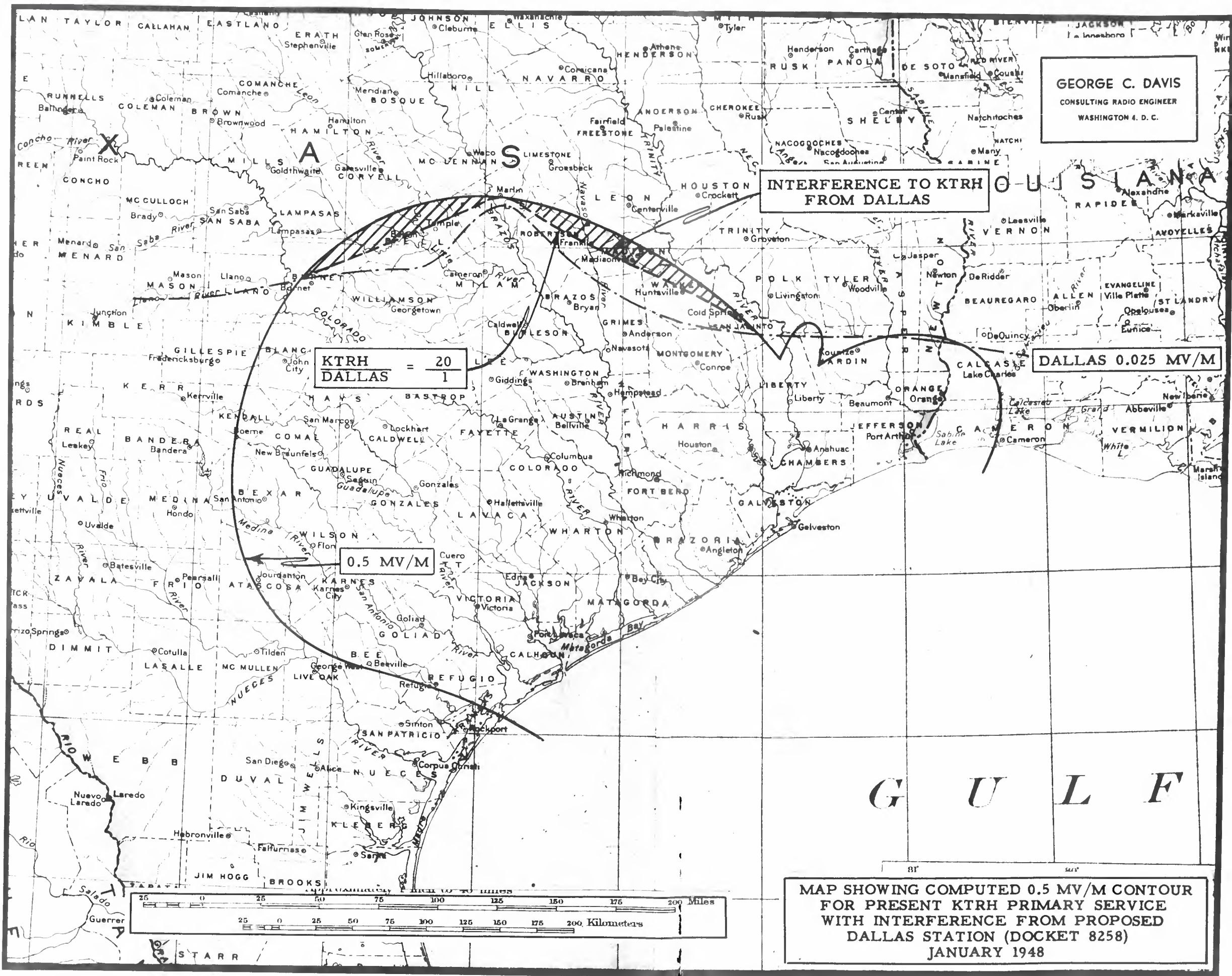
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INTERFERENCE TO KTRH FROM DALLAS

DALLAS 0.025 MV/M

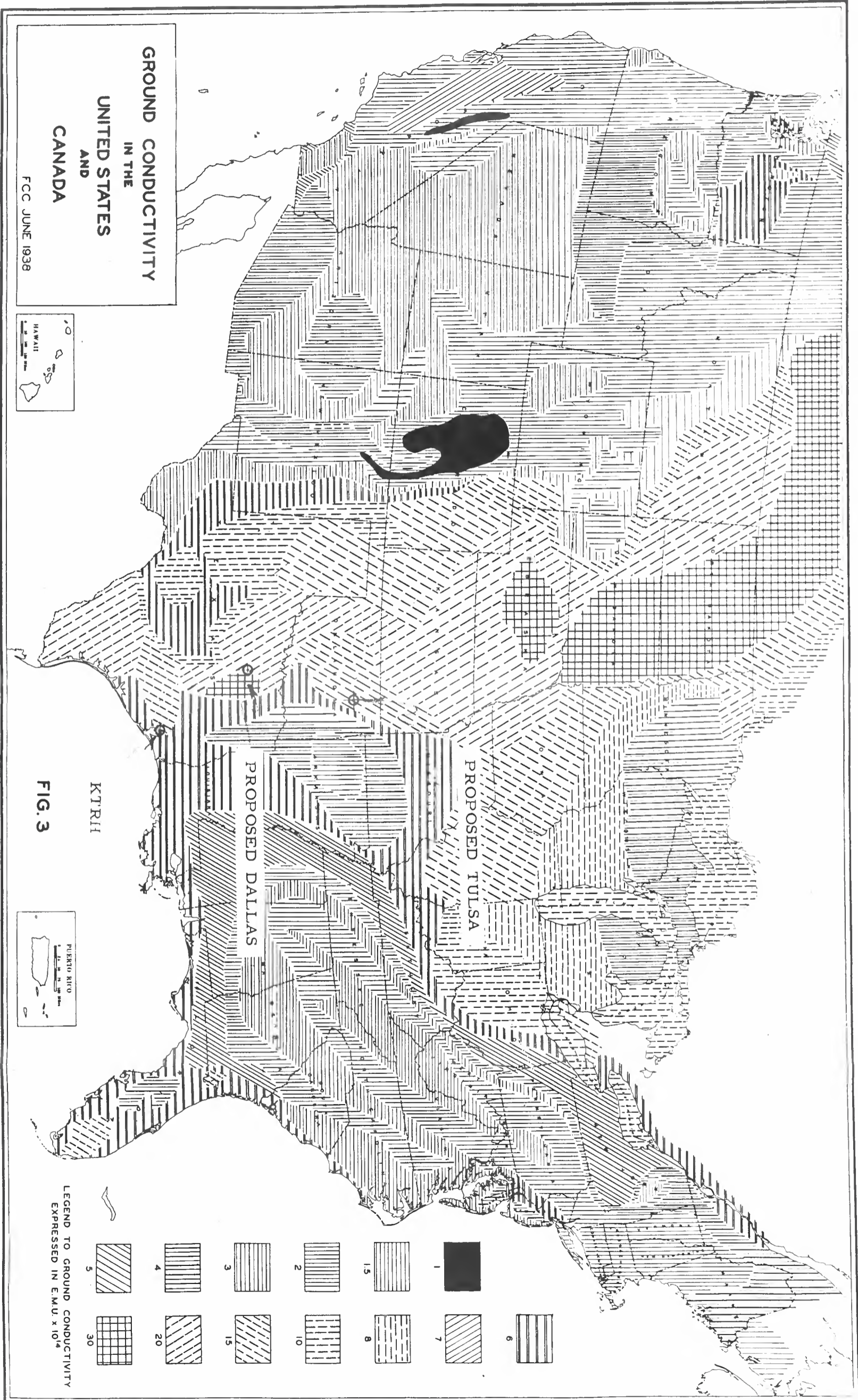
KTRH = 20
DALLAS = 1

0.5 MV/M



MAP SHOWING COMPUTED 0.5 MV/M CONTOUR FOR PRESENT KTRH PRIMARY SERVICE WITH INTERFERENCE FROM PROPOSED DALLAS STATION (DOCKET 8258) JANUARY 1948

STARR



GROUND CONDUCTIVITY
IN THE
UNITED STATES
AND
CANADA
 FCC JUNE 1938

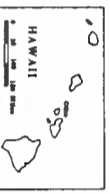


FIG. 3
 KTRH

LEGEND TO GROUND CONDUCTIVITY
 EXPRESSED IN E.M.U. x 10¹⁴

1	2	3	4	5
6	7	8	10	15
15	20	30		

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KTRH PROPOSED = 20
DALLAS = 1

