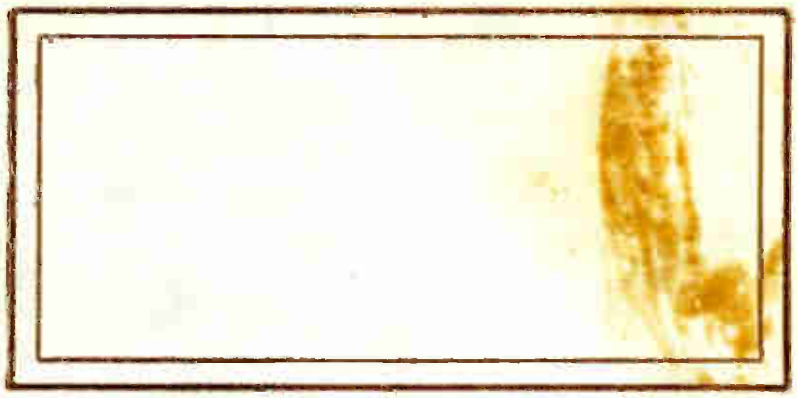


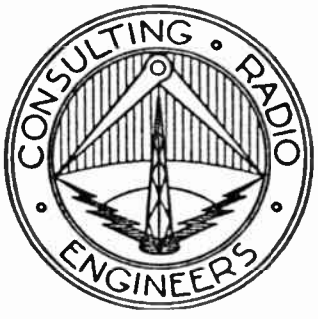
A. D. RING & ASSOCIATES, P.C. WASHINGTON, D.C.

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

710 kHz 50 kW-U DA-2

December 15, 1986



Section V-A

AM Broadcast Engineering Data

Name of Applicant: Mambisa Broadcasting Corporation

1. Purpose of Authorization applied for:

- ☐ Construct a new station
- ☐ To make changes in one of the following:
- ☐ Antenna system (including increase in height by addition of FM or TV antenna)
- ☐ Main studio location point outside the city limits and not at transmitter site.
- ☐ Station location to a different city or town
- ☐ Transmitter location
- ☐ Hours of operation
- ☐ Power
- ☐ Frequency
- ☐ From DA to Non-DA
- ☐ From Non-DA to DA
- ☒ Other (summarize briefly the nature of the changes proposed) Delete one monitored radial bearing. Change four monitored radial bearings

2. Facilities requested: *

Frequency 710 kHz

Hours of Operation Unlimited

Power: Night 50 kW. Day 50 kW.

3. Station location:

State: Florida

City or Town: Miami

4. Geographic coordinates (to nearest second). For directional antenna systems use coordinates of the center of array. For single vertical radiator give tower location.

North Latitude 25° 58' 07"

West Longitude 80° 22' 44"

5. Antenna System (including ground or counterpoise)

Non-Directional

☐ Day ☐ Night

Estimated Efficiency: _____ mV/m/kW/ at one Kilometer.

If antenna is either top loaded or sectionalized, describe fully in attached Exhibit No. _____.
(include apparent electrical height).

Directional

- ☐ Day only (DA-D)
- ☐ Night only (DA-N)
- ☐ Same constants and power day and night (DA-1)
- ☒ Different constants or power day and night (DA-2)
- ☐ Different constants or power night and critical hours (DA-3)

Submit complete engineering data in accordance with Section 73.150 of the Commission's Rules for each Directional Antenna pattern proposed. *

Type of feed circuits (excitation): ☒ Series feed ☐ Shunt feed ☐ Other (explain)

Height of complete radiator above base insulator, or above base if grounded. * ft.

Overall height above ground (without obstruction lighting) * ft.

* On File - No change from authorized operation

If not fully described above, attach as Exhibit No. * further details and dimensions, including any other antennas mounted on tower and associated isolation circuits.

Attach as Exhibit No. * a plat of the transmitter site showing boundary lines, roads, railroads, other obstructions, and the ground system or counterpoise. Show number and dimensions of ground radials or, if a counterpoise is used, show heights and dimensions.

6. Transmitter location: *

State _____ County _____

City or Town _____ Street Address *(or other identification)* _____

7. If the studio will not be within boundaries of the principal community to be served and if the studio is not at the transmitter location, attach as Exhibit No. * justification pursuant to Section 73.1125 of the Commission's Rules.

8. Attach as Exhibit No. * a sufficient number of aerial photographs taken in clear weather at appropriate altitudes and angles to permit identification of all structures in the vicinity. The photographs must be marked so as to show compass directions, exact boundary lines of the proposed site, and locations of the proposed 1000 mV/m contour for both day and night operation. Photographs taken in eight different directions from an elevated position on the ground will be acceptable in lieu of the aerial photographs if the data referred to can be clearly shown.

9. Allocation Studies:

A. For daytime operation, attach as Exhibit No. * map(s), having reasonable scales, showing the 1000, 25, 5, 2 and normally protected daytime contours in mV/m for both existing and proposed operations. For nighttime operation, attach as Exhibit No. * map(s), having reasonable scales, showing the 1000, 25, 2 and the 5 mV/m contours. (RSS nighttime interference-free contour if it is greater than 5 mV/m) for both existing and proposed operations. On the map(s) showing the 25 mV/m, 5mV/m and interference-free contours, clearly indicate the legal boundaries of the proposed community of license and the business and residential areas therein.

B. (1) For daytime operation, attach as Exhibit No. * an allocation study utilizing Figure M-3 of the Commission's Rules or an accurate full scale reproduction thereof and using pertinent field strength measurement data where available, a full scale exhibit of the entire pertinent area to show the following:

(a) Normally protected and the interfering contours for the proposed operation along all azimuths.

(b) Normally protected and interfering contours of existing stations and other proposed stations in pertinent arcs with which prohibited overlap would result as well as those existing stations and other proposals which require study to clearly show absense of prohibited overlap.

(c) The 0.1 mV/m groundwave contour in pertinent arcs of Class 1 stations and appropriate studies to establish compliance with Section 73.187 of the Commission's Rules when operation is proposed on a U.S. Class 1 channel.

(d) Plot of the transmitter location of each station or proposal requiring investigation, with identifying call letters, file numbers, and operating or proposed facilities.

(e) Properly labeled longitude and latitude degree lines, shown across entire exhibit.

*On File- No change from authorized operation

B. (2) For daytime operation, attach as Exhibit No. * , a tabulation of the following:

(a) Azimuths along which the groundwave contours were calculated for all stations or proposals shown on allocation study exhibits required by B(1).

(b) Inverse distance field strength used along azimuth.

(c) Basis for ground conductivity utilized along azimuths specified in (2)(a). If field strength measurements are used, the measurements must be either submitted or be properly identified as to location in Commission files.

