F.C.C. Form 304
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Form Approved
Budget Bureau No. 52-R017.3
File No._____

Call Letters WFAA-570

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

APPLICATION FOR (Construction Permit (x) / Modification of Construction Permit / Modification of License) FOR AN EXISTING STANDARD BROADCAST STATION 1/

(Submit application and all exhibits, in triplicate, except as otherwise required in this form or the Standards of Good Engineering Practice Concerning Standard Broadcast Stations, to Federal Communications Commission, Washington, D. C. Swear to at least two copies. If space provided is insufficient attach inserts)

Before executing application see Communications Act of 1934, as amended, Part 1 (Rules of Practice and Procedure), Part 2 (General Rules and Regulations), and Part 3 (Standard Broadcast Rules) of the Commission's Rules and Regulations and the Standards of Good Engineering Practice Concerning Standard Broadcast Stations. All technical terms, such as "normally protected contours" and "objectionable interference", are for convenient reference only and are to be construed as having the same meaning as when used in the Rules and Regulations and the Standards. The use of the terms "normally protected contours" and "objectionable interference" shall not be taken as implying any right to protection of such contours or from such interference.

TO THE FEDERAL COMMUNICATIONS COMMISSION:

1. Name of applicant 2/ A. H. Belo Corporation

2. Post-office address: State Texas City Dallas

   Street and number 801-15 Commerce

3. Is this application for—

   (a) Authorization to change present location of transmitter of existing station? Yes If so, what is distance in miles between present location and proposed location of transmitter? 14.6 miles

   (b) Approval of transmitter location and antenna system? Yes

1/ If any information or documents which are already on file with the Commission are required to be filed with the application, proper reference thereto may be made herein in lieu of refiling, together with a statement that there has been no change therein since date of filing thereof.

2/ If a corporation, state exact corporate name; if a partnership, state the names of all partners, and the name under which the partnership does business; if an unincorporated association, state the name of an executive officer, the office held by him, and the name of the association.

(c) Authorization to change maximum rated carrier power, which necessitates installation of new equipment? No
If so, applicant represents:
(1) That present maximum rated carrier power is _____ watts.

(2) That proposed maximum rated carrier power is _____ watts.

(d) Authorization to install new equipment? yes If so, indicate (by check mark) what new equipment is to be installed:

(1) New transmitter yes (2) Change in system of modulation _____
(3) Change in type or number of vacuum tubes in last radio stage ___
(4) Change in automatic frequency control equipment _____ (5) Other changes (specify) _____

(e) Changes in antenna system No

(f) Other changes (specify fully) No

APPLICANT PARTY TO ANY SUIT

4. (a) Is applicant now, or has applicant been, party to a suit in any Federal court involving the monopolizing, or an attempt to monopolize radio communication directly or indirectly through control of the manufacture or sale of radio apparatus, by exclusive traffic arrangements, or by any other means, or of using unfair methods of competition? No ("Yes" or "No") If applicant has been finally adjudged guilty in any such case describe fully the proceeding, identify the court and show where records of the proceeding may be obtained. If applicant is party to such a pending case describe fully the proceeding, identify the court and show where records of the proceeding may be obtained. In all other such cases to which applicant has been a party within the past ten years, identify the court and show where records of the proceeding may be obtained.

(b) Is applicant directly or indirectly controlled by any person involved in such a proceeding? No ("Yes" or "No")

(c) Has applicant or, if applicant is other than an individual, has any partner, member, officer, director, or principal stockholder been found guilty of any felony or other crime involving moral turpitude?

No ("Yes" or "No") If so, give the name and address of such person, his position with applicant, together with a full description of the offense committed, the date when, and the court before which convicted, and reference to the official record _____

(d) Have voluntary proceedings in bankruptcy been instituted by, or have involuntary proceedings ever been brought against, applicant or any partner, member, officer, director, or principal stockholder?

No ("Yes" or "No") If so, give the name and address of the person, his position with applicant and describe fully the proceeding; identify the court and show where records of the proceeding may be obtained _____

(e) Are there outstanding any unsatisfied judgments or decrees against applicant or against any partner, member, officer, director, or principal stockholder? No ("Yes" or "No") If so, describe fully the proceeding, state the amount of any judgment or decree, and the court or courts in which said judgment or decree is entered _____

APPLICANT'S FINANCIAL QUALIFICATIONS AND PLAN FOR FINANCING STATION[3]

5. (a) Attach a detailed balance sheet of applicant as at the close of the month preceding the date of the application showing applicant's financial position.[4] See Annual Financial Report of WFAA on Form 324 filed with FCC March, 1947

(b) Attach as Exhibit _____ a statement showing the yearly income for each of the past 4 years, received by applicant from the various types of activity in which he was engaged or from any other source. On file with FCC

(c) Give bank reference for the applicant (if an individual), for each director, officer, or member of the governing board (if an association), for each partner (if a partnership), and for each subscriber to or owner of 25 percent or more shares of its capital stock (if a corporation).

First National Bank in Dallas

(d) Give estimated initial costs of making installation for which application is made:[5]

(1) Transmitter proper, including tubes $ 35,000.00

(2) Antenna system, including antenna, ground system, coupling equipment, and transmission line $ 150,000.00

3/ The Commission is seeking in the questions that follow information as to contracts and arrangements now in existence, as well as any arrangements or negotiations, written or oral, which relate to the present or future financing of the station; the questions must be answered in the light of this instruction.

4/ If the financial showing of applicant is augmented by agreements of others to advance money or to subscribe to stock of applicant, submit verified copies of the agreements by which the parties are legally obligated, together with the financial statements of each such party.

5/ If construction is to be performed under a contract for the completed work, the facts as to such contract must be stated in lieu of estimates as to the several items. In any event, the costs shown must be the costs in place and ready for service, including the amounts for labor, supervision, materials, supplies, and freight.

(3) Frequency and modulation monitors $ 2,500.00

(4) Studio technical equipment, microphones, transcription equipment, etc. $ Existing Facilities

(5) Acquiring land $ 5,000.00

(6) Acquiring or constructing buildings $ 7,500.00

(7) Other items, state nature $

(8) Total $ 200,000.00

(9) Give estimated monthly cost of operation $ On file with FCC

(10) The estimated monthly revenue is $ On file with FCC

(e) That the proposed construction is to be financed and paid for in the following manner (including specific statements as to the approximate amount to be met and paid for from each source): Existing capital, $ 200,000; New capital $; Loans, $; Profits, $; Donations, $; Credit, $; Other sources (specify), $.

(f) Submit the detailed facts upon which the estimates in (d) above are predicated Manufacturers' estimates and previous experience of WFAA operations.

(g) Submit as Exhibit a statement setting forth in separate paragraphs numbered to correspond with the following items, the following information: (If the answer is "None" with respect to any item, specifically so state.) If applicant has complied with the provisions of Section 1.361 of the Commission's Rules and Regulations, reference may be made to the latest financial report submitted in compliance with said section, in lieu of answering subparagraphs 1 to 17 inclusive, of paragraph 5(g), provided proper reference thereto is made immediately hereunder, together with a statement that there has been no substantial change in the financial condition reflected in such report since the date of filing thereof. See Annual Financial Report of WFAA on Form 324 filed with FCC March, 1947. No substantial changes since that date.

FUNDS ON DEPOSIT

(1) Amount of funds on deposit in bank or other depository.

(2) Name and address of the bank in which deposited.

(3) Name and address of the party in whose name the money is deposited and by whom deposited.

(4) Bank balance at the end of each of the past four years.

(5) Bank balance at the end of each month during the preceding 12 months.

(6) Conditions of deposit (in trust, savings, subject to check, on time deposit, or other condition.)

(7) Whether the funds were deposited for the specific purpose of constructing and operating the station.

(8) Who may draw on the account and for what purposes may withdrawals be made?

FUNDS, PROPERTY, ETC., TO BE FURNISHED BY PARTIES CONNECTED WITH APPLICANT OR BY OTHERS

(9) Full name and address of each person (whether or not connected with applicant, but including partners, shareholders, or subscribers to capital stock of the applicant) who has furnished[6] or will furnish funds, property, service, credit, other things of value, assurances (oral or written), or will assist in any other manner in financing station.

(10) A description of that which is or will be furnished by each party showing the value thereof and any encumbrances thereon.

(11) Indicate the source and manner in which each party (named in (9)) originally acquired the funds or other things of value which are now invested or have been furnished.

(12) A financial statement of each party furnishing funds, credit, or assurances thereof as of a recent date, showing assets, liabilities, and net worth.

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6 "Furnish" or "furnished" as herein used includes payments for capital stock or other securities, loans and other credits, gifts and any other contributions.

(13) As to each party (named in (9)) give full information concerning business or financial enterprises in which each is or has been for the past 5 years interested as called for under paragraph 8(b) of the application. The statement should indicate the business or enterprise from which the financing is derived. A general statement only is required as to persons furnishing not more than 25% of the financing.

(14) Income received by each party furnishing funds, credit, or assurances from specifically named business or financial enterprises and the amount and source of all other income over the past 2 years.

(15) Bank references for each party furnishing funds, credit, or assurances.

(16) If applicant or any party named in (9) has pledged, hypothecated or otherwise encumbered any stocks or other securities for the purpose of providing applicant with funds for construction of the station herein requested, submit a statement explaining each such transaction.

(17) A narrative statement summarizing the provisions of contracts or agreements which in any manner relate to financing the station, and the substance of and parties involved in all correspondence, negotiations and discussions which have been conducted relating to financing the station; where pertinent, attach copies of contracts and correspondence; attach copies of all contracts.

APPLICANT'S AUTHORITY AND CONTROL OVER THE STATION, PROPERTY, ETC. 7/

6. Applicant states--

(a) That its control over the station is to be by reason of

/X/ Ownership, /__/ lease, or /__/ other authority. (Indicate by check mark.) Give details On file with FCC

_____

_____

_____

7/ The Commission is seeking in the questions that follow information as to contracts and arrangements now in existence, as well as any arrangements or negotiations, written or oral, which relate to the present or future ownership, control or operation of the station; the questions must be answered in the light of this instruction.

(b) That the name and address of the owner of the station (if other than the applicant) are:

(c) That it will have and maintain absolute control of the station, its equipment, and operation, including complete supervision of the programs to be broadcast. If not, explain

(d) There is submitted as Exhibit_____ a narrative statement summarizing the provisions of contracts or agreements which affect (1) ownership; (2) control; (3) operation, and (4) which may grant to any party a right or interest in the station, and the substance of all correspondence, negotiations and discussions relating in any manner to the ownership, control or operation of the station. Copies of all contracts or agreements are attached.

APPLICANT'S INTERESTS

7. If applicant, or any partner, officer, member of the governing board, director, principal (actual or beneficial) stockholder or supervisory employee has, or has had, a substantial interest (10% or greater) in any of the following, there is submitted herewith a full and complete disclosure of the nature and extent of the interest in each. (If neither applicant, nor any of said parties, has, or has had, any such interest or connection, so state) Yes ("Yes" or "No")

(a) Any application pending before the Commission, or which has been denied by the Federal Communications Commission or the Federal Radio Commission? Dallas Broadcasting Company of which we had 50% interest. Denied in 1936.

Application pending with Commission for Television station.

(b) Any standard or high frequency broadcast station?

Applicant owns and operates WFAA-820 and WFAA-FM.

(c) Any radio station the license of which has been revoked or application for renewal of license which has been denied?

No

(d) Is any party named in 7 directly or indirectly controlled by any party with respect to whom any part of 7 applied? No
("Yes" or "No")

If so, state fully

(e) Has any application concerning a Standard or High Frequency Broadcast Station been filed by or on behalf of (answer "yes" or "no" to each):

(1) Any corporation whose stock is held[8/] by the applicant? No

(2) Any corporation which holds 10% of the stock of the applicant? No

(3) Any corporation which has actual or working control[9/] over the applicant or over any corporation described in (1) and (2) above? No

(4) Any officer or director of any corporation described in (1), (2), or (3) above, or (7) below? No

(5) Any shareholder who holds 10% or more of the capital stock of any corporation described in (1), (2), or (3) above, or (7) below? No

(6) Any partnership (or the individual partners therein), joint venture, association, trust, or other form of business enterprise in which any shareholder, director, officer, or employee of any corporation described in (1), (2), or (3) above, or (7) below, or any person described in (8) below, has any direct or indirect financial, ownership, or working interest? No

(7) Any corporation which is controlled by the applicant, any corporation described in (1), (2), or (3) above, or by any person described in (4), (5), or (6) above?

No

8/ Means held either actually or beneficially.
9/ Means by ownership of stock, proxy, contract, or otherwise.

(8) Any person who is authorized to serve on a nominating or proxy committee of any corporation described in (1), (2), (3), or (7) above? No

(f) If the answer to any subdivision of (a) above is "yes", submit with respect to each such answer the following:

Sub-division of (e) answered	Name of applicant	Date of application	Location of the station (proposed or existing)

8. (a) If applicant has or within the past 5 years has had a substantial interest (25% or greater) in any business or financial enterprise, or if applicant has or within the past 5 years has had any official relationship to any business or financial enterprises, there is submitted herewith full and complete disclosure of the enterprise, the name and principal place of business, the character of business engaged in, and the nature and extent of interest in or relationship to such business A. H. Belo Corporation, publishes The Dallas Morning News, Dallas, Texas and Texas Almanac and State Industrial Guide, sole Owner and operator of Station WFAA and WFAA-FM

(b) If applicant is other than an individual and any partner, officer, member of the governing board, director, or principal stockholder, has or within the past 5 years has had a substantial interest (25% or greater) in any business or financial enterprises or any official relationship to any business or financial enterprises, there is submitted herewith a full and complete disclosure of the enterprise, the name and principal place of business, the character of business engaged in, and the nature and extent of the interest in or relationship to such business of each E. M. Dealey is Director of Southland Paper Mills, Incorporated, Lufkin, Texas, Manufacturers of Pulpwood and Newsprint. George Waverley Briggs, Vice President and Trust Officer of the First National Bank in Dallas, Texas

(c) Give the names and addresses of members of the immediate family, present business associates of applicant or, if applicant is other than an individual, of any stockholder, station manager, or other parties referred to in (b) above, who have any interest in or connection with this application, or with any other radio broadcasting station.

E. M. Dealey, Dallas Morning News, Dallas, Texas

Geo. W. Briggs, First National Bank, Dallas, Texas

(d) If any such party has an interest or connection of the character stated, supply full information with respect thereto and give as to each the information called for in (b) above Geo. W. Briggs, full time employee of First National Bank in Dallas. E. M. Dealey, member of the Board of Directors, Southland Paper Mills.

(e) If any such business or financial enterprise has been liquidated or otherwise concluded, describe the reasons therefor and state whether any person sustained or claimed to have sustained any loss from such liquidation or other conclusion of such activity

Neither business has been liquidated or otherwise concluded.

(f) If any person named in (b) above is or, within the past 5 years, has been employed by or associated with another, state fully the name and business address of each employer or associate, the character of business, and the nature of employment or association therein,

together with the length of time so employed or associated

George W. Briggs, Vice President and Trust Officer, First National Bank in Dallas, Texas - twenty-two years.

(g) If none, specifically so state as to applicant and each named party.

FACILITIES REQUESTED

9. The frequency, power, and hours of operation requested for the proposed station are as follows:

(a) Frequency 570 kilocycles.

(b) Power (night) 5000 watts. (c) Power (day) 5000 watts.

(d) Hours of operation:

(1) Unlimited Yes (2) Daytime only _____ (3) Limited _____

(4) Sharing with (specify stations) _____

(5) Other (specify) _____

(e) State minimum number of hours per day proposed station will operate

On file with FCC

10. (a) Does applicant request the assignment of all or any part of the facilities (i.e., frequency, power, and/or hours of operation) now assigned to any other station or stations? No ("Yes" or "No")

(b) If so, specify the station or stations and state accurately the facilities requested to be withdrawn therefrom _____

TECHNICAL INFORMATION

11. Description of transmitting apparatus proposed to be installed:

(a) Make RCA Type No. 5-F (Modified)

(b) Oscillator: Type of circuit On file with FCC Number, manufacturer's name, and type of tubes On file with FCC

Normal plate current, per tube On file with FCC Plate voltage On file with FCC

(c) List buffer and intermediate power amplifier stages, by number and type of tubes in each stage On file with FCC

(d) Last radio stage: Number, manufacturer's name, and type of tubes On file with FCC

Normal night operation for power requested: Plate current, per tube On file with FCC

Plate voltage On file with FCC If greater day power than night power is requested, specify the following:

Normal day operation: Plate current, per tube

Plate voltage

Describe fully the proposed method and procedure of reducing power at sunset

(e) Modulator or last audio stage: Number, manufacturer's name, and type of tubes and how operated (Class "A" "A Prime", or "B") On file with FCC

Normal plate current, per tube On file with FCC Plate voltage On file with FCC

(f) Which radio stage is modulated? On file with FCC

(g) What system of modulation is employed (high level, low level, grid bias in last radio stage etc.)?

On file with FCC

(h) If low level modulation is employed, give for modulated radio stage:

Number and type of tubes

Plate current, per tube Plate voltage

(i) The transmitter is designed for what maximum percentage of satisfactory modulation? 100%

(j) State name and type of modulation monitor

RCA Type WM-43A

(k) Give Federal Communications Commission approval number 1557

(l) Specify manufacturer's name, type, number, and full-scale reading of the following meters:

(1) In last radio stage: On file with FCC

Plate voltmeter

Plate ammeter

(2) Antenna ammeter

(m) Describe the plate power supply for last radio stage

On file with FCC

Rating: Current Voltage

(n) Maximum carrier power output of transmitter for satisfactory operation is On file with FCC watts.

(o) Maximum rated carrier power of transmitter as determined by orders of the Federal Communications Commission is On file with FCC watts.

12. Description of automatic frequency control equipment:

(a) Make On file with FCC Type No. _____

(b) Give manufacturer's name, type of cut, and temperature coefficient in cycles per degree centigrade of the quartz crystal _____

RCA, on file with FCC

(c) By whom will unit be calibrated? RCA

Calibrated frequency: 570 kilocycles at 60 degrees centigrade.

Proposed operating frequency: 570.000 kilocycles. (Give exact figure, correct to third decimal place at 60 degrees centigrade.)

(d) State guaranteed accuracy of the calibration: On file FCC cycles.

(e) State number of frequency control oscillators which will be maintained constantly at correct operating temperature and frequency in heat-controlled chambers 2

(f) Is provision made for instantaneous connection of spare frequency control units? Yes

(g) Manufacturer's name and type of automatic temperature control _____

On file with FCC

(h) State within what limit automatic temperature control will hold the temperature On file with FCC degrees centigrade.

(i) State temperature coefficient of the frequency control units: _____ cycles per degree centigrade. On file with FCC

(j) Is temperature coefficient positive or negative? On file with FCC

(k) State manufacturer's name and rated accuracy of: Thermostat _____

On file with FCC Thermometer On file with FCC

(l) Attach the circuit diagram of automatic temperature-control system if not already on file with the Commission. On file with FCC

(m) Attach a sketch or drawing of the automatic temperature-control chamber, if not already on file with the Commission.
On file with FCC

(n) Describe checking means used for determining if transmitter retains assigned frequency Approved Frequency Monitor, also Secondary Standard calibrated against WWV.

(o) State name and type number of separate frequency monitor RCA Type WF-48A

(p) Give Federal Communications Commission approval number 1468

13. Applicant states that there are attached hereto copies of an accurate schematic diagram of the fundamental radio and audio circuits of the transmitter proposed, including antenna and ground or counterpoise connections, antenna feed system, and that it indicates the type of tubes. (This diagram should be a blue print or ink drawing, if possible the size of this application.) On file with FCC

14. (a) Type of antenna 10/ See attached engineering exhibit

(b) Height of vertical lead _____ feet. (Height above base insulator or base if grounded.)

(c) Length of flat top (if any) _____ feet.

(d) Give over-all height (in feet) above ground level _____

(e) Give over-all height (in feet) above mean sea level _____

(f) Height (in feet) of building or substructure (distance from ground to base of antenna) _____

(g) Type (uniform cross section, tapered, etc., guyed or self-supporting)

(h) If not fully described above, give complete details or attach sketch _____

(i) Counterpoise (if used): Type and dimensions _____

10/ If directional antenna is proposed, complete engineering data thereon, in addition to the information under (a) to (l) inclusive, on each element, shall be submitted in triplicate properly verified by the engineer who designed it. It shall be clearly shown whether directional operation is for day or night or both and if so, whether the same pattern is proposed for both. If not, full information shall be submitted on each pattern.

(j) Antenna ground (if used): How obtained_____ (Number and length

_____ of radials and depth buried, etc.)

(k) How is antenna excited (shunt or series)?_____

(l) Sketch showing dimensions of property, location of towers, transmitter building and ground system.

15. From whom will equipment be purchased? (Specify whether new or used New _____ If used, where, how long, and what changes have been made or proposed. Attach additional sheets if necessary)

Transmitter RCA

Antenna Truscon Steel Company

Studio equipment_____

Frequency monitor RCA

Modulation monitor RCA

Other equipment_____

16. Proposed location of transmitter: State Texas County Dallas

City or town_____ Street and number_____

See attached engineering exhibit

North latitude: Degrees_____, minutes_____, seconds_____

West longitude: Degrees_____, minutes_____, seconds_____

17. Number of Standard and high frequency broadcast stations by call letters located within various distances of proposed location of transmitter is as follows: See attached engineering exhibit

1 mile_____ 2 miles_____

3 miles_____ 8 miles_____

18. (a) Name and give location of all AIRPORTS within 10 miles of proposed

Location of transmitter See attached engineering exhibit

(b) Give distance from proposed location of transmitter to each of such airports

See attached engineering exhibit

(c) Name and give distance to the center line of any established AIRWAYS within 10 miles of proposed location of transmitter

See attached engineering exhibit

19. Attach in triplicate: See attached engineering exhibit

(a) Map or maps having reasonable scales (not less than one-half inch per mile) clearly showing:

(1) Proposed location and present location.

(2) General character of the surrounding area, particularly the retail business, wholesale business, manufacturing residential, and unpopulated areas (by symbols, cross-hatching, colored crayons, or other means);

(3) The heights of buildings or other structures and terrain elevations in the vicinity of the antenna, indicating the location thereof and any markings for air navigation thereon;

(4) The location of airports, airways, and other known radio stations, including receiving stations, except broadcast or amateur;

(5) The terrain and types of soil.

(b) Aerial photograph or photographs taken of the proposed location of the antenna showing clearly the character of the area within the 250 mv/m contour. (Ordinary photographs will be accepted if they

clearly show the terrain to the 250 mv/m contour and are taken in at least eight directions from the site: North, northeast, east, etc.)

20. (a) Attach triplicate map or maps (same map or maps supplied for section 19 (a) may be used) having reasonable scales showing the following: 11/ 12/ See attached engineering exhibit

(1) The 500, 250, 25, 5 and 2 mv/m contours and for both present and proposed operation.

(2) The present normally protected or interference-free contours of the station (whichever includes the least area--all sources of interference) must be considered in determining interference-free contours 12/ for both day and night operation.

(3) The normally protected contours of the station as proposed by your application for both night and day operation (without regard to interference from other stations).

(4) The interference-free contours of the station as proposed by your application for both night and day operation (if station would be limited inside the normally protected contours by any other station or stations).

(5) The present normally protected or interference-free contours of other stations to which objectionable interference may be caused by operation of the station as proposed by your application.

(6) The interference-free contours of the stations in (5) above considering the interference resulting from the operation of the station as proposed by your application.

11/ See Standards of Good Engineering Practice Concerning Standard Broadcast Stations, Section I.

12/ Maps showing service contours shall exclude the areas which do not receive adequate service due to interference from electrical apparatus. All towns and cities having population in excess of those given in Table II of Section I of the Standards of Good Engineering Practice or other areas not receiving adequate service due to interference from electrical apparatus shall not be included in the tabulation of areas and populations within the service contours. The 1940 Census Minor Civil Division maps should be used in making population counts, subtracting any towns or cities not receiving adequate service and where the contour cuts a minor division, assume uniform distribution of population within division to determine the population included in the contours unless a more accurate count is made.

(b) Attach statement giving the conductivities, effective field intensities, interference fields and other pertinent data used for determining the contours required above. See attached engineering exhibit

21. As determined by the 1940 U. S. Census: 11/ 13/ See attached engineering exhibit

(a) State the number of persons residing in the following contours:

		500 mv/m	250 mv/m	25 mv/m	5 mv/m	2 mv/m
Proposed:	Night					
	Day					
Present:	Night					
	Day					

(b) State areas and number of persons residing within the present interference free contours:

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night			
Day			

(c) State areas and number of persons residing within the normally protected contours of the station as proposed for both night and day operation (without regard to interference from other stations):

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night			
Day			

(d) State areas and number of persons residing within the interference free contours of the station as proposed by your application for both night and day operation (if station would be limited inside the normally protected contours by any other station or stations) 14/

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night			
Day			

11/ See Footnote 11, Page 19.
13/ Supplemental population estimates may be also submitted based upon later census estimates, if considered substantially different from the 1940 Census.
14/ If interference is from more than one station, show totals and attach figures of each station.

(e) State areas and number of persons residing within the present normally protected or interference-free contours of other stations to which objectionable interference may be caused by operation of the station as proposed by your application: 15/

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night			
Day			

(f) State areas and number of persons residing within the normally protected contours of the stations in (e) above that will lose service by reason of objectionable interference from the station operating as proposed by your application. 15/

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night			
Day			

(g) Attach full explanation of methods used in determining the areas and populations.

22. Proposed location of main studio: State Texas County Dallas

City or town Dallas Street and number 1122 Jackson

Other studios maintained by station None

15/ If interference is to more than one station, attach figures for each station.

PROPOSED SERVICE

23. (a) Describe fully and in detail the character and types of program service proposed, (e.g., entertainment, educational, religious, agricultural, fraternal, news, etc.) showing the total average daily time to be devoted to each type of program, the sources of each, and attach as exhibits copies of all contracts or the substance of all understandings covering program service.

On file with FCC

(b) State the number of hours and percentage of time per month to be devoted to

(1) Commercial programs On file with FCC

(2) Sustaining programs On file with FCC

24. Describe fully any new or additional service not now rendered in the area to be served which will be given by the proposed station. Show how the proposed service will differ from service presently rendered in the area.

See attached engineering exhibit

(If space is insufficient for answer, attach exhibit.)

25. Set forth fully plans for staffing the station and set forth as fully as possible in Exhibit_____ the name, address, citizenship, experience, and salary of each member of station personnel. Show the position and duties of each and the specific part each will take in carrying out applicant's proposed plan of program service.

On file with FCC

26. (a) What percentage of the total monthly time will be used for mechanical records (i.e., phonograph records, electrical transcriptions, etc.)?

On file with FCC

(b) Does applicant contemplate obtaining programs from a chain? Yes
If so, what percentage of the total monthly time will be used for chain programs (i.e., programs both paid and sustaining)?_____

On file with FCC

(c) Has any correspondence been had, or have any negotiations, discussions, or understandings (oral or written) been entered into with respect to chain or network programs? Yes
("Yes" or "No")

If so, attach as Exhibit_____ a full and detailed description thereof, with copies of all correspondence, understandings, and contracts. On file with FCC

(d) Does applicant retain the right to determine at all times what programs shall be broadcast in the public interest Yes
("Yes" or "No")

Attach as Exhibit_____ a statement fully describing this condition, show to what extent applicant will or will not have such right and cite the contract provisions upon which applicant relies in making this statement. On file with FCC

27. (a) If it is proposed to serve wholly or substantially an area already served by an existing standard broadcast station, state fully the facts upon which reliance is placed to show applicant can compete effectively with such existing station

Does not apply

(b) If applicant (including all persons under common control) is now licensed to operate a Standard or High Frequency Broadcast Station, or directly or indirectly owns, operates or controls such a station, state fully the facts upon which reliance is placed to show (1) that the station proposed would foster competition among broadcast stations and (2) that the proposed station would not result in concentration of control of broadcast stations facilities in a manner inconsistent with public interest, convenience or necessity. (Attach statement on same size paper.) Does not apply

FULL INFORMATION

28. Applicant states that if any further information is necessary for a full disclosure with respect to construction, location, facilities, operation, service, assets, obligations, or otherwise not already fully explained,

the following is a complete disclosure with respect thereto

Applicant believes full and complete information has been supplied herein but, if available, additional facts will be supplied upon request.

29. Applicant states--
That the direct objects to be attained by the construction, changes in construction or modification of license contemplated by the application are as follows:

Changes necessary to provide improved nighttime service to the Fort Worth-Dallas metropolitan areas.

EXHIBITS IDENTIFIED

30. There are attached hereto the following described and identified exhibits, which have been prepared by applicant (if an individual or partnership) or by or under the direction of officers or employees of the applicant whose respective names and official titles appear opposite the exhibit prepared by each. (List here all exhibits attached to the application):

Exhibit number	Description of information	Name of officer or employee (1) by whom or (2) under whose direction exhibit was prepared (show which)	Official title
A	Corporate Resolution authorizing necessary expenditures.	J. M. Moroney (1)	Vice-Pres. & Sec'y A. H. Belo Corp.
	General Supervision of Application	Ray Collins (1)	Chief Engineer - WFAA

31. There are listed below the names and addresses of all counsel (legal, engineering, accounting, or persons in any other capacity), together with the name and address of firm, if any, with which connected who prepared or assisted in preparing the application and/or exhibits. (Identify opposite the name of each such person the paragraph number of this application and/or the exhibit which he prepared or assisted in preparing. Where the answer contained in any such paragraph or exhibit involves representations of fact an affidavit must be furnished from the person on whose knowledge the statement is based to the effect that the facts stated 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. Where the statement of information consists of expert opinion such statement must be signed by the attorney, engineer, or accountant. There must also be included in such statement a full description of the qualifications of the expert.)

Paragraph or exhibit number	Description of information	Name and address of the party who prepared or assisted in preparing the paragraph or Exhibit and name and address of firm with which connected.
B	Engineering Exhibit	A. Earl Cullum, Jr. Highland Park Village Dallas, Texas

AUTHORITY OF ANY OTHER REGULATORY AGENCY OBTAINED

32. If any part of the proposal involved in this application is subject to regulation or approval by any other Federal or State body, show here the character and status of such proceeding and submit certified copies of all pleadings filed therewith, together with any orders issued by said body.

_____

_____

_____

_____

_____

_____

33. If the construction permit is granted, the construction will be commenced within 30 days of the granting thereof and will be completed and the station ready for operation within 180 days thereafter.

34. The applicant waives any claim to the use of any particular frequency or of the other as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests a construction permit in accordance with this application.

35. (A) Applicant, if a legal entity other than an individual or partnership, states: See attached exhibit A

(a) That the making of this application is authorized by_____

_____ of the _____
(Resolution or act)

_____, adopted at a meeting
(Board of directors or other governing body)

held at_____
(Place)

on_____
(Date)

(b) That there are attached hereto as Exhibits A properly certified copies of extracts from the minutes of said meeting 1/ affirmatively showing:

(1) That a quorum of members required by the bylaws having authority to act was present.

(2) That the resolution was voted upon favorably by a majority (or the number required by the bylaws) of those present and having authority to vote on the resolution.

(3) That the officer executing this application is authorized to do so.

(B) If application is executed on behalf of applicant by attorney there is attached hereto as Exhibit _____ cogent evidence of his authority to act.16/

36. All the statements made in the application and attached exhibits are considered material representations, and all the exhibits are a material part hereof and are incorporated herein as if set out in full in the application.

Dated this 19th day of February, 19 48

A. H. BELO CORPORATION
(Name of applicant)

By: James M. Moroney,
Vice-Pres. & Sec'y.

By _____

(Authorized officer or attorney)
16/

1/ See footnote 1 on page 1.

16/ Must be executed by applicant, if an individual; by one of the partners of applicant, if a partnership; by an officer of applicant, if a corporation or association or by attorney of applicant only under conditions shown in Sec. 1.121, Rules of Practice and Procedure, in which event satisfactory evidence of disability of applicant or his absence from the continental United States, and authority of attorney to act must be submitted with application.

Subscribed and sworn to before me this 19th day of Feb. ,1948

(Mary Mason) Notary public
Dallas County, Texas.

[SEAL]

(Notary public's seal must be affixed where law of jurisdiction requires, otherwise state that law does not require seal.

My commission expires June 1 , 1949

(Be sure all necessary information is furnished and all questions are fully answered. If any portions of the application are not applicable, specifically so state, and show reasons therefor. Defective applications may be returned without consideration.)

EXHIBIT A

BE IT RESOLVED: That the officers of this corporation be, and they are hereby authorized to take any and all steps necessary to move the present transmitter and antenna system used in connection with the operation of its station on the 570 kc frequency from its location three miles southeast of Arlington, Texas to a location approximately four miles southeast of Grapevine, Texas, and further that the officers of this corporation be, and they are hereby authorized and directed to take all necessary steps to file as soon as possible with the Federal Communications Commission at Washington, D. C., an application or applications for authority to effectuate such move.

BE IT FURTHER RESOLVED: That there is hereby appropriated and set aside the sum of $100,000.00 for this corporation's one-half of the cost of purchase of transmitter and other physical equipment necessary to the proper construction of the plant and buildings, and other costs incident to such move. The management is also authorized to sign new purchase order agreement for the equipment with some manufacturer of their selection for delivery when, as and if authority to move the transmitter and antenna system is granted and equipment is available.

BE IT FURTHER RESOLVED: That the Vice-President and Secretary, James M. Moroney, be, and he is hereby authorized and empowered for and on behalf of this corporation, and in its name to execute all papers and instruments and to verify and file all applications and forms necessary to be filed with the Federal Communications Commission in connection with the grant of an application for authority to move the transmitter and antenna system.

STATE OF TEXAS }
COUNTY OF DALLAS }

I, W. A. (Al) Dealey, Assistant Secretary of the A. H. Belo Corporation, have compared the foregoing resolution adopted by the Board of Directors of the A. H. Belo Corporation at a special meeting of the Board of Directors of such corporation held on the 19th day of February, A.D. 1948, a quorum being present, as recorded in the minute book of said corporation; and I do hereby certify that same is a true correct and complete copy thereof and that same has not been altered, amended, rescinded or repealed and is in full force and effect as of this time.

W. A. (Al) Dealey
Assistant Secretary,
A. H. Belo Corporation

SUBSCRIBED AND SWORN TO on this the 19th day of February, A.D. 1948.

[illegible]
Notary Public in and for
Dallas County, Texas

RADIO STATION WFAA-570
APPLICATION FOR CONSTRUCTION PERMIT
570-KC, 5-KW, DA-2
ENGINEERING, EXHIBIT B

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

ENGINEERING STATEMENT OF THE FIRM OF A. EARL CULLUM, JR., CONSULTING RADIO ENGINEERS, IN CONNECTION WITH THE APPLICATION OF THE A. H. BELO CORPORATION, LICENSEE OF RADIO STATION WFAA-570, DALLAS, TEXAS, FOR CONSTRUCTION PERMIT TO CHANGE PRESENT LOCATION OF TRANSMITTER, TO INSTALL NEW TRANSMITTER, AND TO INSTALL DIRECTIONAL ANTENNAS FOR BOTH DAYTIME AND NIGHTTIME OPERATION ON 570 KILOCYCLES

* * * * * *

I, A. EARL CULLUM, JR., AM A CONSULTING RADIO ENGINEER WITH OFFICES LOCATED IN DALLAS, TEXAS. I GRADUATED FROM THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY IN 1931 WITH A BACHELOR OF SCIENCE DEGREE IN COMMUNICATION ENGINEERING. MY EXPERIENCE INCLUDES ALMOST CONTINUOUS EMPLOYMENT BY BROADCAST STATIONS SINCE 1922. SINCE 1936 I HAVE MAINTAINED AN OFFICE AS A CONSULTING RADIO ENGINEER.

THIS FIRM HAS BEEN EMPLOYED BY THE A. H. BELO CORPORATION, LICENSEE OF RADIO STATION WFAA-570, DALLAS, TEXAS, TO STUDY THE 570-KILOCYCLE OPERATION OF RADIO STATION WFAA-570 TO DETERMINE HOW THE SERVICE TO THE COMBINED DALLAS AND FORT WORTH METROPOLITAN DISTRICTS MIGHT BE IMPROVED. AFTER STUDIES HAD BEEN MADE, THIS FIRM RECOMMENDED THAT THE PRESENT LOCATION OF THE TRANSMITTER BE MOVED FROM A SITE APPROXIMATELY TWO MILES SOUTHEAST OF ARLINGTON, TEXAS, TO A SITE THREE AND ONE-HALF MILES SOUTHEAST OF GRAPEVINE, TEXAS, ON STATE HIGHWAY 114; AND FURTHER RECOMMENDED THE USE OF DIRECTIONAL ANTENNAS DURING BOTH DAYTIME AND NIGHTTIME HOURS WHEN OPERATING ON THE 570-KILOCYCLE CHANNEL WITH 5 KILOWATTS OF POWER.