KTRH PRESENT = 20
DALLAS = 1

0.5 MV/M - PROPOSED

0.5 MV/M - PRESENT

MAP SHOWING REGIONAL AND
CLEAR CHANNEL SERVICES
DUPLICATING PRESENT AND PROPOSED
KTRH's 0.5 MV/M PRIMARY SERVICE AREA



LIST INDICATING REGIONAL AND CLEAR CHANNEL SERVICES Duplicating Present and Proposed KTRH 9.5 MV/M PRIMARY SERVICE AREA

TEXAS STATIONS

<u>City</u>	<u>Station</u>	<u>Frequency</u>
Alice Austin	KBKI	1070
	KTEC	590
	KVET	1300
	KTXX (C.P.)	1370
Bay City Beaumont	KIOX	1270
	KPDM	560
	KPEX	1380
	KWHI	1280
Brenham College Station Corpus Christi	WTAV	1150
	KWBH	1010
	KRIS	1030 (SSA)
	KEYS (C.P.)	1360
Dallas	WPAA	1440
	KSKY	570
	WPAA	660
	KIKL	820
	KNLD	1040
	KLIF (C.P.)	1080
	WRR	1190
	KULP (C.P.)	1310
	WBAP	1390
	WBAP	570
KVBC	820	
El Campo Fort Worth	KFJZ	970
	KXOL	1270
	KCUL (C.P.)	1360
	KGHC	1540
	KREL (C.P.)	1540
	KLEE (C.P.)	1360
	KTHF (C.P.)	610
	KPRC	790
	KXYZ	950
	KCOM (C.P.)	1320
Galveston Goose Creek Houston	KATL	1430
	KTRE (C.P.)	1590
	KSF A	1420
	New (C.P.)	1600
Lufkin Nacogdoches Orange Port Arthur	KPAC	860
		1600
		1250

- 2 -

<u>City</u>	<u>Station</u>	<u>Frequency</u>
San Antonio	KTSA	550
	KMAC (C.F.)	630
	KABC	680
	KITE	930
	WQAI	1200
	KCOR	1350
	KTAE (C.F.)	1260
Taylor	KTAE (C.F.)	1260
Texas City	KTLW (C.F.)	920
Tyler	KRST (C.F.)	1530
Waco	WACO	1460
Wichita Falls	KWFT	620

LOUISIANA STATIONS

Alexandria	KALE	580
Lake Charles	KLOU	1580

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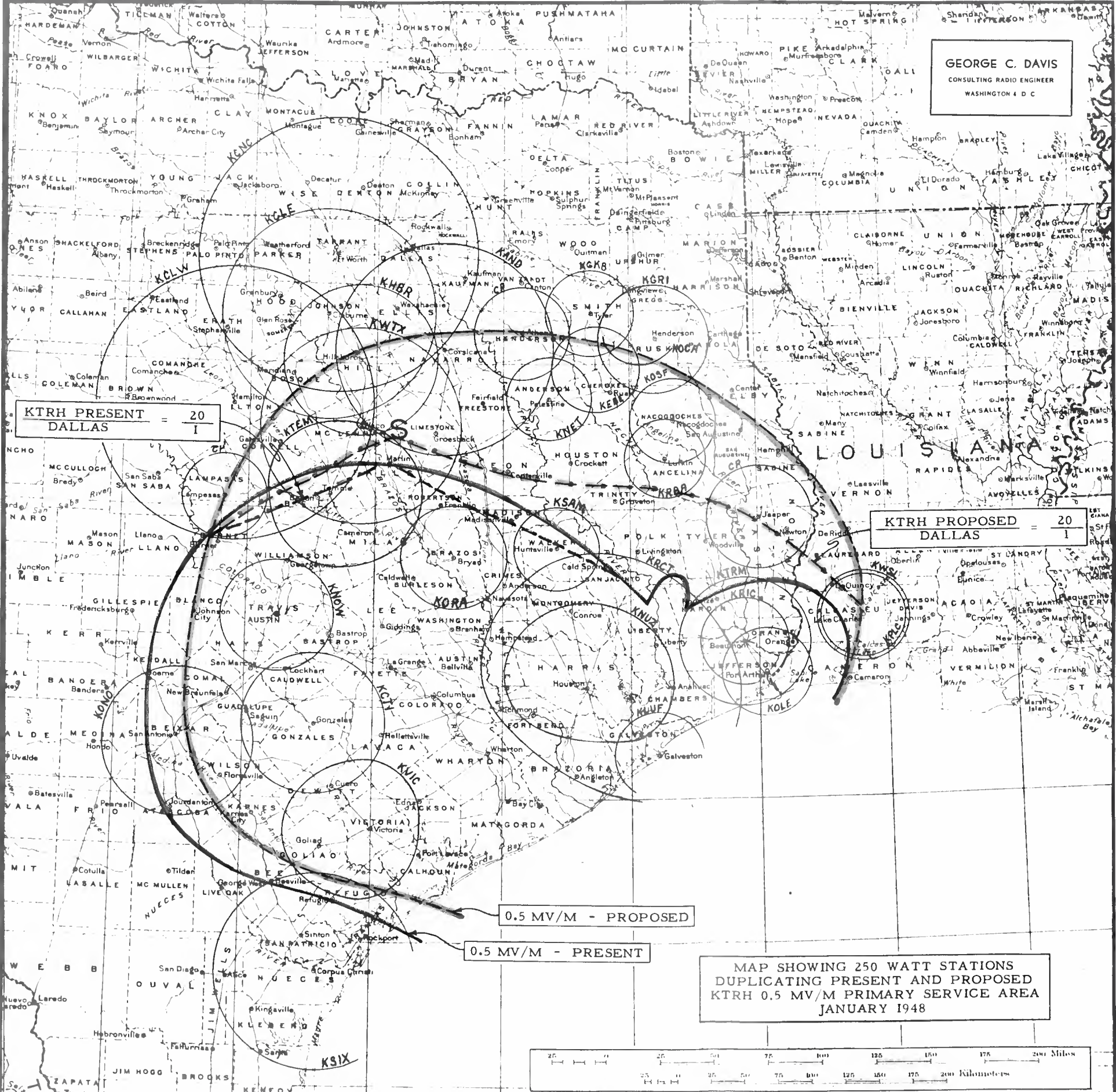
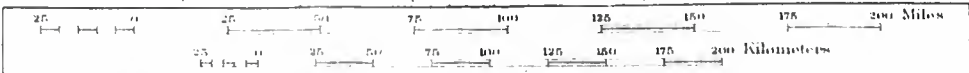
KTRH PRESENT = $\frac{20}{1}$
DALLAS

KTRH PROPOSED = $\frac{20}{1}$
DALLAS

0.5 MV/M - PROPOSED

0.5 MV/M - PRESENT

MAP SHOWING 250 WATT STATIONS
DUPLICATING PRESENT AND PROPOSED
KTRH 0.5 MV/M PRIMARY SERVICE AREA
JANUARY 1948



LIST INDICATING 250 WATT STATIONS
DUPLICATING PRESENT AND PROPOSED KTRH
0.5 MV/M PRIMARY SERVICE AREA

TEXAS STATIONS

<u>City</u>	<u>Station</u>	<u>Frequency</u>
Athens	New (C.F.)	1410
Austin	KNOW	1490
Beaumont	KRIC	1450
Bryan	KORA	1240
Cleburne	KCLE	1120
Corpus Christi	KSIX	1230
Corsicana	KAND	1340
Fort Worth	KCNC (C.F.)	870
Galveston	KLUF	1400
Gonzales	KCTI (C.F.)	1450
Goose Creek	KRCT	650
Hamilton	KCLW (C.F.)	900
Henderson	KGRI (C.F.)	1000
Hillsboro	KHBR (C.F.)	1560
Houston	KNUZ (C.F.)	1230
Muntsville	KSAM	1490
Jacksonville	KEBE	1400
Jasper	New (C.F.)	1240
Lampasas	New (C.F.)	1450
Lufkin	KRBA	1340
Nacogdoches	KOSF	1230
Palestine	KNET	1450
Fort Arthur	KOLE	1340
San Antonio	KONO	1400
Temple	KTEM	1400
Tyler	KGKB	1490
Victoria	KVIC	1340
Waco	KWTX	1230

LOUISIANA STATIONS

Lake Charles	KPLC	1490
	KWSL	1400

[Faint, illegible text and markings at the bottom of the page, possibly bleed-through or handwritten notes.]