C. For nighttime operation, attach as Exhibit No. * , allocation data including the following:

(1) Proposed nighttime limitation to other existing or proposed stations with which objectionable interference would result, as well as those other proposals and existing stations which require study to clearly show absence of objectionable interference.

(2) All existing or proposed nighttime limitations which enter into the nighttime R.S.S. limitation of each of the existing or proposed facilities investigated under C(1) above.

(3) All existing and proposed limitations which contribute to the R.S.S. nighttime limitation of the proposed operation, together with those limitations which must be studied before being excluded.

(4) A detailed interference study plotted upon an appropriate scale map if a question exists with respect to nighttime interference to other existing or proposed facilities along bearing other than on a direct line toward the facility considered.

(5) The detailed basis for each nighttime limitation calculated under C(1), (2), (3) and (4) above.

10. Is the population within the 1 V/m contour less than 300 persons or less than 1.0 percent of the population within the 25 mV/m contour?

☒ YES ☐ NO

11. Attach as Exhibit No. * a map (7.5 minute U.S. Geographic Survey topographic quadrangles if available) of the proposed antenna location showing the following information:

A. Proposed transmitter location accurately plotted with the latitude and longitude lines clearly marked and showing a scale of statute miles.

B. Heights of buildings or other structures and terrain elevations in the vicinity of the antenna, indicating the location thereof.

C. Transmitter location and call signs of all non-broadcast radio stations (except amateur and citizens band), established commercial and government receiving stations in the general vicinity which may be adversely affected by the proposed operation.

D. Transmitter location and call letters of all AM, FM and TV broadcast stations within 2 miles of the proposed antenna location.

* On File- No change from authorized operation

12. Environmental Statement, See Part 1, Subpart 1 of the Commission's Rules.

Would a Commission grant of your application be a major action as defined by Section 1.1305 of the Commission's Rules. ☐ YES ☒ NO

If Yes, submit as Exhibit No._____ the required statement in accordance with Section 1.1311 of the Commission's Rules.

If No, – explain briefly.

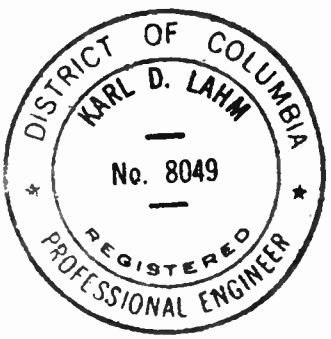
No change from authorized operation

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

December 15, 1986
(Date)

Karl D. Lahm
Name

Signature (Check appropriate box below)



1140 19th Street, N.W., Suite 500
Address (Include ZIP Code)

Washington, D.C. 20036

(202) 223-6700
Telephone No. (Include Area Code)

☐ Technical Director
☐ Chief Operator
☐ Other (specify)

☒ Registered Professional Engineer
☒ Technical Consultant

ENGINEERING EXHIBIT
APPLICATION FOR CONSTRUCTION PERMIT

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

710 KHZ 50 KW-U DA-2

ENGINEERING STATEMENT

Mambisa Broadcasting Corporation (MBC), licensee of AM broadcast station WAQI, Miami, Florida hereby proposes changes in the assigned monitored radial bearings pertaining to its directional antenna systems. Specifically, deletion of the requirement for monitoring in one direction and a change in bearing for four directions are requested. Grant of the instant application will permit final action on the complete proof of performance for the WAOI directional arrays, which is being submitted simultaneously.

Monitored Direction Deletion

It is requested that the requirement to monitor the radial bearing 92 degrees True be deleted. This bearing corresponds to the center of the secondary lobe of the nighttime radiation pattern and is directed straight out into the Atlantic Ocean. No cochannel station is located in this direction or between it and the adjacent monitored radial bearings, 20.5 and 120 degrees True.

Changed Radial Bearings

For daytime operation, WAQI must monitor the 220 degree True radial bearing. The actual radiation pattern minimum is located one degree away, at 221 degrees True. The actual minimum bearing was used in the current Proof of Performance. Consequently, it

is requested that the 220 degree assignment be changed to 221 degrees.

For nighttime operation, WAQI is required to monitor the radial bearings 330, 340, and 350 degrees True. None of these direction corresponds to a theoretical or augmented pattern inflection point (minimum or maximum). They do not define the outer boundaries of a protected cochannel station's contour.

As best as can be determined, the basis for the assignment of these radials was that the 330 degree radial passes just outside the protected 0.5 millivolt per meter (mV/m) skywave service contour of cochannel Class I-B station WOR, New York, the 340 degree radial corresponds to the bearing of tower lines 1-2-3 and 4-5-6, and the 350 degree bearing corresponds to one of the ideal minima caused by the wide-spaced tower pairs of this parallelogram array, the symmetrical mate of the 120 degree monitored bearing. Figure 1 illustrates the placement of these bearings with respect to the WOR protected skywave service area. Of the entire 52 degree sector of protection to WOR, these bearings span only 19 degrees.

Near the WAQI transmitter site, these three directions pass over largely uninhabited, inaccessable swampland. The original 1965 Proof of Performance utilized close-in measurements taken on a "swamp buggy" for these radials. The 1975 proof of performance included measurements taken within a moving helicopter for these bearings. The Commission's engineering records for this facility demonstrate that accurate measurement and analysis of field strength levels in these directions is exceptionally difficult.

The relevant pattern inflection azimuths throughout the span of protection to the skywave service area of WOR are 333, 0.5, and 20.5 degrees True. The 333 degree bearing corresponds to an tiny minor lobe, while the 0.5 and 20.5 degree bearings correspond to pattern nulls. Furthermore, the 0.5 degree bearing

corresponds to the minimum radiation point of the augmented standard pattern. Sufficient measuring locations are accessible by road on the 0.5 and 20.5 degree bearings, eliminating the need for airborne measurements in those directions.

The 333 degree radial passes through the southwestern tip of the WOR protected skywave service area. The 0.5 degree radial passes through the middle of that area. The 20.5 degree radial passes through the southeastern boundary of the WOR protected service area (along the North Carolina Capes) and through the eastern section of Long Island, where WOR provides groundwave service. The relationship of these bearings to the WOR skywave service contour is illustrated by Figure 2. They span 50 degrees of the 52 degree sector of protection toward WOR. Consequently, it is believed that monitoring of these three pattern inflection bearings inherently affords better monitoring of the protection afforded to the WOR service area.