EXISTING OPERATION

THE EXISTING DALLAS-FORT WORTH 570-KILOCYCLE OPERATION IS LICENSED FOR 5 KILOWATTS OF POWER, USING A NONDIRECTIONAL ANTENNA DAY AND A DIRECTIONAL ANTENNA NIGHT, FROM A SITE APPROXIMATELY TWO MILES SOUTHEAST OF ARLINGTON, TEXAS.

FOR DAYTIME OPERATION, A 407-FOOT TOWER OF A THREE-TOWER ARRAY IS USED. IT HAS BEEN ASSUMED THAT A UNIFORM FIELD OF 425 MILLIVOLTS-PER-METER UNATTENUATED AT ONE MILE IS BEING RADIATED FOR 5 KILOWATTS OF POWER INTO THE ANTENNA. FOR NIGHTTIME OPERATION A THREE-TOWER ARRAY IS USED. DETAILS IN REGARD TO THE PRESENT DIRECTIONAL ARRAY ARE ON FILE WITH THE FEDERAL COMMUNICATIONS COMMISSION, KGKO FILE NUMBER BL-1622.

MAPS HAVE BEEN PREPARED SHOWING THE COVERAGE NOW BEING HAD FROM THE EXISTING OPERATION BASED ON A FIELD INTENSITY SURVEY OF THE OPERATION MADE IN 1938 BY THE FIRM OF GLENN D. GILLETT.

PROPOSED OPERATION

AN ALLOCATION STUDY OF THE 570-KILOCYCLE CHANNEL HAS BEEN MADE IN ACCORDANCE WITH METHODS PRESCRIBED IN THE STANDARDS OF GOOD ENGINEERING PRACTICE FOR STANDARD BROADCAST STATIONS. THE STUDY SHOWS THAT THE ALLOWABLE RADIATIONS IN VARIOUS DIRECTIONS FROM THE DALLAS-FORT WORTH AREA PRECLUDE THE POSSIBILITY OF IMPROVING THE NIGHTTIME SERVICE TO THE DALLAS AND FORT WORTH METROPOLITAN DISTRICTS

FROM THE EXISTING SITE.

IT IS PROPOSED TO CHANGE THE TRANSMITTER LOCATION TO A SITE APPROXIMATELY THREE AND ONE-HALF MILES SOUTHEAST OF GRAPEVINE, TEXAS, ON STATE HIGHWAY 114, AT A LOCATION IMMEDIATELY SOUTH OF THE PRESENT WBAP-WFAA 820-KILOCYCLE TRANSMITTER SITE. A THREE-ELEMENT DIRECTIONAL ARRAY HAS BEEN DESIGNED TO PROVIDE FOR NIGHT-TIME OPERATION FROM THE PROPOSED SITE WITH 5 KILOWATTS OF POWER. THE PROPOSED DIRECTIONAL ARRAY WILL PROTECT ALL OTHER 570-KILOCYCLE OPERATIONS, AS SHOWN ON THE ATTACHED ALLOCATION STUDY. FOR DAYTIME OPERATION, THE SAME THREE TOWERS WILL BE USED WITH DIFFERENT PHASING AND CURRENT RATIOS. COMPLETE DETAILS OF THE DIRECTIONAL ARRAYS ARE ATTACHED.

MAPS HAVE BEEN PREPARED SHOWING THE COVERAGE TO BE EXPECTED FROM THE PROPOSED DIRECTIONAL ARRAYS BASED ON VALUES OF GROUND CONDUCTIVITY INDICATED BY A FIELD INTENSITY SURVEY, MADE IN 1939 BY THIS FIRM, OF THE 800-KILOCYCLE OPERATION OF STATIONS WFAA AND WBAP. A POINT-BY-POINT CONVERSION TO 570-KILOCYCLES OF THE AVERAGE CONDUCTIVITY INDICATED BY THE 800-KILOCYCLE MEASUREMENTS HAS BEEN PREPARED, AND GRAPHS ARE ATTACHED SHOWING THE CONDUCTIVITY ALONG EACH OF 16 RADIALS.

ATTACHED FIGURES

IN CARRYING OUT THE STUDIES, DESIGNING THE DIRECTIONAL ANTENNAS,

AND DETERMINING THE COVERAGES, THE FOLLOWING ATTACHED FIGURES WERE PREPARED BY ME OR UNDER MY SUPERVISION:

1. SPECIFICATIONS OF PROPOSED ANTENNA SYSTEM

2. DIRECTIONAL ANTENNA DESIGN FORMULAE

3. DIRECTIONAL ANTENNA CALCULATIONS

4. GROUND SYSTEM SPECIFICATIONS SHOWING THE DETAILS OF THE PROPOSED GROUND SYSTEM

5. HORIZONTAL RADIATION PATTERN AND TABULATION OF DATA FOR THE PROPOSED DAYTIME DIRECTIONAL ARRAY USING 5 KILOWATTS OF POWER ON 570 KILOCYCLES

6. HORIZONTAL RADIATION PATTERN AND TABULATION OF DATA FOR THE PROPOSED NIGHTTIME DIRECTIONAL ARRAY USING 5 KILOWATTS OF POWER ON 570 KILOCYCLES

7. VERTICAL RADIATION PATTERNS AND TABULATIONS OF DATA FOR THE PROPOSED NIGHTTIME DIRECTIONAL ARRAY USING 5 KILOWATTS OF POWER ON 570 KILOCYCLES

8. 570-KILOCYCLE NIGHTTIME ALLOCATION STUDY

9. MAPS SHOWING THE 500-, 250-, 25-, 5.0-, 2.0-, AND 0.5-MV/M, AND INTERFERENCE-FREE CONTOURS FROM THE PROPOSED 570-KILOCYCLE, 5-KILOWATT, DIRECTIONAL, DAYTIME OPERATION. POPULATION AND AREA FIGURES ARE INCLUDED

10. MAPS SHOWING THE 500-, 250-, 25-, 5.0-, 2.65-, AND 2.5-MV/M CONTOURS FROM THE PROPOSED 570-KILOCYCLE, 5 KILOWATT, DIRECTIONAL, NIGHTTIME OPERATION. POPULATION AND AREA FIGURES ARE INCLUDED

11. MAPS SHOWING THE 500-, 250-, 25-, 5.0-, 2.0-, AND 0.5-MV/M, AND INTERFERENCE-FREE CONTOURS FROM THE EXISTING 570-KILOCYCLE, 5-KILOWATT, NONDIRECTIONAL, DAYTIME OPERATION. POPULATION AND AREA FIGURES ARE INCLUDED

12. Maps showing the 500-, 250-, 25-, 5.0-, 2.65-, and 2.5-mv/m contours from the existing 570-kilocycle, 5-kilowatt, directional, nighttime operation. Population and area figures are included

13. Maps showing the residential, business, and industrial areas in Dallas and Fort Worth

14. Map showing the topography in vicinity of the proposed site

15. Map showing the aeronautical facilities and other radio stations in the vicinity of the proposed site

16. Photographs showing the character c the area in the vicinity of the proposed site

17. Graphs showing the conductivity used in projecting the coverage maps from the proposed site

18. Answers to questions 14 and 16 through 21 of FCC Form 304 revised May, 1944

POPULATION AND AREA ANALYSIS

A population and area analysis of the coverage maps has been prepared by using the 1940 United States Census figures and the Standards of Good Engineering Practice concerning coverage. The population figures were determined from an analysis of the population distribution shown on 1940 Minor Civil Division Maps. From the total population within each contour, the urban areas not receiving satisfactory service in accordance with the Standards of the Federal Communications Commission concerning coverage were subtracted according to the following schedule:

Contour	Urban Population Subtracted
25 mv/m	10% of cities of 1,000,000 or more
10 mv/m	20% of cities of 1,000,000 or more 10% of cities of 100,000 to 1,000,000
5 mv/m	50% of cities of 1,000,000 or more 20% of cities of 100,000 to 1,000,000 10% of cities of 10,000 to 100,000
2 mv/m	100% of cities of 1,000,000 or more 50% of cities of 100,000 to 1,000,000 20% of cities of 10,000 to 100,000 10% of cities of 2,500 to 10,000
0.5 mv/m	100% of cities of 2,500 or more

The population within the blanket contours was determined by a count of houses within those contours. It was assumed that 3.8 people reside within each house. The areas were determined from the original maps by using a polar planimeter. The results of the studies are tabulated on attached figures.

Adjacent Channel Interference

Studies indicate that the existing and proposed daytime operations on 570 kilocycles in the Dallas-Fort Worth area do not involve adjacent channel interference with the 550-kilocycle, 5-kilowatt operation of KTSA at San Antonio, Texas, within the respective 0.5-mv/m contours, based on a ratio of 1 to 30 for desired to undesired signals.

Studies indicate that the existing and proposed daytime

OPERATIONS ON 570 KILOCYCLES IN THE DALLAS-FORT WORTH AREA DO NOT INVOLVE ADJACENT CHANNEL INTERFERENCE WITH THE 560-KILOCYCLE, 5-KILOWATT OPERATION OF KFDM AT BEAUMONT, TEXAS, WITHIN THE RESPECTIVE 0.5-MV/M CONTOURS, BASED ON A RATIO OF 1 TO 1 FOR DESIRED OR UNDESIRED SIGNALS.

STUDIES INDICATE THAT A SLIGHT AMOUNT OF INTERFERENCE EXISTS BETWEEN THE DAYTIME OPERATIONS ON 570 KILOCYCLES IN THE DALLAS-FORT WORTH AREA AND THE 590-KILOCYCLE, 5-KILOWATT OPERATION OF KTBC AT AUSTIN, TEXAS, WITHIN THE RESPECTIVE 0.5-MV/M CONTOURS, BASED ON A RATIO OF 1 TO 30 FOR DESIRED TO UNDESIRED SIGNALS. THE MAPS SHOW THAT THE AREAS AND POPULATIONS IN WHICH INTERFERENCE OCCUR ARE RELATIVELY UNAFFECTED BY THE PROPOSED CHANGES IN THE DALLAS-FORT WORTH 570-KILOCYCLE OPERATION.

OTHER CONSIDERATIONS

THE PROPOSED 250-MV/M CONTOURS INCLUDE LESS THAN ONE PERCENT OF THE POPULATION IN EITHER THE DALLAS OR FORT WORTH METROPOLITAN DISTRICTS. THE PROPOSED 25-MV/M CONTOURS COVER THE MAIN BUSINESS AND INDUSTRIAL AREAS OF BOTH DALLAS AND FORT WORTH. THE PROPOSED 25-MV/M SERVICE TO THE DALLAS AND FORT WORTH METROPOLITAN DISTRICTS WILL BE INCREASED DURING DAYTIME FROM 232,535 PEOPLE TO 413,677 PEOPLE AND WILL BE INCREASED DURING NIGHTTIME FROM 156,794 PEOPLE TO 408,789 PEOPLE. THE PROPOSED 5.0-MV/M CONTOURS COVER THE ENTIRE

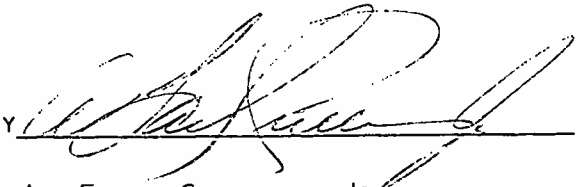
DALLAS AND FORT WORTH METROPOLITAN DISTRICTS.

NO ADDITIONAL HAZARD WILL BE CAUSED TO THE AIRWAYS INASMUCH AS THE PROPOSED TOWERS WILL BE LOCATED IMMEDIATELY SOUTH OF THE EXISTING WFAA-WBAP 820-KILOCYCLE TOWER OF COMPARABLE HEIGHT. IT SHOULD ALSO BE NOTED THAT THE PROPOSED SITE IS MORE THAN FIVE MILES FROM THE NEAREST AIRPORT.

THE PROXIMITY OF THE 570-KILOCYCLE OPERATION TO THE 820-KILOCYCLE OPERATION INTRODUCES POSSIBILITIES THAT CROSS-MODULATION AND/OR RE-RADIATION PHENOMENA MAY BE OBSERVED. STUDIES INDICATE THAT BY USING PROPERLY DESIGNED FILTERS, SUCH PROBLEMS OF CROSS-MODULATION AND/OR RE-RADIATION CAN BE ELIMINATED. WE PROPOSE TO ELIMINATE ALL CAUSES OF CROSS-MODULATION AND/OR RE-RADIATION SHOULD SUCH PROBLEMS ARISE.

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

BY 

A. EARL CULLUM, JR.

FEBRUARY 12, 1948

STATE OF TEXAS)
) SS:
COUNTY OF DALLAS)

A. EARL CULLUM, JR., BEING DULY SWORN, UPON HIS OATH DEPOSES AND SAYS THAT THE FACTS STATED IN THE FOREGOING, TOGETHER WITH ALL FIGURES ATTACHED HERETO, ARE TRUE OF HIS OWN KNOWLEDGE, EXCEPT AS TO SUCH STATEMENTS AS THEREIN STATED TO BE BASED ON INFORMATION AND BELIEF, AND AS TO SUCH STATEMENTS HE BELIEVES THEM TO BE TRUE.

A. EARL CULLUM, JR.

SUBSCRIBED AND SWORN TO BEFORE ME THIS 12TH DAY OF FEBRUARY, 1948

NOTARY PUBLIC IN AND FOR
DALLAS COUNTY, TEXAS

MY COMMISSION EXPIRES JUNE 1, 1949

ASSOCIATE ENGINEERS
D. A. PETERSON
C. M. DANIELL
R. L. HAMMETT
J. G. ROUNTREE

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
HIGHLAND PARK VILLAGE
DALLAS 5, TEXAS

SPECIFICATIONS OF PROPOSED ANTENNA SYSTEM FOR WFAA-570

FREQUENCY	570 KILOCYCLES
RATED POWER DAYTIME	5000 WATTS DIRECTIONAL
RATED POWER NIGHTTIME	5000 WATTS DIRECTIONAL
NUMBER OF TOWERS DAYTIME	3 TOWERS
NUMBER OF TOWERS NIGHTTIME	3 TOWERS
TYPE OF TOWERS	GUYED UNIFORM CROSS SECTION
TOWER FEED	SERIES FEED
TOWER HEIGHT ABOVE INSULATOR	643 FEET
TOWER HEIGHT ABOVE GROUND	653 FEET
TOWER HEIGHT ABOVE SEA LEVEL	1213 FEET
LINE OF TOWERS	SEE FIGURES 5A AND 6A
TOWER SPACING	SEE FIGURES 5A AND 6A
TOWER FIELD RATIO	SEE FIGURES 5A AND 6A
TOWER FIELD PHASE	SEE FIGURES 5A AND 6A
GROUND SYSTEM	SEE FIGURE 4
FIELD RATIO MEASUREMENTS	PHASE MONITOR FROM SAMPLING LOOPS
FIELD PHASE MEASUREMENTS	PHASE MONITOR FROM SAMPLING LOOPS

LOCATION — ON STATE HIGHWAY 114, APPROXIMATELY 4 MILES SOUTHEAST OF GRAPEVINE, TEXAS

N. LAT. 32° 54' 41"
W. LONG. 97° 01' 33"

471124

FIGURE 1

DIRECTIONAL ANTENNA DESIGN FORMULAE

$$F(E): \quad \sqrt{\left[M_1 + M_2 \operatorname{Cos}(\Psi_2 - S_2 \operatorname{Cos}\Phi \operatorname{Cos}\theta) + M_3 \operatorname{Cos}(\Psi_3 - S_3 \operatorname{Cos}\Phi \operatorname{Cos}\theta)\right]^2 + \left[M_2 \operatorname{Sin}(\Psi_2 - S_2 \operatorname{Cos}\Phi \operatorname{Cos}\theta) + M_3 \operatorname{Sin}(\Psi_3 - S_3 \operatorname{Cos}\Phi \operatorname{Cos}\theta)\right]^2}$$

$$F(\theta): \quad \frac{\operatorname{Cos}(G \operatorname{Sin}\theta) - \operatorname{Cos} G}{\operatorname{Cos}\theta\,(1 - \operatorname{Cos} G)}$$

$$K: \quad 1 - \operatorname{Cos} G$$

$$P: \quad (I_1^2 \times R_1) + (I_2^2 \times R_2) + (I_3^2 \times R_3)$$

$$E: \quad 37.25 + I + K + F(E) + F(\theta)$$

WHERE:

P	IS POWER IN WATTS AT LOOP OF ANTENNAS
I	IS THEORETICAL UNIT VECTOR CURRENT IN AMPERES
E	IS UNATTENUATED FIELD INTENSITY IN MILLIVOLTS PER METER AT ONE MILE
I_N	IS CURRENT IN AMPERES AT LOOP OF THE N^{TH} ELEMENT OPERATING DIRECTIONAL
R_N	IS RESISTANCE IN OHMS AT LOOP OF THE N^{TH} ANTENNA OPERATING DIRECTIONAL
M_N	IS FIELD RATIO OF THE N^{TH} ELEMENT OPERATING DIRECTIONAL
Ψ_N	IS FIELD PHASE OF THE N^{TH} ELEMENT OPERATING DIRECTIONAL
S_N	IS THE SPACING IN DEGREES OF THE N^{TH} ELEMENT FROM ELEMENT NUMBER 1
G	IS HEIGHT OF THE ELEMENTS IN DEGREES
θ	IS ANGLE FROM HORIZONTAL TO RADIATION VECTOR
Φ	IS ANGLE FROM LINE OF ELEMENTS TO RADIATION VECTOR
K	IS FORM FACTOR OF THE ELEMENTS

471124

FIGURE 2

DAYTIME DIRECTIONAL ANTENNA CALCULATIONS

GIVEN:

RATED POWER	5000	WATTS
M_1	1.00	
M_2	2.85	
M_3	0.43	
Ψ_1	0	DEGREES
Ψ_2	-70	DEGREES
Ψ_3	+80	DEGREES
S_2	120	DEGREES
S_3	420	DEGREES
G	136	DEGREES

ASSUMED:

COUPLING EQUIPMENT LOSSES	7.5	PER CENT
ANTENNA AND GROUND LOSSES	1.5	OHMS PER TOWER
CURRENT DISTRIBUTION	SINUSOIDAL	

EXPECTED RESULTS:

TOWER NUMBER	(1)	(2)	(3)	
TOWER LOCATION	NORTH	INTERMEDIATE	SOUTH	
FIELD PHASE	0	-70	+80	DEGREES
FIELD RATIO	1.00	2.85	0.43	
LOOP CURRENT	2.26	6.45	0.97	AMPERES
LOOP RESISTANCE	1.8	112.9	292.5	OHMS
LOOP POWER	9	4700	277	WATTS

VECTOR CURRENT — I IS 2.265

FORM FACTOR — K IS 1.719

FIELD INTENSITY AT ONE MILE IN ANY DIRECTION — $E = 145 \times F(E) \times F(\theta)$

VARIOUS VALUES WERE THEN ASSIGNED TO Φ, AND THE CORRESPONDING VALUES OF F(E) AND E WERE DETERMINED. THE HORIZONTAL RADIATION PATTERN WAS PLOTTED AND PLANIMETERED, AND THE RMS VALUE OF THE UNATTENUATED FIELD WAS FOUND TO BE 455 MILLIVOLTS PER METER AT ONE MILE.

471124

FIGURE 3A

NIGHTTIME DIRECTIONAL ANTENNA CALCULATIONS

GIVEN:

RATED POWER	5000	WATTS
M_1	1.00	
M_2	1.33	
M_3	0.46	
Ψ_1	0	DEGREES
Ψ_2	-70	DEGREES
Ψ_3	+65	DEGREES
S_2	120	DEGREES
S_3	420	DEGREES
G	136	DEGREES

ASSUMED:

COUPLING EQUIPMENT LOSSES	7.5	PER CENT
ANTENNA AND GROUND LOSSES	1.5	OHMS PER TOWER
CURRENT DISTRIBUTION	SINUSOIDAL	

EXPECTED RESULTS:

TOWER NUMBER	(1)	(2)	(3)	
TOWER LOCATION	NORTH	INTERMEDIATE	SOUTH	
FIELD PHASE	0	-70	+65	DEGREES
FIELD RATIO	1.00	1.33	0.46	
LOOP CURRENT	3.90	5.19	1.79	AMPERES
LOOP RESISTANCE	54.4	130.1	211.9	OHMS
LOOP POWER	825	3500	675	WATTS

VECTOR CURRENT — I IS 3.896

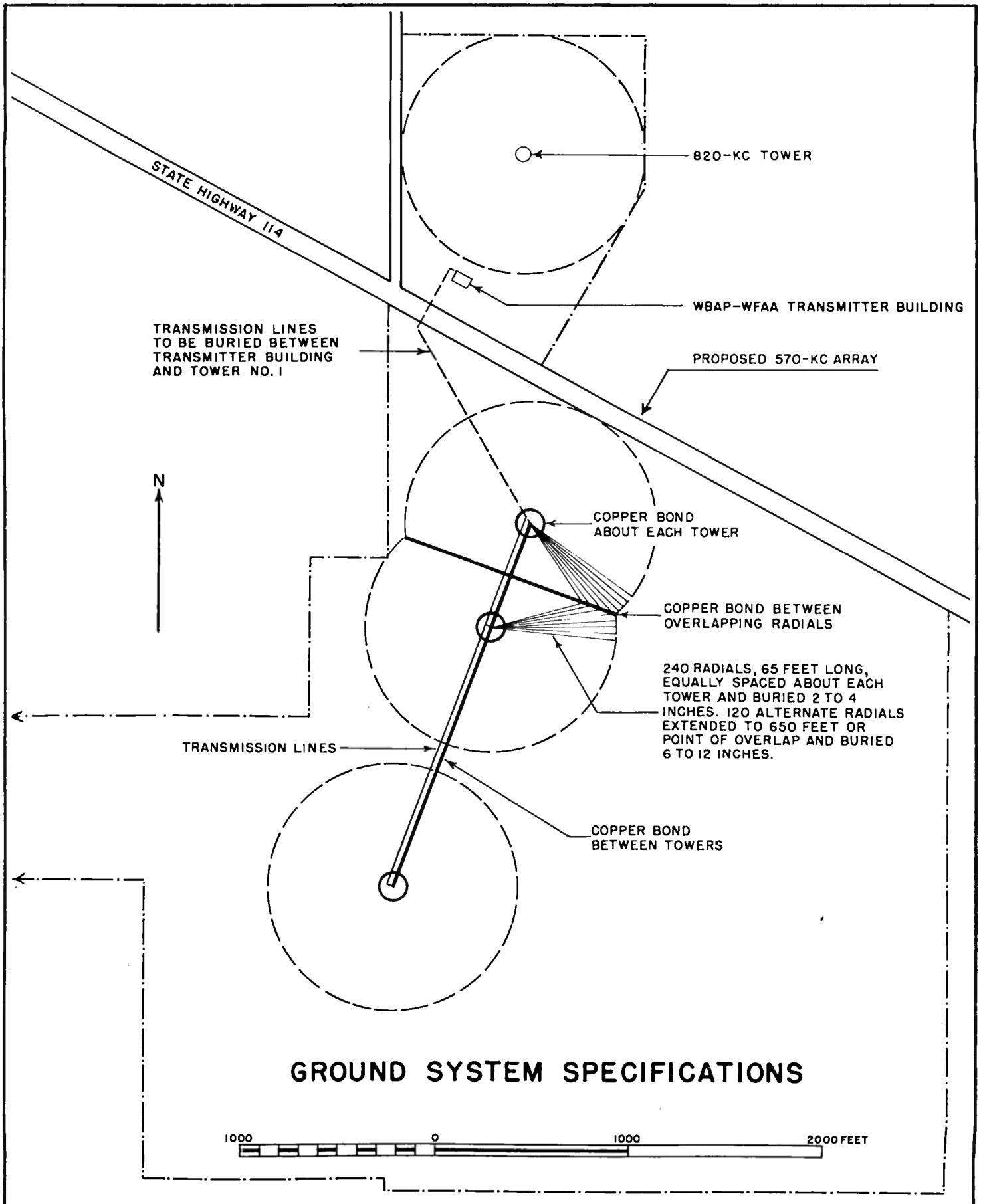
FORM FACTOR — K IS 1.719

FIELD INTENSITY AT ONE MILE IN ANY DIRECTION — $E = 249.5 \times F(E) \times F(\theta)$

VARIOUS VALUES WERE ASSIGNED TO θ AND Φ, AND THE CORRESPONDING VALUES OF $F(\theta)$, $F(E)$, AND E WERE DETERMINED. THE HORIZONTAL RADIATION PATTERN WAS PLOTTED AND PLANIMETERED, AND THE RMS VALUE OF THE UNATTENUATED FIELD WAS FOUND TO BE 454 MILLIVOLTS PER METER AT ONE MILE.

471124

FIGURE 3B

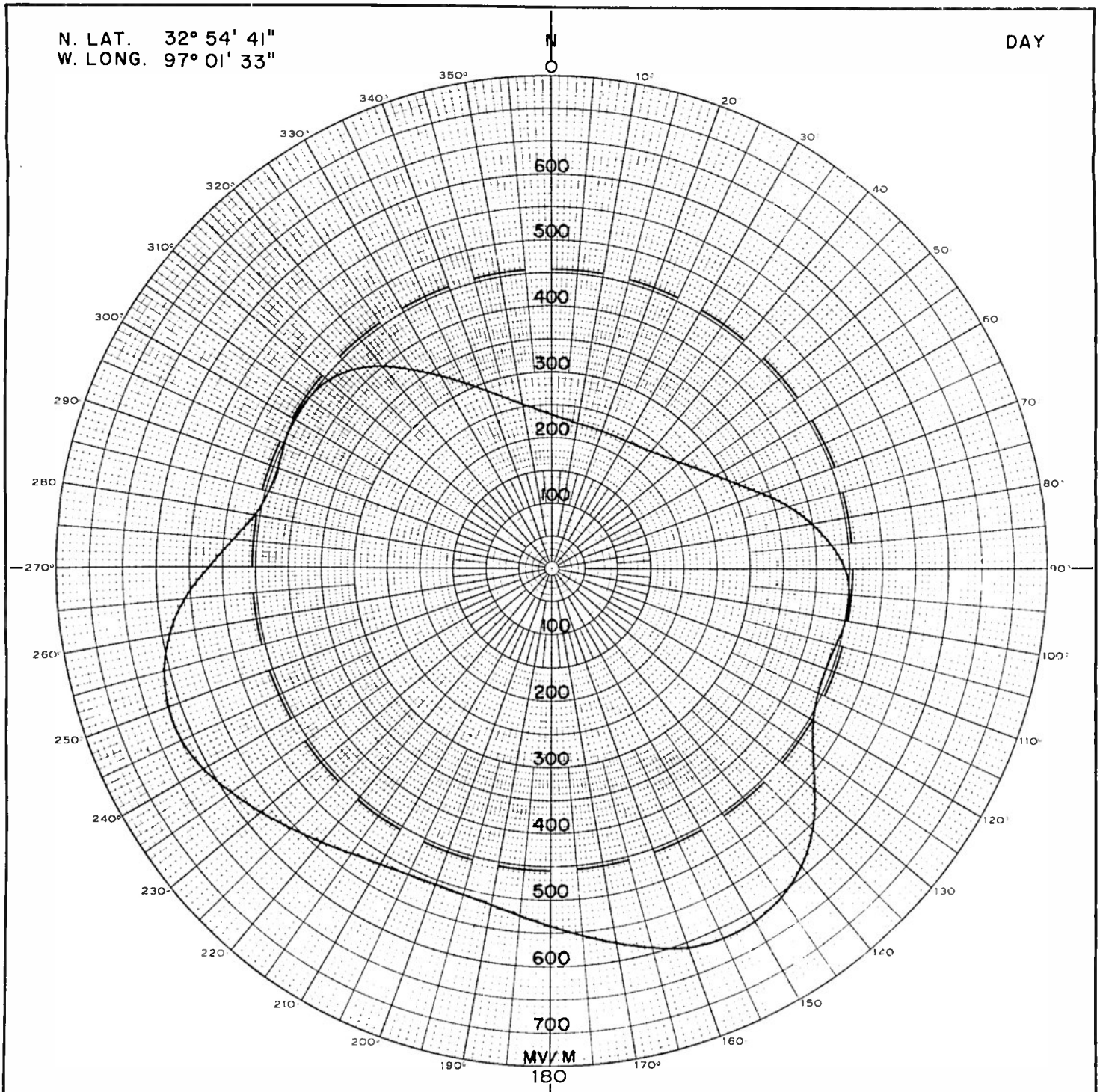


GROUND SYSTEM SPECIFICATIONS

A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH PROPOSED 570 KC, 5 KW, DA-D FIGURE 4

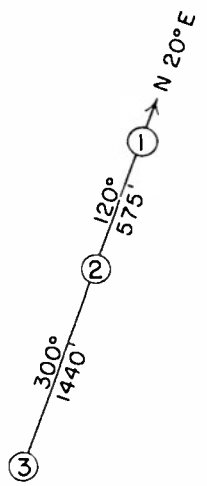
N. LAT. 32° 54' 41"
W. LONG. 97° 01' 33"

DAY



RMS = 455 MV/M

PATTERN 47II24-D



TOWER	FIELD	PHASE
1	1.00	0°
2	2.85	−70°
3	0.43	+80°

ALL G'S = 136°

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DALLAS TEXAS

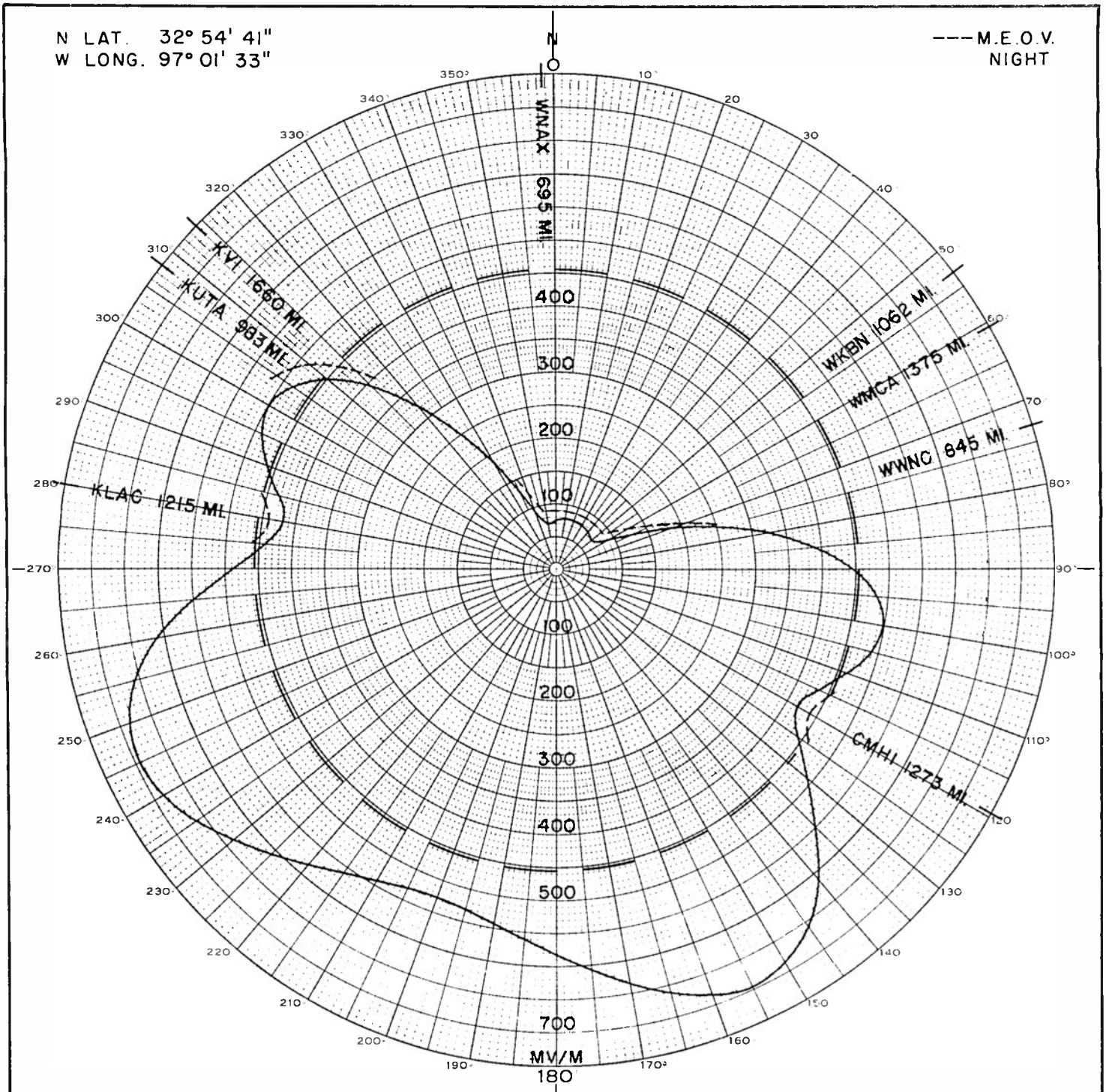
RADIO STATION WFAA-570
PROPOSED 570 KC, 5 KW, DA-D
FIGURE 5A

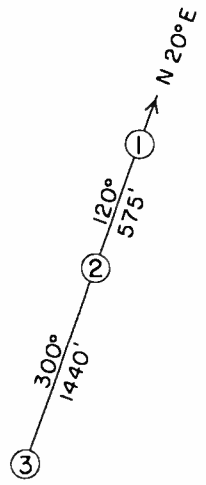
DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-D
DAYTIME HORIZONTAL RADIATION PATTERN

BEARINGS	Φ	F(E)	E(MV/M)
020-020	00	1.543	224.
010-030	10	1.555	225.
000-040	20	1.607	233.
350-050	30	1.736	252.
340-060	40	1.979	285.
330-070	50	2.34	339.
320-080	60	2.75	398.
310-090	70	3.05	442.
300-100	80	3.11	451.
290-110	90	3.05	442.
280-120	100	3.16	458.
270-130	110	3.59	520.
260-140	120	4.06	588.
250-150	130	4.26	617.
240-160	140	4.20	609.
230-170	150	3.96	574.
220-180	160	3.73	540.
210-190	170	3.56	516.
200-200	180	3.51	509.

471124

FIGURE 5B





TOWER	FIELD	PHASE
1	1.00	0°
2	1.33	−70°
3	0.46	+65°

ALL G'S = 136°

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

RADIO STATION WFAA-570
PROPOSED 570 KC, 5 KW, DA-N
FIGURE 6A

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
NIGHTTIME HORIZONTAL RADIATION PATTERN

BEARINGS	Φ	F(E)	E(MV/M)
020-020	00	0.309	77.1
010-030	10	0.311	77.6
000-040	20	0.304	75.8
350-050	30	0.282	70.4
340-060	40	0.371	92.6
330-070	50	0.751	187.
320-080	60	1.303	325.
310-090	70	1.800	449.
300-100	80	2.000	499.
290-110	90	1.849	461.
280-120	100	1.680	419.
270-130	110	1.960	489.
260-140	120	2.450	611.
250-150	130	2.740	684.
240-160	140	2.740	684.
230-170	150	2.555	637.
220-180	160	2.335	583.
210-190	170	2.175	543.
200-200	180	2.118	528.