GEORGE C. DAVIS

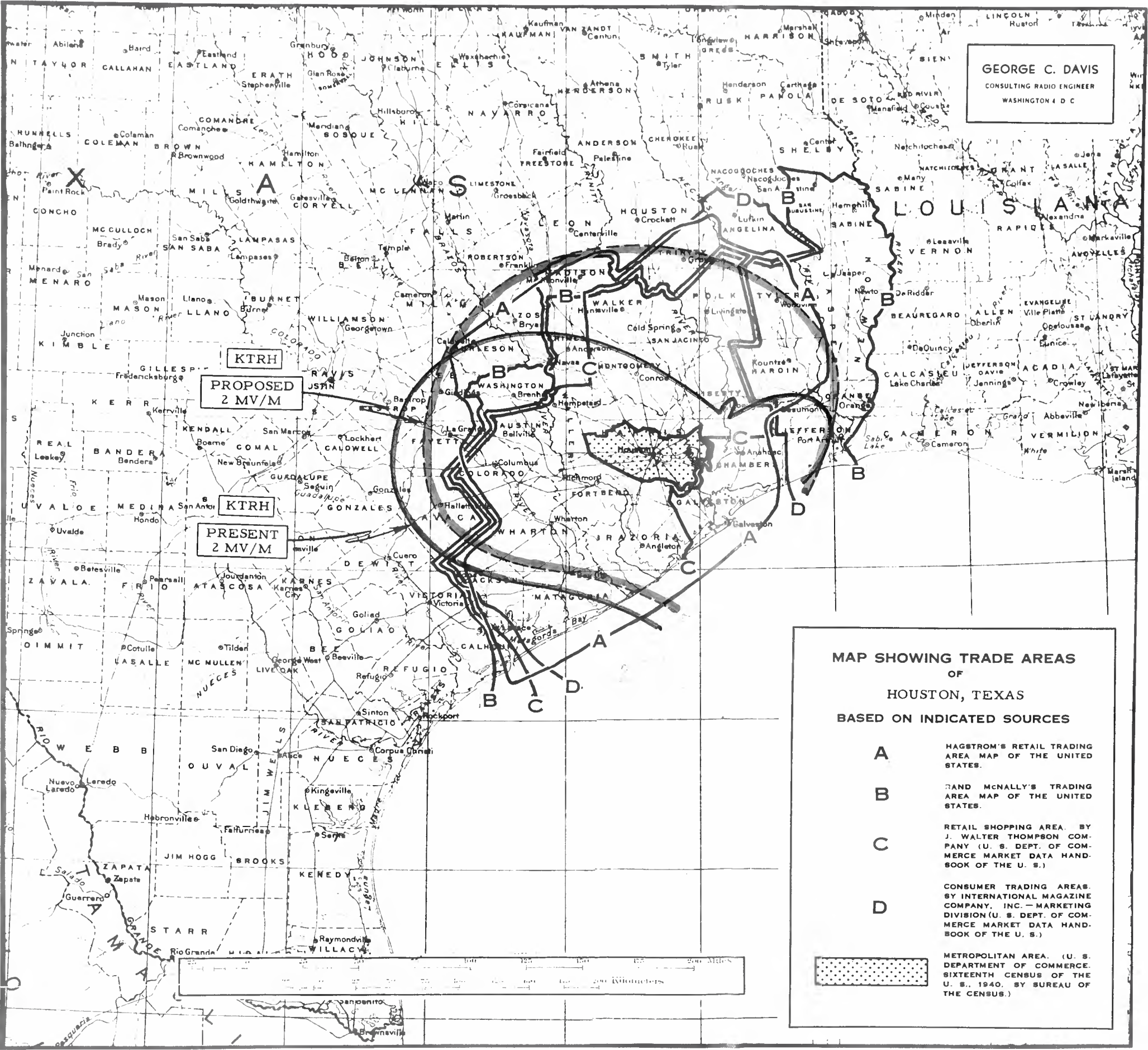
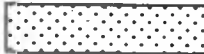
CONSULTING RADIO ENGINEER

WASHINGTON 4 D C

MAP SHOWING TRADE AREAS
OF
HOUSTON, TEXAS
BASED ON INDICATED SOURCES

- A HAGSTROM'S RETAIL TRADING AREA MAP OF THE UNITED STATES.
- B RAND McNALLY'S TRADING AREA MAP OF THE UNITED STATES.
- C RETAIL SHOPPING AREA, BY J. WALTER THOMPSON COMPANY (U. S. DEPT. OF COMMERCE MARKET DATA HANDBOOK OF THE U. S.)
- D CONSUMER TRADING AREAS, BY INTERNATIONAL MAGAZINE COMPANY, INC. — MARKETING DIVISION (U. S. DEPT. OF COMMERCE MARKET DATA HANDBOOK OF THE U. S.)

METROPOLITAN AREA. (U. S. DEPARTMENT OF COMMERCE, SIXTEENTH CENSUS OF THE U. S., 1940, BY BUREAU OF THE CENSUS.)



480127

LINCOLN Ruston

GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON 4, D. C.

INTERFERENCE

INTERFERENCE

MAP SHOWING TRADE AREAS OF HOUSTON, TEXAS
BASED ON INDICATED SOURCES

A HAGBTROM'S RETAIL TRADING AREA MAP OF THE UNITED STATES.

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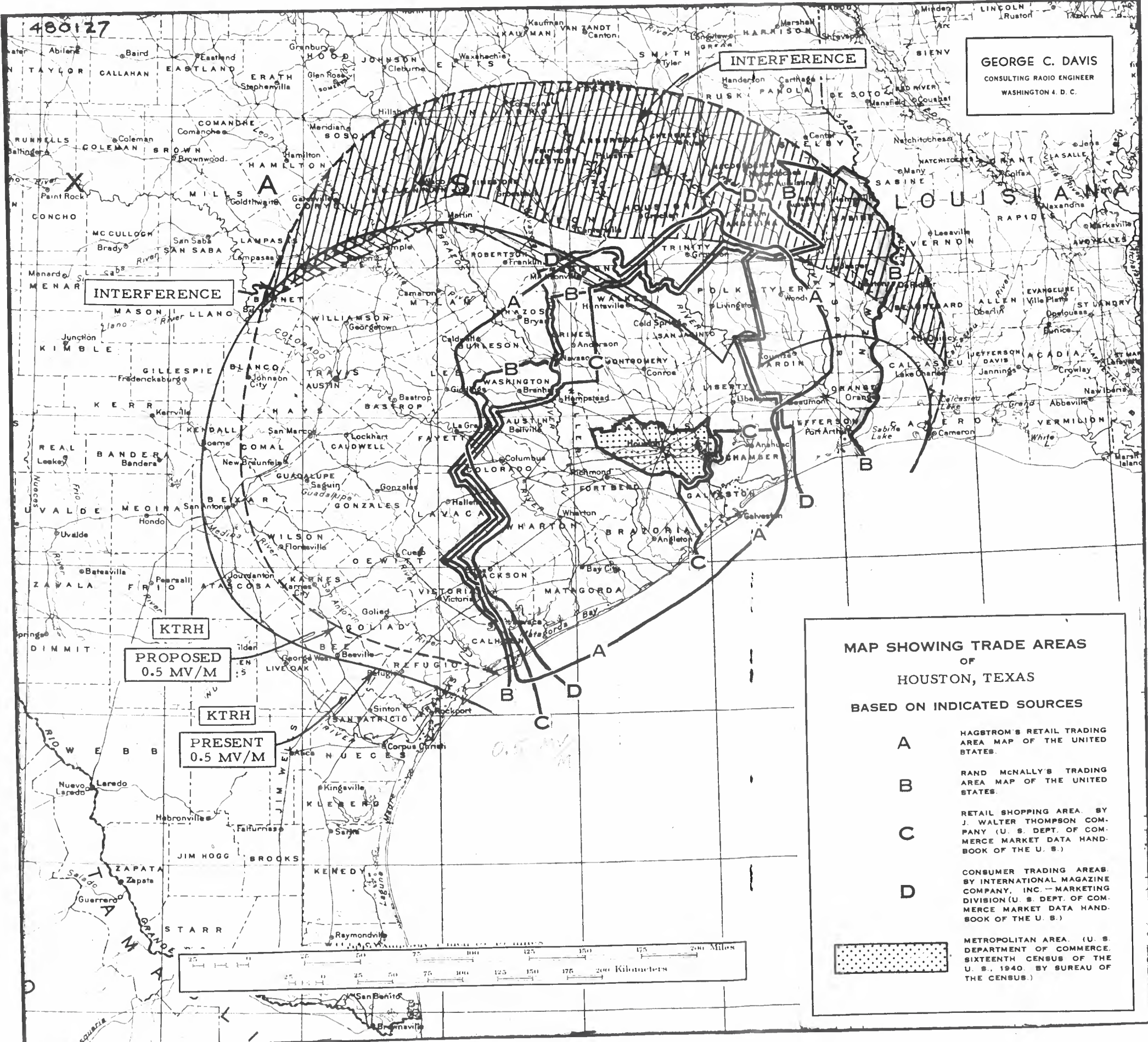
D CONSUMER TRADING AREAS BY INTERNATIONAL MAGAZINE COMPANY, INC. - MARKETING DIVISION (U. S. DEPT. OF COMMERCE MARKET DATA HANDBOOK OF THE U. S.)