WOR, in pleadings objected to the partial proof of performance for this facility filed September 10, 1985, has expressed its concerns over the sufficiency of the existing radial bearing assignments. Attachment I is a copy of a letter to the undersigned from WOR's engineering consultant attesting to WOR's support of monitoring the 333, 0.5, and 20.5 degree bearings in lieu of the 330, 340, and 350 degree bearings.

It is requested that the 330, 340, and 350 degree monitored bearing assignments be changed to 333, 0.5, and 20.5 degrees, respectively. The latter assignment set better defines the groundwave and skywave protected service areas of cochannel Class I-B station WOR. Those bearings correspond to theoretical pattern inflections (the criterion currently used by the Commission staff in assigning monitored directions), as well as the augmented pattern minimum radiation direction. Sufficient ground locations, accessible by road, are available on two of the three directions, facilitating accurate array adjustment and proof of performance measurements.

Conclusion

The monitored radial bearing changes requested herein will not adversely affect any station or authorization. In fact, their adoption will better assure establishment of adequate protection to Class I-B station WOR, while permitting MBC to perform field strength measurements in a more convenient and accurate manner.

December 15, 1986

A. D. RING & ASSOCIATES, P. C.

Karl D. Lahm, P.E.
Registration Number 8049
District of Columbia

Attachment I

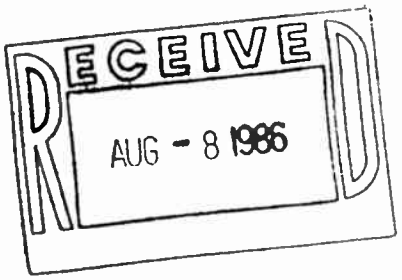
SMITH AND POWSTENKO

BROADCASTING AND TELECOMMUNICATIONS CONSULTANTS

WASHINGTON, D. C. 20036

NEIL M. SMITH
GEORGE A. POWSTENKO
JEANNE F. SMITH
KEVIN T. FISHER

August 6, 1986



Mr. Karl D. Lahm
A. D. RING & ASSOCIATES, P.C.
Suite 500
1140 Nineteenth Street, N.W.
Washington, D. C. 20036

Dear Karl:

On behalf of RKO General, Inc., licensee of WOR, New York, New York, this is to advise you that WOR agrees with your plan for WAQI, Miami, Florida, as described in your letter of July 3.

WOR is a Class I-B station on 710 kHz, and WAQI operates as a Class II station on that channel. At present, WAQI is required to measure and monitor three radials toward the WOR secondary service area: 330° T, 340° T, and 350° T. Under your proposal, WAQI would instead measure and monitor at 333° T, 0.5° T, and 20.5° T. I believe that your proposal would better assure the protection of WOR while minimizing measurement difficulties for WAQI.

If I can be of assistance in your dealings with the Commission on this matter, please let me know.