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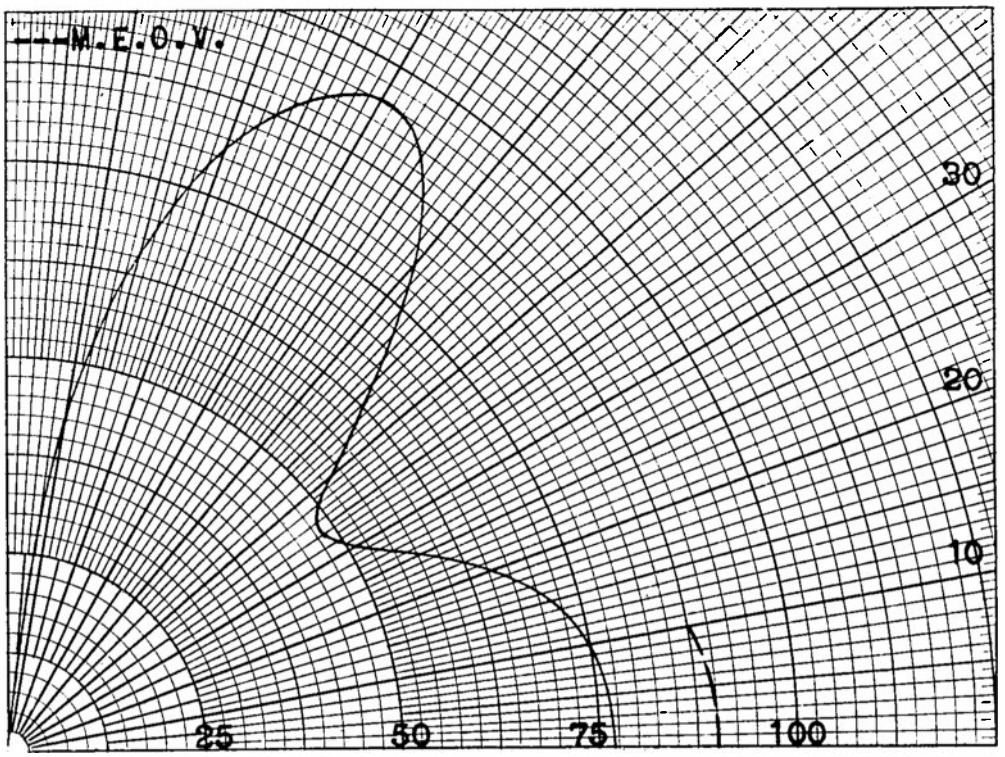
FIGURE 6B

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH LINE OF TOWERS NORTH



AZ: N 20.0° E Φ: 0.0°

θ	F(E)	F(θ)	E(MV/M)
00	0.309	1.000	77.1
10	0.311	0.966	75.0
20	0.304	0.871	66.0
30	0.282	0.734	51.6
40	0.371	0.580	53.7
50	0.751	0.429	80.3
60	1.303	0.295	95.9
70	1.800	0.181	81.4
80	2.000	0.085	42.4
90	-.---	0.000	0.0

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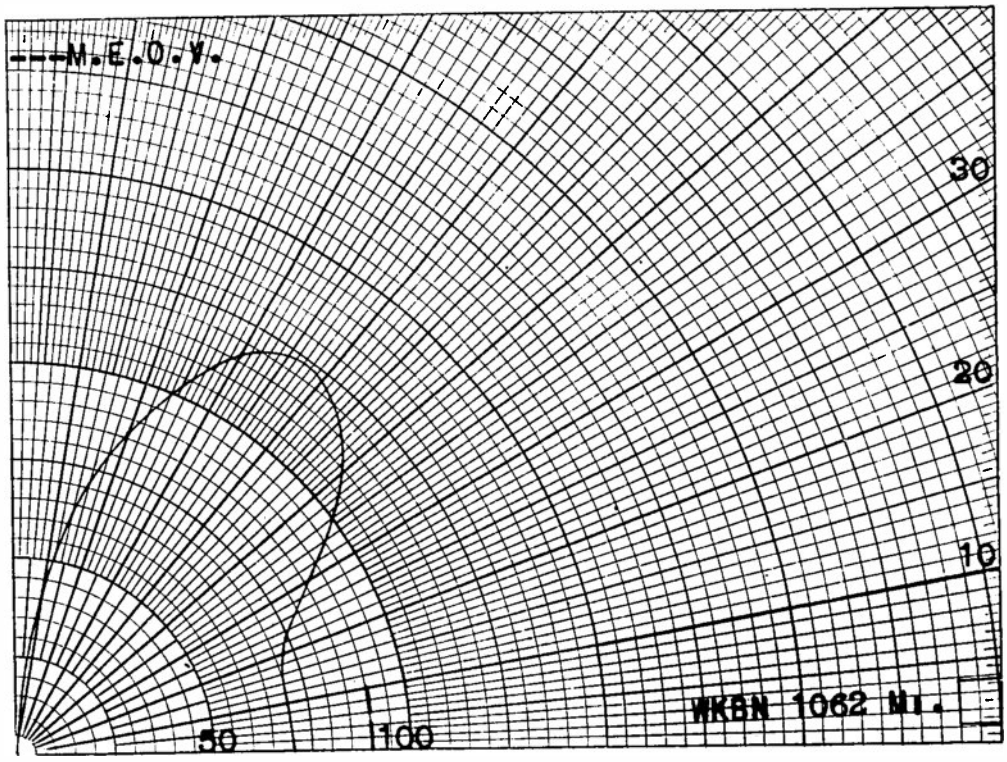
FIGURE 7A

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH YOUNGSTOWN, OHIO



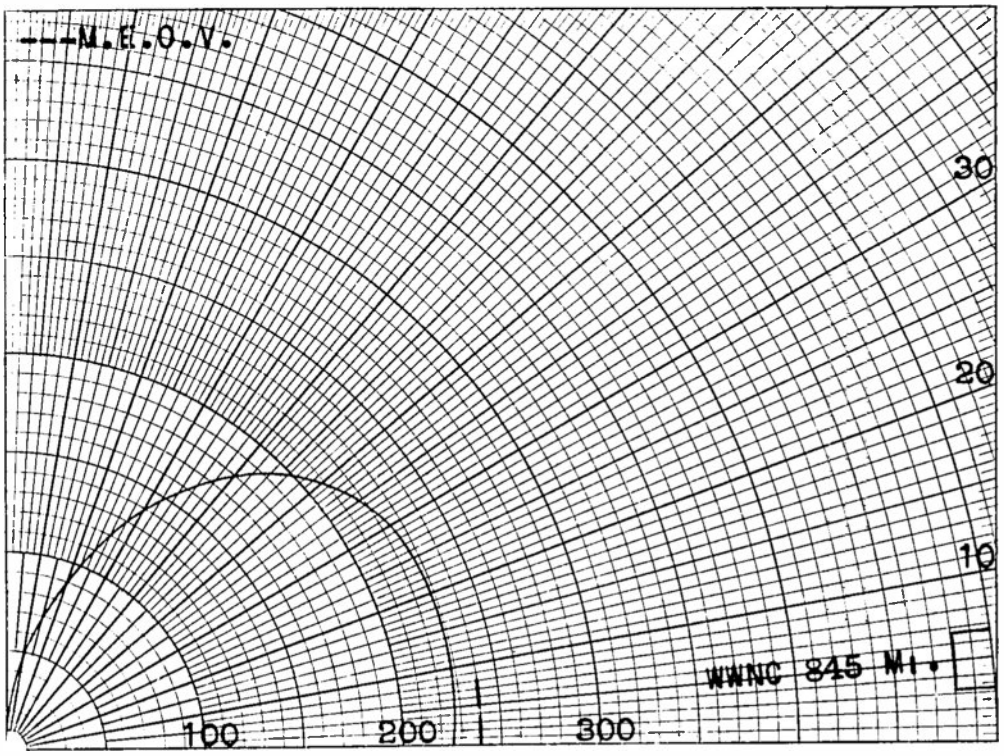
AZ: N 53.0° E Φ: + 33.0°

θ	F(E)	F(θ)	E(MV/M)
00	0.284	1.000	70.8
10	0.290	0.966	69.9
20	0.332	0.871	72.1
30	0.471	0.734	86.2
40	0.752	0.580	109.
50	1.154	0.429	123.
60	1.585	0.295	117.
70	1.908	0.181	86.2
80	2.000	0.085	42.4
90	-.---	0.000	0.0

471124

FIGURE 7B

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH ASHEVILLE, N. CAR.



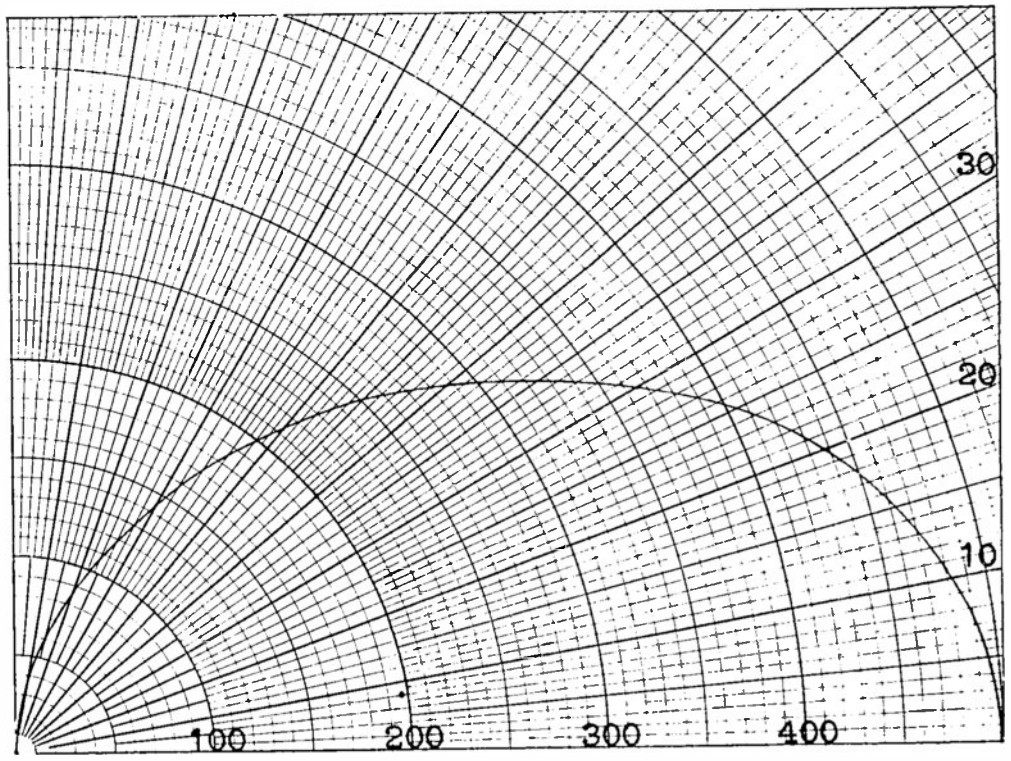
AZ: N 73.0° E Φ: + 53.0°

θ	F(E)	F(θ)	E(MV/M)
00	.908	1.000	226.
10	.945	0.966	228.
20	1.050	0.871	228.
30	1.223	0.734	224.
40	1.446	0.580	209.
50	1.683	0.429	180.
60	1.887	0.295	139.
70	1.993	0.181	90.1
80	1.973	0.085	41.8
90	-.---	0.000	0.0

471124

FIGURE 7C

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH SIDE LOBES



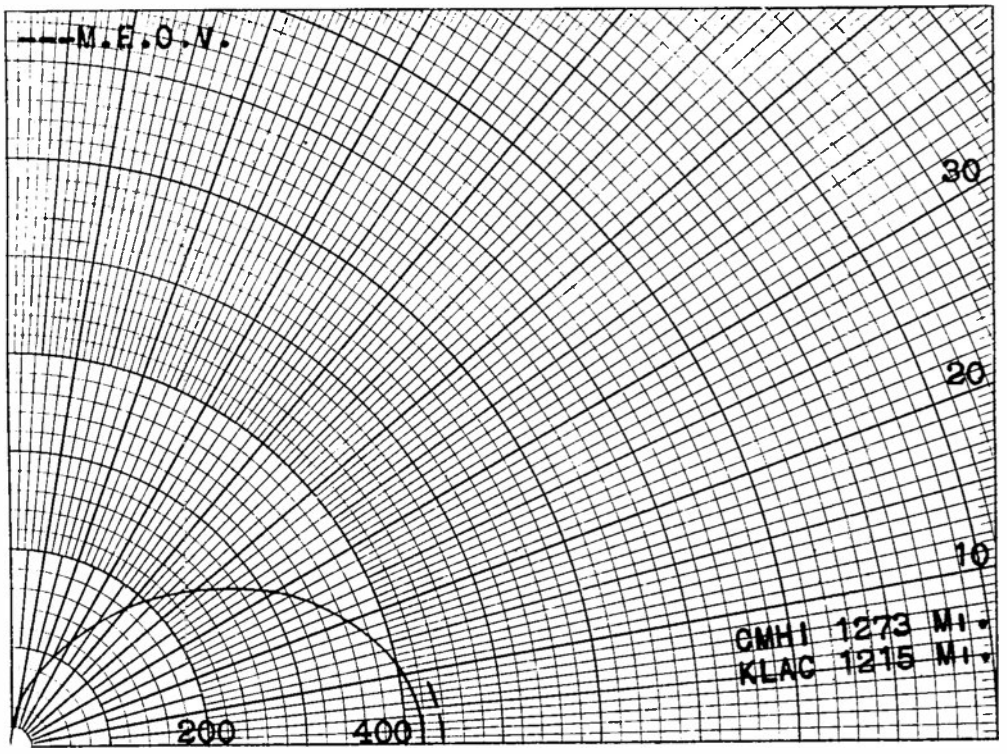
AZ: N 100° & 300° E Φ: ± 80.0°

θ	F(E)	F(θ)	E(MV/M)
00	2.001	1.000	499.
10	2.001	0.966	482.
20	2.015	0.871	438.
30	1.999	0.734	366.
40	1.992	0.580	288.
50	1.979	0.429	212.
60	1.958	0.295	144.
70	1.923	0.181	86.9
80	1.890	0.085	40.0
90	-.---	0.000	0.0

471124

FIGURE 7D

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANES THROUGH SANTA CLARA,
CUBA, & LOS ANGELES, CALIF.



AZ: N 120° & 280° E Φ: ± 100.0°

θ	F(E)	F(θ)	E(MV/M)
00	1.680	1.000	419.
10	1.680	0.966	405.
20	1.680	0.871	365.
30	1.684	0.734	308.
40	1.689	0.580	244.
50	1.704	0.429	182.
60	1.729	0.295	127.
70	1.737	0.181	78.5
80	1.803	0.085	38.2
90	-.---	0.000	0.0

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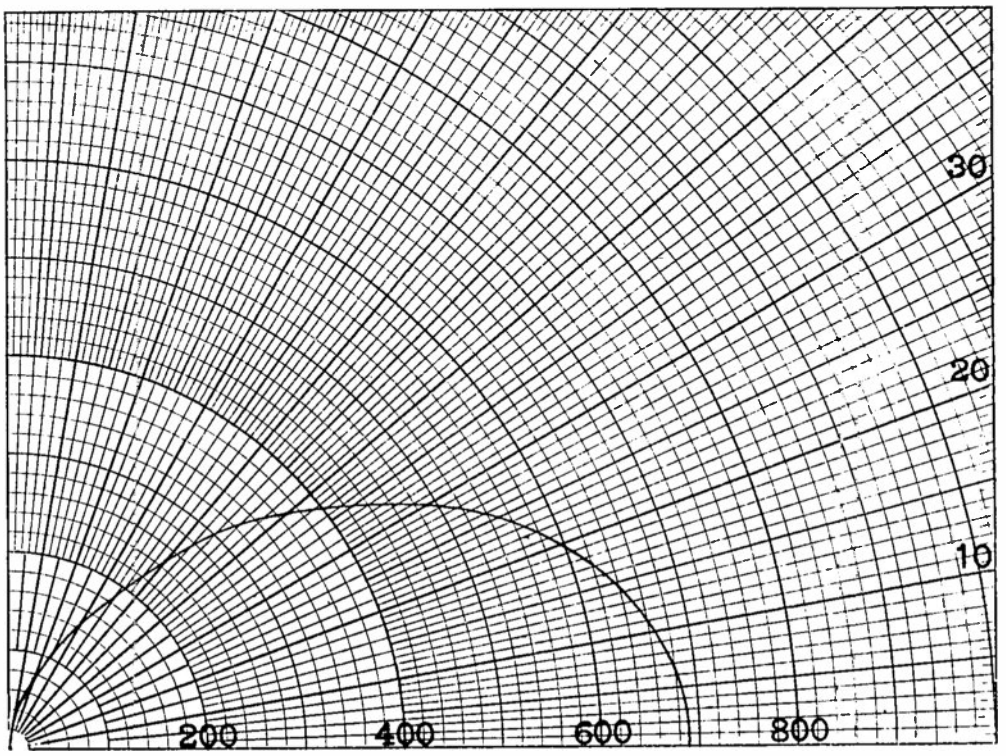
FIGURE 7E

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANES THROUGH MAXIMA



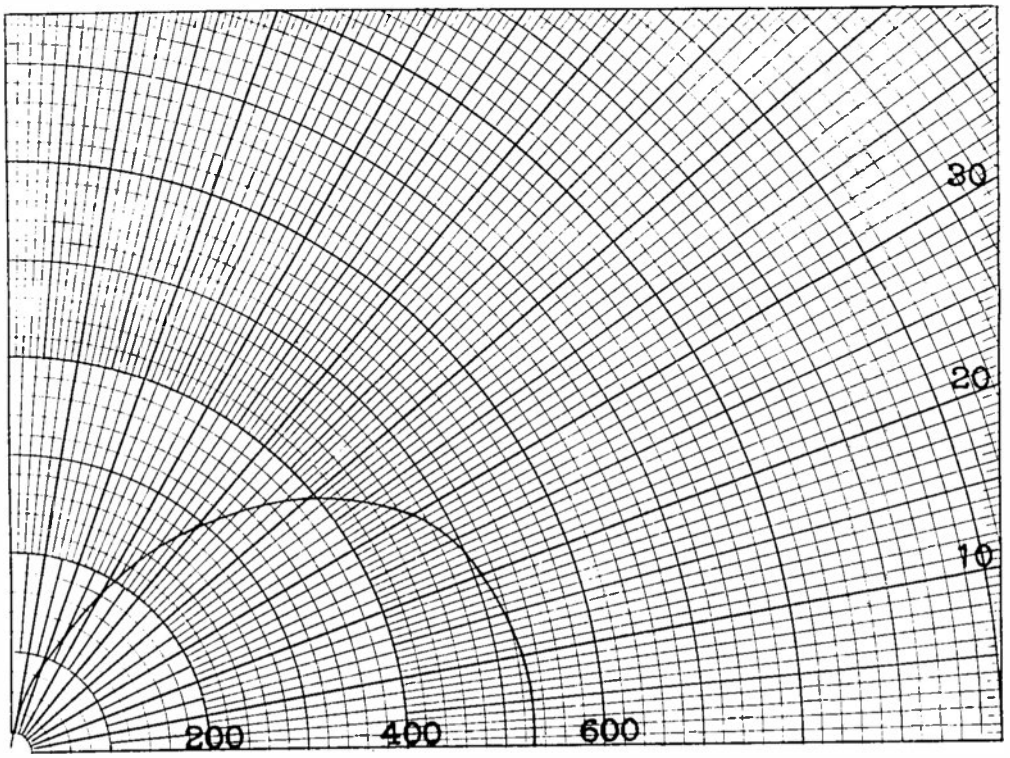
AZ: N 155° & 245° E Φ: ± 135.0°

θ	F(E)	F(θ)	E(MV/M)
00	2.770	1.000	691.
10	2.765	0.966	666.
20	2.750	0.871	598.
30	2.695	0.734	493.
40	2.560	0.580	370.
50	2.310	0.429	247.
60	1.997	0.295	147.
70	1.733	0.181	78.3
80	1.692	0.085	35.9
90	-.---	0.000	0.0

471124

FIGURE 7F

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH LINE OF TOWERS SOUTH



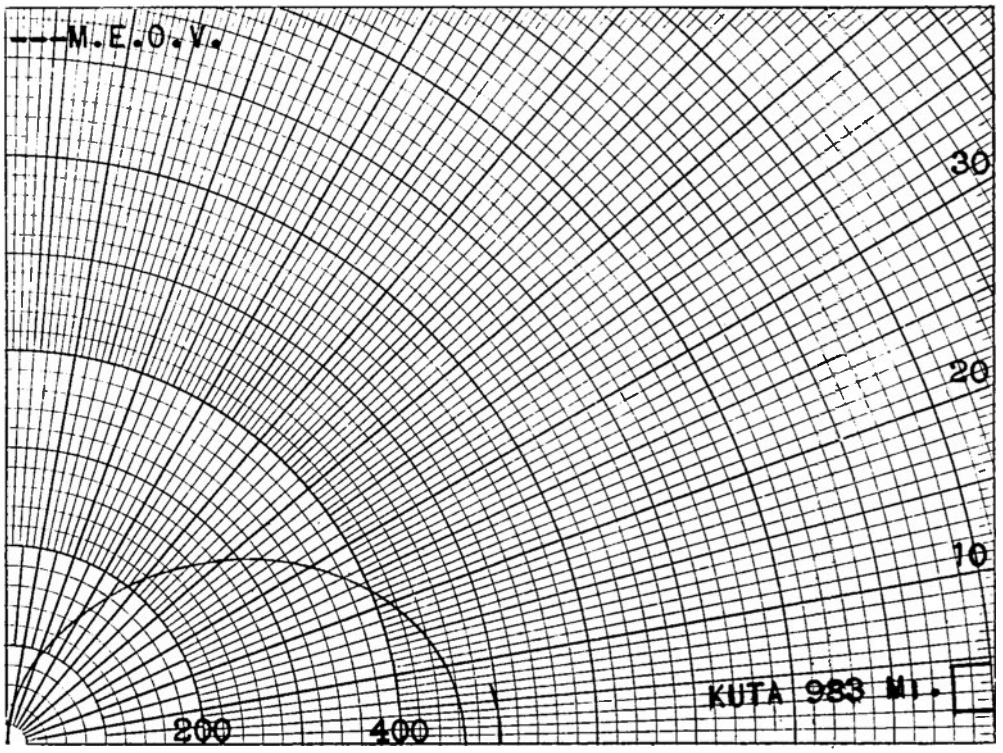
AZ: N 200.0° E Φ: 180.0°

θ	F(E)	F(θ)	E(MV/M)
00	2.118	1.000	528.
10	2.175	0.966	524.
20	2.335	0.871	507.
30	2.555	0.734	468.
40	2.740	0.580	396.
50	2.740	0.429	293.
60	2.450	0.295	180.
70	1.960	0.181	88.6
80	1.680	0.085	35.6
90	-.---	0.000	0.0

471124

FIGURE 7G

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH SALT LAKE CITY, UTAH



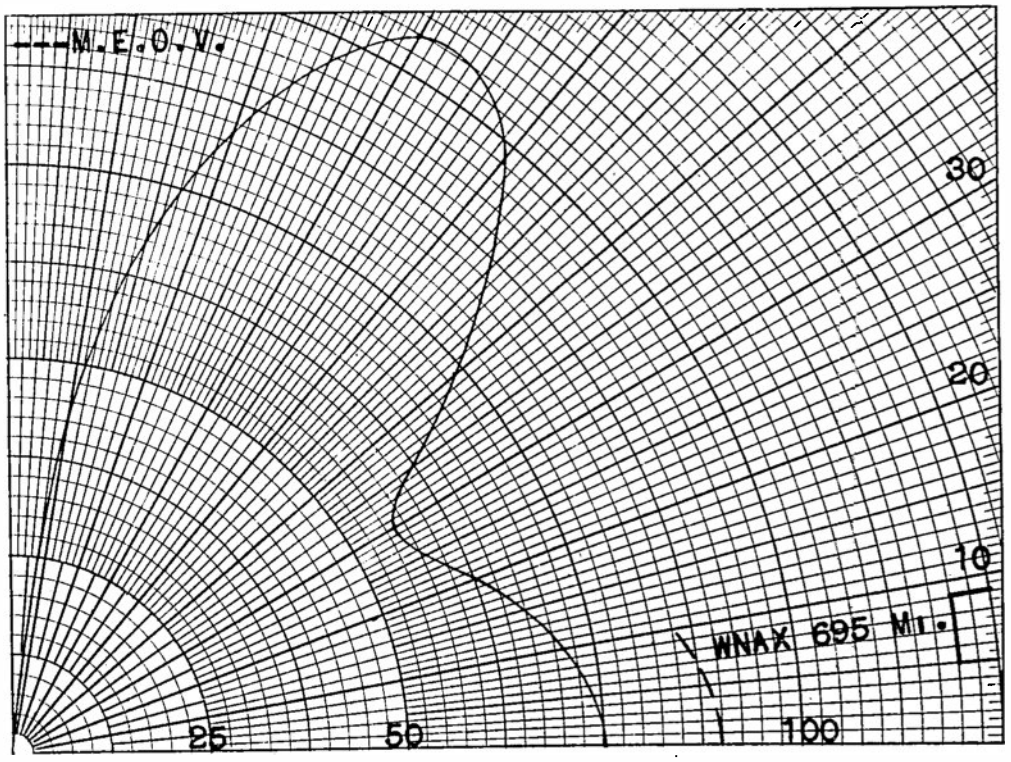
AZ: N 308.0° E Φ: - 72.0°

θ	F(E)	F(θ)	E(MV/M)
00	1.870	1.000	466.
10	1.878	0.966	452.
20	1.903	0.871	413.
30	1.939	0.734	355.
40	1.978	0.580	286.
50	1.998	0.429	214.
60	2.000	0.295	147.
70	1.973	0.181	89.2
80	1.920	0.085	40.7
90	-.---	0.000	0.0

471124

FIGURE 7H

DALLAS-FORT WORTH
PROPOSED 570 KC, 5 KW, DA-N
VERTICAL RADIATION PATTERN
IN PLANE THROUGH YANKTON, SOUTH DAKOTA

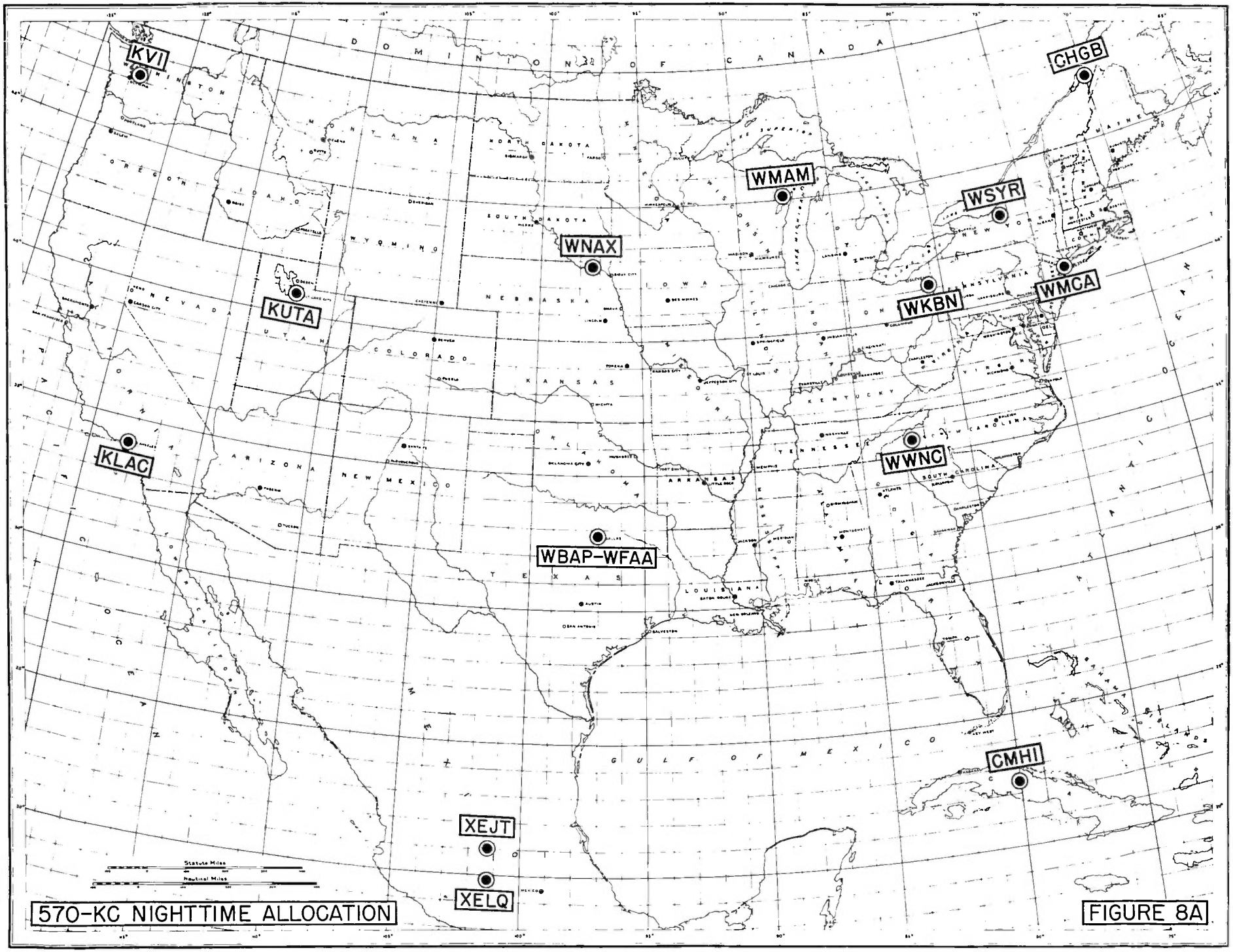


AZ: N 358.5° E Φ: - 21.5°

θ	F(E)E	F(θ)	E(MV/M)
00	0.301	1.000	75.1
10	0.296	0.966	71.3
20	0.289	0.871	62.8
30	0.308	0.734	56.4
40	0.511	0.580	73.9
50	0.923	0.429	98.8
60	1.430	0.295	105.
70	1.852	0.181	83.7
80	2.000	0.085	42.4
90	-.---	0.000	0.0

471124

FIGURE 71



570-KILOCYCLE NIGHTTIME LIMITATIONS
FROM DALLAS-FORT WORTH PROPOSED 5 KW DA-N

To	KLAC	KUTA	KVI	WKBN	WMCA
1. Miles	1215	983	1660	1062	1375
2. Mid-Point Lat.	35-	37	40.7	37.4	37.5
3. Azimuth Angle	280	308	314	53	60.5
4. Radiation on Gnd.	440	500	440	90	130
5. Min.-Max. $\angle v$ ($\triangle \theta$)	0-2.2	1.9-4.6	0-0	1.2-3.8	0-0
6. Max. Rad. within $\triangle \theta$	440	500	440	90	130
7. Skywave Field (Figure 1-A)	0.018	.0315	.0075	.0255	.0128
8. Limit	1.58	3.15	0.66	0.46	0.33

To	WNAX	WSYR	WWNC	CHGB	CMHI
1. Miles	695	1330	845	1775	1273
2. Mid-Point Lat.	37.9	38.5	35-	41	35-
3. Azimuth Angle	358.5	52	73	47	119.5
4. Radiation on Gnd.	90	90	240	90	440
5. Min.-Max. $\angle v$ ($\triangle \theta$)	5.0-9.1	0-0	3.2-6.6	0-0	0-1.5
6. Max. Rad. within $\triangle \theta$	88.5	90	240	90	440
7. Skywave Field (Figure 1-A)	0.072	.0140	0.047	.0083	.0160
8. Limit	1.28	0.25	2.25	0.15	1.41

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FIGURE 8B

570 KILOCYCLE NIGHTTIME LIMITATIONS

TO DALLAS-FORT WORTH AREA

FROM	WKBN	WWNC	CMHI
MILES	1070	848	1270
MID-POINT LAT.	37.2	34.5	35-
AZIMUTH ANGLE	243	261.5	310
RADIATION ON GND.	323	165	440
MIN-MAX. $\angle v$ ($\triangle \theta$)	1.2-3.7	3.2-6.5	0-1.6
MAX. RAD. WITHIN $\triangle \theta$	323	165	440
SKYWAVE FIELD (FIG. 1A)	.025	.047	.016
LIMIT	1.62	1.55	1.41

CALL	LIMIT	$LIMIT^2$	RSS
WKBN	1.62	2.625	
WWNC	1.55	2.400	2.24
CHMI	1.41	1.990	2.65

471124

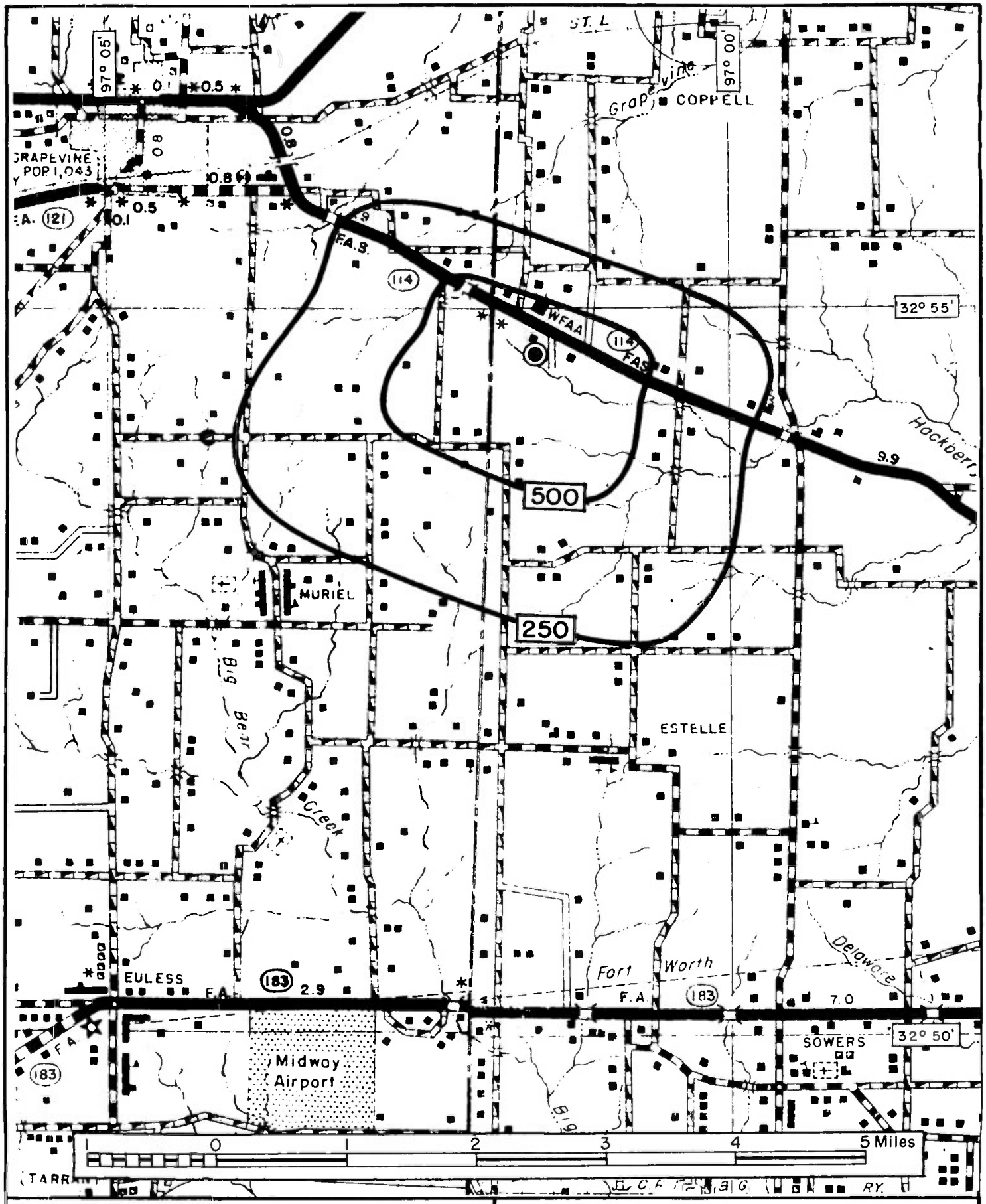
FIGURE 8C

570 KILOCYCLE NIGHTTIME LIMITATIONS

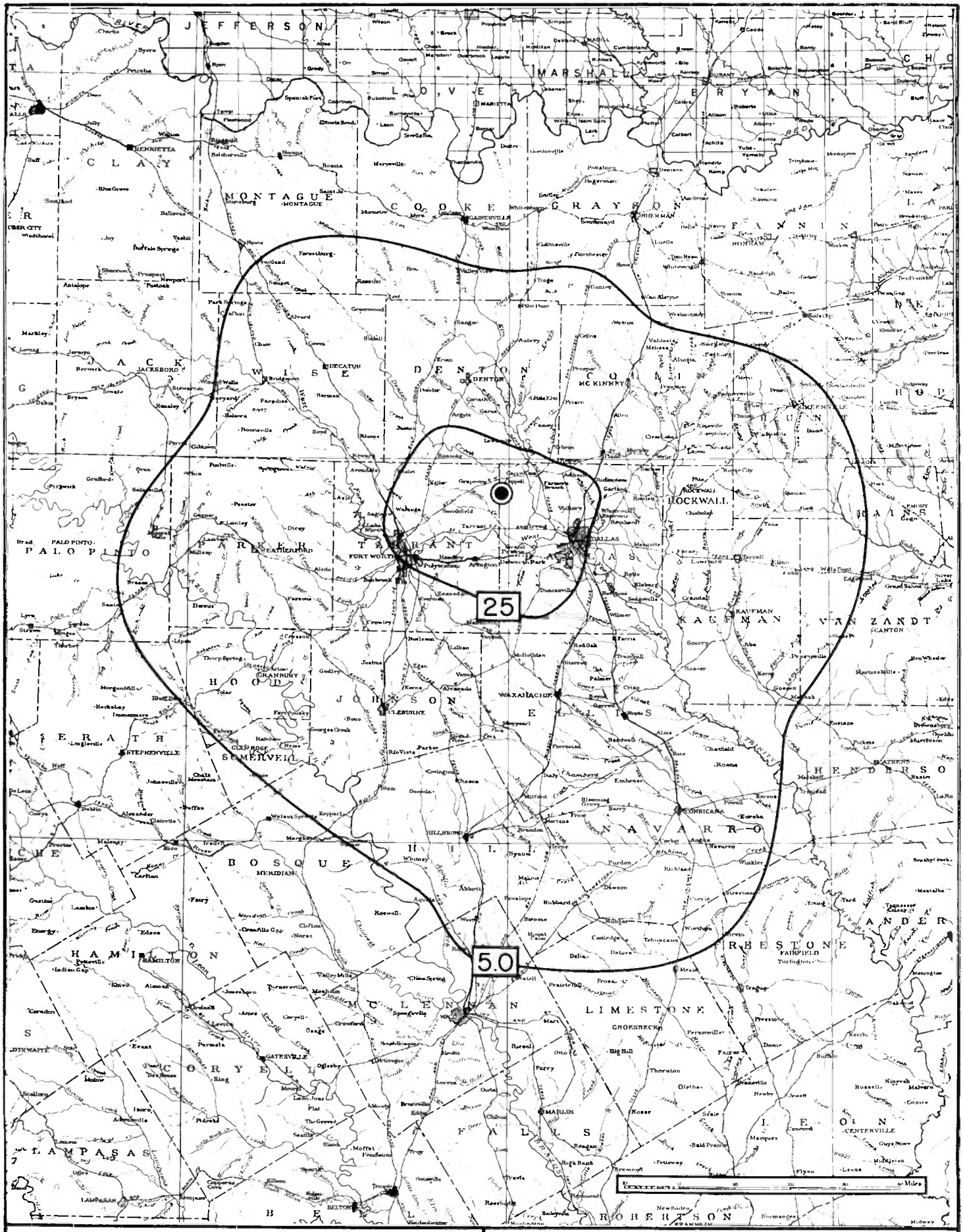
	KLAC	KUTA	KVI	WKBN	WMCA	WNAX	WSYR	WWNC	CHGB	CMHI	WBAP WFAA	RSS
KLAC	← Pres. To ← Prop. To	1.71	2.63							1.58 1.58		3.51 3.51
KUTA	3.34		6.25			5.08				2.51 3.15		8.05 8.05
KVI										0.52 0.66		
WKBN				1.91		2.71				1.37 0.46		3.32 3.32
WMCA										0.66 0.33		
WNAX						1.36	2.31			0.78 1.28		2.69 2.69
WSYR										0.75 0.25		
WWNC			1.78		1.37					2.25 2.25		2.86 2.86
CHGB										0.45 0.15		
CMHI			1.41							1.47 1.41		2.04 1.99
WBAP-WFAA			1.62				1.55		1.41			2.65