METROPOLITAN AREA. (U. S. DEPARTMENT OF COMMERCE, SIXTEENTH CENSUS OF THE U. S., 1940. BY BUREAU OF THE CENSUS.)

PROPOSED 0.5 MV/M

PRESENT 0.5 MV/M

0.5 MV/M

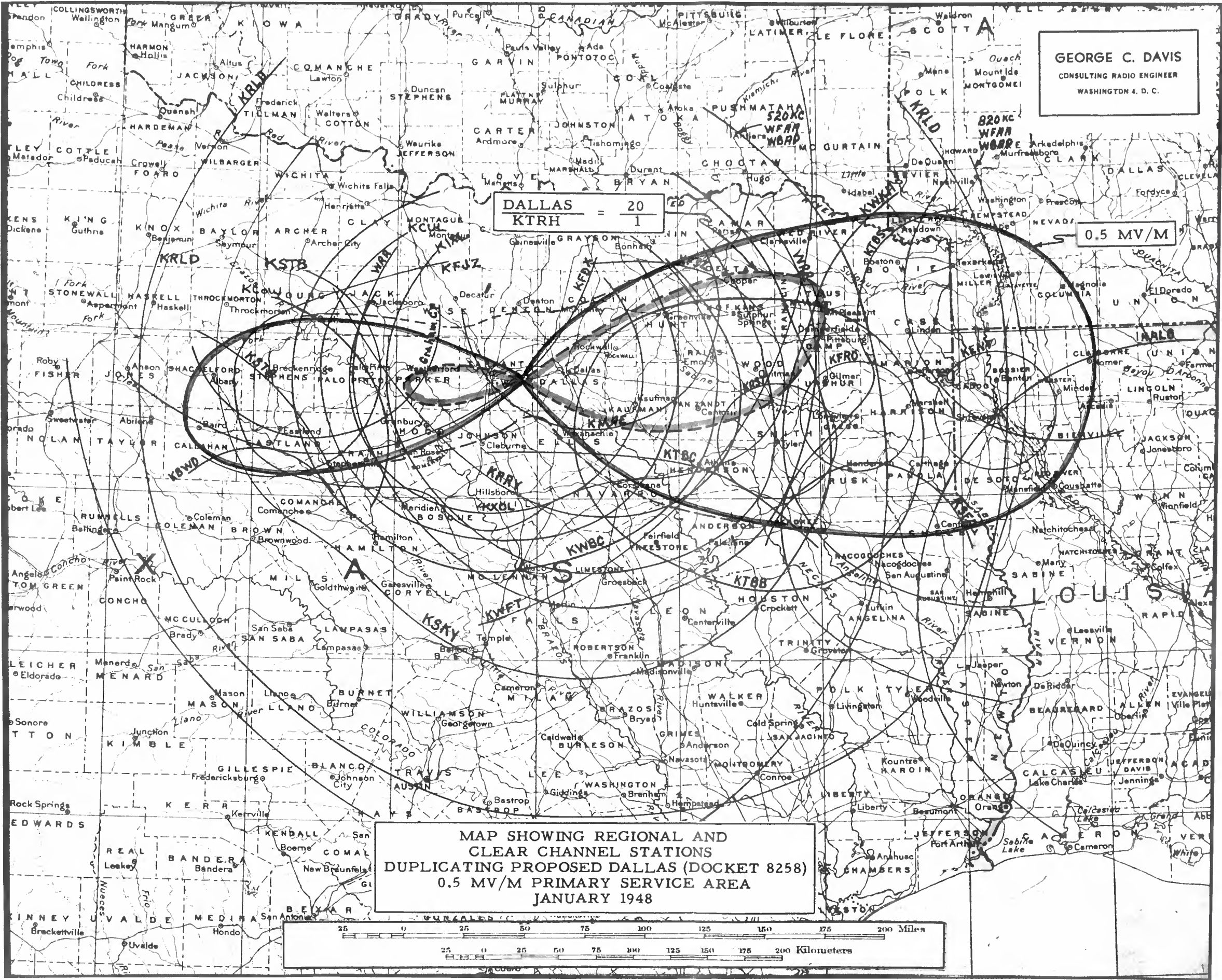
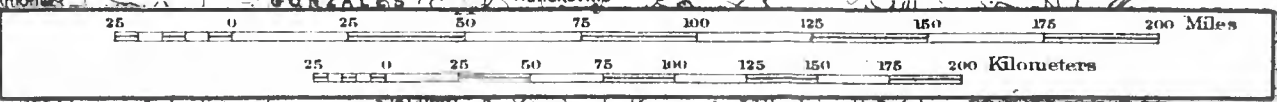


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WASHINGTON 4, D. C.

DALLAS = 20
KTRH = 1

0.5 MV/M

MAP SHOWING REGIONAL AND
CLEAR CHANNEL STATIONS
DUPLICATING PROPOSED DALLAS (DOCKET 8258)
0.5 MV/M PRIMARY SERVICE AREA
JANUARY 1948



TABULATION SHOWING REGIONAL AND CLEAR CHANNEL SERVICES DUPLICATING PROPOSED DALLAS (DOCKET 8258) 0.5 MV/M CONTOUR

TEXAS STATIONS

<u>City</u>	<u>Station</u>	<u>Frequency</u>
Austin	KTBC	590
Cleburne	KCLE	1120
Dallas	WFAA (s-WBAP)	570
	KSKY	660
	WFAA (s-WBAP)	820
	KIKL	1040
	KRLD	1080
	WRR	1310
Eastland	KCOW (C.P.)	1600
Fort Worth	WBAP (s-WFAA)	570
	WBAP (s-WFAA)	820
	KWBC	970
	KFJE	1270
	KKOL	1360
	KCUL (C.P.)	1540
Graham	KSWA (C.P.)	1330
Longview	KFRO	1370
McKinney	KMAE (C.P.)	1600
Nacogdoches	KSFA	860
Sherman	KRRY	910
Tyler	KTBB	600
	KRST	1530
Wichita Falls	KWFT	620
	KFDX	990

LOUISIANA STATIONS

Alexandria	KALB	580
Shreveport	KTBS (C.P.)	710
	KWKH	1130
	KENT	1550

ARKANSAS STATIONS

Magnolia	KVMA	630
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OKLAHOMA STATIONS