Best regards,

Neil M. Smith

NMS/dee

cc: Mr. George J. Capalbo
Mr. Paul Stewart

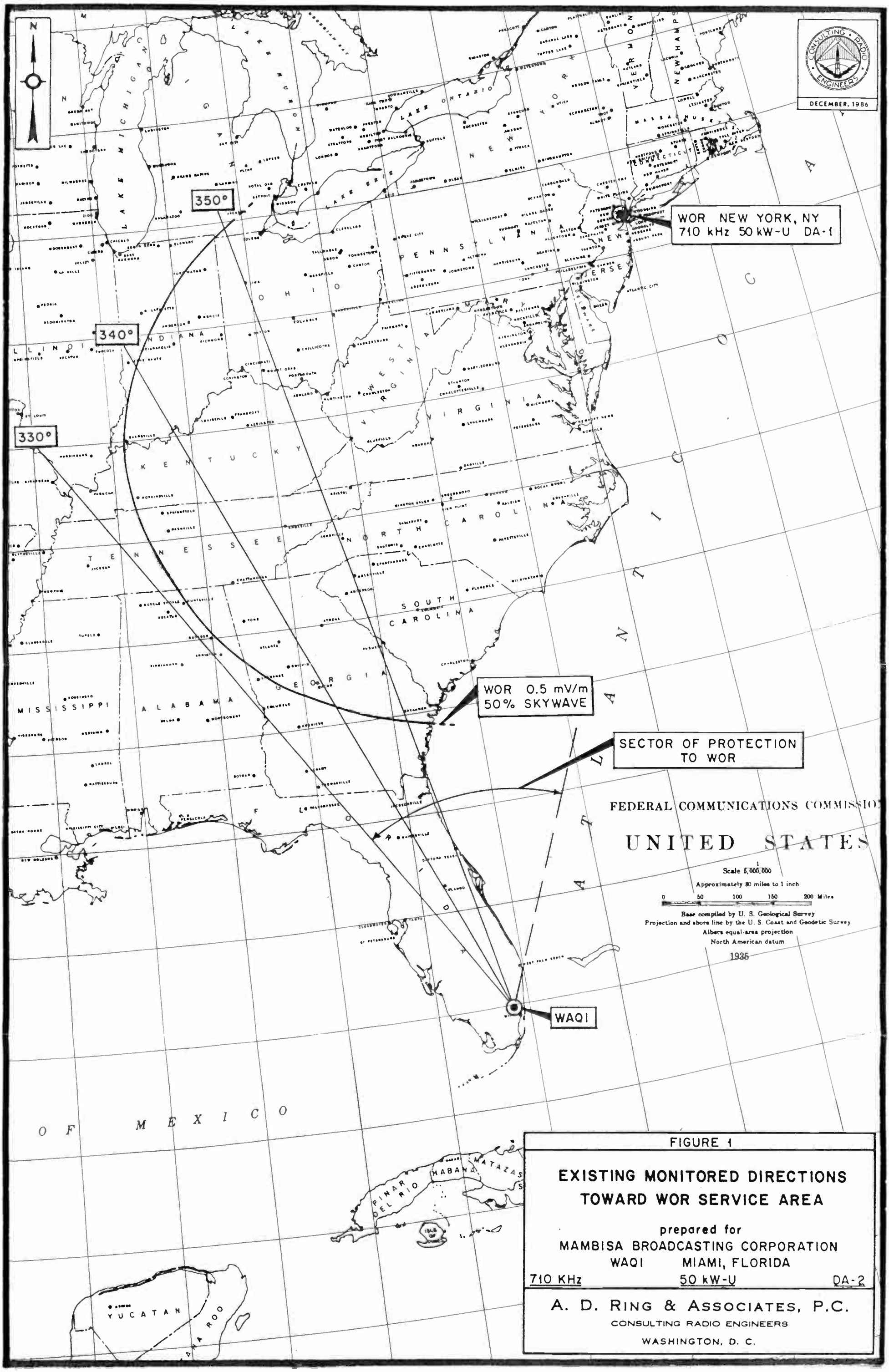


FIGURE 1

EXISTING MONITORED DIRECTIONS TOWARD WOR SERVICE AREA

prepared for

MAMBISA BROADCASTING CORPORATION

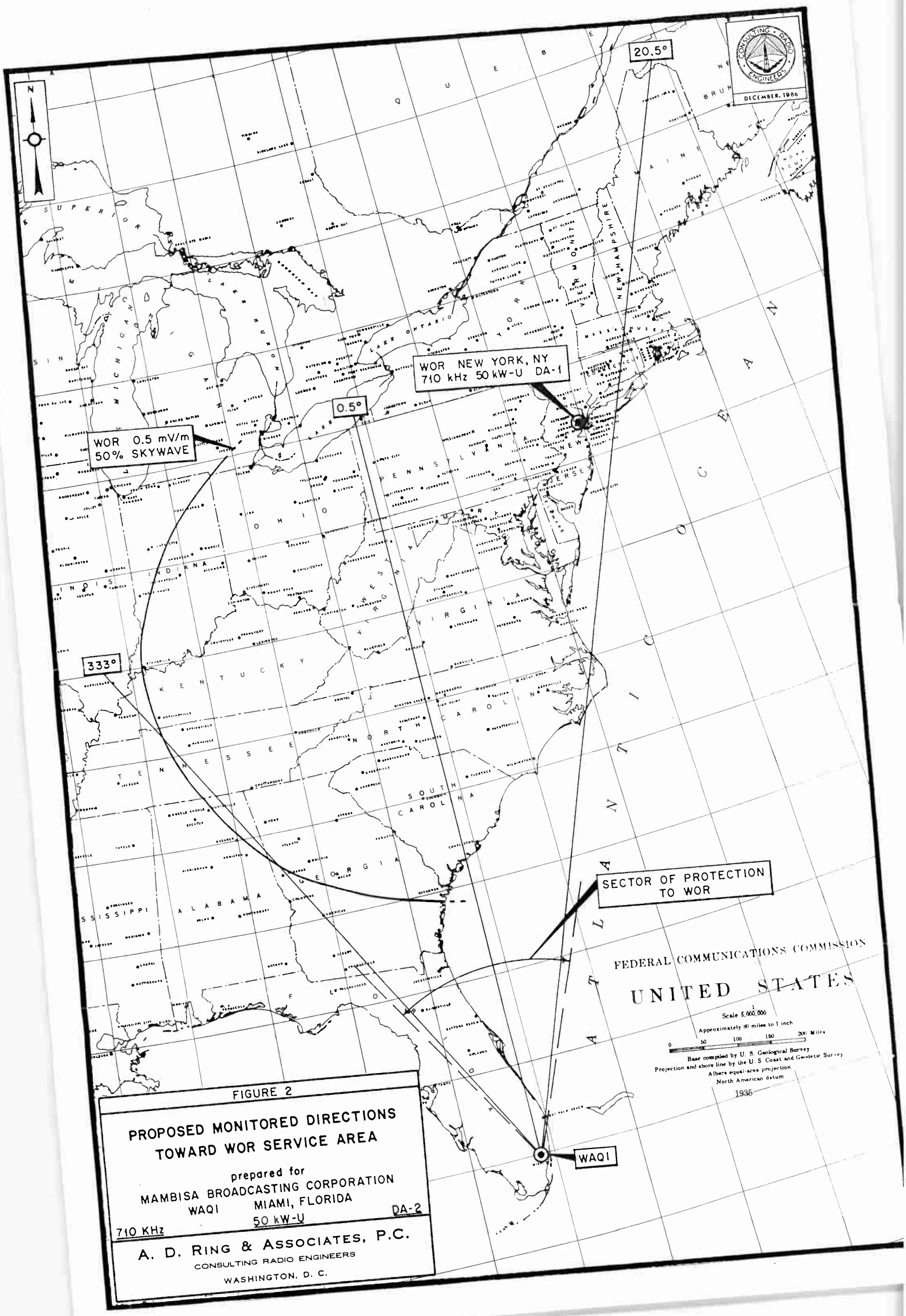
WAQI MIAMI, FLORIDA

710 KHz 50 kW-U DA-2

A. D. RING & ASSOCIATES, P.C.

CONSULTING RADIO ENGINEERS

WASHINGTON, D. C.