471124

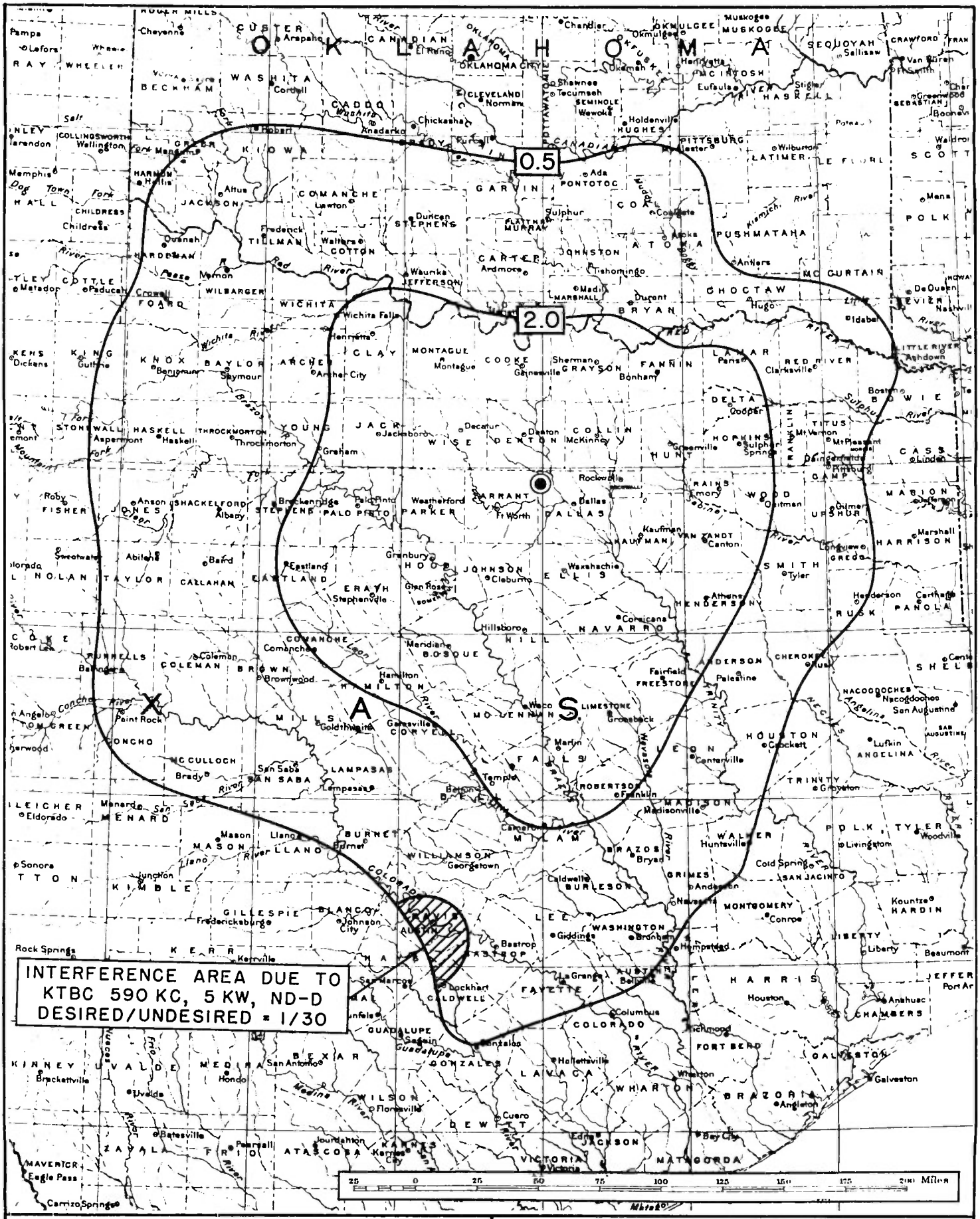
FIGURE 8D



A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS–FT. WORTH PROPOSED 570 KC, 5 KW, DA-D FIGURE 9A

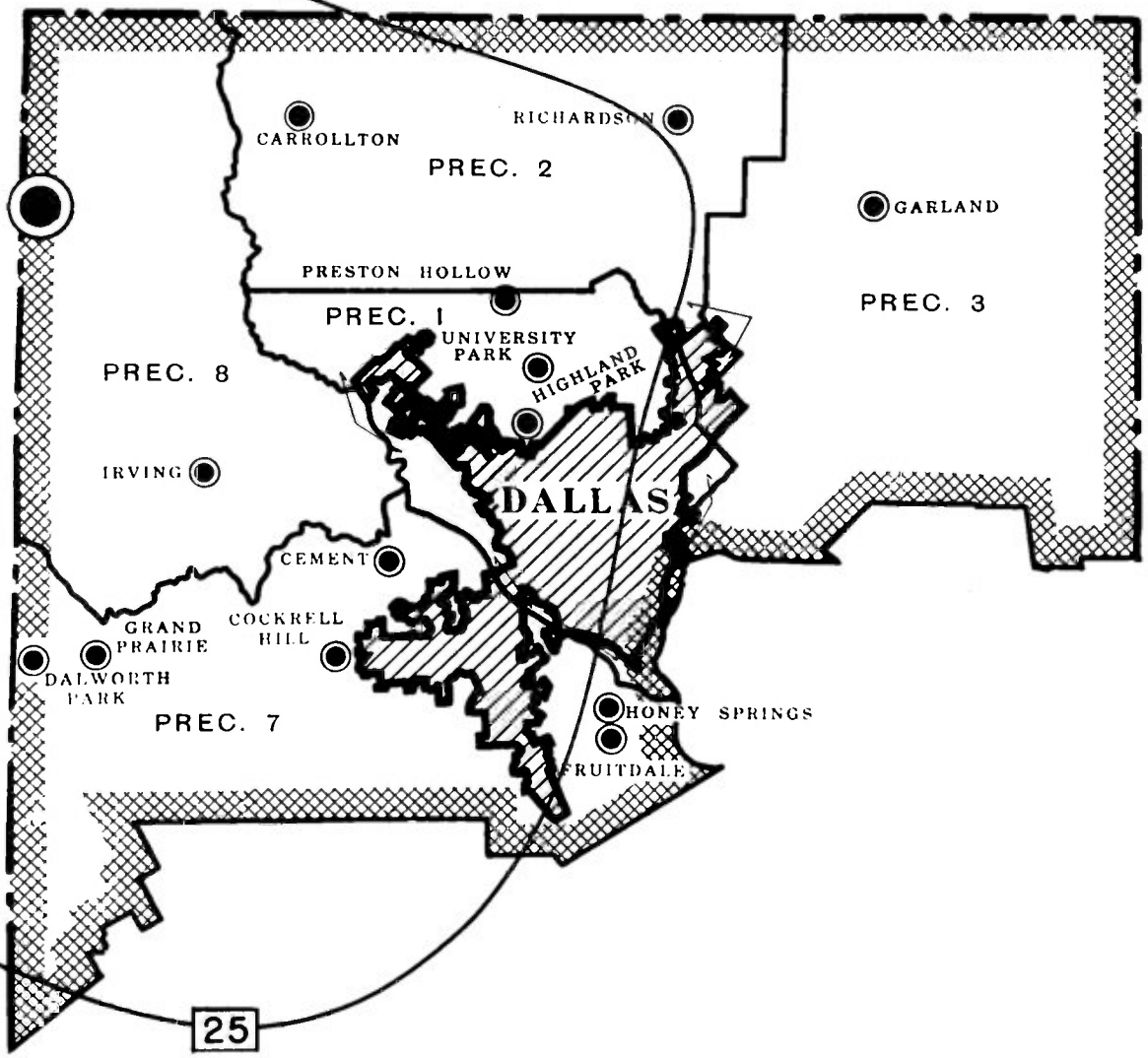


A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS–FT. WORTH PROPOSED 570 KC, 5 KW, DA-D FIGURE 9B



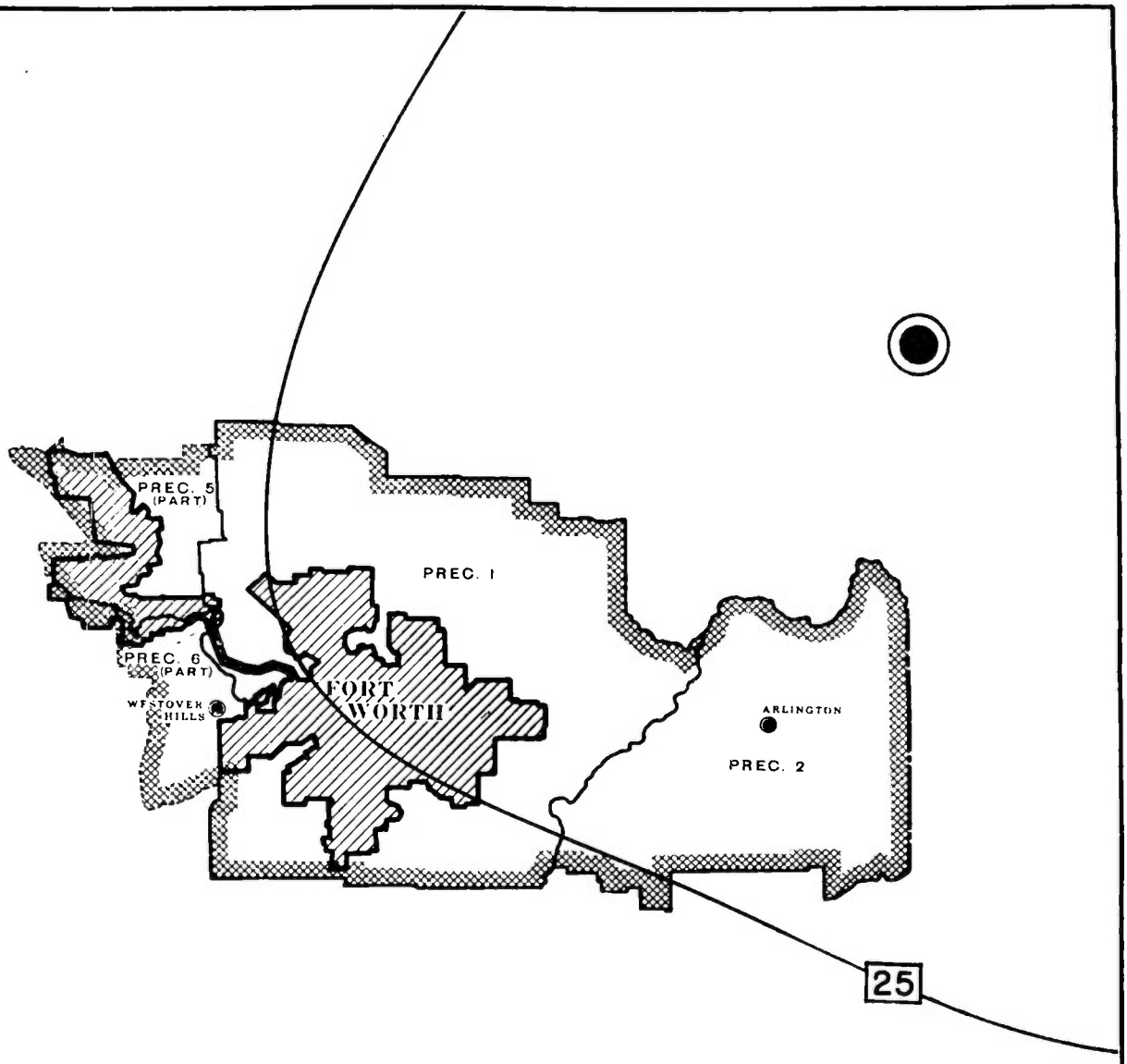
A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS-FT. WORTH
PROPOSED 570 KC, 5 KW, DA-D
FIGURE 9C



5.0 MV/M CONTOUR COVERS
DALLAS METROPOLITAN DISTRICT

A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS–FT. WORTH PROPOSED 570 KC, 5 KW, DA-D FIGURE 9D



5.0 MV/M CONTOUR COVERS
FT. WORTH METROPOLITAN DISTRICT

A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS–FT. WORTH PROPOSED 570 KC, 5 KW, DA-D FIGURE 9E

POPULATION AND AREA ANALYSIS OF COVERAGE CONTOURS

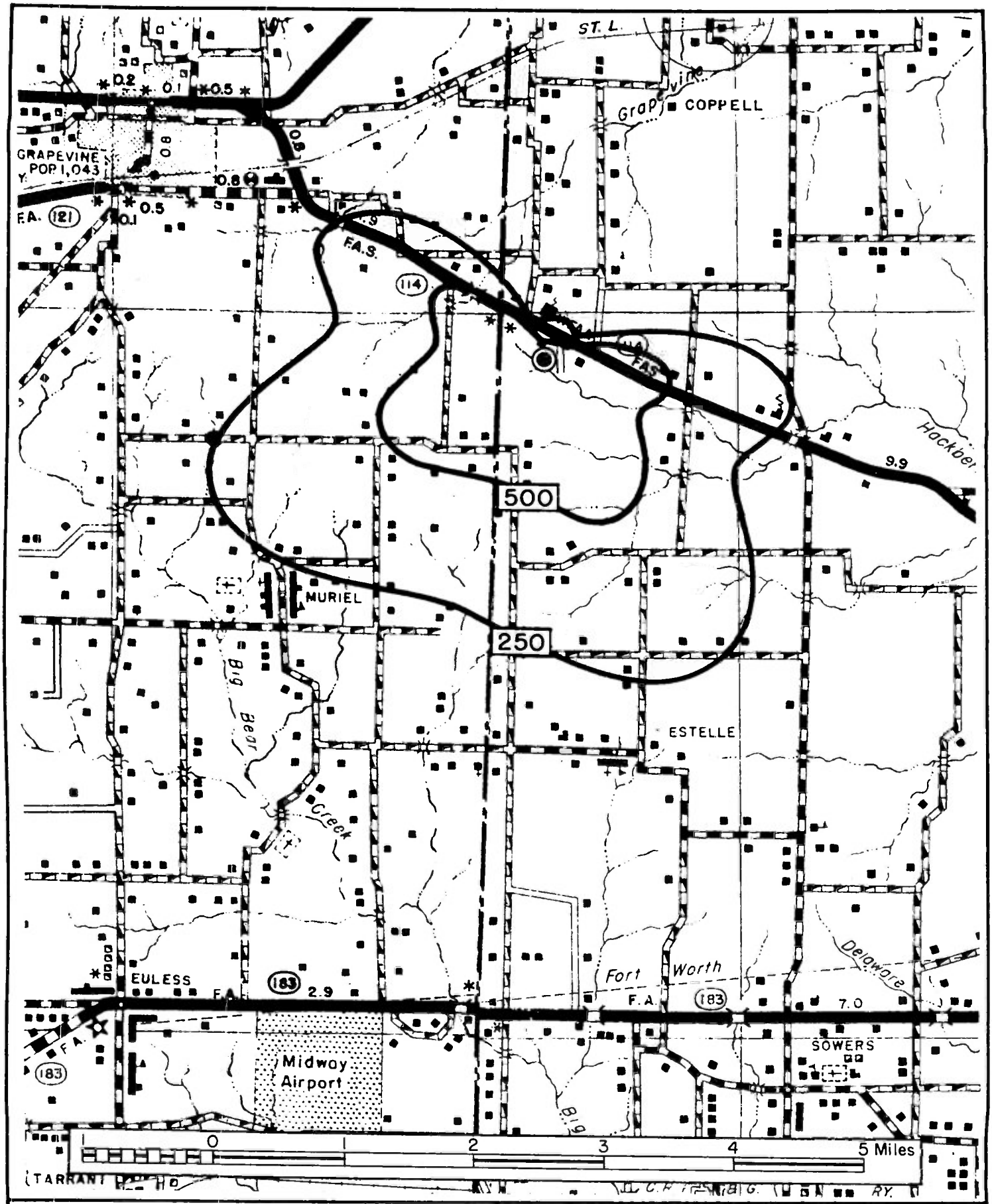
PROPOSED DALLAS-FORT WORTH 570 KILOCYCLES, 5000 WATTS, DA-DAYTIME

CONTOUR	POPULATION	LAND AREA - SQ.MI.
WITHIN THE 500 MV/M CONTOUR	19	
WITHIN THE 250 MV/M CONTOUR	156	
WITHIN THE 25 MV/M CONTOUR	426,437	
WITHIN THE 5.0 MV/M CONTOUR	1,028,087	
WITHIN THE 2.0 MV/M CONTOUR	1,736,343	
WITHIN THE 0.5 MV/M CONTOUR	2,906,995	89,100
WITHIN THE 0.5 MV/M INT.-FREE CONTOUR	2,887,944	88,300

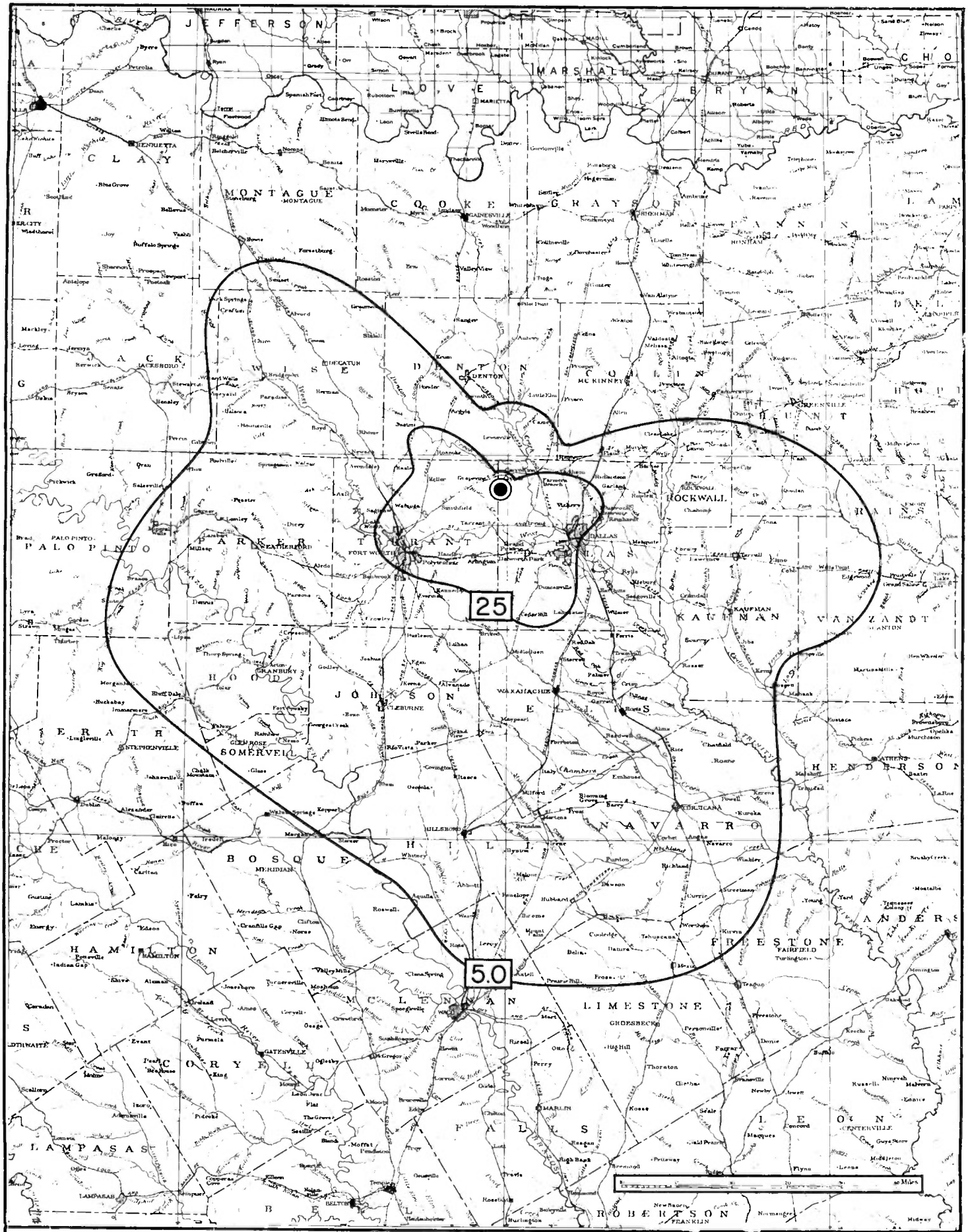
CONTOUR	DALLAS MET. DISTRICT	FT. WORTH MET. DISTRICT	DALLAS-FT.WORTH MET. DISTRICTS
WITHIN THE 25 MV/M CONTOUR	278,924	134,753	413,677
WITHIN THE 5 MV/M CONTOUR	368,725	206,937	575,662

471124

FIGURE 9F

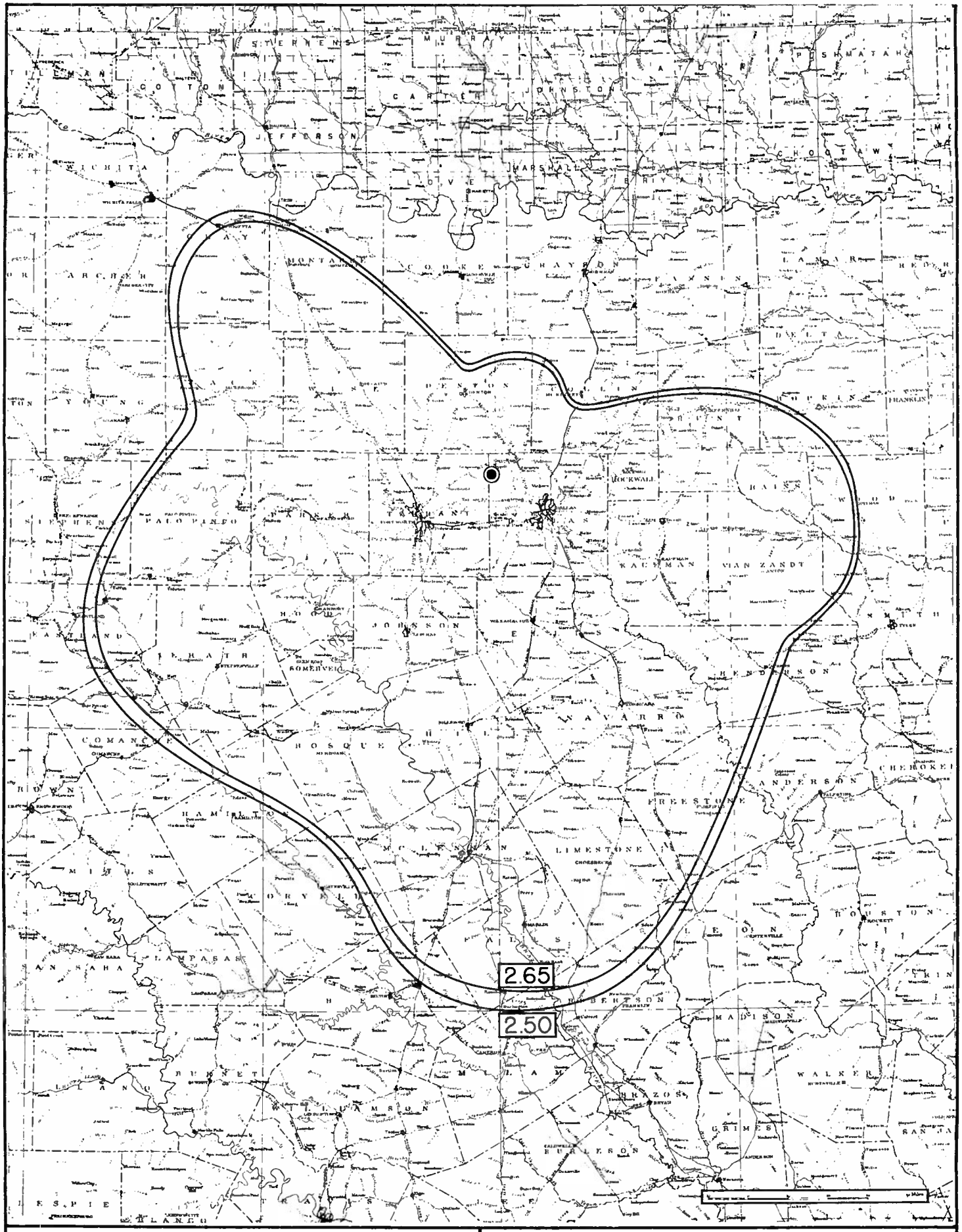


A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH PROPOSED 570 KC, 5 KW, DA-N FIGURE 10A



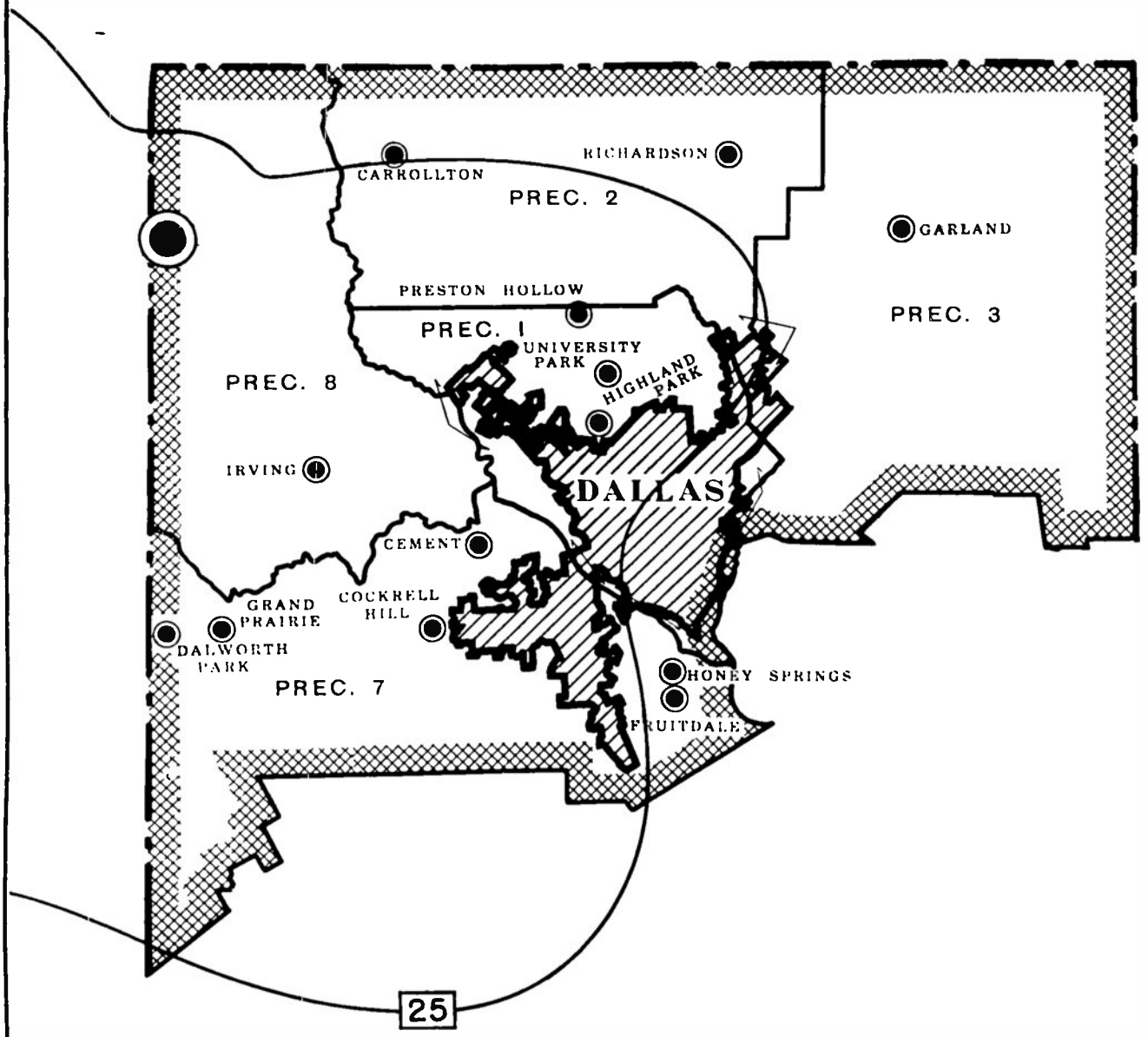
A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS-FT. WORTH
PROPOSED 570 KC, 5 KW, DA-N
FIGURE 10B



A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

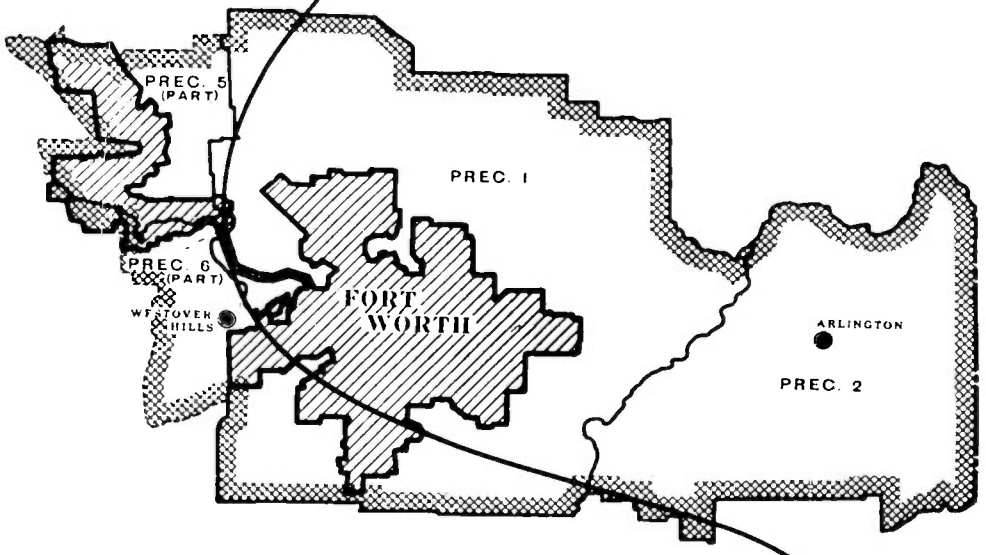
DALLAS-FT. WORTH
PROPOSED 570 KC, 5 KW, DA-N
FIGURE 10C



5.0 MV/M CONTOUR COVERS
DALLAS METROPOLITAN DISTRICT

10 0 10 20
MILES

A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH PROPOSED 570 KC, 5 KW, DA-N FIGURE 10D



5.0 MV/M CONTOUR COVERS
FT. WORTH METROPOLITAN DISTRICT

A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH PROPOSED 570 KC, 5 KW, DA-N FIGURE 10E

POPULATION AND AREA ANALYSIS OF COVERAGE CONTOURS

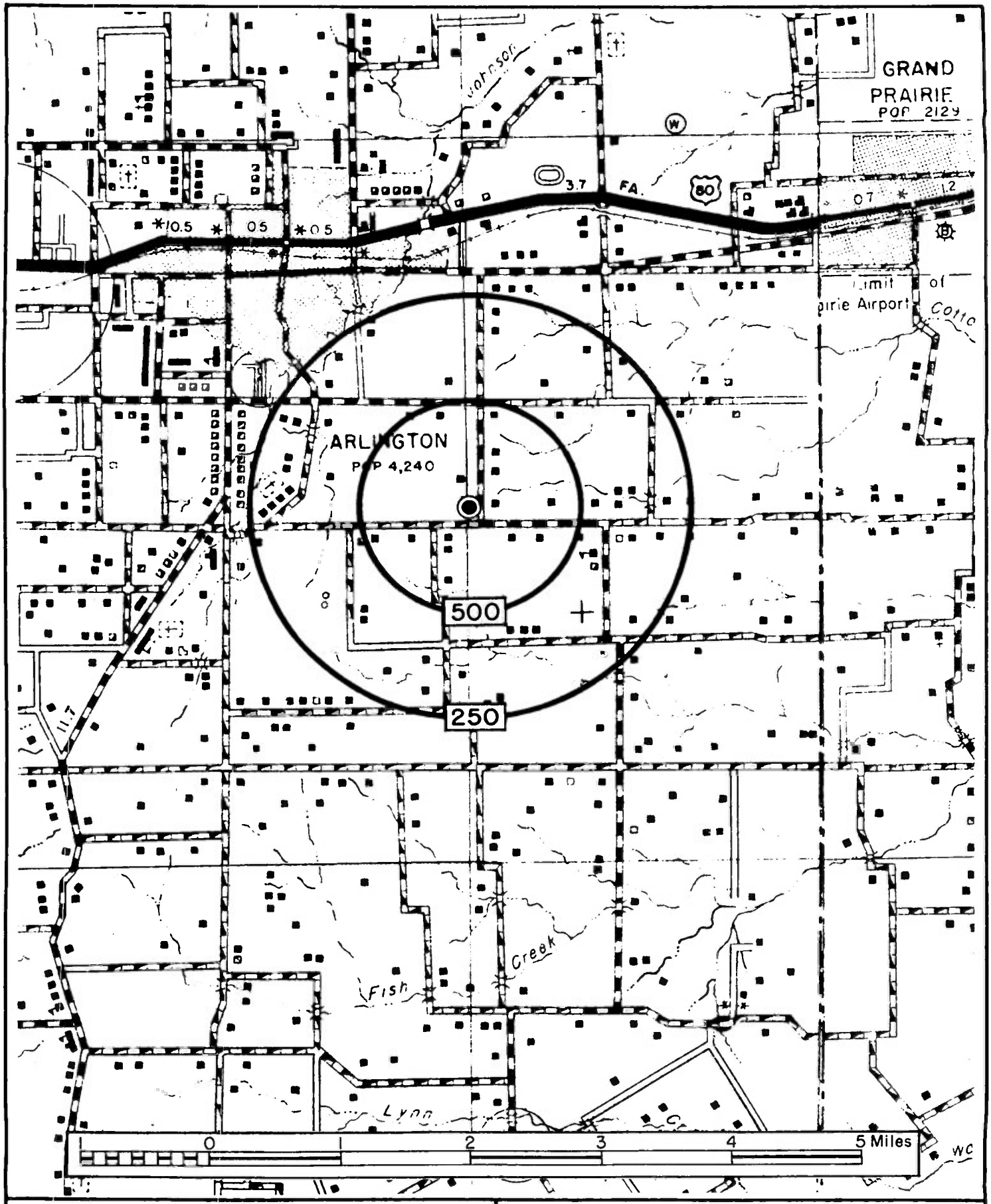
PROPOSED DALLAS-FORT WORTH 570 KILOCYCLES, 5000 WATTS, DA-NIGHTTIME

CONTOURS	POPULATION	LAND AREA - SQ.MI.
WITHIN THE 500 MV/M CONTOUR	27	
WITHIN THE 250 MV/M CONTOUR	160	
WITHIN THE 25 MV/M CONTOUR	422,586	
WITHIN THE 5.0 MV/M CONTOUR	954,131	
WITHIN THE 2.65 MV/M CONTOUR	1,293,507	22,100
WITHIN THE 2.5 MV/M CONTOUR	1,333,234	23,600