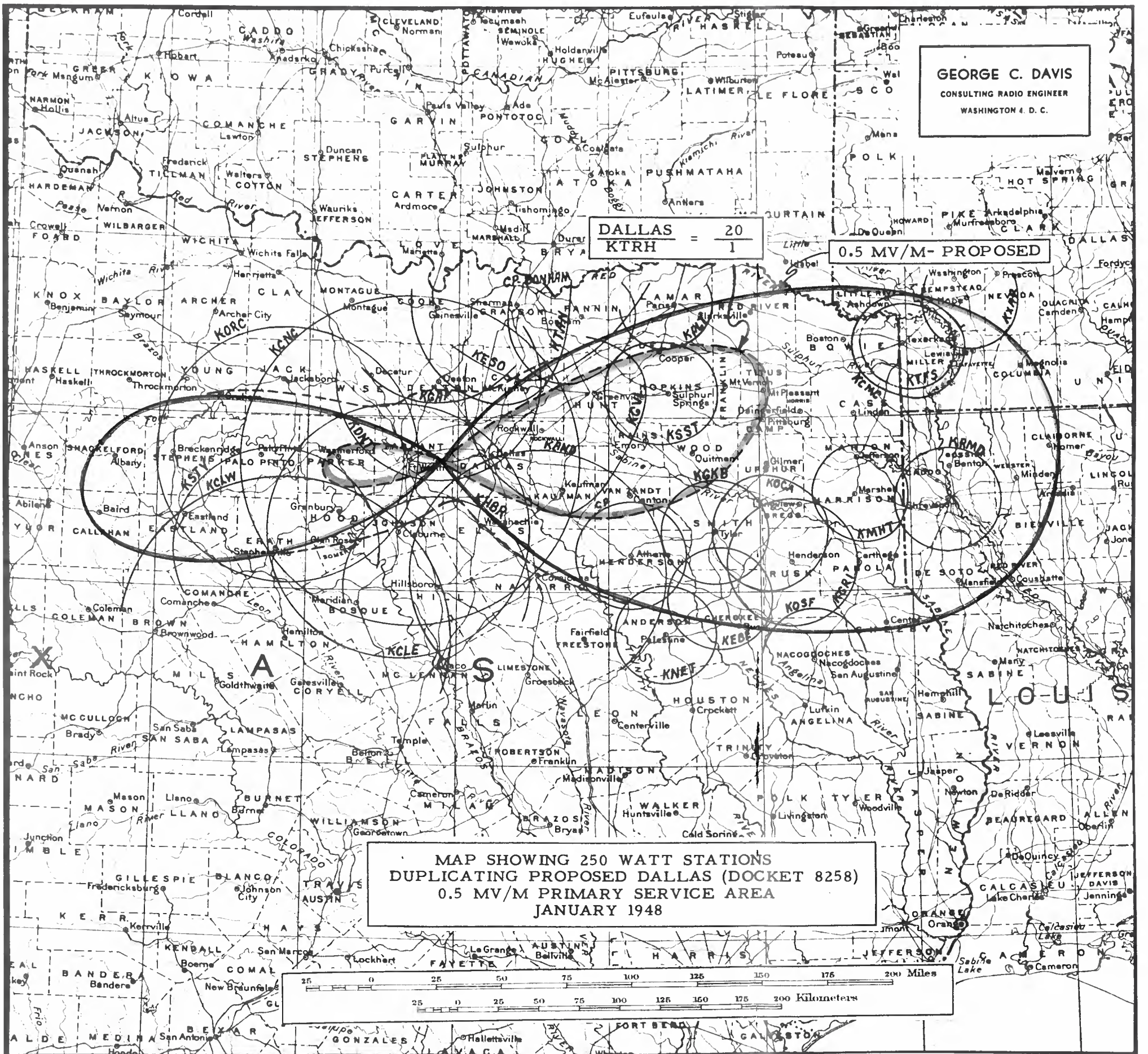
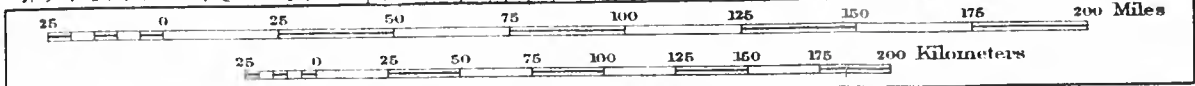
Durant	KSEO	750
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GEORGE C. DAVIS
 CONSULTING RADIO ENGINEER
 WASHINGTON 4. D. C.

DALLAS = 20
KTRH = 1

0.5 MV/M- PROPOSED

**MAP SHOWING 250 WATT STATIONS
 DUPLICATING PROPOSED DALLAS (DOCKET 8258)
 0.5 MV/M PRIMARY SERVICE AREA
 JANUARY 1948**



TABULATION SHOWING 250 WATT STATIONS
DUPLICATING PROPOSED DALLAS (DOCKET 8258)
0.5 MV/M CONTOUR

TEXAS STATIONS

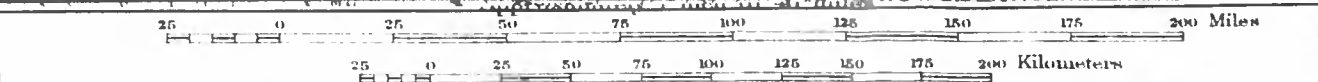
<u>City</u>	<u>Station</u>	<u>Frequency</u>
Athens	New (C.F.)	1410
Bonham	KFYN (C.F.)	1420
Breckenridge	KSTB	1430
Brownwood	KBWD	1380
Cleburne	KCLE	1120
Corsicana	KAND	1340
Denton	KDNT	1450
Gainesville	KGAF	1580
Greenville	KGVL	1400
Hamilton	KCLW (C.F.)	900
Henderson	KGRI (C.F.)	1000
Hillsboro	KHBR (C.F.)	1560
Jacksonville	KEBE	1400
Kilgore	KOCA	1240
Marshall	KMHT	1450
Mineral Wells	KORC	1140
Nacogdoches	KOSF	1230
Palestine	KNET	1450
Paris	KPLT	1490
Sherman	KTAN	1500
Stephenville	KSTV	1510
Sulphur Springs	KSST	1230
Texarkana	KCMC	1230
	KTFS	1400
Tyler	KGKB	1490

LOUISIANA STATIONS

Shreveport	KRMD	1340
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ARKANSAS STATIONS

Hope	KXAR (C.F.)	1490
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 CONSULTING RADIO ENGINEER
 WASHINGTON 4. O. C.

$$\frac{\text{DALLAS}}{\text{KTRH}} = \frac{20}{1}$$

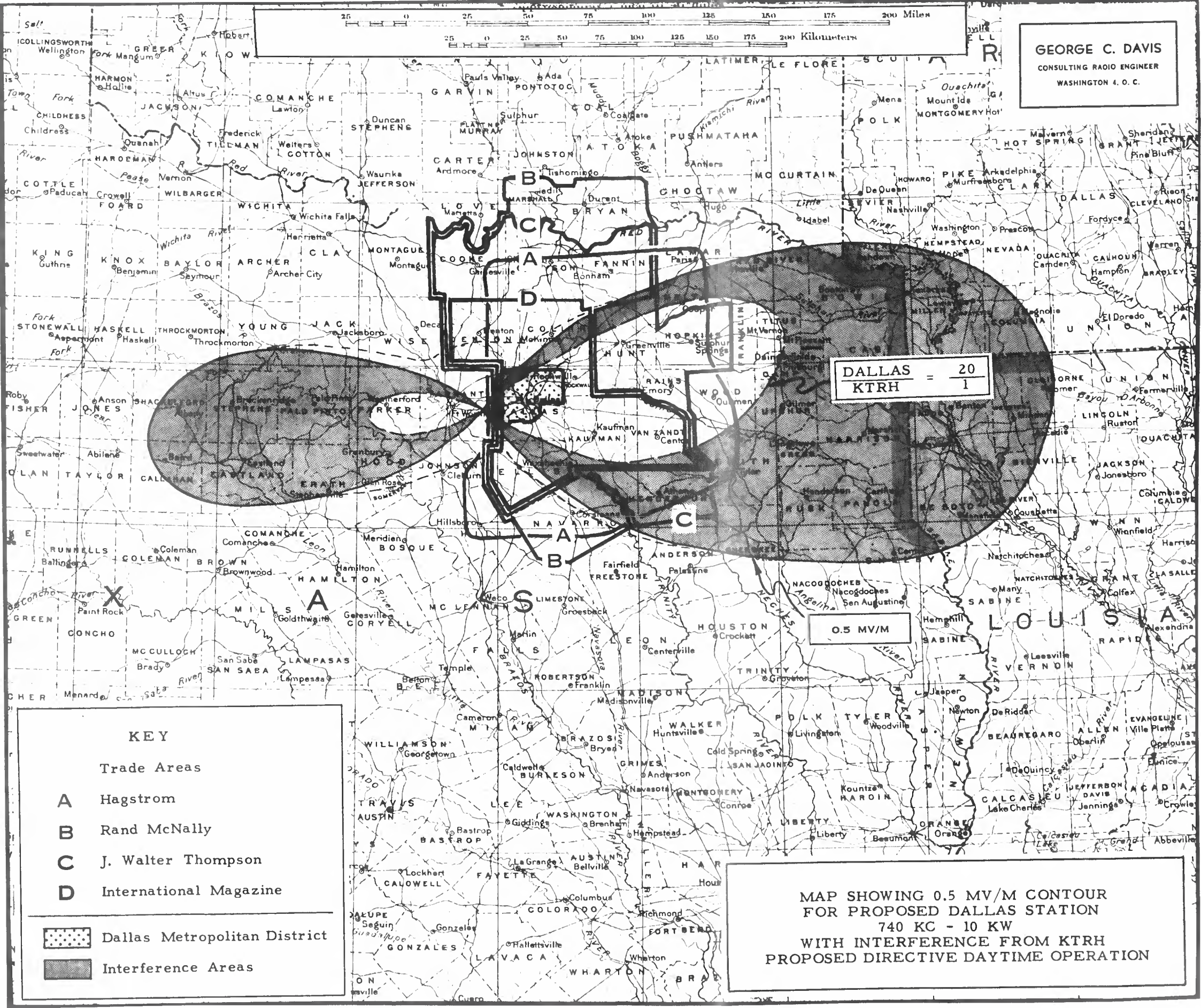
0.5 MV/M

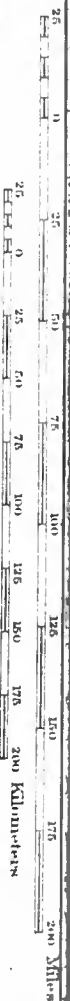
KEY

- Trade Areas
- A** Hagstrom
- B** Rand McNally
- C** J. Walter Thompson
- D** International Magazine