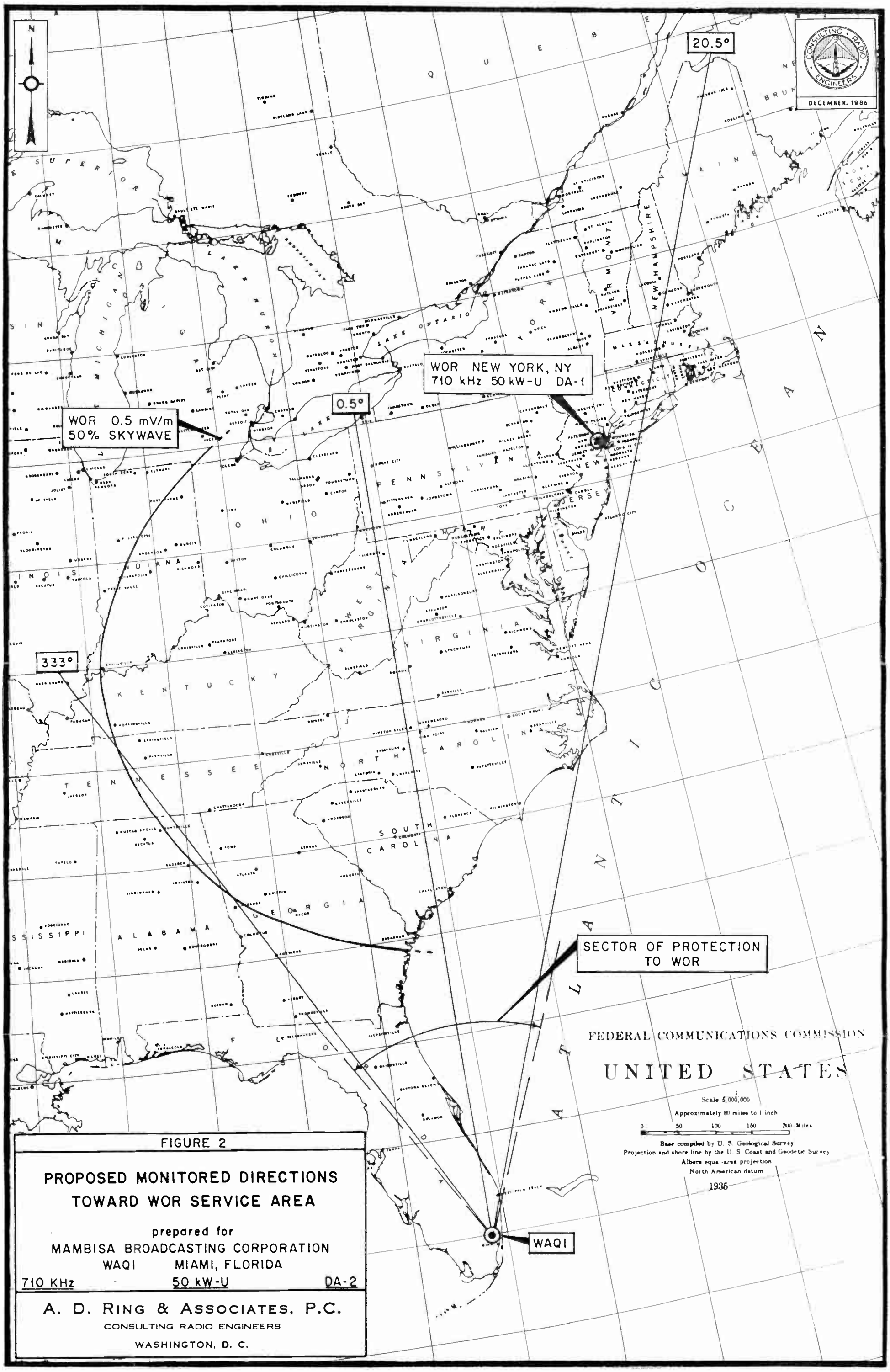


FIGURE 2

PROPOSED MONITORED DIRECTIONS TOWARD WOR SERVICE AREA

prepared for

MAMBISA BROADCASTING CORPORATION

WAQI MIAMI, FLORIDA

710 KHz 50 kW-U DA-2

A. D. RING & ASSOCIATES, P.C.

CONSULTING RADIO ENGINEERS

WASHINGTON, D. C.

ENGINEERING EXHIBIT
APPLICATION FOR MODIFICATION OF LICENSE
COMPLETE PROOF OF PERFORMANCE

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

710 kHz 50 kW-U DA-2

TABLE OF CONTENTS

Engineering Exhibit Summary	
FCC Form 302	
Engineering Statement	
Table I	Antenna System Operating Parameter Data
Table II	Analyzed Unattenuated Field Strength Summary
Figure 1	Measured Nondirectional Radiation Pattern
Figure 2	Daytime Directional Measured Radiation Pattern
Figure 3	Nighttime Directional Measured Radiation Pattern
Figure 4	Monitor Point Location Map
Figures 5 A-I	Monitor Point Photographs and Descriptions
Tables III A-N	Close-In Nondirectional Measured Field Strength Data
Tables IV A-I	Daytime Directional Measured Field Strength Data and Numerical Analysis
Tables V A-M	Nighttime Directional Measured Field Strength Data and Numerical Analysis
Figures 6 A-N	Nondirectional Measured Field Strength Graphs

TABLE OF CONTENTS (Continued)

Figures 7 A-I	Daytime Directional Measured Field Strength Graphs
Figures 8 A-M	Nighttime Directional Measured Field Strength Graphs
Figures 9 A-V	Field Strength Measurement Location Maps
Figure 10	STL Receive Antenna
Appendix i	Detuning of Unused Towers
Appendix ii	Evaluation of Seasonal Conductivity Changes
Appendix iii	Airborne Field Strength Measurement Method
Appendix iv	Field Strength Measurement in the Presence of Significant Cochannel Interference
Appendix v	Geometric Measurement Distortion (Proximity) Correlation Method

Engineering Exhibit Summary

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

710 kHz 50 kW-U DA-2

WAQI has completed replacement of its seven antenna towers. Complete proof of performance data is set forth herein establishing that the WAQI directional antenna system has been adjusted to comply with the radiation requirements of the authorized standard radiation pattern. A companion application for construction permit is being filed simultaneously to request reassignment of monitored radial bearings to those employed in the instant proof of performance, which correspond to theoretical pattern minima and maxima and address concerns raised by cochannel station WOR, New York, N.Y. Grant of the instant application would not constitute a "major environmental action" as defined by Section 1.1305(d) of the Commission's rules.

Name of Applicant

Mambisa Broadcasting Corporation

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

		Answer Items
☐	Station License	1-9
☒	Direct measurement of power	1, 2, 6, 7, 8 and 10

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit	Frequency	Hours of operation	Power in kilowatts	
				Night	Day
WAQI	(Application filed Concurrently)	710	U	50	50

2. Station location

State	City or town
Florida	Miami

3. Transmitter location *

State	County	City or town	State address (or other identification)

4. Main Studio location *

State	County	City or town	Number and Street

5. Remote control point location (only if authorized) *

State	City or town	Street address (or other identification)

6. Operating constants:

RF common point or antenna current without modulation for night power in amperes	RF common point or antenna current without modulation for day power in amperes
32.4	32.4

Actual measured antenna or common point *resistance* (in ohms) at operating frequency	Actual measured antenna or common point *reactance* (in ohms) at operating frequency
Night 50 Day 50	Night 0 Day 0

Antenna monitor indication for directional operation

Tower	Phase reading in degrees		Antenna base current		Antenna monitor sample current ratio	
	Night	Day	Night	Day	Night **	Day
1-W	+ 113.5	0.0	14.1	38.7	0.528	1.00
2-SW	0.0	-141.0	26.5	12.4	1.000	0.33
3-5 Night 7-NW Day	- 109.5	+ 13.0	11.3	10.2	0.428	0.26
4-N	- 169.0	N/A	9.4	N/A	0.346	N/A
5-NE	+ 78.0	N/A	17.5	N/A	0.651	N/A
6-E	- 38.0	N/A	8.55	N/A	0.317	N/A

Manufacturer and type of antenna monitor:

Potomac Instruments AM-19(204) S/N with PMA-19 S/N 133

** PMA Direct Reading

7. Description of antenna system

(If directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary. Height figures should not include obstruction lighting.)

Type radiator	Height in feet of complete radiator above base insulator, or above base if grounded. *	Overall height in feet above ground (without obstruction lighting) *	If antenna is either top loaded or sectionalized, describe fully in Exhibit No. —
Uniform Cross-section, Guyed			STL receive antenna at 330 ft. tower #5.

Excitation ☒ Series ☐ Shunt

* On File, No Change

Geographic coordinate to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North latitude ° ' " West longitude ° ' "

If not fully described above, attach as Exhibit No. Eng further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Also, if necessary for a complete description attach as Exhibit No. Enga sketch of the details and dimensions of ground system.