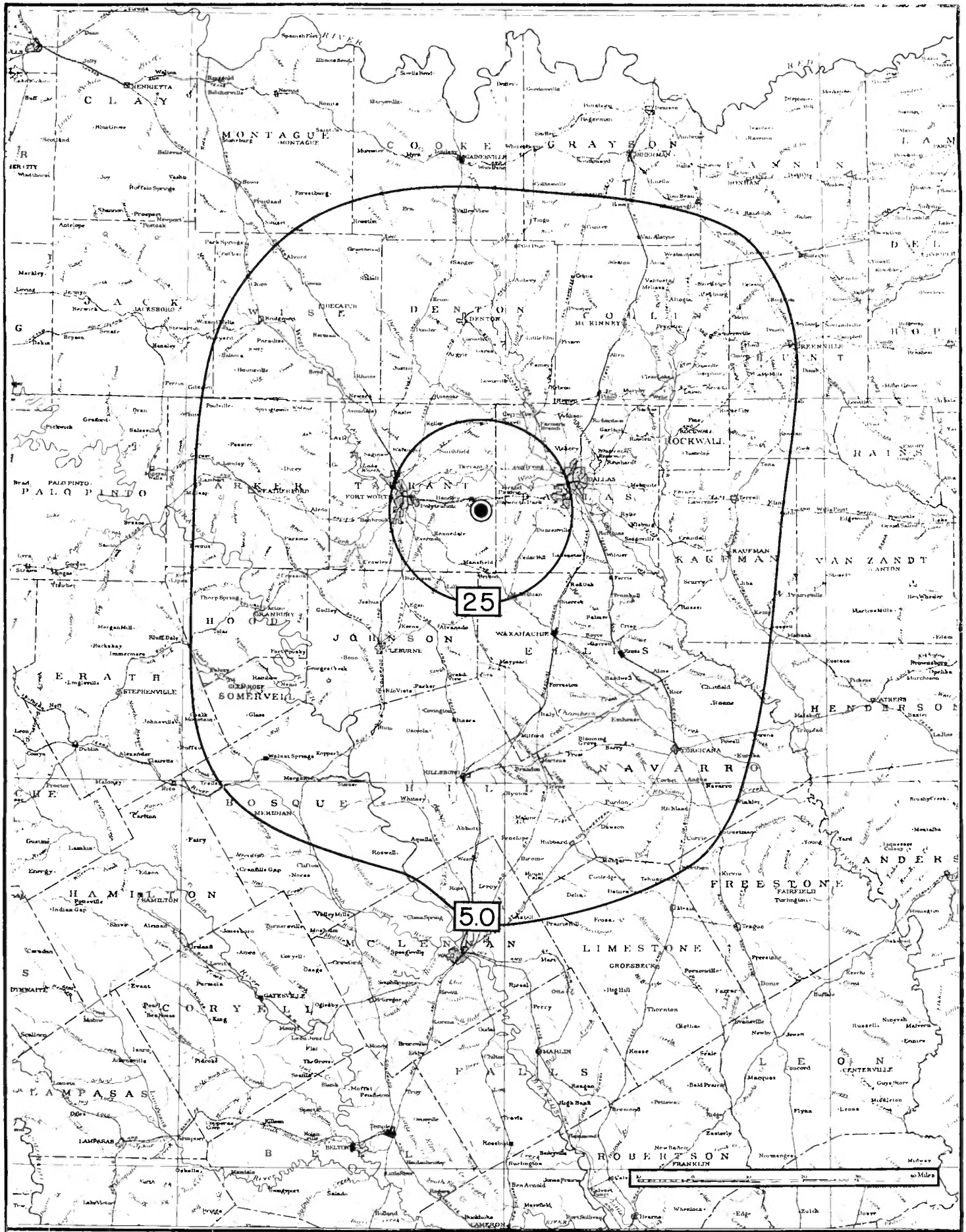
CONTOUR	DALLAS MET. DISTRICT	FT. WORTH MET. DISTRICT	DALLAS-FT.WORTH MET. DISTRICTS
WITHIN THE 25 MV/M CONTOUR	246,540	162,249	408,789
WITHIN THE 5.0 MV/M CONTOUR	365,702	204,045	569,747

471124

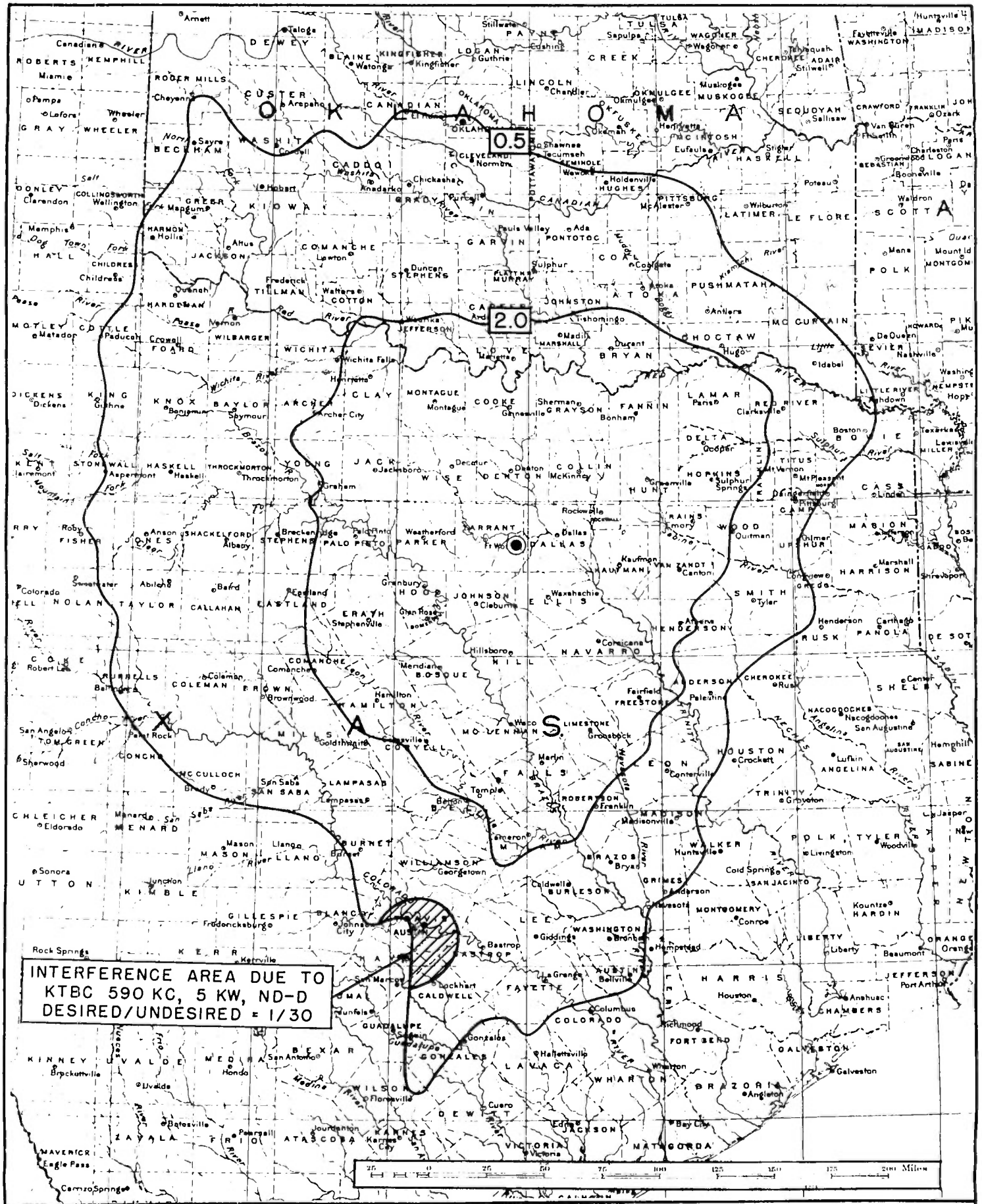
FIGURE 10F



A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, ND-D FIGURE 11A

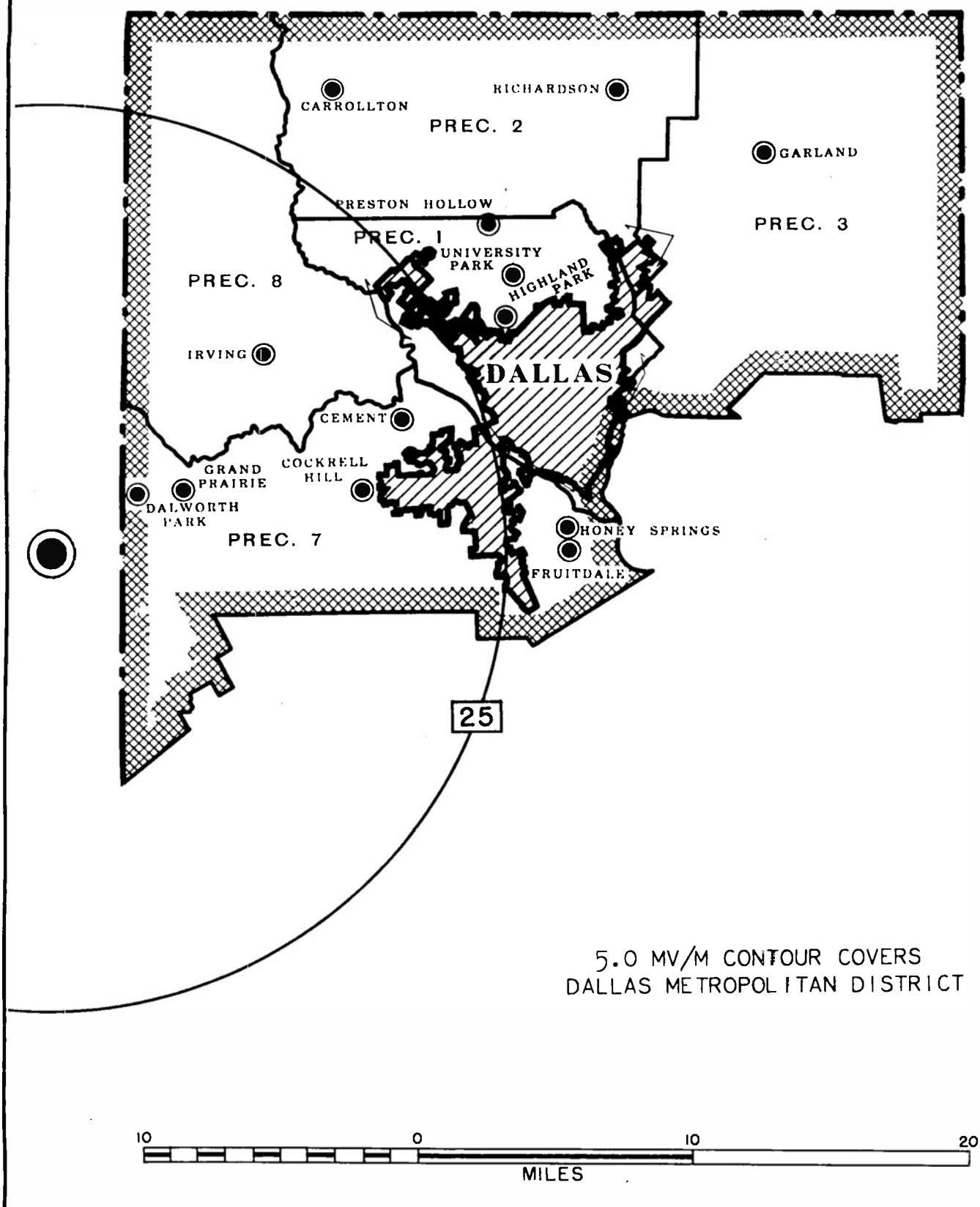


A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, ND-D FIGURE 11

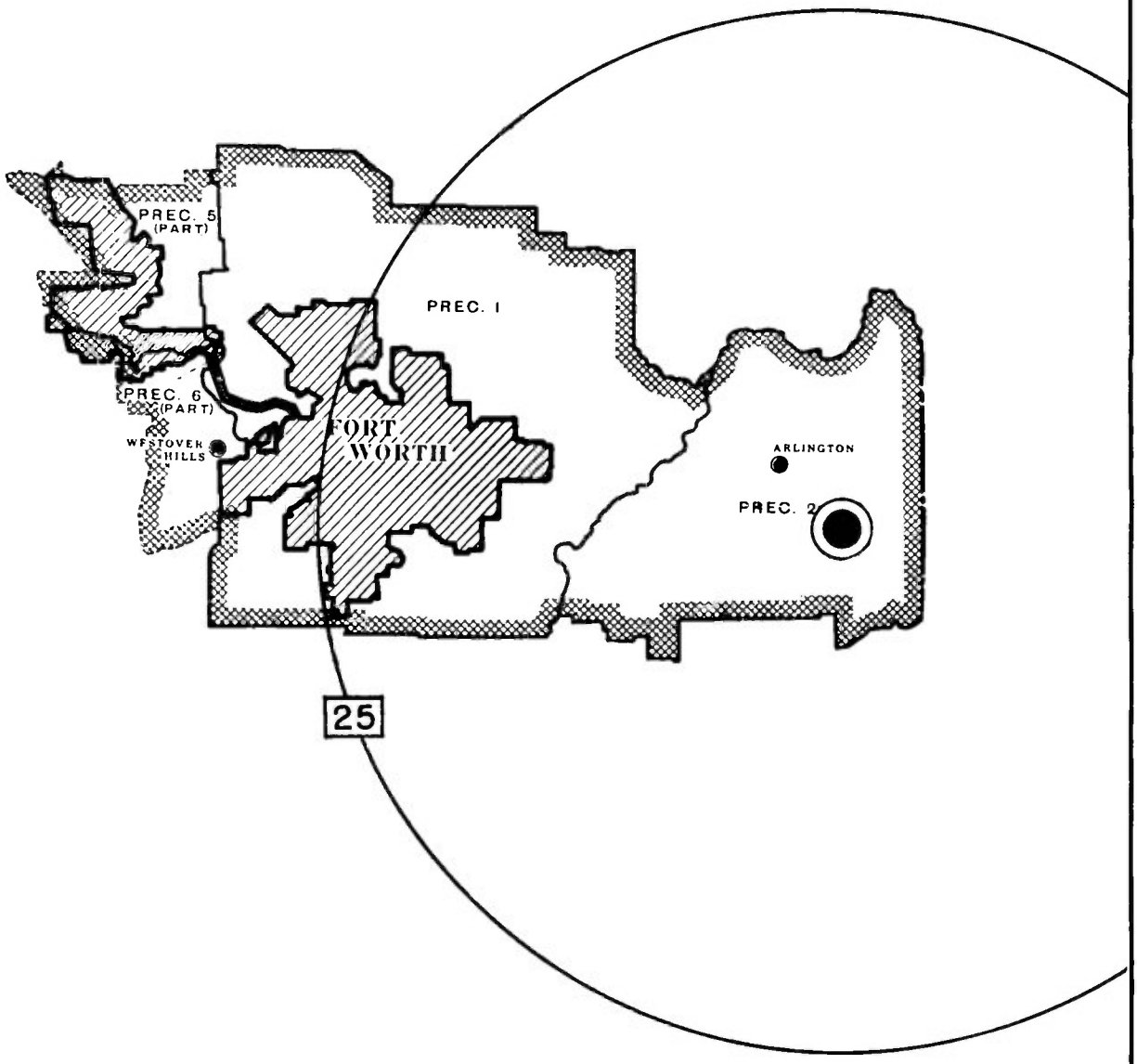


A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS-FT. WORTH
EXISTING 570 KC, 5 KW, ND-D
FIGURE 11C



A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, ND-D FIGURE 11D



5.0 MV/M CONTOUR COVERS
FT. WORTH METROPOLITAN DISTRICT

10 0 10 20
MILES

A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, ND-D FIGURE 11E

POPULATION AND AREA ANALYSIS OF COVERAGE CONTOURS

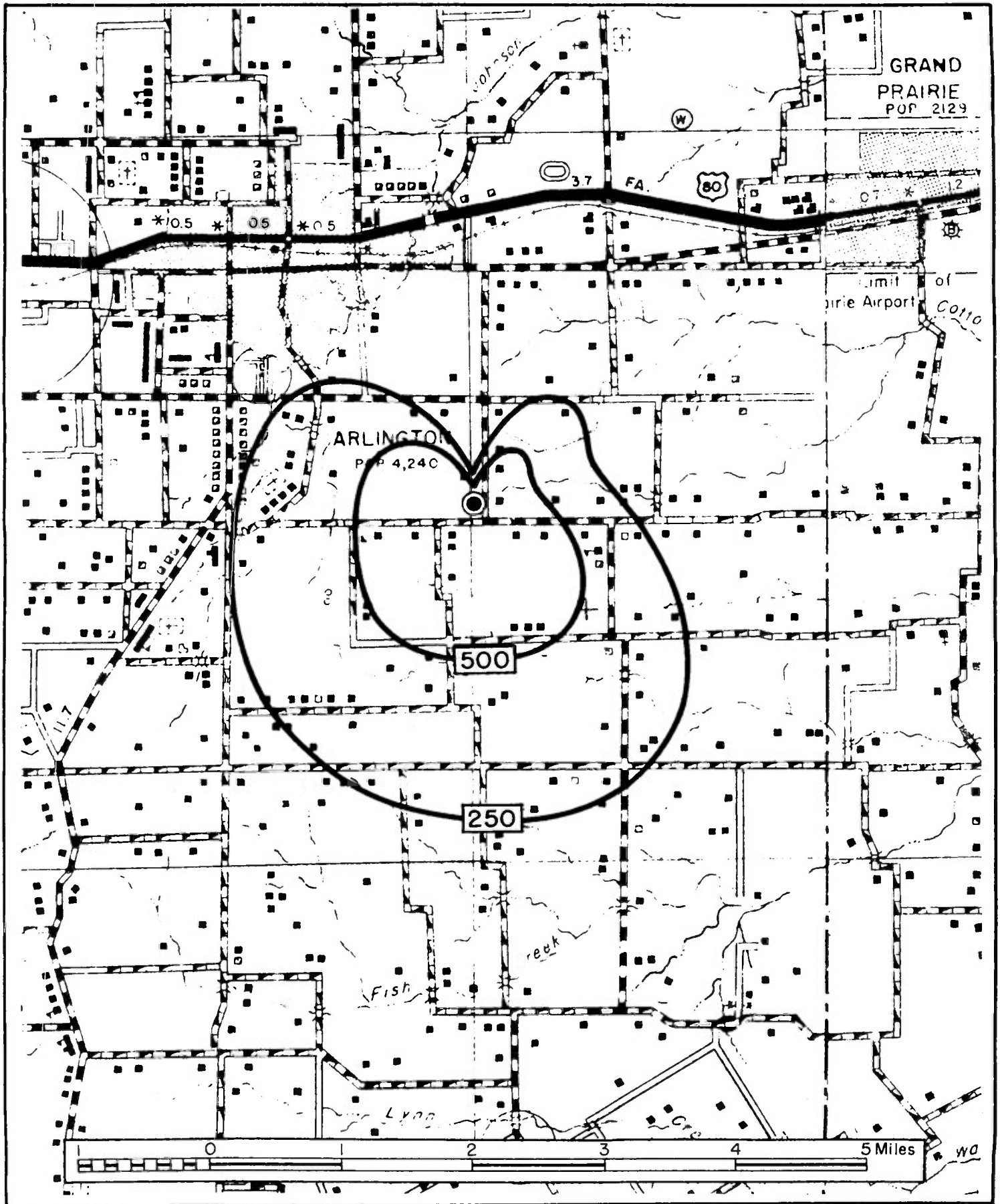
EXISTING DALLAS-FORT WORTH 570 KILOCYCLES, 5000 WATTS, ND-DAYTIME

CONTOUR	POPULATION	LAND AREA - SQ.MI.
WITHIN THE 500 MV/M CONTOUR	57	
WITHIN THE 250 MV/M CONTOUR	244	
WITHIN THE 25 MV/M CONTOUR	249,405	
WITHIN THE 5.0 MV/M CONTOUR	984,335	
WITHIN THE 2.0 MV/M CONTOUR	1,772,167	
WITHIN THE 0.5 MV/M CONTOUR	3,009,867	95,700
WITHIN THE 0.5 MV/M INT.-FREE CONTOUR	2,990,788	95,100

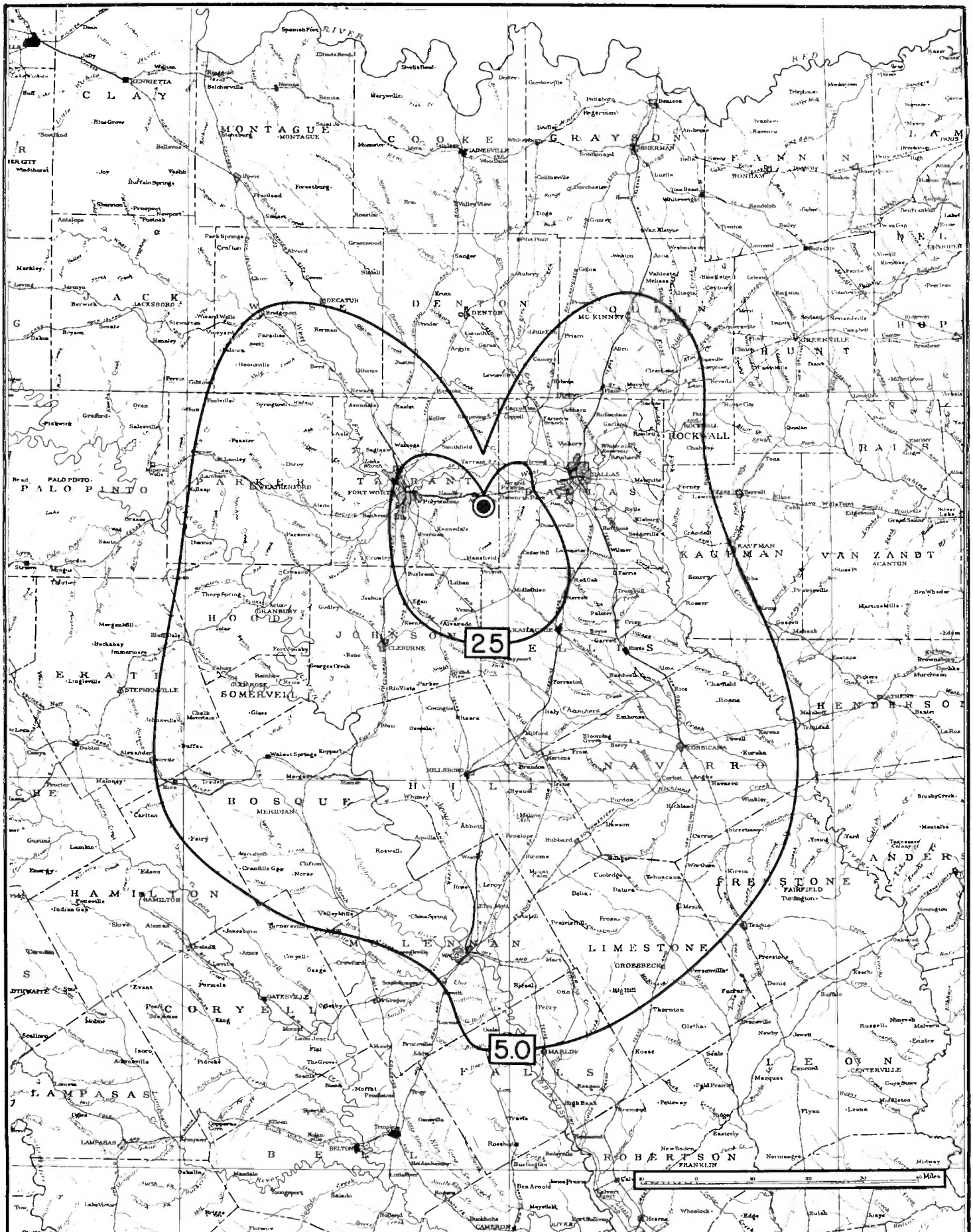
CONTOUR	DALLAS MET. DISTRICT	FT. WORTH MET. DISTRICT	DALLAS-FT.WORTH MET. DISTRICTS
WITHIN THE 25 MV/M CONTOUR	98,498	134,037	232,535
WITHIN THE 5 MV/M CONTOUR	354,385	201,395	555,780

471124

FIGURE 11F

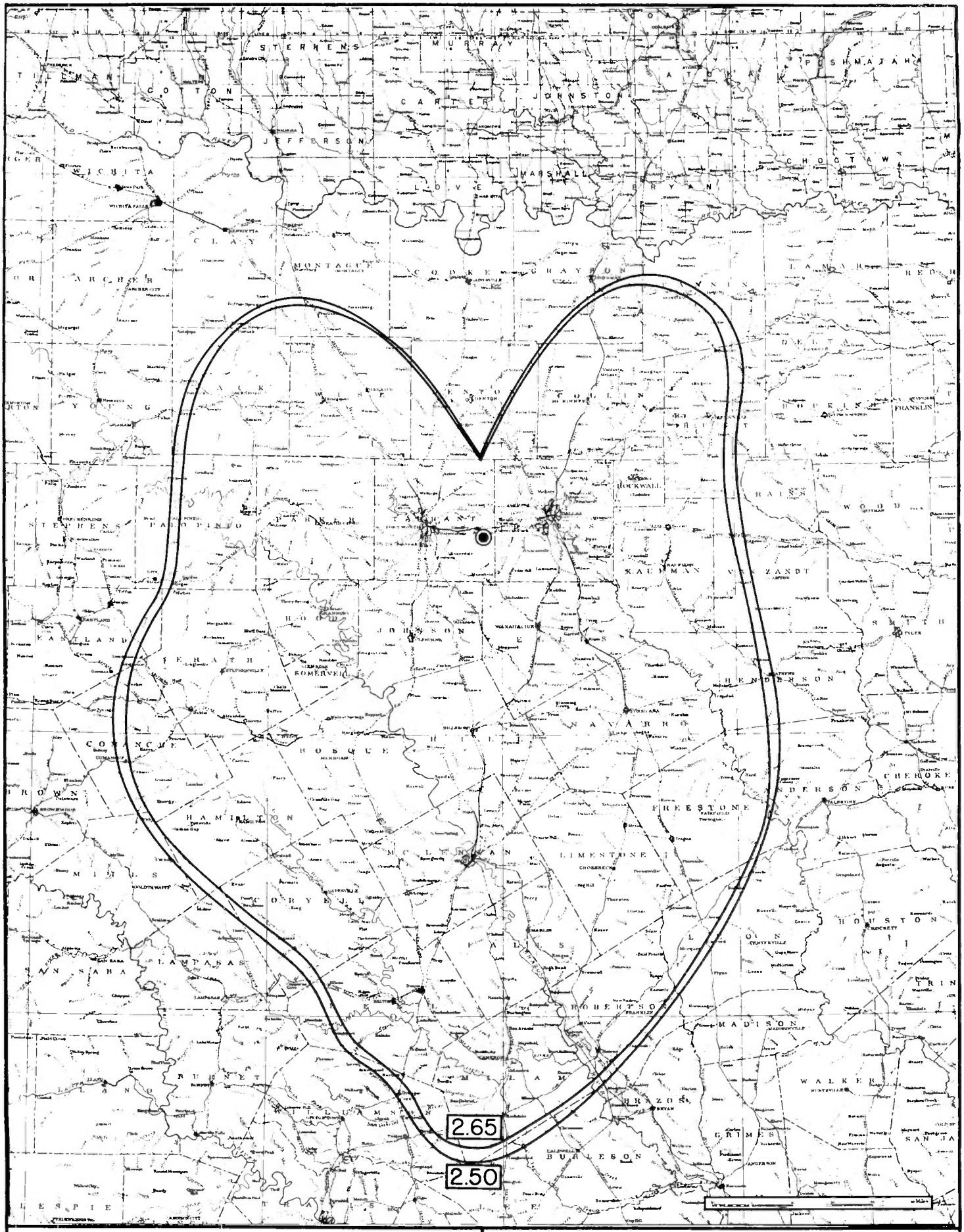


A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, DA-N FIGURE 12



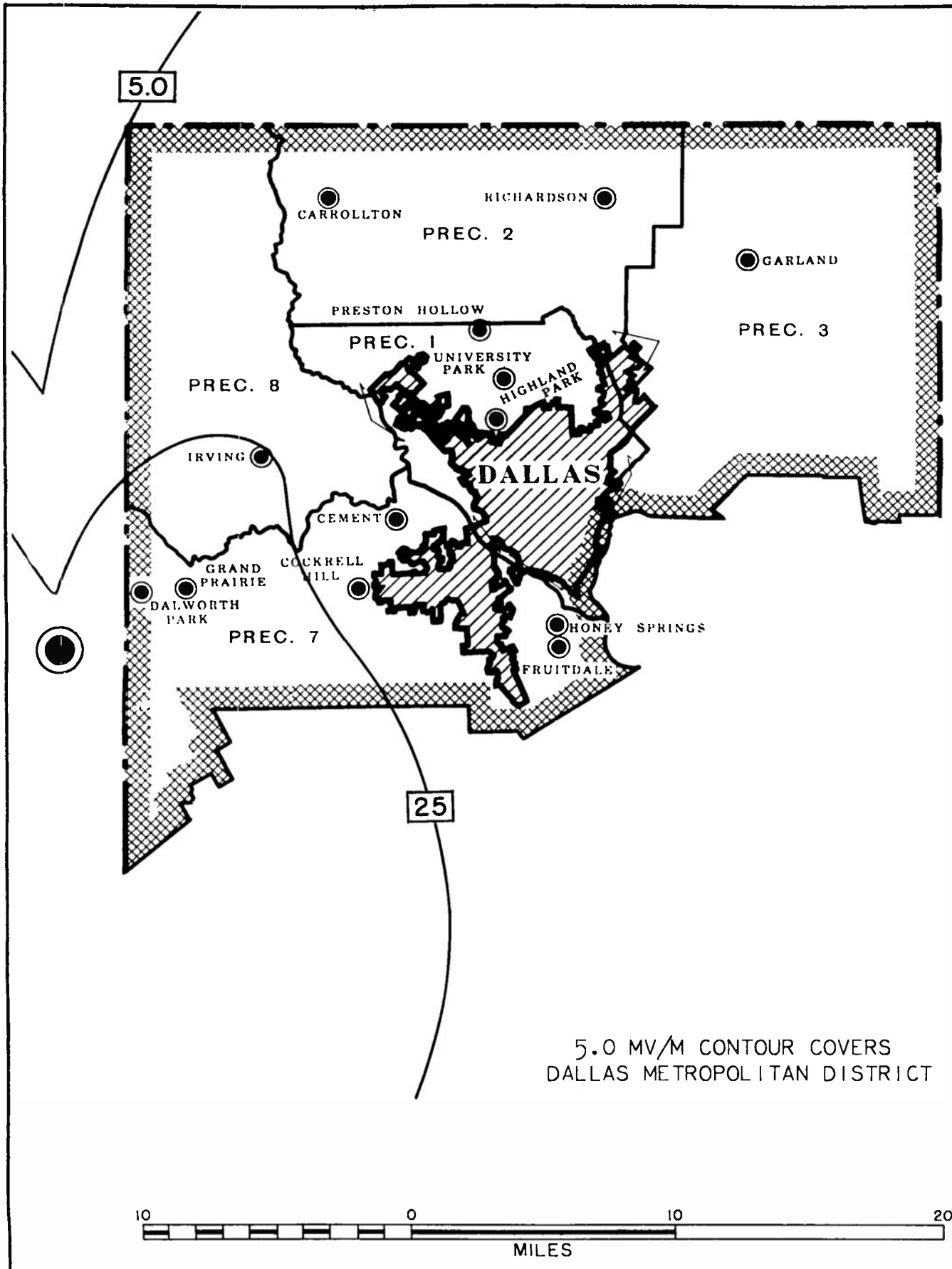
A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS-FT. WORTH
EXISTING 570 KC, 5 KW, DA-N
FIGURE 12?