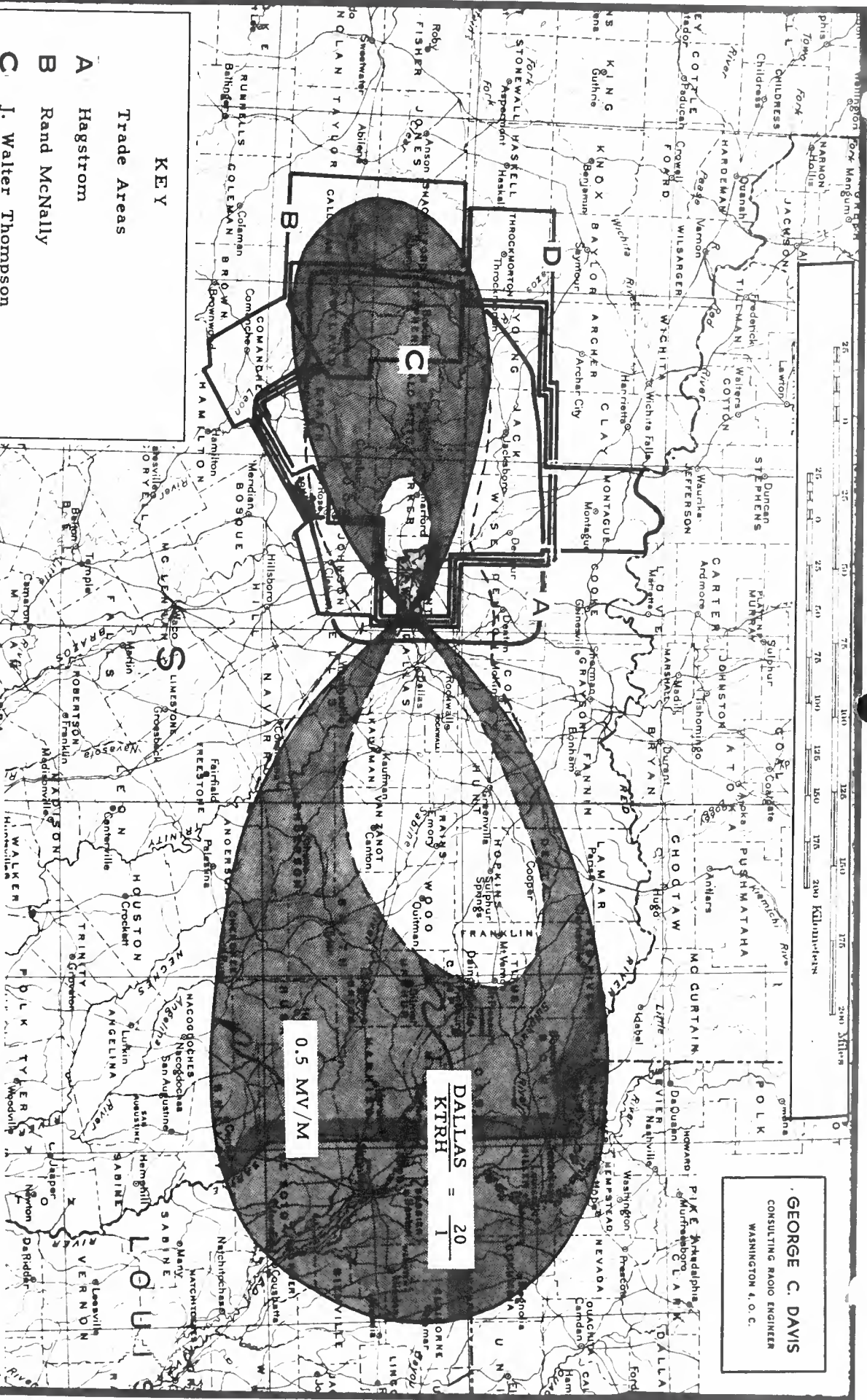
-  Dallas Metropolitan District
-  Interference Areas

MAP SHOWING 0.5 MV/M CONTOUR
 FOR PROPOSED DALLAS STATION
 740 KC - 10 KW
 WITH INTERFERENCE FROM KTRH
 PROPOSED DIRECTIVE DAYTIME OPERATION





GEORGE C. DAVIS
CONSULTING RADIO ENGINEER
WASHINGTON 4, D. C.



0.5 MV/M

DALLAS = 20
KTRH = 1

- KEY**
- Trade Areas
- A Hagstrom
 - B Rand McNally
 - C J. Walter Thompson
 - D International Magazine

- Ft. Worth Metropolitan District
- Interference Areas

MAP SHOWING COMPUTED 0.5 MV/M CONTOUR
FOR DALLAS (DOCKET 8258) WITH THE
INTERFERENCE FROM PROPOSED KTRH OPERATION
AND THE TRADE AREAS FOR FT. WORTH
JANUARY 1948