8. Antenna resistance measurement

Attach as Exhibit No. Eng. the following:

(a) Qualifications of persons taking measurements.

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

(c) Full description of method used to make measurements.

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

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

(f) Table of complete data taken.

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

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

None

10. Give reasons for the change in antenna or common point resistance.

Replacement of all towers, installation of STL receive antenna on tower #5, complete readjustment of antenna system.

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Date December 17, 1986

Name Karl D. Lahm
(Please Print or Type)

(202) 223-6700
Telephone No. (Include Area Code)

Signature
(Check appropriate box below)

1140 19th Street, N.W.
Address (Include ZIP Code)

Washington, D.C. 20036

DISTRICT OF COLUMBIA
KARL D. LAHM
No. 8049
REGISTERED PROFESSIONAL ENGINEER

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☒ Technical Consultant

☐ Other (specify)

ENGINEERING STATEMENT

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

710 kHz 50 kW-U DA-2

WAQI has completed replacement of its seven antenna towers, reconfiguration of its antenna monitor sampling system, and readjustment of its directional antenna system. Since the most recent (1975) complete proof of performance was based largely on measurements taken in a moving helicopter, it is understood that the Commission staff will not accept a partial proof of performance in this instance, as would otherwise be the case. Data set forth herein establishes new nominal operating parameters, monitor point locations, and monitor point field strengths. Various pertinent facts regarding the equipment installation are also stated.

Antenna Monitor and Sampling System

The WAQI antenna monitor sampling system consists of Delta Electronics toroidal current transformers sampling the base current of each tower, connected to the Potomac Instruments AM-19(204)/PMA-19 antenna monitor by Andrew FHJ-2-50 phase stabilized coaxial transmission line. The lengths of these lines were measured on site and found to be within one degree of equal length, with the exception of the line to tower #7, which is used only during daytime operation. All lines are subjected to identical environmental conditions. The limited seasonal temperature changes of South Florida assure that the phase change of the tower #7

sampling line attributable to its unequal length remains below 0.5 degrees. This sampling system meets the requirements of the former provisions of Section 73.68 of the Commission's rules.

Table I sets forth complete antenna monitor indication data for both operating modes. For nighttime operation, it is recommended that the deviation indications (digital) and attenuator settings of the PMA-19 Precision Monitor Adaptor (PMA) be considered the most accurate representation of the sample current amplitudes. The PMA direct phase readings should be employed. PMA direct ratio readings are supplied also. For nighttime operation, the AM-19 (analog) monitor indications should not be relied upon.

Adjustment of the Directional Antenna Systems

Tower replacement commenced at WAQI during January of 1986. The nighttime directional antenna system was initially set up by Leonard A. Spragg, P.E. to produce within-limits field strengths at monitor points during March. The daytime system was operating well within limits at that time, with greater than theoretical suppression observed. Adjustment of the daytime directional antenna commenced in May, with ground proof of performance measurements completed in June. Airborne measurements for the daytime system were conducted in August. Tower #7, unused during nighttime operation, was detuned, as detailed in Appendix i. After receipt of equipment which would allow determination of low WAQI field strength in the presence of equal or greater Cuban interference in late August, nighttime antenna system adjustments commenced. Nighttime adjustments and measurements, which were hampered by equipment failures partially caused by lightning damage, were completed in November, 1986.

Nondirectional Operation

All field strength measurements reported herein for nondirectional operation were obtained with tower #1 (W) excited. All other towers were detuned by adjusting a terminating coil at each tower base to obtain a current minimum at one-third the height of each tower.

Nondirectional measurements used in conjunction with the analysis of directional data were taken during the same season as the corresponding directional data. Since several months separated the gathering of daytime and nighttime data, duplicated nondirectional measurements are reported herein. Appendix ii presents a comparison of May/June and October/November nondirectional data for typical radials. Close-in nondirectional measurements used only to determine the nondirectional inverse distance field strength at one mile were not repeated, since conductivity changes would not materially affect the results thereof. Since, for each pattern, the nondirectional reference data is contemporaneous and the data of Appendix ii establishes negligible seasonal conductivity changes, it is believed that the data provided meets the Commission's requirements.

Directional Antenna Performance Data

Table I sets forth theoretical and present adjustment operating parameter data, for both antenna monitor and base current indications. Differences between theoretical and present adjustment values are attributable to the fact that the base feed current, which is sampled, consists of both radiation and tower base capacitance current components.

The nondirectional tower antenna base input resistance was measured. The directional common point resistances were adjusted to match the transmitter. Resistances measured are set forth in Table I. Information concerning methods and results is being provided to the station for retention in its files. Analyzed inverse distance field strengths are summarized in Table II. All inverse distance values are below the limits established by the WAQI authorized standard radiation patterns, as shown.

Measured radiation patterns for nondirectional, daytime directional, and nightiime directional operation are included as Figures 1, 2, and 3. RMS values were computed by polar planimeter measurement of the area contained within the pattern and computation of the equivalent nondirectional radius. Results were checked by numerical integration of the measured field strengths. The measured daytime pattern RMS is 93 percent of the standard pattern RMS, while the nighttime pattern RMS is 92 percent of the standard pattern value, indicating that substantial operating efficiency continues to exist.

Monitor Points

Field strength measurement data obtained throughout the adjustment and measurement cycle was analyzed to determine how well various potential monitor points tracked the field strength analyzed for the radial as a whole. The monitor points chosen herein exhibit the best historical performance, as well as reliable accessibility, for all points available between one and four miles from the transmitter site. For the 20.5 degree radial, the monitor point is located 4.35 miles from the transmitter site, due to the lack of road access to more than one point between two and four miles. Figure 4 shows the monitor point locations and routings to those points from the transmitter site. Photographs and descriptions of each point are included as Figures 5-A through 5-I.

Contemporary photographs and descriptions have been provided for all points, regardless of whether or not they not been changed.

Change of the requirement to monitor the daytime radial bearing 220 degrees True to 221 degrees (the actual location of a radiation minimum) and the nighttime radial bearings 330, 340, and 350 degrees True has been requested in a companion application for construction permit. After discussions with the consulting engineer for RKO General, Inc., licensee of cochannel class I-B station WOR, New York, N.Y., it was agreed to change these radial bearings to 333, 0.5, and 20.5 degrees True, which correspond to theoretical pattern inflection bearings and span a much broader arc of the WOR protected service area, better assuring establishment of interference protection to WOR than do the present radial bearing assignments.