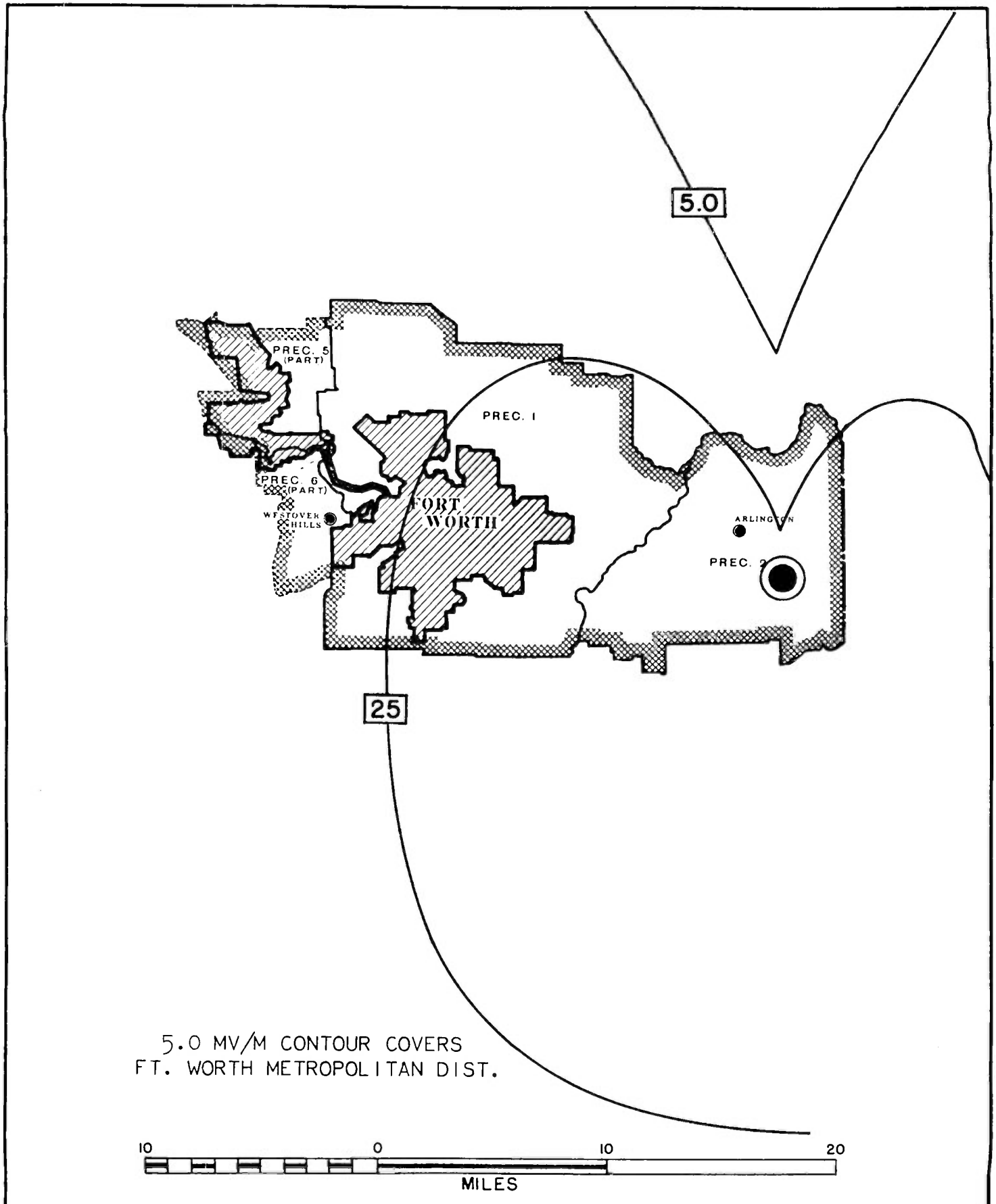


A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS-FT. WORTH
EXISTING 570 KC, 5 KW, DA-N
FIGURE 12C



A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, DA-N FIGURE 129



A. EARL CULLUM, JR. CONSULTING RADIO ENGINEERS DALLAS 471124	DALLAS-FT. WORTH EXISTING 570 KC, 5 KW, DA-N FIGURE 12E

POPULATION AND AREA ANALYSIS OF COVERAGE CONTOURS

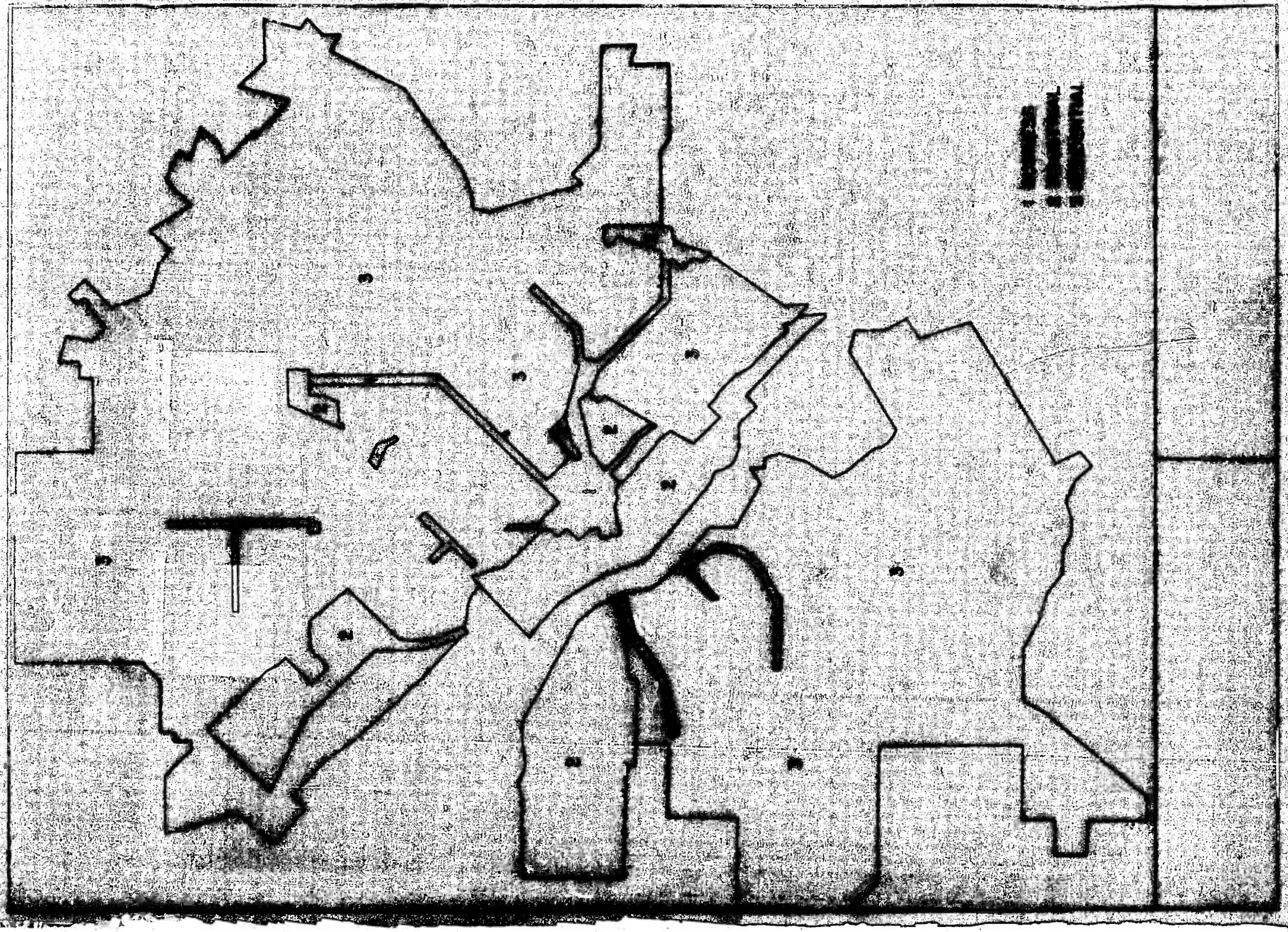
EXISTING DALLAS-FORT WORTH 570 KILOCYCLES, 5000 WATTS, DA-NIGHTTIME

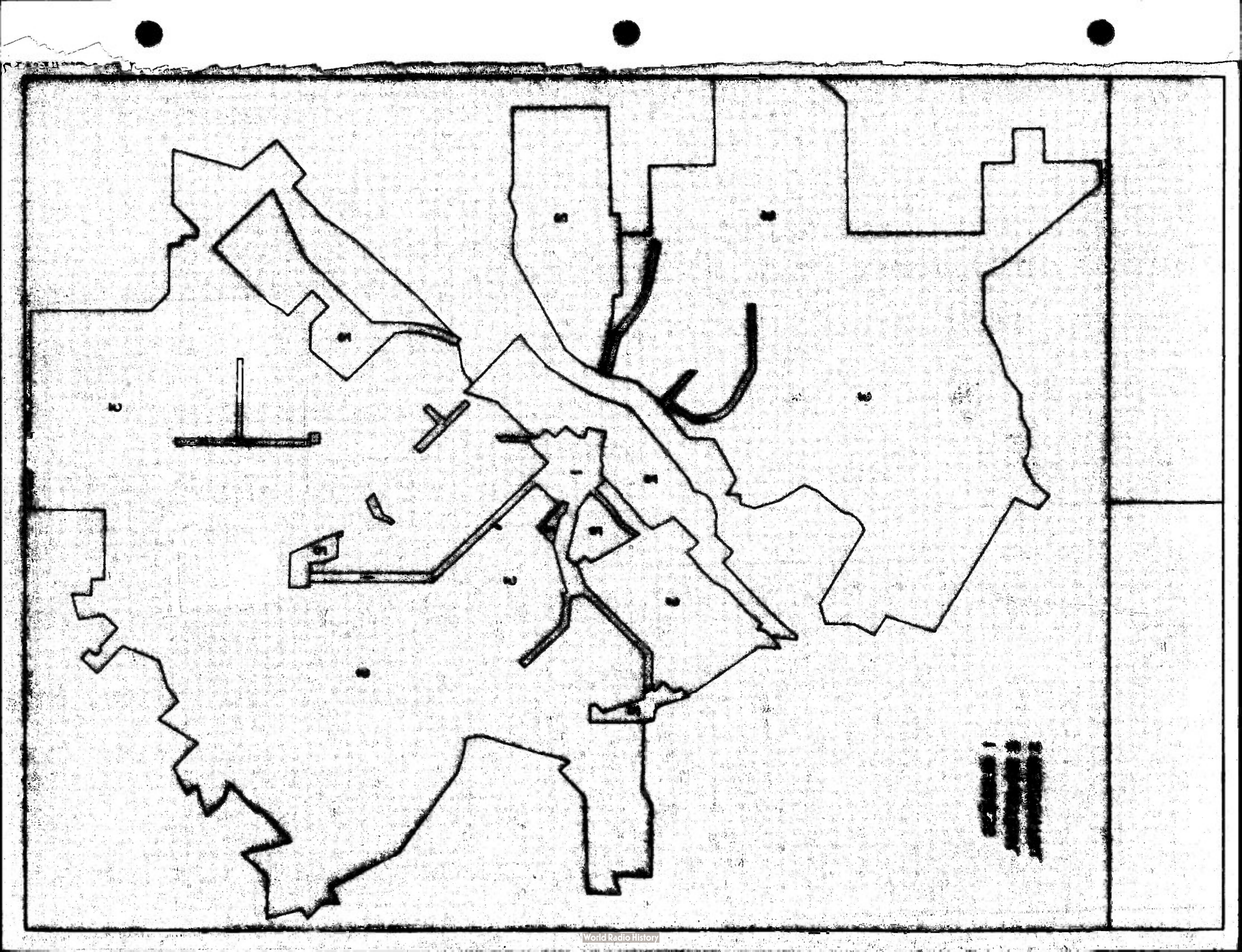
CONTOUR	POPULATION	LAND AREA - SQ.MI.
WITHIN THE 500 MV/M CONTOUR	53	
WITHIN THE 250 MV/M CONTOUR	274	
WITHIN THE 25 MV/M CONTOUR	174,651	
WITHIN THE 5.0 MV/M CONTOUR	980,702	
WITHIN THE 2.65 MV/M CONTOUR	1,368,278	24,400
WITHIN THE 2.5 MV/M CONTOUR	1,416,773	25,900

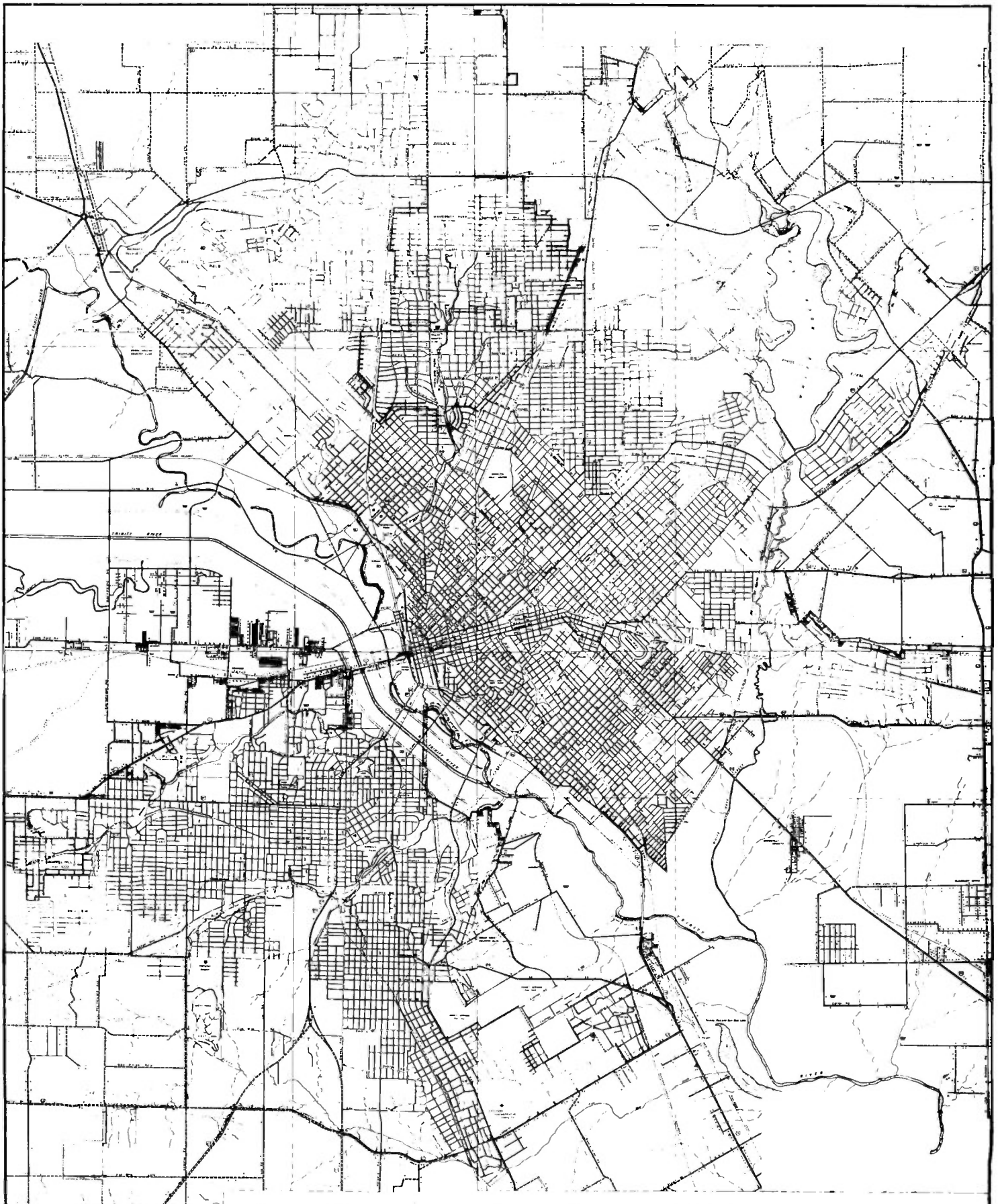
CONTOUR	DALLAS MET. DISTRICT	FT. WORTH MET. DISTRICT	DALLAS-FT.WORTH MET. DISTRICTS
WITHIN THE 25 MV/M CONTOUR	14,722	142,072	156,794
WITHIN THE 5 MV/M CONTOUR	347,076	202,279	549,355

471124

FIGURE 12F

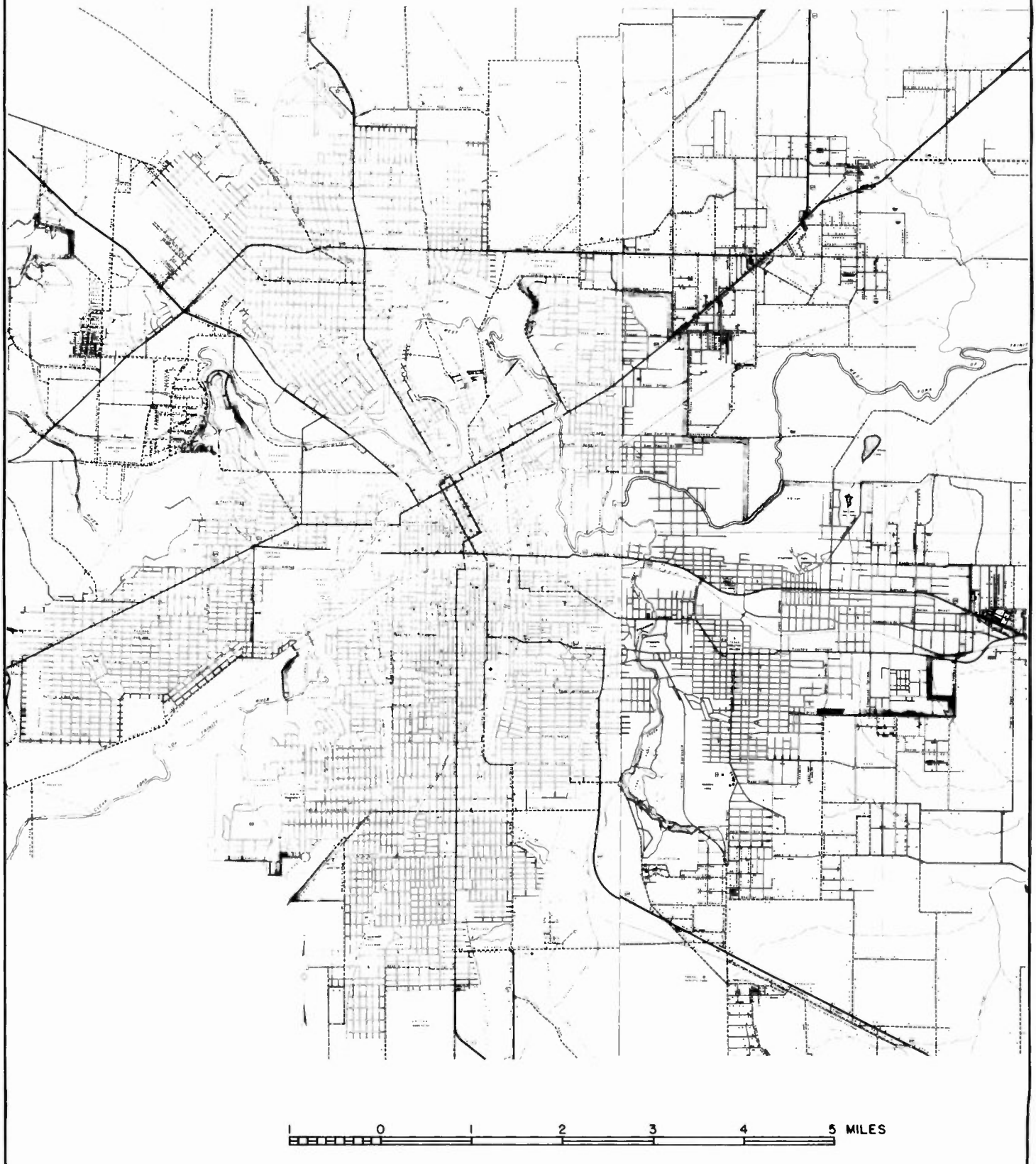






A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS, TEXAS
ZONE MAP
FIGURE 13A



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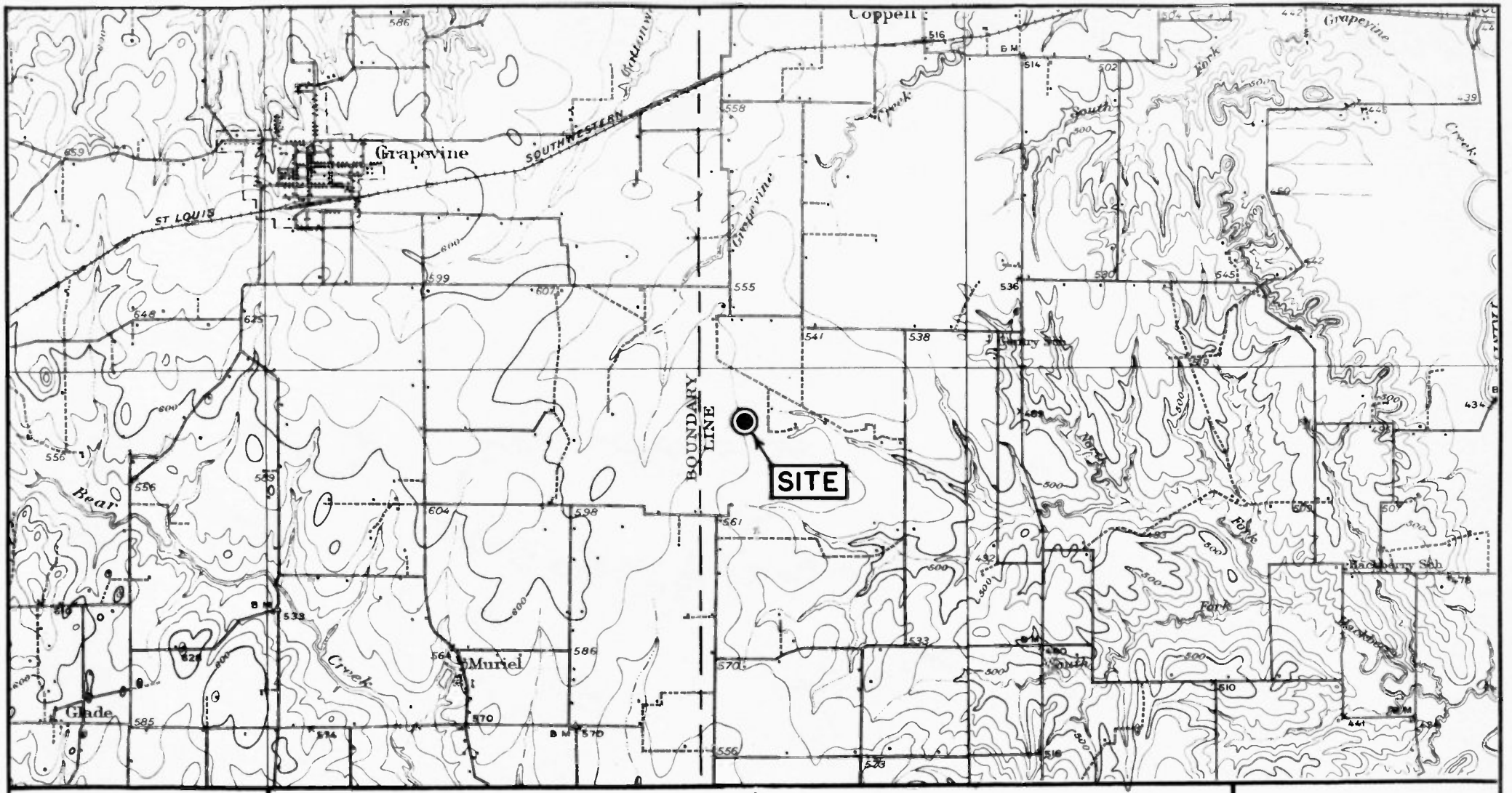
DALLAS 471124

FORT WORTH, TEXAS
ZONE MAP
FIGURE 13B



GRAPEVINE, TEX.
Edition of 1931

Scale 1/62500

1 ½ 0 1 2 3 4 Miles
5000 0 5000 10000 15000 20000 Feet
1 ½ 0 1 2 3 4 5 Kilometers

Contour interval 20 feet.
Datum is mean sea level.

CARROLLTON, TEX.
Edition of 1931
reprinted 1938

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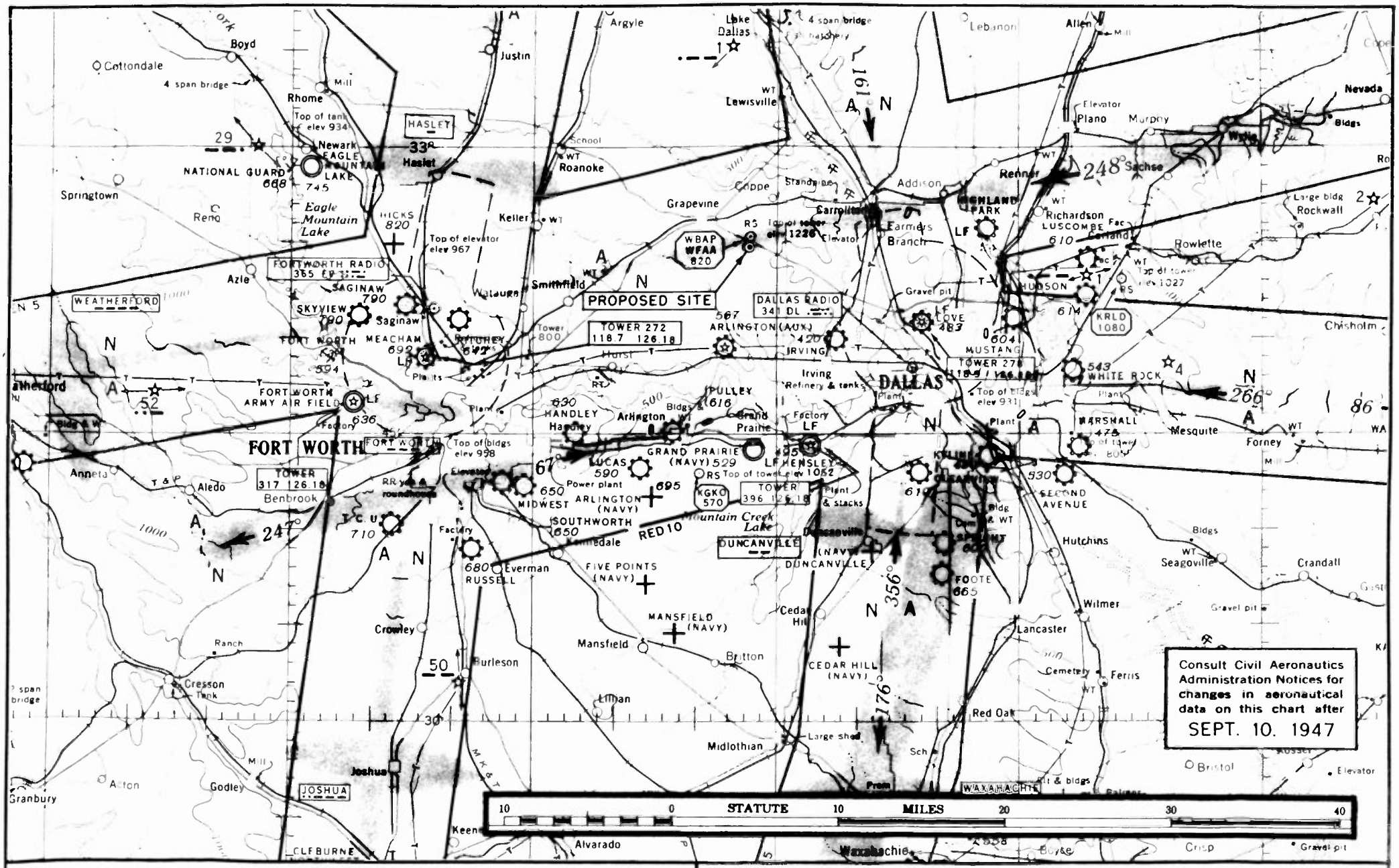
DALLAS 471124

DALLAS-FT. WORTH
PROPOSED 570 KC, 5 KW, DA-2
FIGURE 14

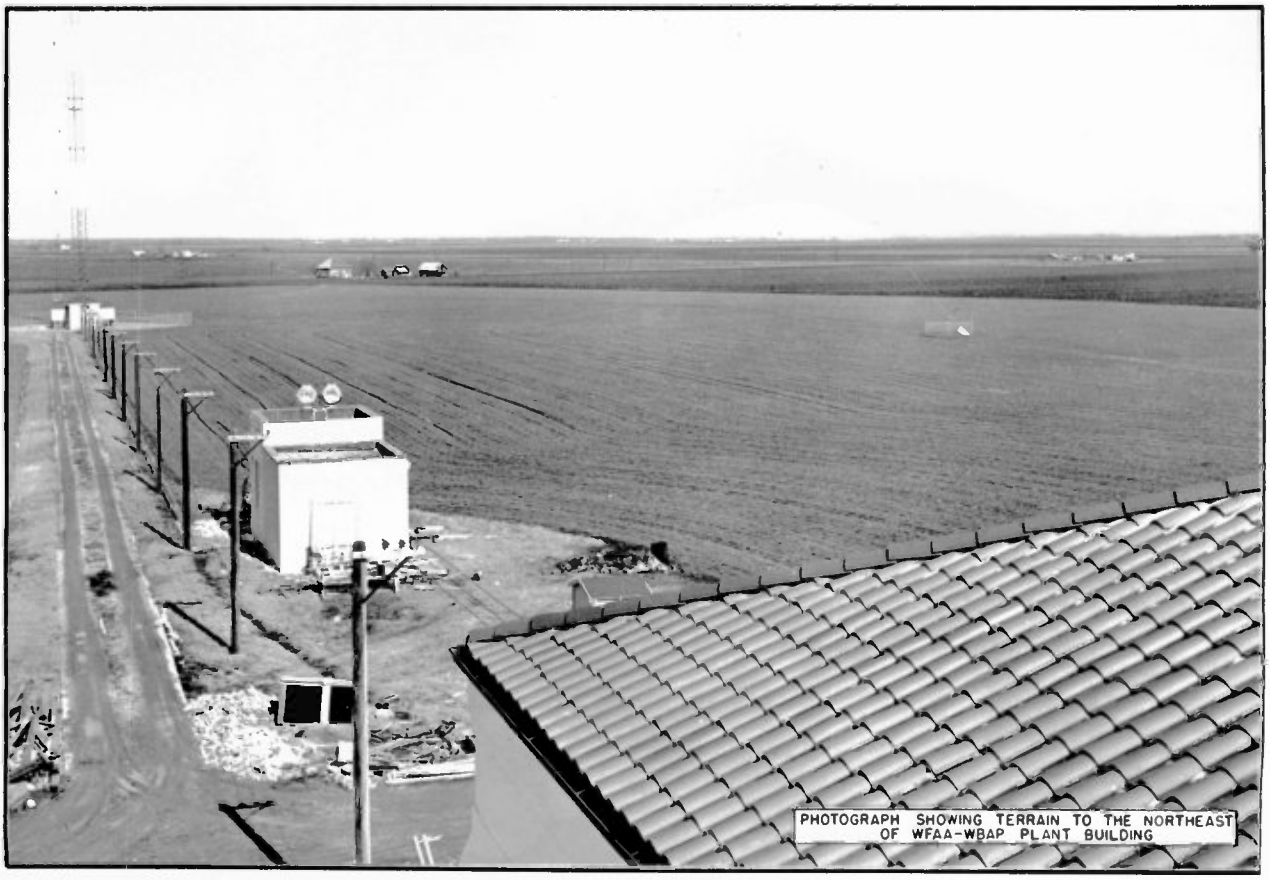


Consult Civil Aeronautics Administration Notices for changes in aeronautical data on this chart after SEPT. 10. 1947