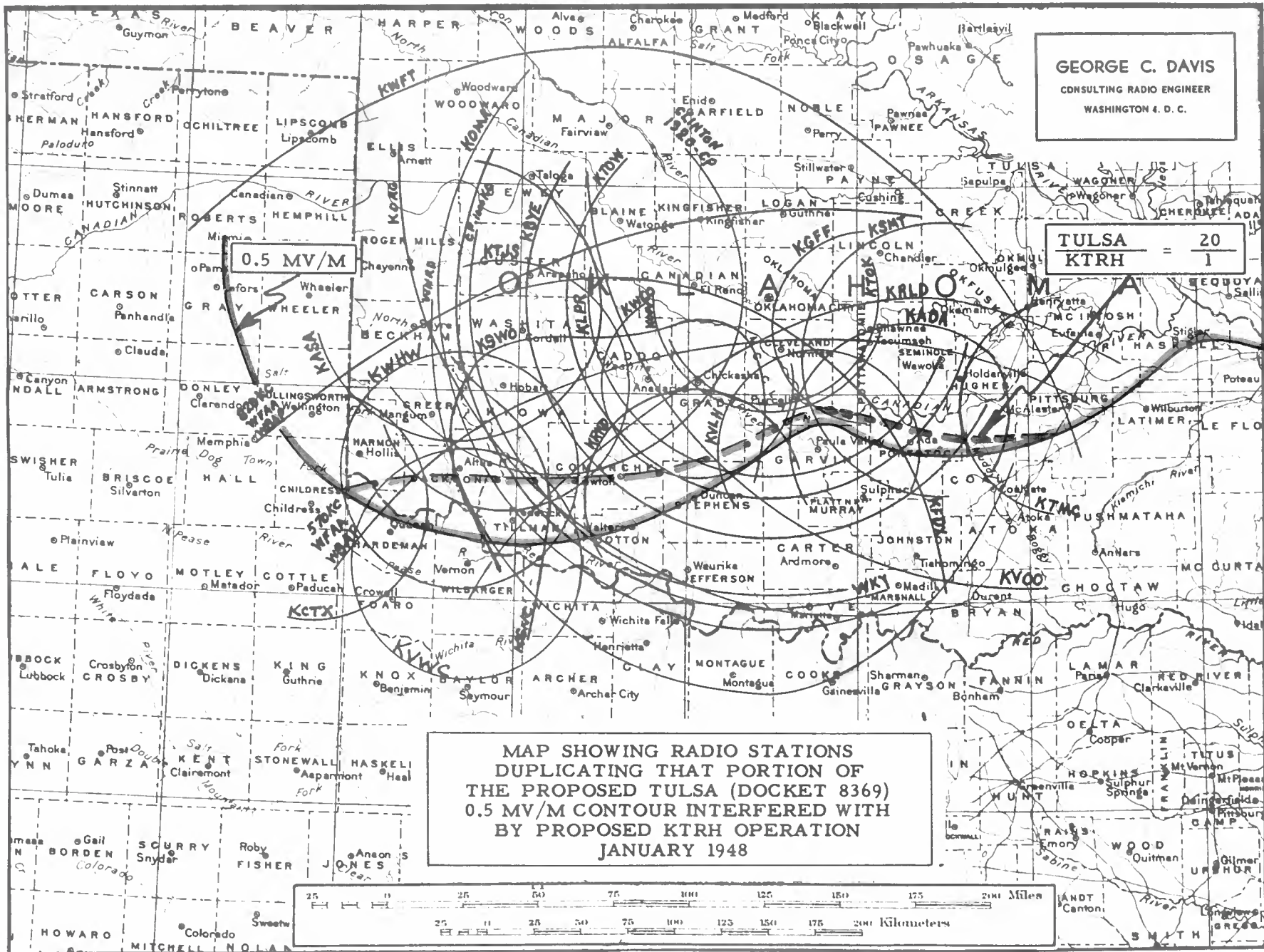
GEORGE C. DAVIS

CONSULTING RADIO ENGINEER

WASHINGTON 4, D. C.

$$\frac{\text{TULSA}}{\text{KTRH}} = \frac{20}{1}$$

MAP SHOWING RADIO STATIONS
DUPLICATING THAT PORTION OF
THE PROPOSED TULSA (DOCKET 8369)
0.5 MV/M CONTOUR INTERFERED WITH
BY PROPOSED KTRH OPERATION
JANUARY 1948



TABULATION OF RADIO STATIONS DUPLICATING
THE INTERFERENCE AREA OF THE PROPOSED
740 KC TULSA (DOCKET 8369) STATION

OKLAHOMA STATIONS

<u>City</u>	<u>Station</u>	<u>Frequency</u>
Ada	KADA	1230
Altus	KWHW	1450
Chickasha	KWGO (C.F.)	1560
Duncan	KRND (C.F.)	1350
Hobart	KTJS	1420
Lawton	KSWO	1380
McAlester	KTMC	1400
Norman	WNAD	640
Oklahoma City	KTOW	800
	KBYE	890
	WKY	930
	New (C.F.)	1000
	KLPR	1140
	KOMA	1520
Pauls Valley	KVLH (C.F.)	1470
Seminole	KSMT	1260
Shawnee	KGFF	1450
Stillwater	KOAG (C.F.)	840
Tulsa	KVOO	1170

TEXAS STATIONS

Amarillo	KGNC	710
Chilress	KCTX	1510
Dallas	WFAA (s-WBAP)	570
	WFAA (s-WBAP)	820
	KRLD	1080
Fort Worth	WBAP (s-WFAA)	570
	WBAP (s-WFAA)	820
Wichita Falls	KWFT	620
	KFDX	990
Vernon	KVWC	1490

WFOA N 307W
 Copy on 5/11/59
 WFOA

TABULATION OF POPULATION AND AREA DATA FOR KTRH
HOUSTON, TEXAS
JANUARY 1948

Present Operation - KTRH

<u>Contour</u>	<u>Population</u>	<u>Area (Sq. Mi.)</u>
2.0 mv/m	984,741	15,500
0.5 mv/m	1,547,413	42,400
interference area	31,700	1,386
0.5 mv/m (interference-free)	1,515,707	40,991

Proposed Operation - KTRH

2.0 mv/m	1,150,809	21,126
0.5 mv/m	1,974,610	50,800
interference area	364,964	10,000
0.5 mv/m (interference-free)	1,609,730	43,794

Proposed Dallas Operation

0.5 mv/m	1,393,014 *	31,100 *
interference from KTRH- Proposed Operation	584,217	24,919
0.5 mv/m (interference-free)	808,797	6,181

Proposed Tulsa Operation

0.5 mv/m	2,091,246 **	78,400 **
interference from KTRH- Proposed Operation	47,463	2,960
0.5 mv/m (interference-free)	2,043,783	75,440

* From Docket 8256

** From Docket 8369

KTRH BROADCASTING COMPANY
HOUSTON, TEXAS
DA-2 DAY 740 kc.
SUPPLEMENTARY DATA (2)
FCC REF. 8840
December 8, 1956

Rec'd 10-19-56
EBB

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON 25, D. C.

October 15, 1956

ADDRESS ALL COMMUNICATIONS
TO THE SECRETARY

IN REPLY REFER TO:

8840

KTRH Broadcasting Company
Radio Station K T R H
Main & Texas Streets
Houston, Texas

Gentlemen:

Reference is made to your recently submitted Engineering Report submitting data to show that the KTRH directional antenna has been maintained in accordance with the specifications contained in the temporary license specifications dated June 22, 1956.

Examination of your report indicates that, in an effort to maintain monitoring point values below the limits specified, you have frequently changed the antenna phasing and current ratios from day to day in order to accomplish this result. The intent of the Commission's request for weekly monitoring point checks was to establish the range of field intensity during a thirty day period with the antenna parameters maintained in accordance with the above license specifications.

Accordingly, in order to determine whether or not the monitoring point values specified in the temporary license specifications are satisfactory, it is requested that you re-establish the original adjustment of the directional antenna system in accordance with the Proof of Performance, and while maintaining the antenna parameters as specified therein, check the values of field intensity at each of the monitoring points at least once weekly for a period of thirty days and submit this information to facilitate further action on your application for license.

With reference to the second paragraph on page two of your report, to facilitate measurements of the nighttime pattern, the Commission may, upon request, authorize operation of the nighttime pattern during daytime hours one day each week for sufficient time within which to make the desired measurements.

✓ ND
250

Further action on your license application will be deferred for a period of sixty days pending receipt of the above-requested information.

Very truly yours,

A handwritten signature in cursive script that reads "Mary Jane Morris".

Mary Jane Morris
Secretary

cc: Dow, Lohnes and Albertson

KTRH BROADCASTING COMPANY

HOUSTON, TEXAS.

740 kc

DA-2, DAY

SUPPLEMENTARY DATA (2)

FCC REF. 8840

DECEMBER 8, 1956

State of Texas)
) ss
County of Harris)

T. L. Hiner, being duly sworn, upon his oath deposes and says that the following report was made under his supervision and direction, and that the facts stated and all exhibits attached thereto are true of his own knowledge, except as to such statements as are therein stated on information and belief, and as to such statements, he believes them to be true.

Subscribed and sworn to before me this _____ day of _____, 1956

Notary Public

My commission expires _____, 19__.

KTRH Broadcasting Company
Houston, Texas
DA-2 DAY
740 kc

SUPPLEMENTARY DATA (2)

Requested in Letter, October 15, 1956 Ref. No. 8840

The attached data, which was requested in correspondence from the Federal Communications Commission, dated October 15, 1956, (Ref. 8840) is submitted in response to the Commission's request that KTRH "re-establish the original adjustment of the directional antenna system in accordance with the Proof of Performance, and while maintaining the antenna parameters as specified therein, check the values of field intensity at each of the monitoring points at least once weekly for a period of thirty days and submit this information....."

The data for each week's observations of Field Intensity at the Monitoring Points is tabulated separately and includes Phase Monitor Indications for the weekly ^{report} versus Proof of Performance conditions; the calibration data, I antennas versus I remotes during measuring period, in which is included for this report, a columnar tabulation of base current ratios for the weekly report versus Proof of Performance conditions. The Fields measured at the Monitoring Points is also tabulated, in the same form as the previous supplementary report of 8/15/56.

The drouth remains critical at our antenna site. During the month of November while the attached data was being taken, we had only 0.72 inch rainfall in a series of scattered showers. Tabulated below is record of rainfall at our site, over the same period of each year (June-Nov. incl.) for the past four years.

1953 -	32.28	inches
1954 -	16.20	"
1955 -	20.95	"
	<u>3 / 69.41</u>	
	23.13	" average for 3 year period.
1956 -	7.76	"
	<u>7.76</u>	
	23.13	= .335 (1956 is .335 of 3 year average)

The earth is so dry now that it appears to have stabilized in its effect on our antenna system. adjustments to the array have been minor and few and necessary only following the brief showers. In our long experience maintaining DA-1, we have had less serious and less extensive periods of drouth, during which time it was necessary to make minor adjustments to the array to compensate for lack of moisture in the earth, which in this area is considered to be swamp.