The aforementioned Application for Construction Permit also requests deletion of the requirement to monitor the radial bearing 92 degrees True. This direction corresponds to a strong secondary lobe and is directed into the Atlantic Ocean, toward no cochannel stations. It is believed that monitoring of this direction serves no useful purpose. Consequently, no monitor point description has been provided.

Field Strength Measurements

Field strength measurements were conducted to establish the performance of the directional antenna system in accordance with the standards of Section 73.151 of the Commission's rules. For the daytime pattern, nine radial bearings were selected, corresponding to the pattern minima (35 and 221 degrees), maxima (141 and 308 degrees), -3 dB points (92.5 and 190 degrees), -6 dB point (71 degrees) and intermediate bearings between the minor lobe and minima (0.5 and 277 degrees). For the nighttime pattern, thirteen radial bearings were used, corresponding to the pattern minima (0.5, 20.5,

and 120 degrees), tiny lobes between minima (308 and 333 degrees), the FCC Fort Lauderdale monitoring station (35 degrees), cochannel stations (235 and 277 degrees), the secondary lobe (92.5 degrees), the main lobe (162 degrees), and -3 dB points (71, 141, and 190 degrees). An Application for Construction Permit is being filed simultaneously requesting reassignment of the monitored radial bearings to those reported herein.

Close-in nondirectional field strength measurement data is detailed by Tables III-A through III-N. Such data was taken by helicopter, using the retractable boom assembly developed by WNOE, New Orleans. Appendix iii describes this airborne measurement procedure in some detail. Additional nondirectional data is set forth with corresponding directional data and the analysis thereof in Tables IV-A through IV-I for daytime operation and Tables V-A through V-M for nighttime operation. Measured nondirectional field strengths are plotted on the graphs of Figures 6-A through 6-N.

Daytime directional data and the numerical analysis thereof is presented by Tables IV-A through IV-I. Measured daytime field strengths are plotted on the graphs of Figures 7-A through 7-I. Where sufficient measurement locations could not be accessed on the ground (along the 190, 221, 277, and 308 degree radials), airborne measurements were conducted, as noted. The airborne measurement locations reported were selected from field-versus-time (distance) chart recordings to provide, when combined with the ground locations, a relatively uniform spacing of points versus distance.

Nighttime directional data and the numerical analysis thereof is presented by Tables V-A through V-M. Once again, airborne measurements were required on those radials (190, 235, 277, 308, and 333 degrees) where sufficient points could not be accessed on the ground. The directional field strength in directions of high radiation suppression was of the same order of magnitude as cochannel interference from Cuba. In such directions, airborne

measurements were terminated where the field strength was low enough to result in inaccuracy due to interference. Airborne measurement locations were selected from field-versus-time (distance) chart recordings to result, when combined with ground locations, in a relatively uniform spacing of points versus distance. Nighttime field strength data is illustrated graphically by the plots of Figures 8-A through 8-M. Measurements were made by Timothy Sawyer of this firm and independent subcontractors Charles N. Miller, P.E., Michael Perryman, and Paul L. Whitney, whose qualifications are a matter of record with the Commission, under the direction of the undersigned. The field strength meter types, serial numbers, and calibration dates are:

Manufacturer & Type	Serial	Calibration Date
Potomac Instruments FIM-21	105	March 20, 1986
Potomac Instruments FIM-21	524	January 6, 1986
Potomac Instruments FIM-41	463	April 3, 1984
Potomac Instruments FIM-41	512	March 20, 1986
Potomac Instruments FIM-41	659	May 24, 1979

Meter serial number 463 was calibrated by the manufacturer for use with a remotely located loop antenna and was used exclusively for helicopter measurements. All meters were compared and found to agree within their rated accuracies.

Measurement Point Location

Measurement points were selected to comport with requirements of Section 73.186 of the rules to as great an extent as possible, while at the same time being readily accessible by road. The road structure near WAQI approximates a "one mile grid" structure and several roads have been blocked or their entrances fenced in order

to prevent trash dumping, limiting the number of measurement locations available near the transmitter site. Nondirectional field strength measurements were taken at least 0.4 mile away from the transmitter site and directional measurements were commenced 1.4 miles from the transmitter site for the day pattern and approximately two miles from the transmitter site for the night pattern, in accordance with Section 73.186 specifications. In those few cases where the use of locations within these distances could not be avoided, geometric proximity effects were accounted for in the analysis of measured data. Field strength measurement locations are illustrated by the maps of Figures 9-A through 9-V.

Measurement Analysis

Nondirectional measurements were analyzed by the graphic analysis technique described in Section 73.186(a)(3) of the rules. Graph 6 of Section 73.184(f) was used in the determination of unattenuated field strength at one mile and the effective ground conductivities. Field strengths so determined were plotted for each radial bearing measured, yielding a measured nondirectional RMS of 950 millivolts per meter at one mile.

The unattenuated field strength at one mile for directional operation was analyzed using the directional to nondirectional logarithmic ratio method. Geometric proximity effects were evaluated for each radial. Where use of proximity correlations changed the analyzed field strength by more than five percent, they were employed, as detailed in Tables V-A through V-M. Proximity effect estimation and correlation was applied using the undersigned's Quadrature Method, as described by Appendix v.

Environmental Considerations

Section 1.1305(d) of the Commission's rules provides that grant of any application would be considered a "major environmental action" if the exposure of workers or the public results in an exposure to levels radio frequency radiation in excess of the "Radio Frequency Protection Guides" recommended in standard ANSI C95.1-1982 of the American National Standards Institute (ANSI). To protect its facilities from vandalism and the public from injury or excessive radiation exposure, WAQI has installed chain-link fences across the access roads to the transmitter site.

A Radiation exposure survey was conducted at the WAQI transmitter site using a Holaday Industries HI-3002 Microwave Energy Meter. The survey revealed that the public is not exposed to excessive energy and that workers are exposed to levels above the ANSI standard within equipment shelters at the tower bases. Station personnel need to access the area within the shelters during station operation only for the purpose of reading the antenna base current meters. This action takes less than one minute and is required not more than weekly, which is predicted to result in an average exposure in compliance with the ANSI standard.

STL Antenna Installation

An STL receiving antenna was installed at tower #5 (NE). Figure 10 illustrates the vertical plan of that tower. The STL coaxial cable is isolated across the tower base by means of an isocupler.

Conclusion

The data detailed herein demonstrates that, in accordance with the Commission's rules, the present adjustment of the WAQI nighttime directional antenna system complies with the radiation limitations of the authorized standard radiation pattern. Revised operating specifications may be issued based on the data set forth herein.