A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 471124

DALLAS-FT. WORTH
PROPOSED 570 KC, 5 KW, DA-2
FIGURE 15

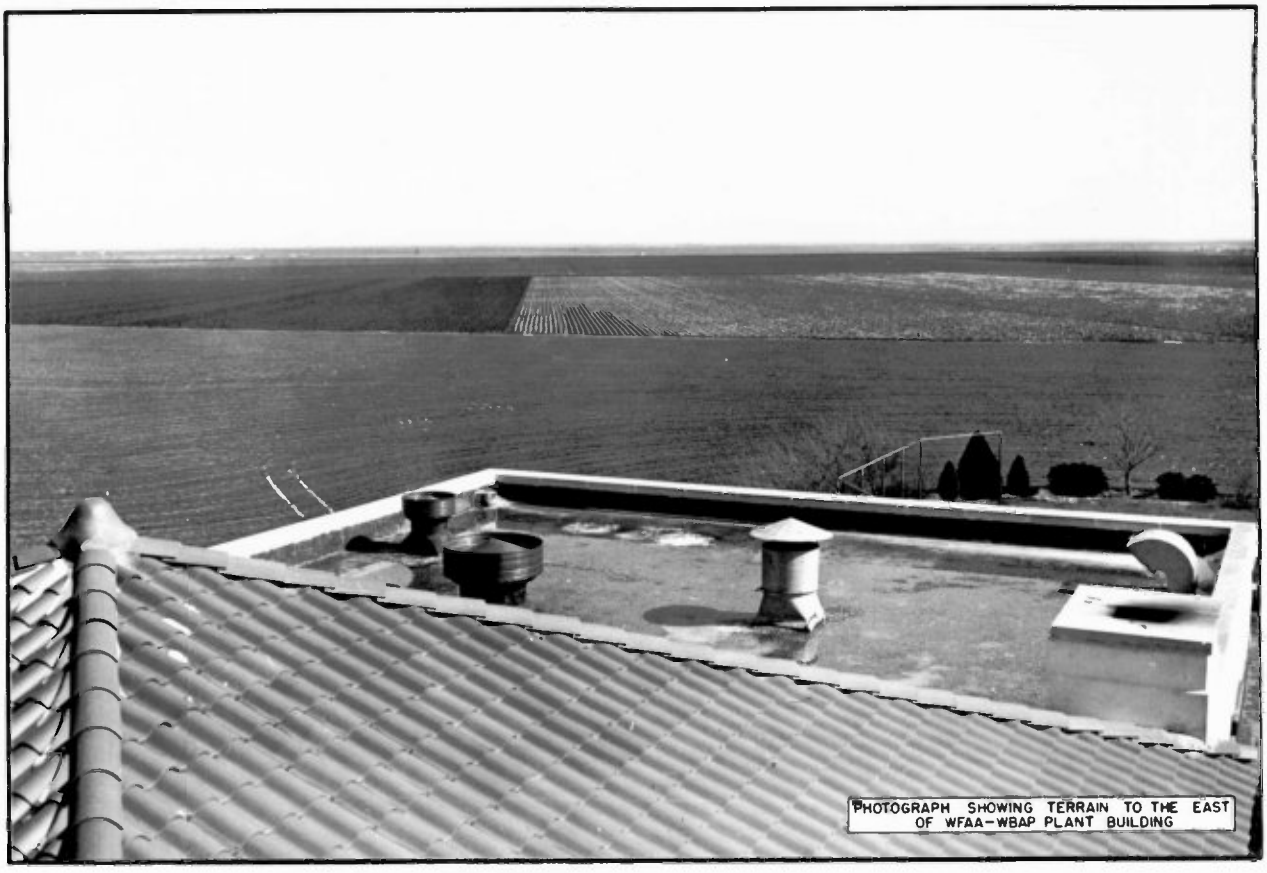
PHOTOGRAPH SHOWING TERRAIN TO THE NORTH OF WFAA-WBAP PLANT BUILDING



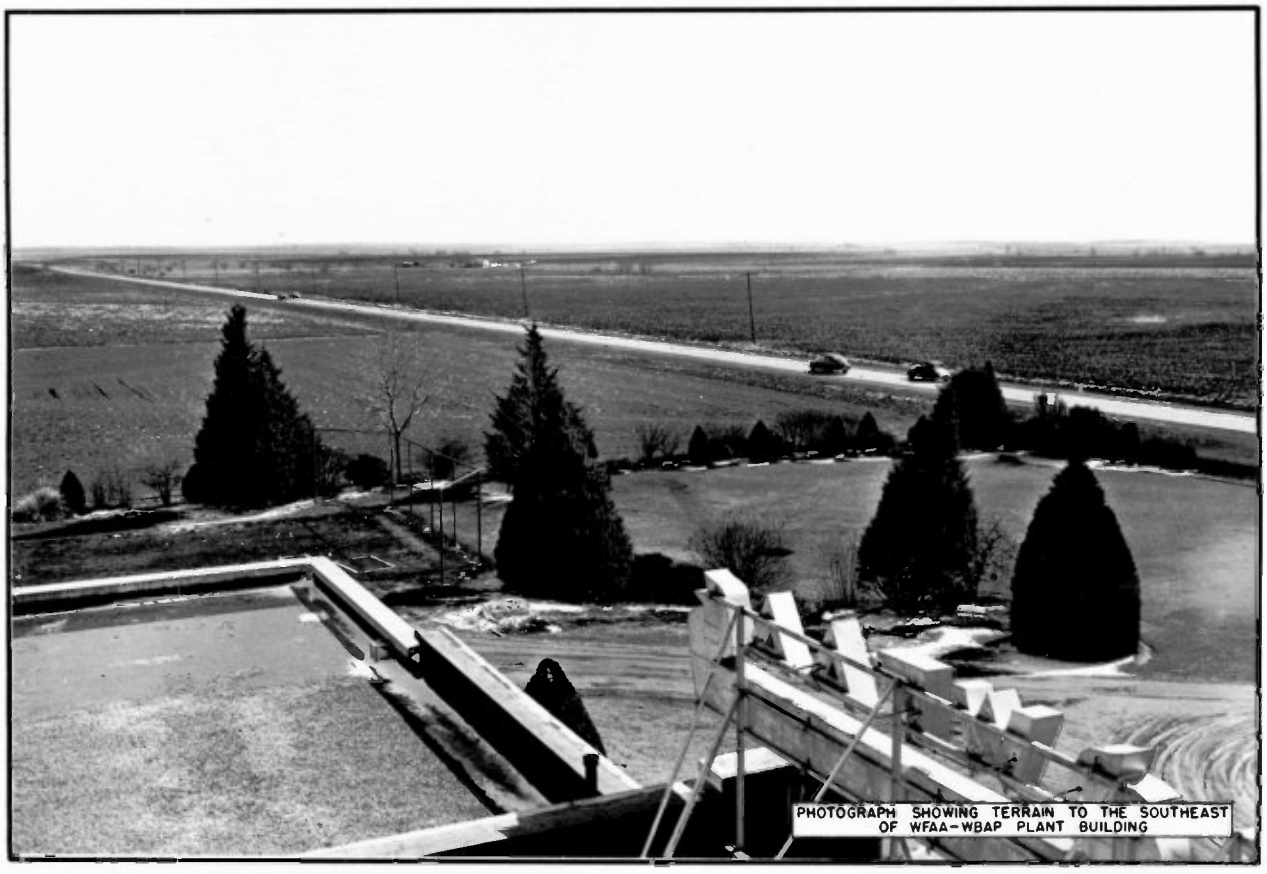
PHOTOGRAPH SHOWING TERRAIN TO THE NORTHEAST OF WFAA-WBAP PLANT BUILDING

471124

FIGURE 16 A



PHOTOGRAPH SHOWING TERRAIN TO THE EAST OF WFAA-WBAP PLANT BUILDING

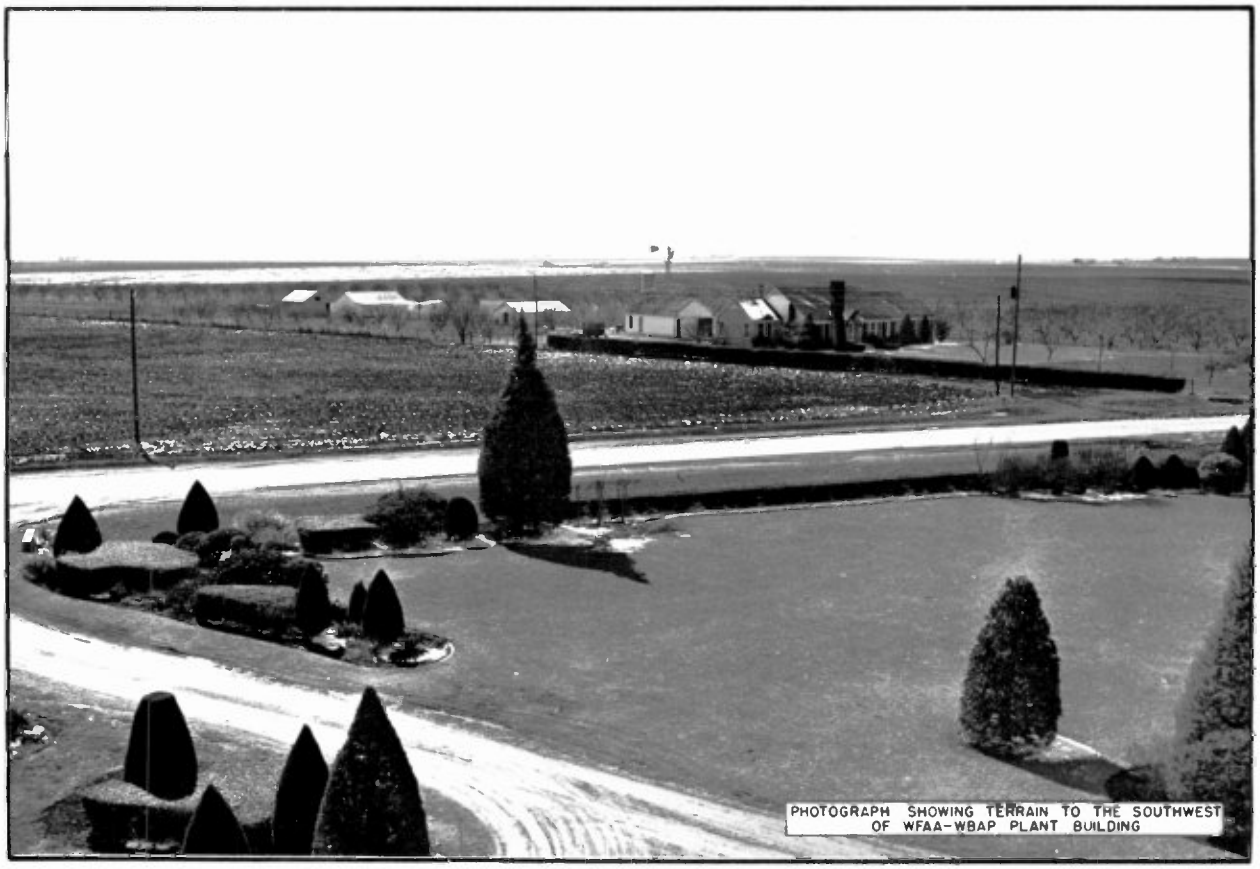


PHOTOGRAPH SHOWING TERRAIN TO THE SOUTHEAST OF WFAA-WBAP PLANT BUILDING

471124

FIGURE 16 B

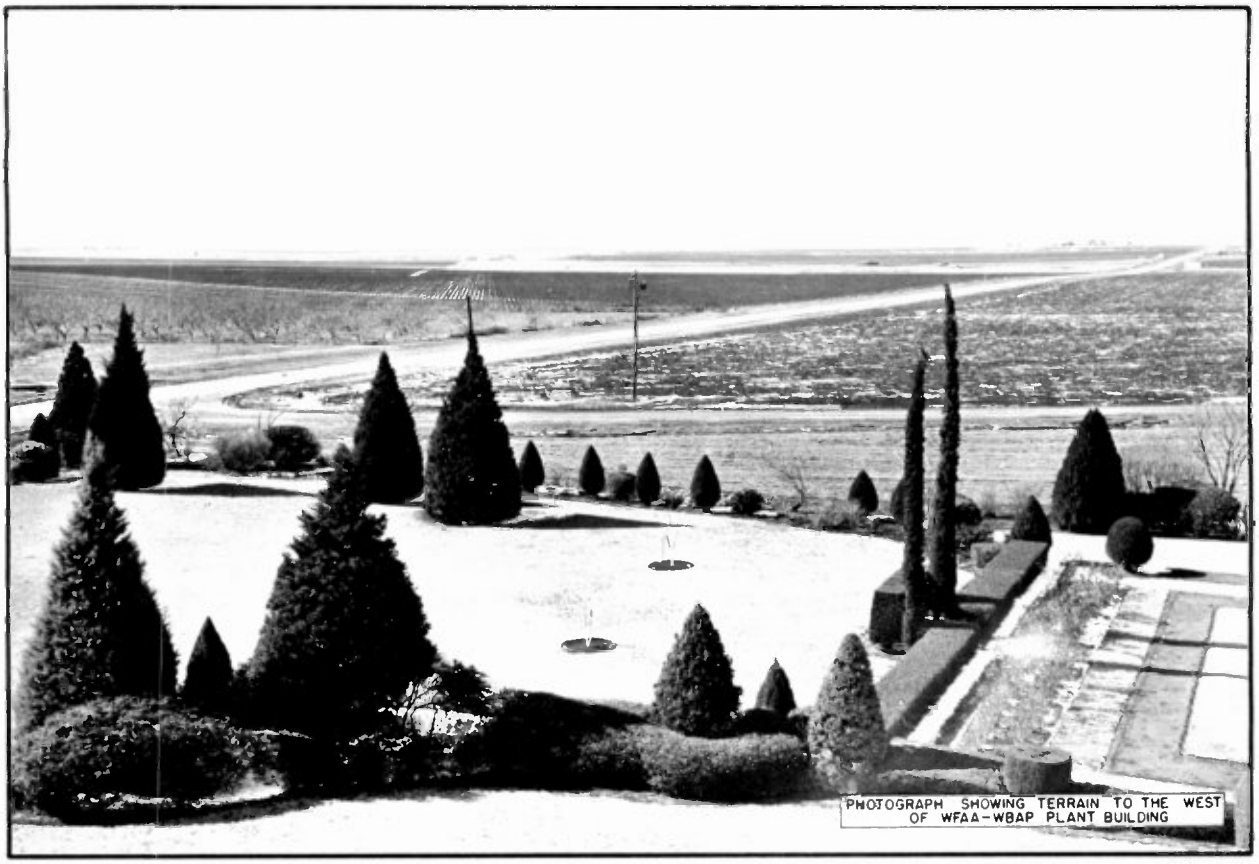
PHOTOGRAPH SHOWING TERRAIN TO THE SOUTH OF WFAA-WBAP PLANT BUILDING



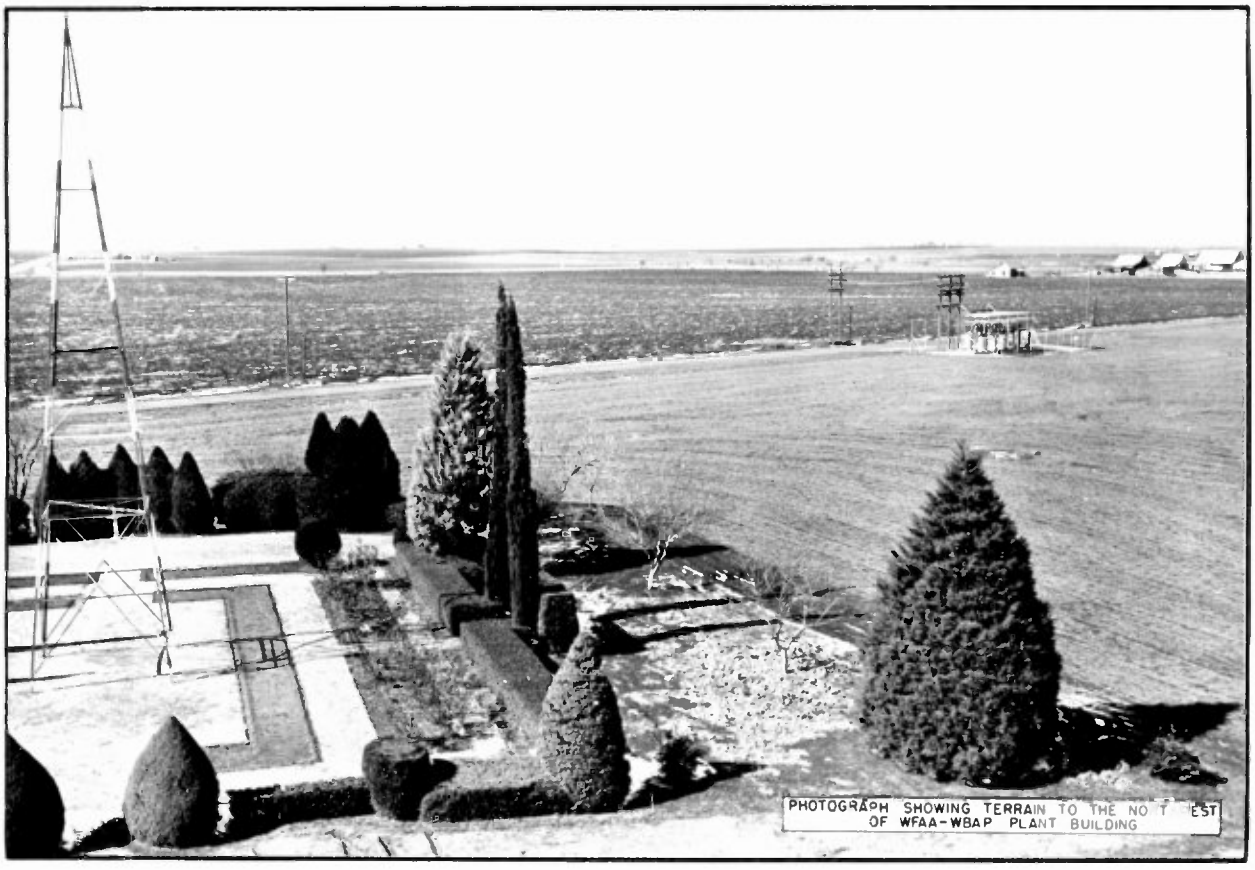
PHOTOGRAPH SHOWING TERRAIN TO THE SOUTHWEST OF WFAA-WBAP PLANT BUILDING

471124

FIGURE 16 C



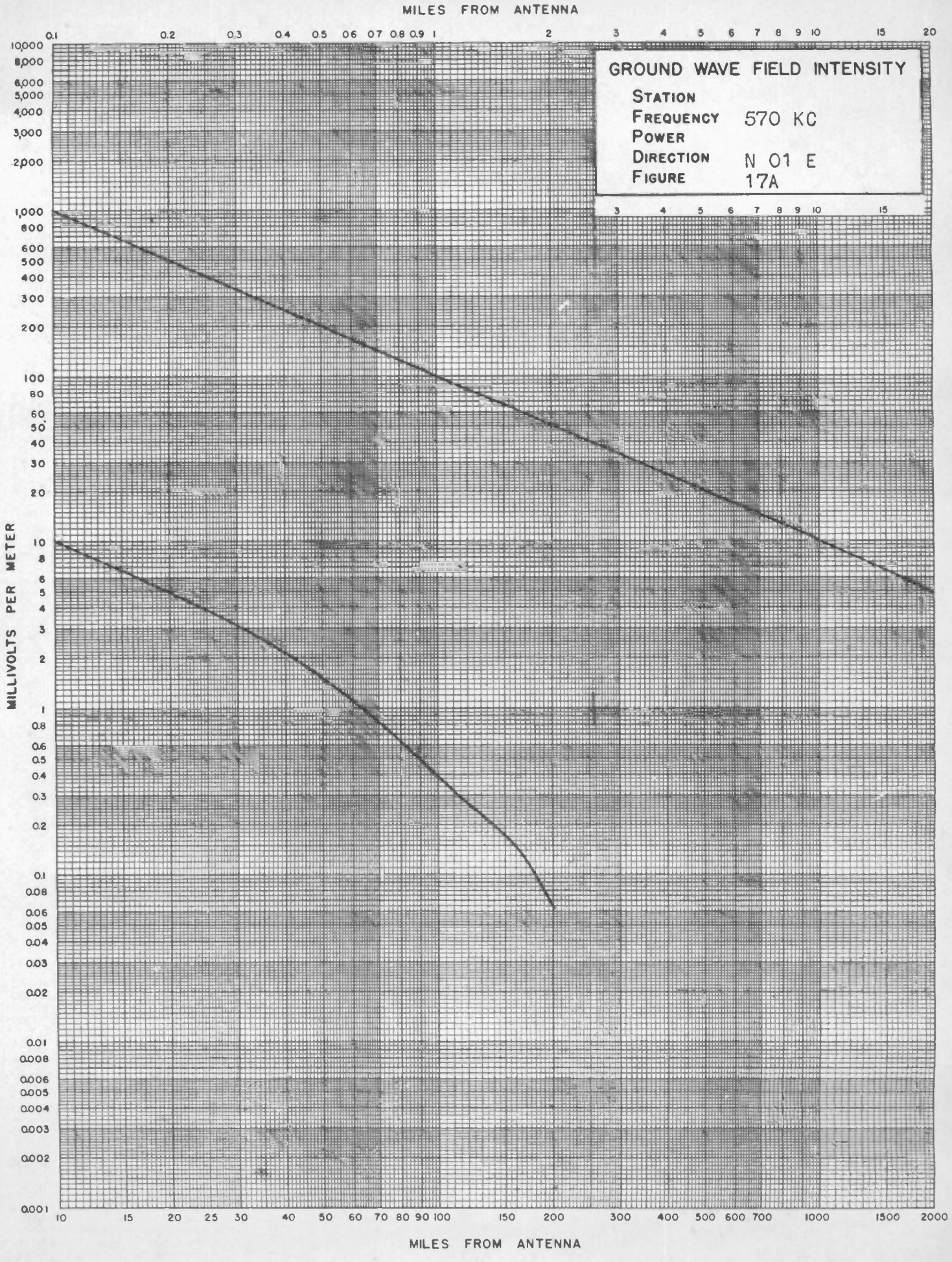
PHOTOGRAPH SHOWING TERRAIN TO THE WEST OF WFAA-WBAP PLANT BUILDING

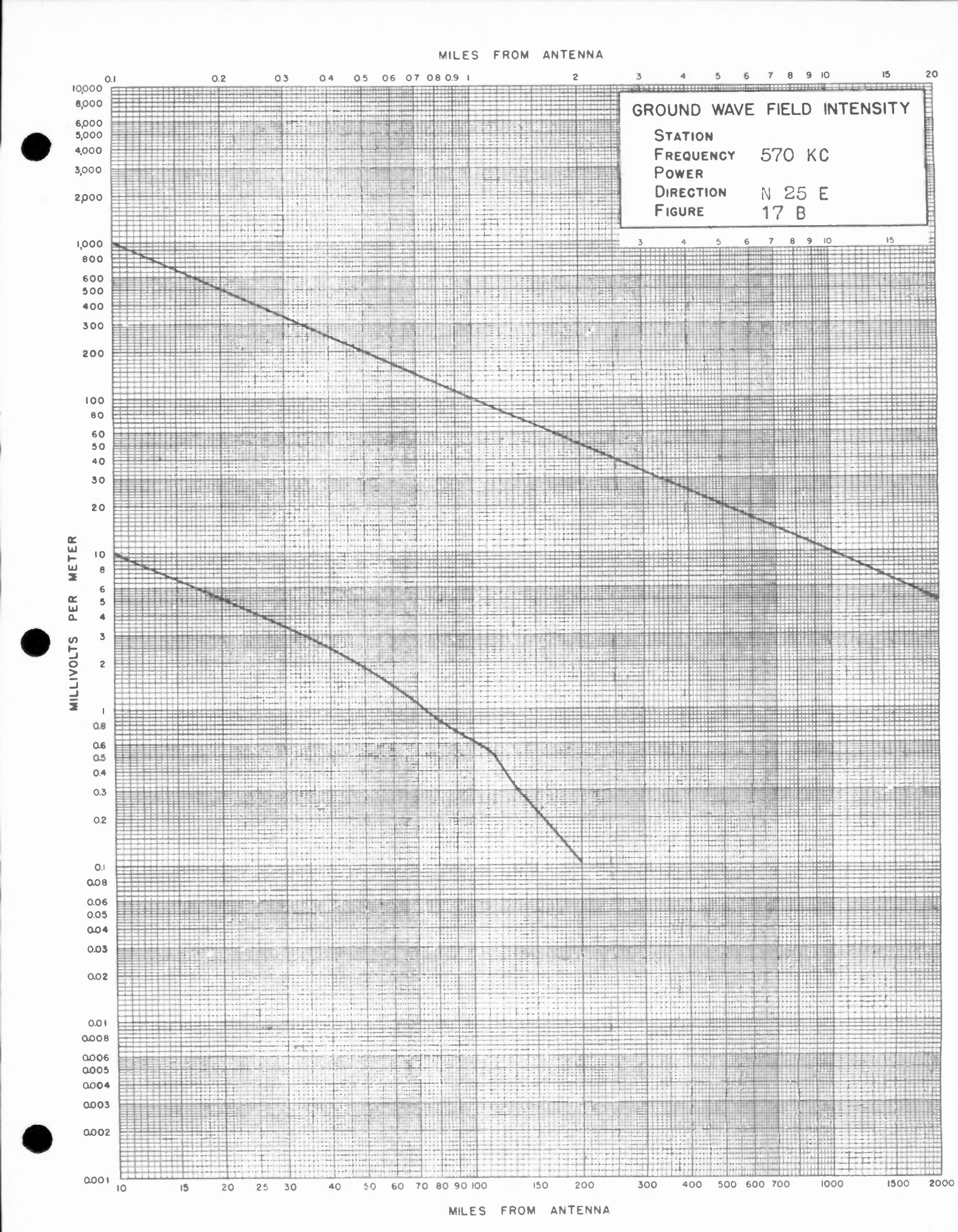


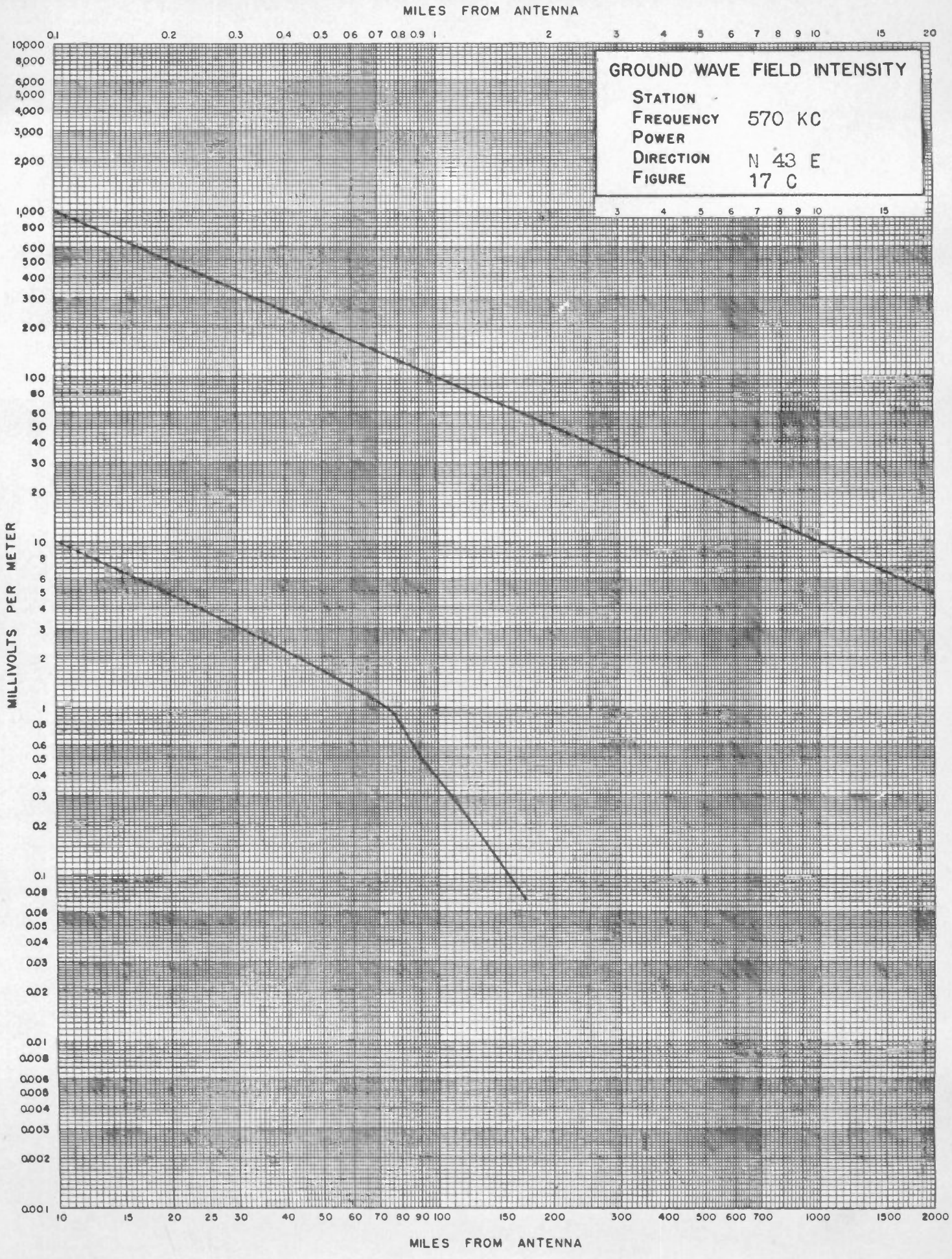
PHOTOGRAPH SHOWING TERRAIN TO THE NORTHWEST OF WFAA-WBAP PLANT BUILDING

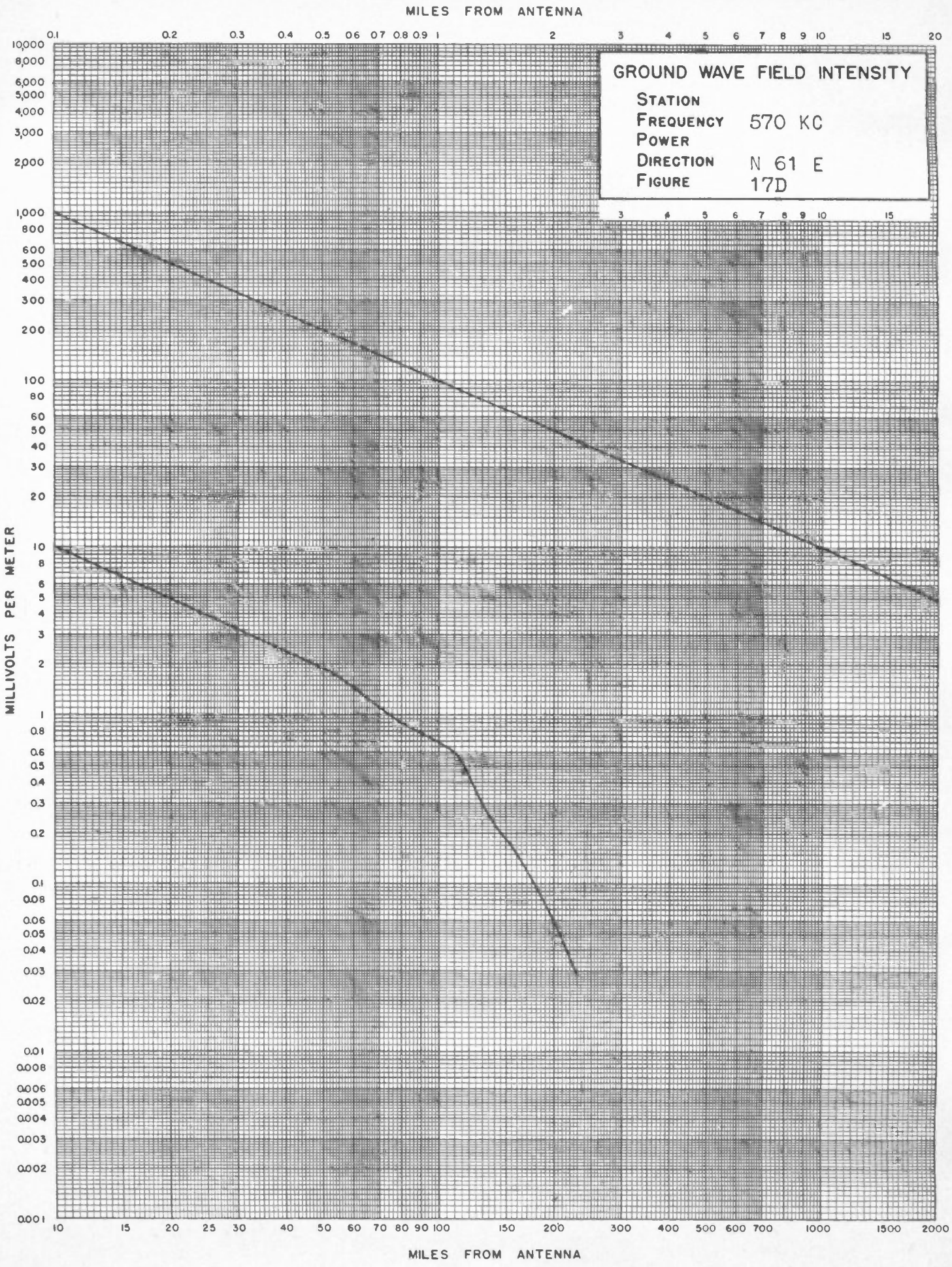
471124

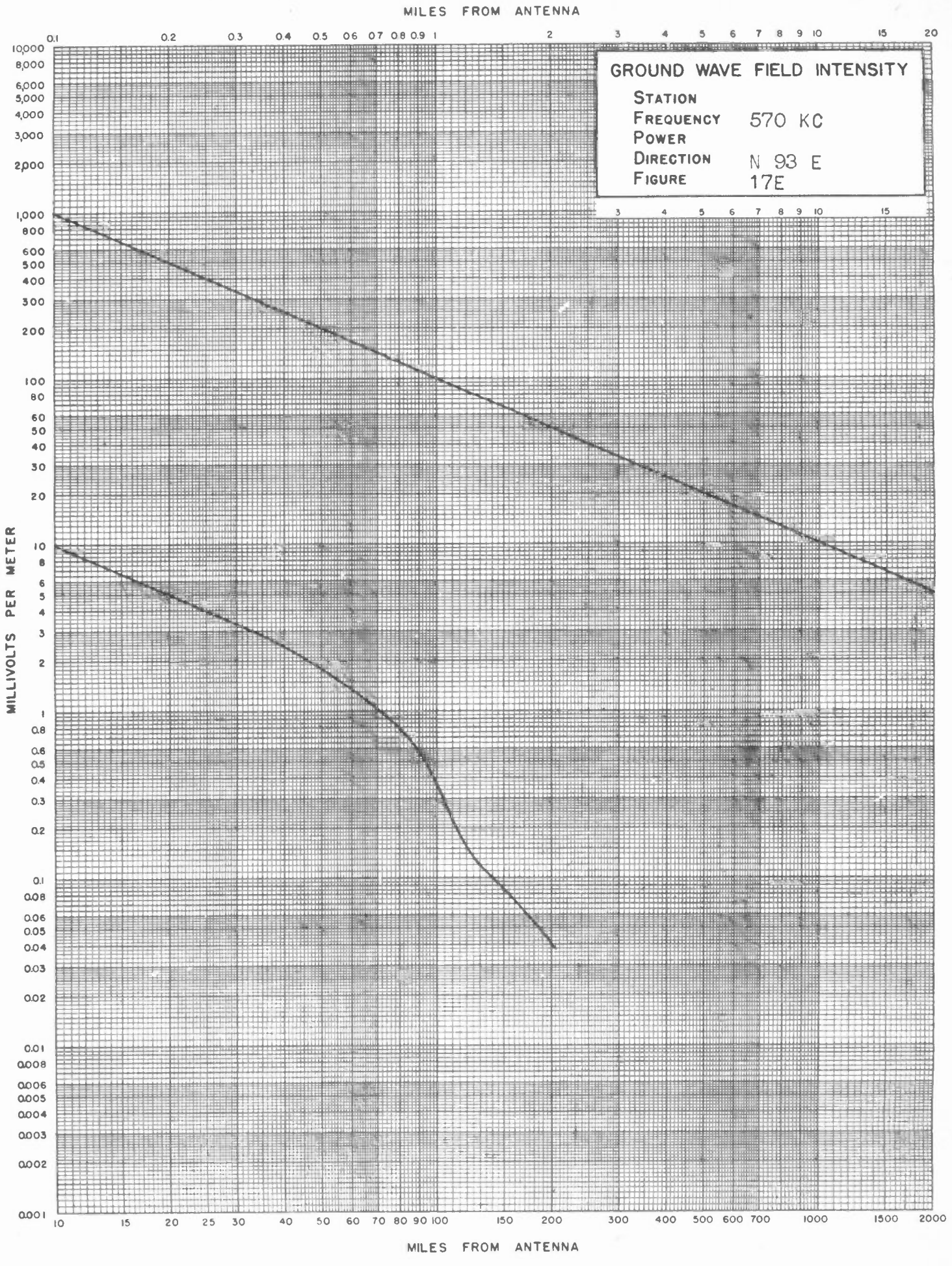
FIGURE 16 D

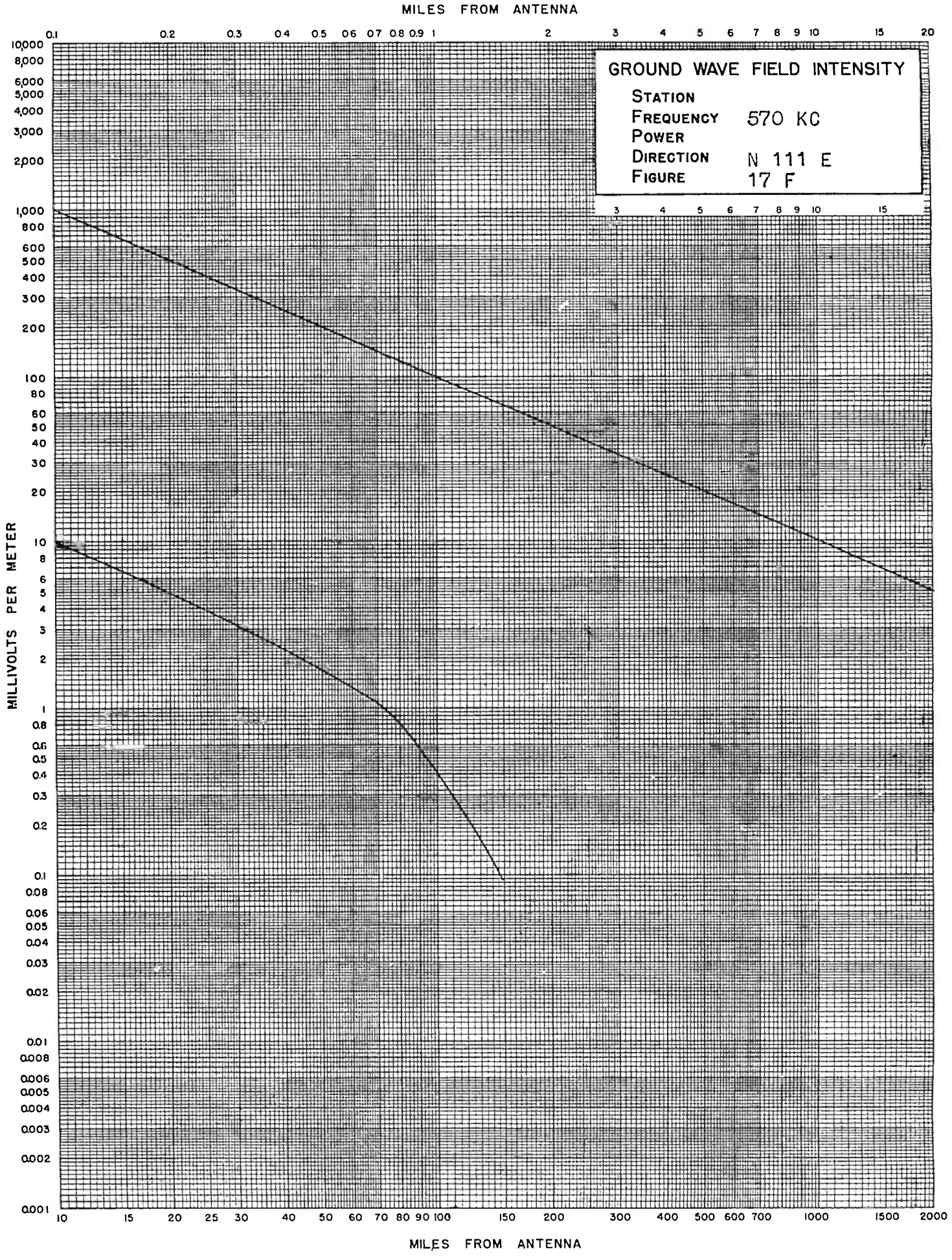


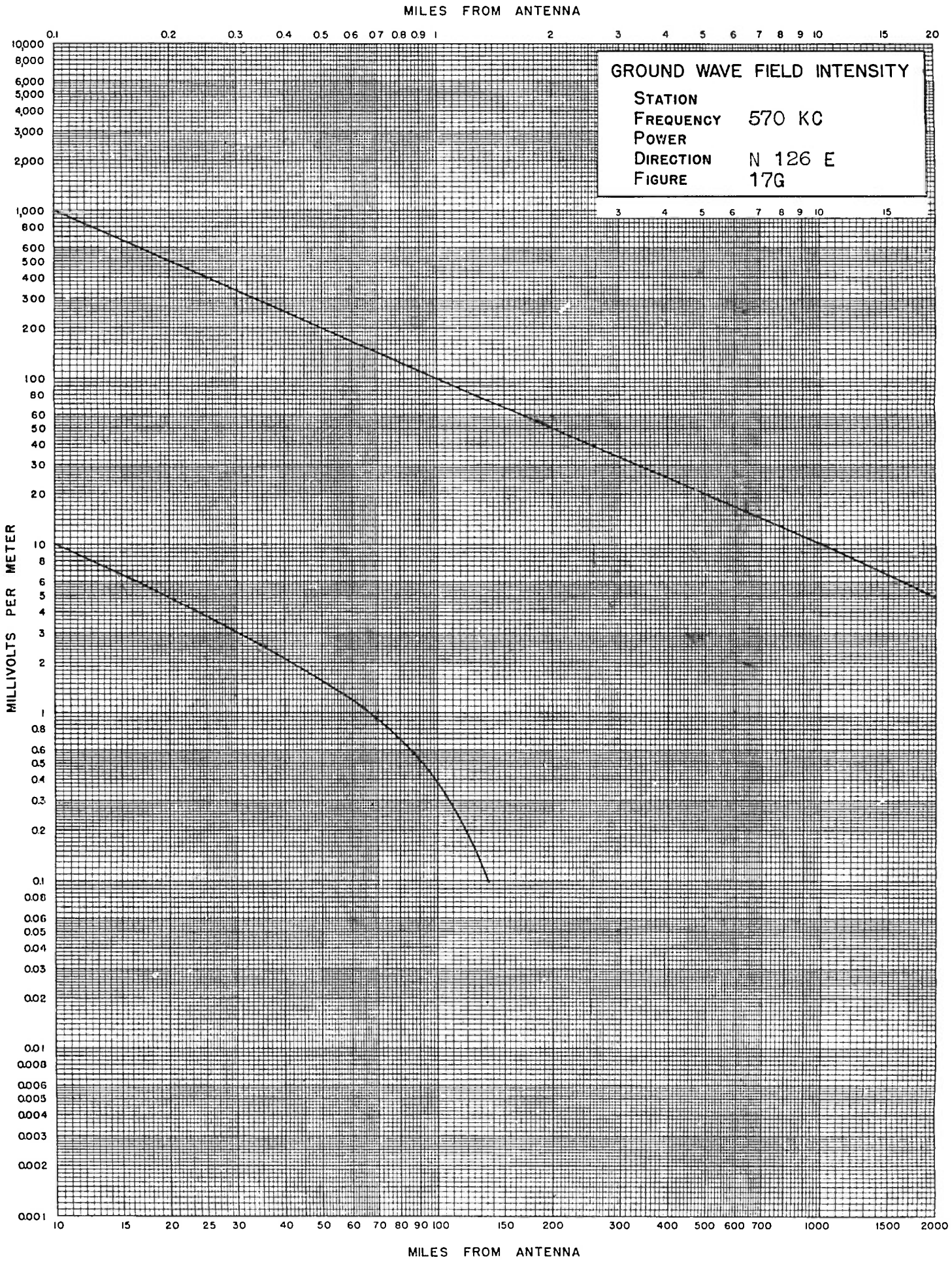


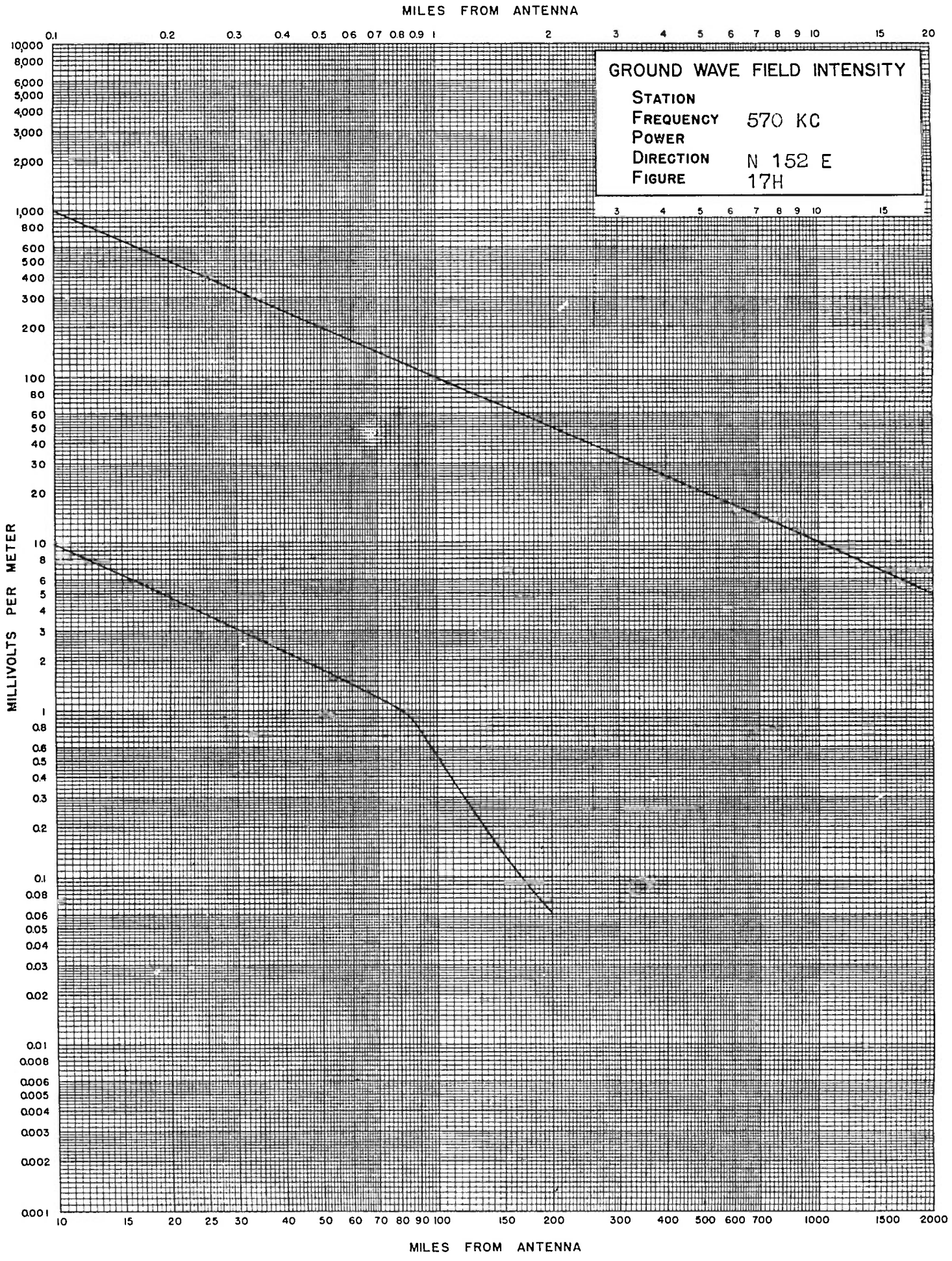


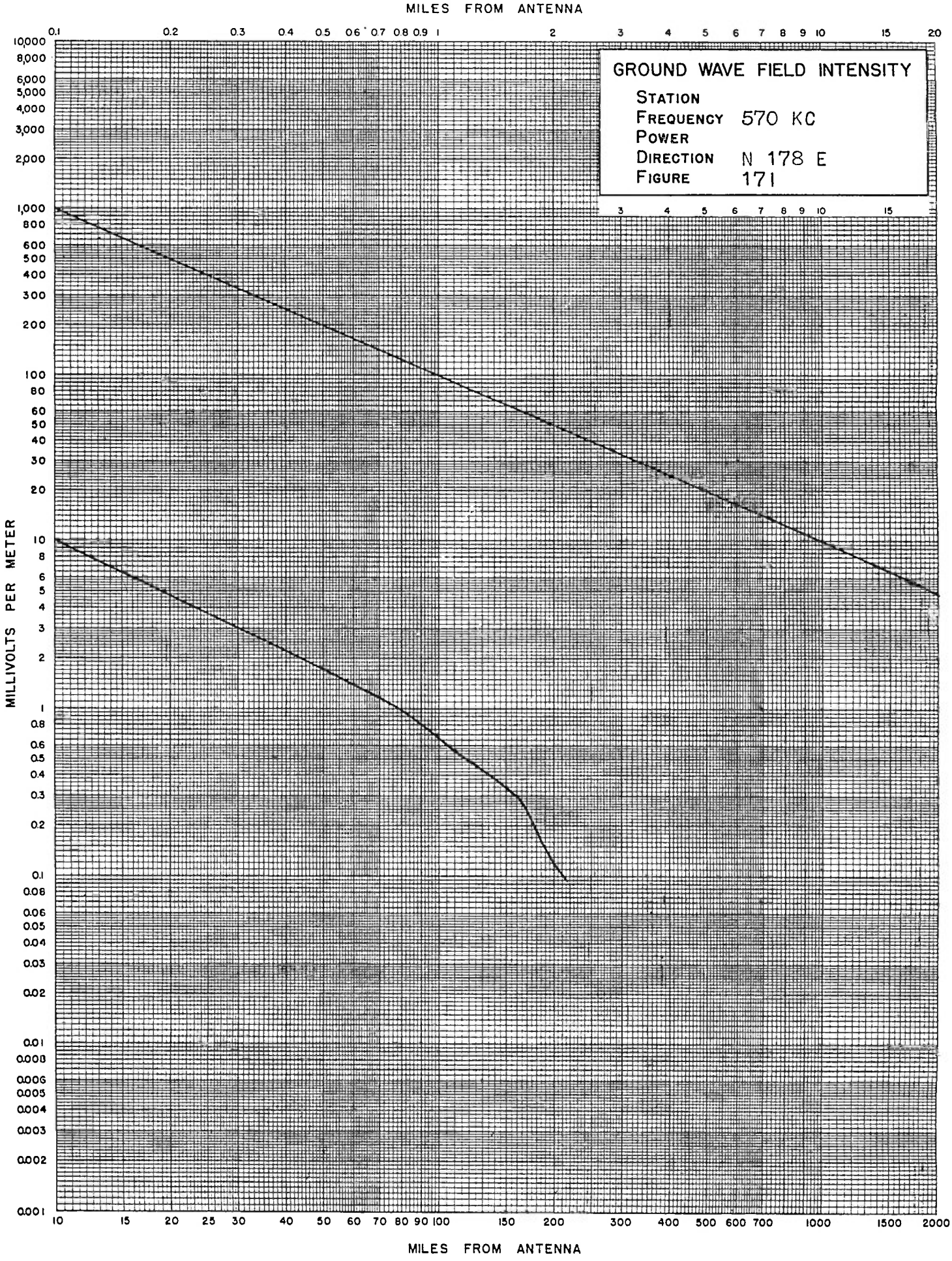


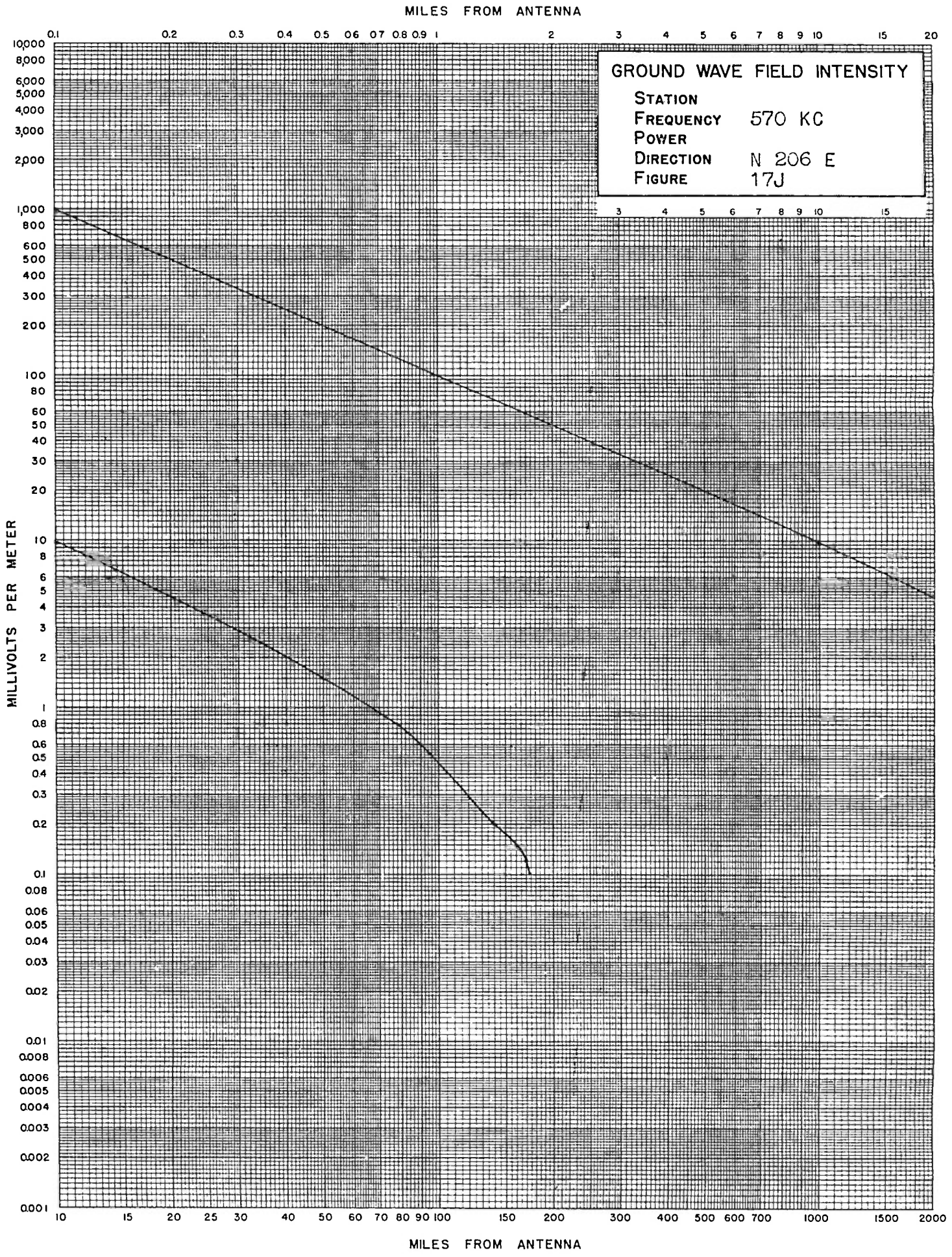


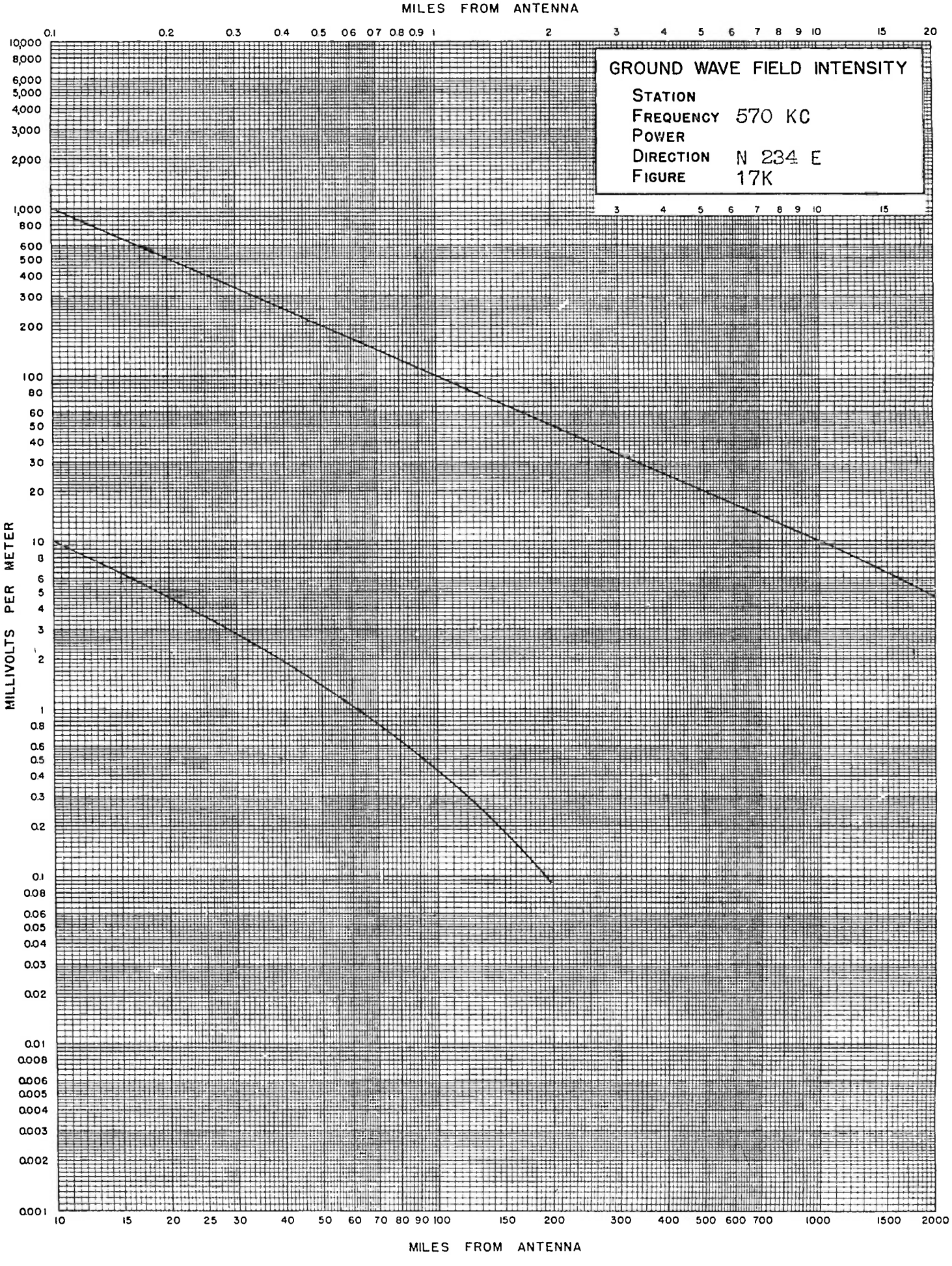


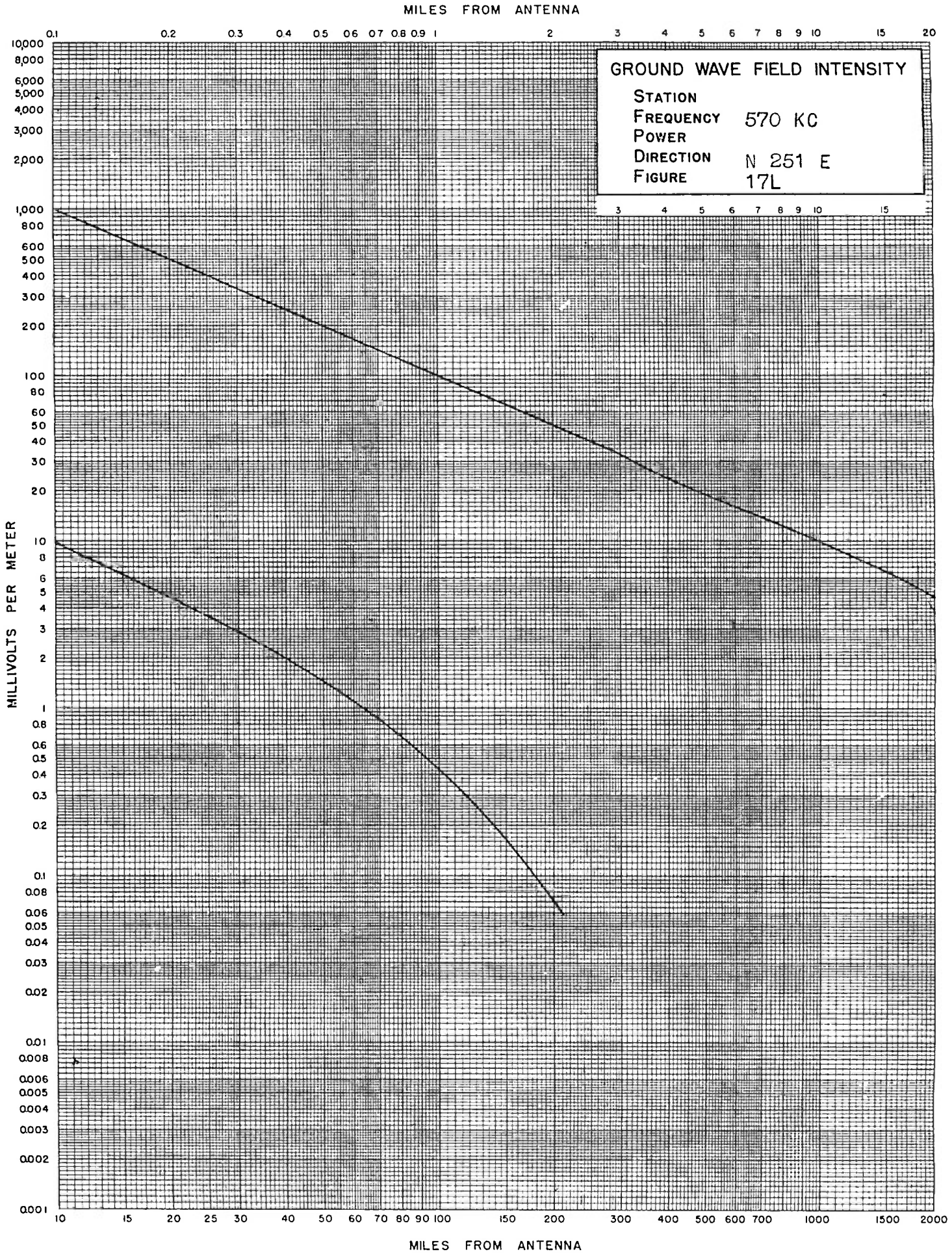


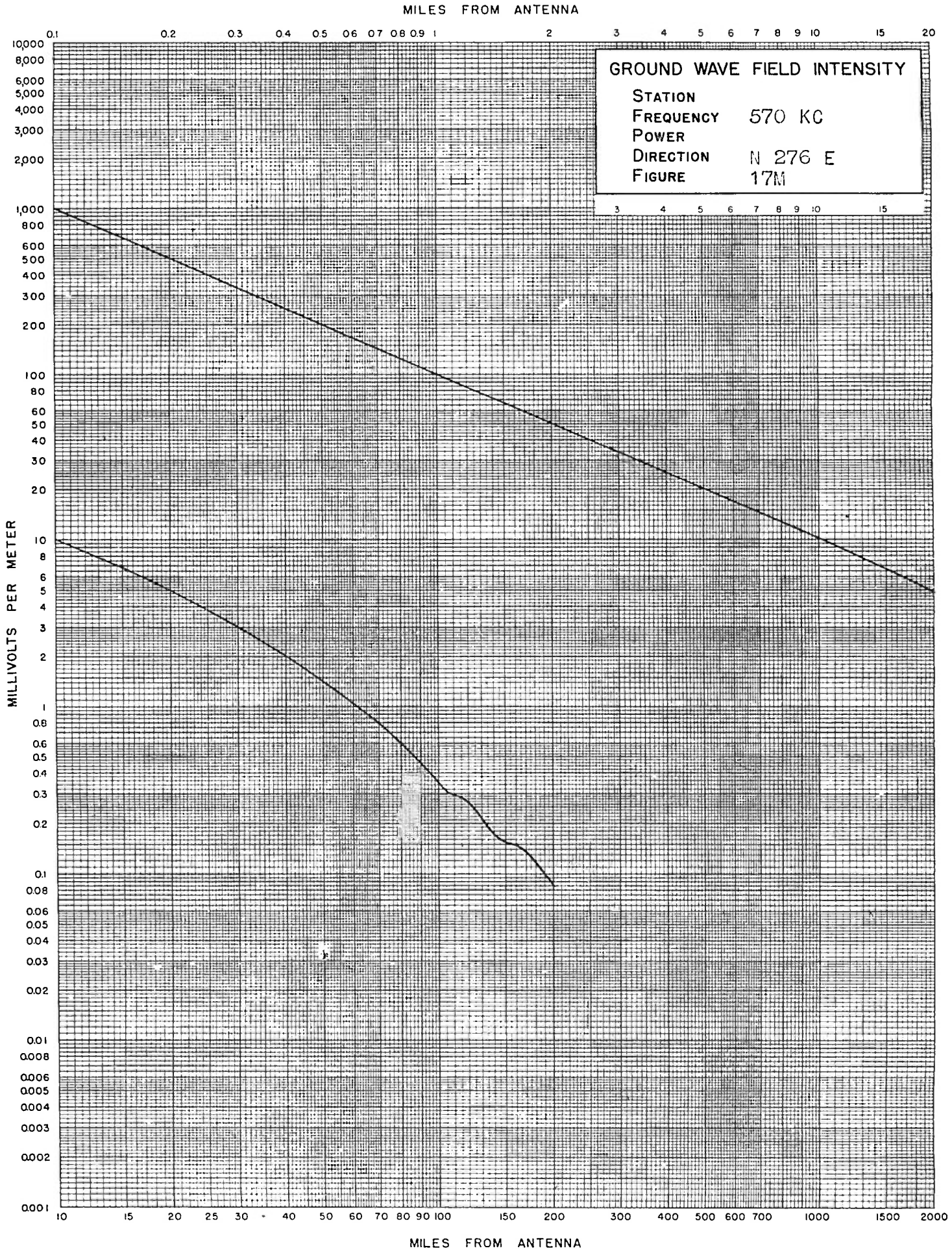


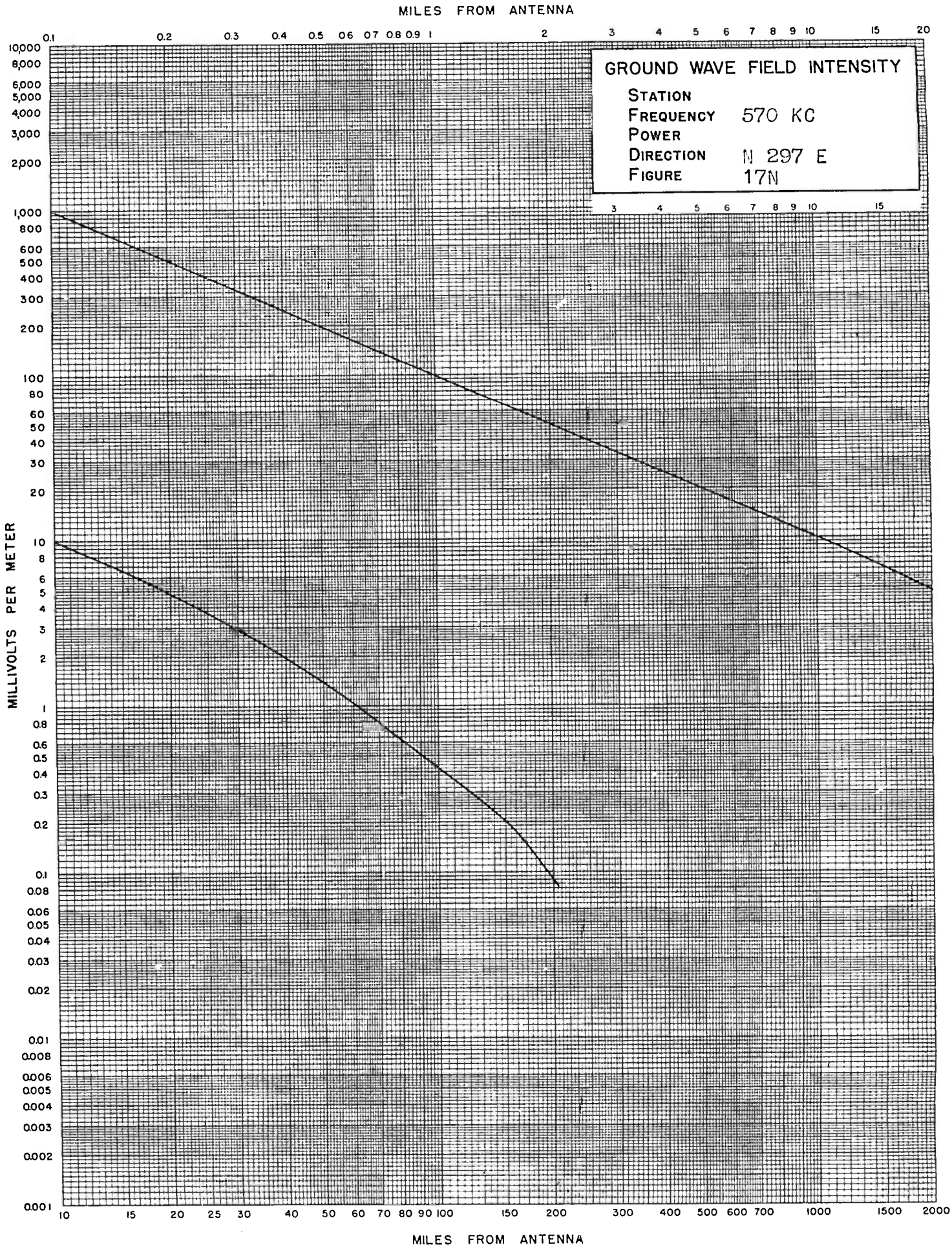


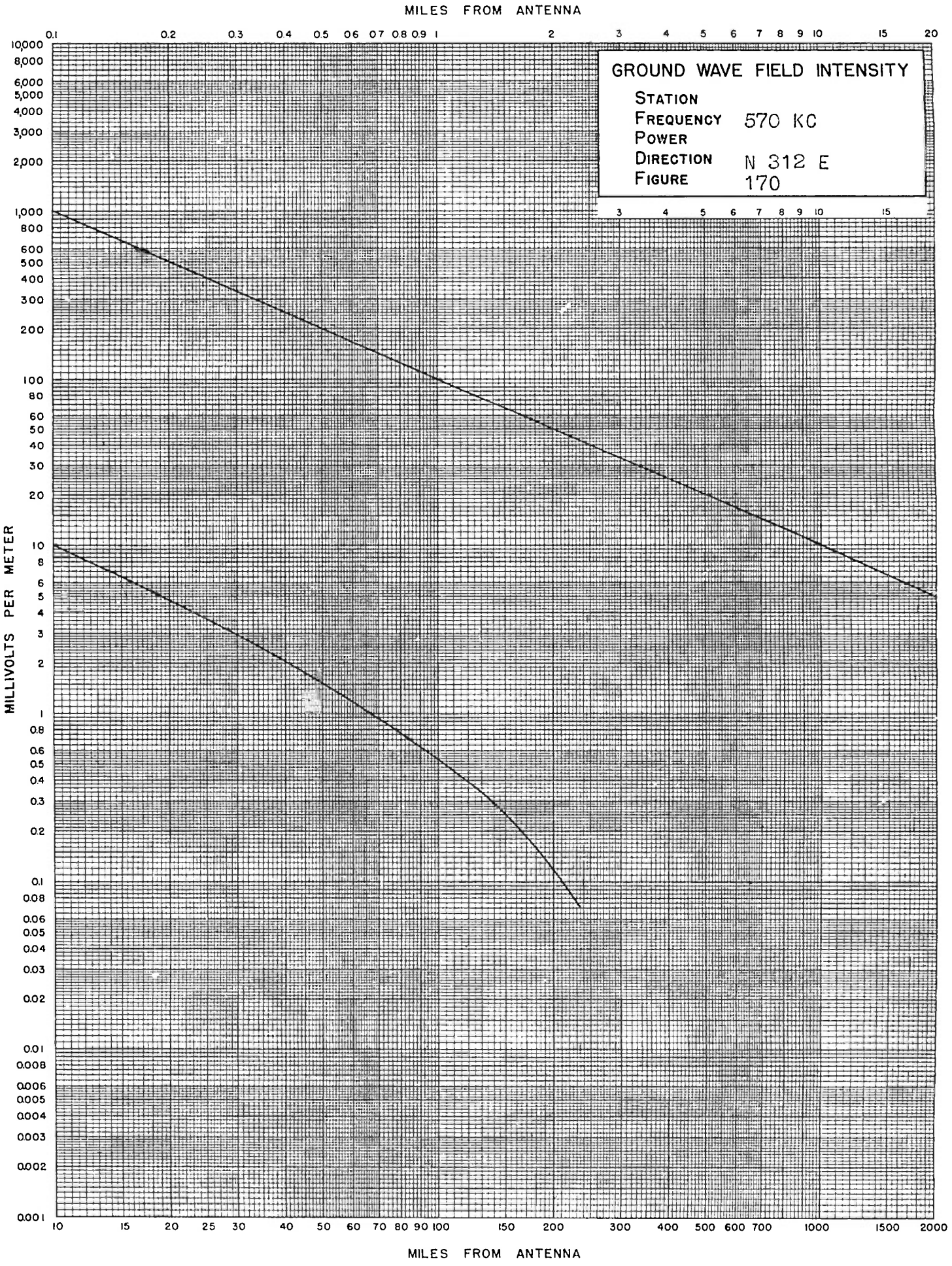


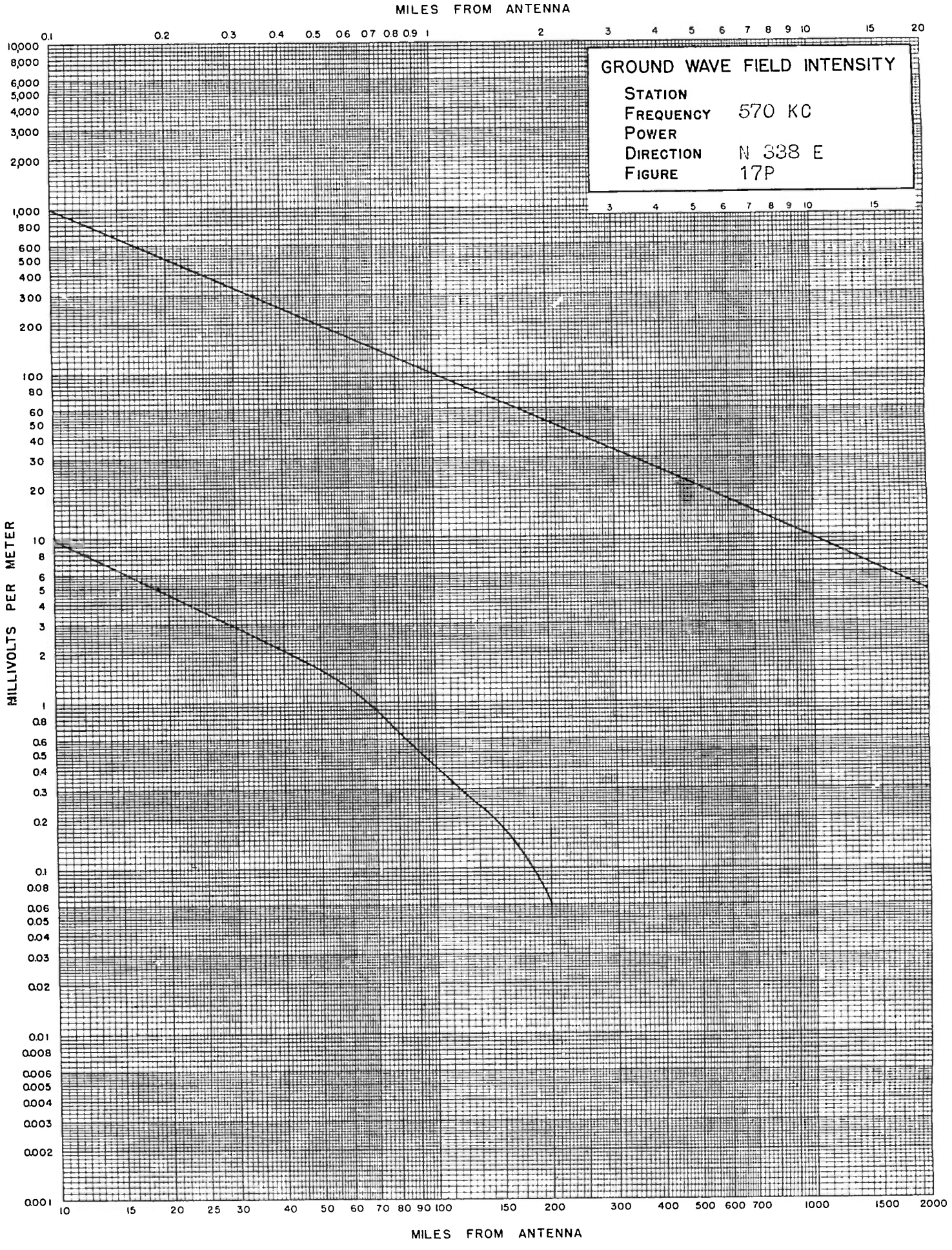












ANSWERS TO QUESTIONS IN FCC FORM 304

The following are the correct answers in connection with this application to questions 14 and 16 through 21 of the Federal Communications Commission Form 304 as revised May, 1944:

14. (a) Type of antenna Directional antennas day and night

(b) Height of vertical lead 643 feet. (Height above base insulator or base if grounded.

(c) Length of flap top (if any) None feet.

(d) Give over-all height (in feet) above ground level 653 feet

(e) Give over-all height (in feet) above mean sea level 1213 feet

(f) Height (in feet) of building or substructure (Distance from ground to base of antenna) 10 feet

(g) Type (uniform cross section, tapered, etc., guyed or self-supporting)

Guyed, uniform cross section

(h) If not fully described above, give complete details or attach

sketch See attached Engineering Statement

(i) Counterpoise (if used): Type and dimensions Does not apply

(j) Antenna ground (if used): How obtained 240 radials, 65 feet long, equally spaced about each tower and buried 2 to 4 inches. 120 alternate radials extended to 650 feet or point of overlap and buried 6 to 12 inches.

(k) How is antenna excited (shunt or series)? series

(l) Sketch showing dimensions of property, location of towers, transmitter building and ground system.

16. Proposed location of transmitter: State Texas County Dallas

City or town _____ Street and number _____

3.5 miles southeast of Grapevine, Texas, on State Highway 114

471124

FIGURE 18A

North latitude: Degrees 32, Minutes 54, Seconds 40

West longitude: Degrees 97, Minutes 01, Seconds 33

17. Number of Standard or high frequency broadcast stations by call letters located within various distances of proposed location of transmitter is as follows:

1 mile WBAP-WFAA 820-kc — 2 miles None

3 miles None — 8 miles None

18. (a) Name and give location of all AIRPORTS within 10 miles of proposed location of transmitter:

Arlington (Aux.) N. Lat. 32° 49' 30", W. Long. 97° 03' 10";

Irving N. Lat. 32° 50' 00", W. Long. 96° 56' 15"

(b) Give distance from proposed location of transmitter to each of such airports Arlington (Aux.), 6.0 miles; Irving, 7.5 miles

(c) Name and give distance to the center line of any established AIRWAYS within 10 miles of proposed location of transmitter

Green 5	0 miles
Blue 5	8 miles
Red 10	9 miles

19. Attach in triplicate: See attached Engineering Statement

(a) Map or maps having reasonable scales (not less than one-half inch per mile) clearly showing:

(1) Proposed location and present location.

(2) General character of the surrounding area, particularly the retail business, wholesale business, manufacturing, residential, and unpopulated areas (by symbols, cross-hatching, colored crayons, or other means);