Date: November 8, 1958

FIELD MONITOR INDICATIONS

<u>A/A</u>	<u>B/A</u>	<u>C/A</u>	<u>D/A</u>	
0°	100.5°	310°	101.5°	11/8/58 Conditions
0°	100.5°	310°	101.5°	Proof of Performance Conditions

CALIBRATION:

I METERS vs. I MICROPS

<u>FOUR</u>	<u>I METERS</u>	<u>I MICROPS</u>	<u>ATTENNA GAIN TODAY</u>	<u>PERCENT RATIO FOR CONDITION</u>
A (20 P1)	14.0 amps.	14.0 amps.	.338	.338
B (20 P2)	4.75 "	14.24 x 1/3 = 4.75 amp.	.115	.115
C (20 P3)	13.45 "	13.45 amps.	.384	.384
D (20 P4)	41.5 "	13.05 x 3 = 41.5 amps.	1.000	1.000

1cp = 14.0 amps.

Fx: 1000 wpt.

MEASURED FIELD AT MONITORING POINT

<u>F</u>	<u>Fx.</u>	<u>OUTPUT POWER</u>	<u>ATTEN-GATE</u>	<u>MON. FIELD SV/m</u>	<u>FSO OR CIVILIAN LIMIT</u>	<u>°</u>	<u>PER. POINT NO.</u>
740	1100	4.18	1v	418	435	100°	9
740	1108	7.1	1v	710	715	51°	10
740	1114	2.45	1v	245	260	26°	11
740	1117	8.32	1v	832	815	55°	12
740	1122	5.1	1v	510	535	315°	13

Measured on FX-50, Serial No. 426

By: E. S. Anderson, Jr.

Date: November 6, 1956

PHASE POSITION INDICATIONS

<u>1/2</u>	<u>3/4</u>	<u>2/3</u>	<u>1/4</u>	
0°	100.5°	210°	181.5°	11/6/56 Conditions
0°	100.5°	210°	181.5°	Proof of Performance Conditions

DEFINITIONS:

1 AMPERE vs. 1 CYCLE

<u>TRIAL</u>	<u>1 AMPERE</u>	<u>1 CYCLE</u>	<u>PERCENTAGE OF CURRENT RATIO</u>	
			<u>100%Y</u>	<u>100% CONDITION</u>
A (20 #1)	13.5 amps.	13.5 amps.	.336	.336
B (20 #2)	4.5 "	13.5 x 1/3 = 4.5 "	.115	.115
C (20 #3)	13.0 "	13.0 amps.	.324	.324
D (20 #4)	40.0 "	13.33 x 3 = 40.0 "	1.000	1.000

1ap = 14.8

7x: 1000 amp.

MEASURED FIELD AT SWITCHING POINTS

<u>F</u>	<u>Hz.</u>	<u>INT. LT. METER</u>	<u>ATTEN. GAIN</u>	<u>MEAS. FIELD MV/M</u>	<u>100% FIELD LIMIT</u>	<u>φ°</u>	<u>LOW. POINT NO.</u>
740	1616	4.1	1v	610	436	124°	9
740	1636	7.08	1v	708	715	81°	10
740	1628	2.4	1v	240	260	26°	11
740	1638	2.5	1v	230	236	334°	12
740	1638	3.08	1v	308	336	318°	13

Measured on 51-23, Serial No. 706

By: E. S. Sherman, Jr.

DA-8 DAY

Date: November 15, 1956

PHASE MONITOR INDICATIONS

<u>A/A</u>	<u>B/A</u>	<u>C/A</u>	<u>D/A</u>	
0°	106.5°	218°	121.5°	11/15/56 Conditions
0°	106.5°	218°	121.5°	Proof of Performance Conditions

CALIBRATION:

I ANTENNAS vs. I REMOTES

<u>TOWER</u>	<u>I ANTENNA</u>	<u>I REMOTE</u>	<u>ANTENNA BASE CURRENT RATIOS</u>	
			<u>TODAY</u>	<u>POP CONDITIONS</u>
A (SW #1)	13.8 amps.	13.8 amps.	.338	.338
B (NW #2)	4.7 "	14.1 x 1/3 = 4.7 a.	.115	.115
C (NE #3)	13.25 "	13.25 amps.	.324	.324
D (SE #4)	40.9 "	13.63 x 3 = 40.9 a.	1.000	1.000

Icp = 14.9 amps.

Tx: 1600 est.

MEASURED FIELDS AT MONITORING POINTS

<u>f</u>	<u>Tx.</u>	<u>OUTPUT METER</u>	<u>ATTEN-UATOR</u>	<u>MRD. FIELD mv/m</u>	<u>FCC SPECIFIED LIMIT</u>	<u>/°</u>	<u>MON. POINT NO.</u>
740	1628	4.1	1v	410	435	124°	9
740	1634	7.05	1v	705	713	51°	10
740	1640	2.40	1v	240	260	28°	11
740	1644	2.30	1v	230	258	354°	12
740	1649	4.80	1v	480	536	318°	13

Measured on EX-20, Serial No. 756

By: E. B. Buchanan, Jr.

DA-2 DAY

Date: November 22, 1956

FRAME MONITOR INDICATIONS

<u>A/A</u>	<u>B/A</u>	<u>C/A</u>	<u>D/A</u>	
0°	106.5°	218°	121.5°	11/22/56 Conditions
0°	106.5°	218°	121.5°	Proof of Performance Conditions

CALIBRATION:

I ANTENNAS vs. I REMOTES

<u>TOWER</u>	<u>I ANTENNA</u>	<u>I REMOTE</u>	<u>ANTENNA BASE CURRENT RATIOS</u>	
			<u>TODAY</u>	<u>POP CONDITIONS</u>
A (SW #1)	13.83 amps.	13.83 amps.	.338	.338
B (NW #2)	4.72 "	14.16 x 1/3 = 4.72 a.	.115	.115
C (NE #3)	13.25 "	13.25 amps.	.324	.324
D (SE #4)	41.0 "	13.66 x 3 = 41.0 a.	1.000	1.000

Icp = 14.9 a.
Tx: 1100 est.

MEASURED FIELDS AT MONITORING POINTS

<u>f</u>	<u>Tx.</u>	<u>OUTPUT METER</u>	<u>ATTEN-UATOR</u>	<u>MSRD. FIELD mv/m</u>	<u>FCC SPECIFIED LIMIT</u>	<u>/°</u>	<u>MON. POINT NO.</u>
740	1129	4.0	1v	400	435	124°	9
740	1134	6.9	1v	690	715	51°	10
740	1140	2.4	1v	240	260	26°	11
740	1145	2.32	1v	232	258	354°	12
740	1150	4.97	1v	497	536	318°	13

Measured on WK-23, Serial No.756

By: E. B. Buchanan, Jr.

DA-2 DAY

Date: November 26, 1956

PHASE MONITOR INDICATIONS

<u>A/A</u>	<u>B/A</u>	<u>C/A</u>	<u>D/A</u>	
0°	106.5°	218°	121.5°	11/26/56 Conditions
0°	106.5°	218°	121.5°	Proof of Performance Conditions

CALIBRATION:

I ANTENNAS vs. I REMOTES

<u>TOWER</u>	<u>I ANTENNA</u>	<u>I REMOTE</u>	<u>ANTENNA BASE CURRENT RATIOS</u>	
			<u>TODAY</u>	<u>TOP CONDITIONS</u>
A (SW #1)	13.9 amps.	13.9 amps.	.338	.338
B (NW #2)	4.75 "	14.2 x 1/3 = 4.73a	.115	.115
C (NE #3)	13.3 "	13.3 amps.	.324	.324
D (SE #4)	41.2 "	13.73 x 3 = 41.2	1.000	1.000

Isp = 14.9 amps.

Tx: 1100 est.

MEASURED FIELDS AT MONITORING POINTS

<u>f</u>	<u>Tx.</u>	<u>OUTPUT METER</u>	<u>ATTEN- UATOR</u>	<u>MEAS. FIELD mv/m</u>	<u>FCC SPECIFIED LIMIT</u>	<u>/°</u>	<u>MON. POINT NO.</u>
740	1115	4.1	1v	410	435	124°	9
740	1126	7.0	1v	700	713	51°	10
740	1128	2.4	1v	240	260	26°	11
740	1131	2.3	1v	230	258	354°	12
740	1136	3.1	1v	310	336	318°	13

Measured on RX-2C, Serial No. 756

By: E. B. Buchanan, Jr.