(3) The heights of buildings or other structures and terrain elevations in the vicinity of the antenna, indicating the location thereof and any markings for air navigation thereon;

(4) The location of airports, airways, and other known radio stations, including receiving stations, except broadcast or amateur;

(5) The terrain and types of soil.

(b) Aerial photograph or photographs taken of the proposed location of the antenna showing clearly the character of the area within the 250 mv/m contour. (Ordinary photographs will be accepted if they clearly show the terrain to the 250 mv/m contour and are taken in at least eight directions from the site: North, northeast, east, etc.)

20. (a) Attach triplicate map or maps (same map or maps supplied for section 19 (a) may be used) having reasonable scales showing the following: See attached Engineering Statement

(1) The 500, 250, 25, 5 and 2 mv/m contours and for both present and proposed operation.

(2) The present normally protected or interference-free contours of the station (whichever includes the least area--all sources of interference) must be considered in determining interference-free contours 12/ for both day and night operation.

(3) The normally protected contours of the station as proposed by your application for both night and day operation (without regard to interference from other stations).

(4) The interference-free contours of the station as proposed by your application for both night and day operation (if station would be limited inside the normally protected contours by any other station or stations).

(5) The present normally protected or interference-free contours of other stations to which objectionable interference may be caused by operation of the station as proposed by your application.

(6) The interference-free contours of the stations in (5) above considering the interference resulting from the operation of the station as proposed by your application.

(b) Attach statement giving the conductivities, effective field intensities, interference fields and other pertinent data used for determining the contours required above. See attached Engineering Statement

21. As determined by the 1940 U. S. Census:

(a) State the number of persons residing in the following contours:

		500 mv/m	250 mv/m	25 mv/m	5 mv/m	2 mv/m
Proposed:	Night	27	160	422,586	954,131	Does not apply
	Day	19	156	426,437	1,028,087	1,736,343
Present:	Night	53	274	174,651	980,702	Does not apply
	Day	57	244	249,405	984,335	1,772,167

(b) State areas and number of persons residing within the present interference free contours:

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night	2.65	24,400	1,368,278
Day	0.5	95,100	2,990,788

(c) State areas and number of persons residing within the normally protected contours of the station as proposed for both night and day operation (without regard to interference from other stations):

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night	2.5	23,600	1,333,234
Day	0.5	89,100	2,906,995

(d) State areas and number of persons residing within the interference free contours of the station as proposed by your application for both night and day operation (if station would be limited inside the normally protected contours by any other station or stations)

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night	2.65	22,100	1,293,507
Day	0.5	88,300	2,887,944

(e) State areas and number of persons residing within the present normally protected or interference-free contours of other stations to which objectionable interference may be caused by operation of the station as proposed by your application:

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night	Does not apply during nighttime		
Day	No substantial change during daytime		

(f) State areas and number of persons residing within the normally protected contours of the stations in (e) above that will lose service by reason of objectionable interference from the station operating as proposed by your application. 15/

	Contour (mv/m)	Area (Sq. Mi.)	Persons
Night	Does not apply during nighttime		
Day	No substantial change during daytime		

(g) Attach full explanation of methods used in determining the areas and populations.

See attached Engineering Statement