December 17, 1986

A. D. RING & ASSOCIATES, P.C.

Timothy Z. Sawyer

Karl D. Lahm, P. E.
District of Columbia #8049
State of California #E010307

TABLE I

Antenna System Operating Parameter Data

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Operating Power Parameter	Nondirectional Tower #1	Daytime DA Common Point	Nighttime DA Common Point
Antenna input resistance (ohms)	46.5	50.0	50.0
Antenna current (amps)	23.2	32.4	32.4
Antenna input power (kilowatts)	25.0	52.6	52.6

Daytime Directional

Tower Number	Theo. Field Ratio	Ind.* Sample Ratio	Theo. Field Phase (deg)	Ind.* Sample Phase (deg)	Antenna Base Current (amps)	Base Current Ratio
1-W	1.000	1.00	0	0	38.7	1.000
2-SW	0.333	0.33	-134	-141	12.4	0.320
7-NW	0.333	0.26	+174	+13	10.2	0.264

Nighttime Directional

Tower Number	Theo. Field Ratio	Direct Sample Ratio **	PMA-19 Atten. Reading **	Monitor 0 Dev. Ratio **	Theo. Field Phase (deg)	Ind.** Sample Phase (deg)	Antenna Base Current (amps)	Base Current Ratio
1-W	0.504	0.528	11.49	0.527	+112.0	+113.5	14.1	0.532
2-SW	1.000	1.000	6.05	1.000	0.0	0.0	26.5	1.000
3-S	0.504	0.428	14.28	0.424	-112.0	-109.5	11.3	0.426
4-N	0.327	0.346	17.48	0.346	-173.0	-169.0	9.4	0.355
5-NE	0.650	0.651	9.37	0.646	+75.0	+78.0	17.5	0.660
6-E	0.327	0.317	18.99	0.319	-37.0	-38.0	8.55	0.323

* As indicated on Potomac Instruments AM-19(204) antenna monitor, serial number 1023

** As indicated on Potomac Instruments PMA-19 precision monitor, serial number 133

TABLE II

ANALYZED FIELD STRENGTH SUMMARY

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

UNATTENUATED FIELD STRENGTH AT ONE MILE

Radial Bearing	Nondirectional 25 kW Tower #1	Daytime Directional			Nighttime Directional		
		Analyzed		Authorized	Analyzed		Authorized
(deg)	(mV/m)	(mV/m)		(mV/m)	(mV/m)		(mV/m)
0.5	900	928		1030	12.6	*	15.0
20.5	950				14.4	*	25.1
35	900	468	*	524	81.3		122
71	950	1025		1096	1010		1196
92.5	1000	1510		1628	1600		1718
120	1000				522	*	894
141	950	2120		2260	2180		2533
162	950				3430		3665
190	950	1550		1570	1930		2197
221	1000	1190	*	1348			
235	1000				339	*	450
277	1000	1170	*	1379	125	*	195
308	950	1160		1355	35.4	*	50.0
333	900				19.1	*	21.7
RMS	950	1350		1452	1320		1433

* Monitored direction

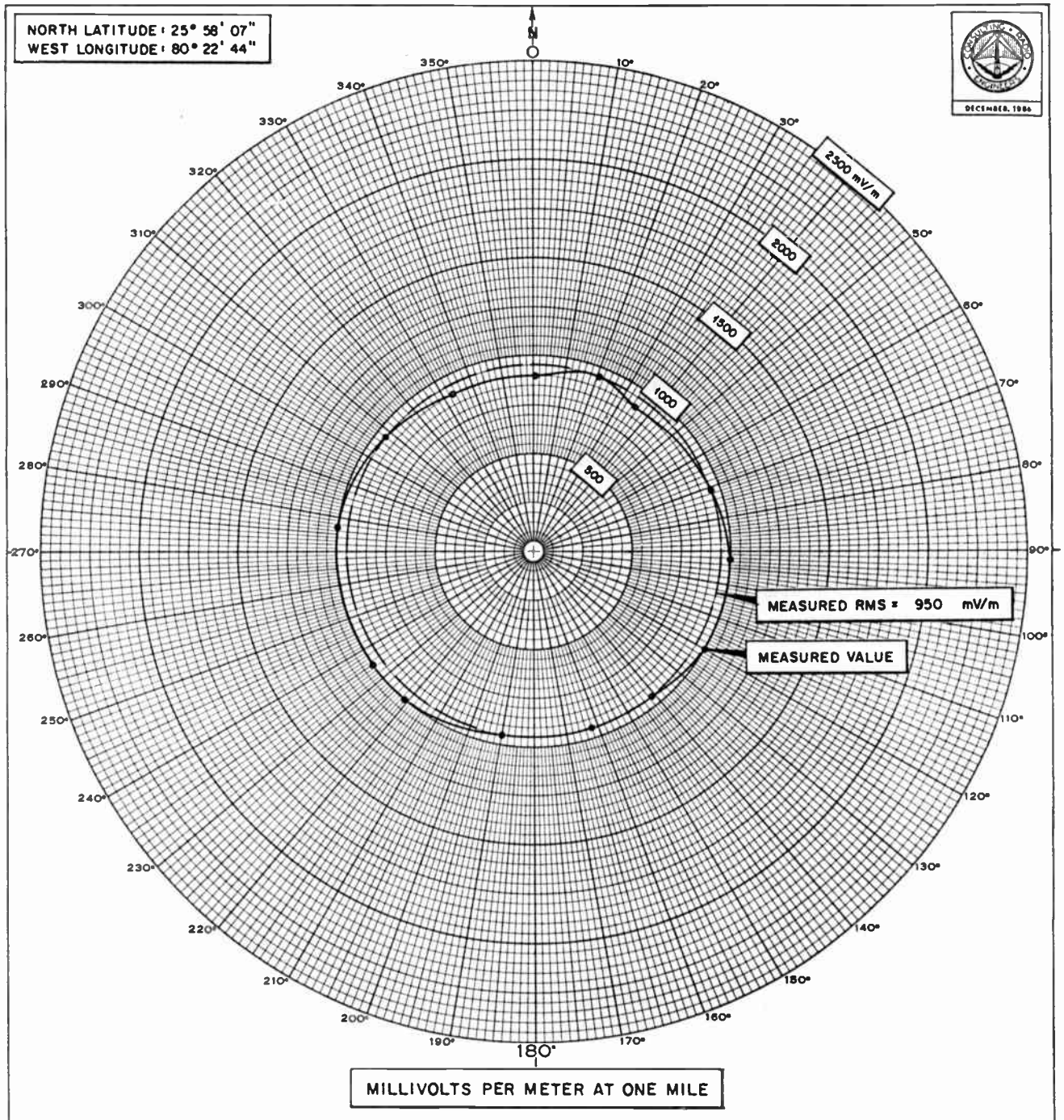


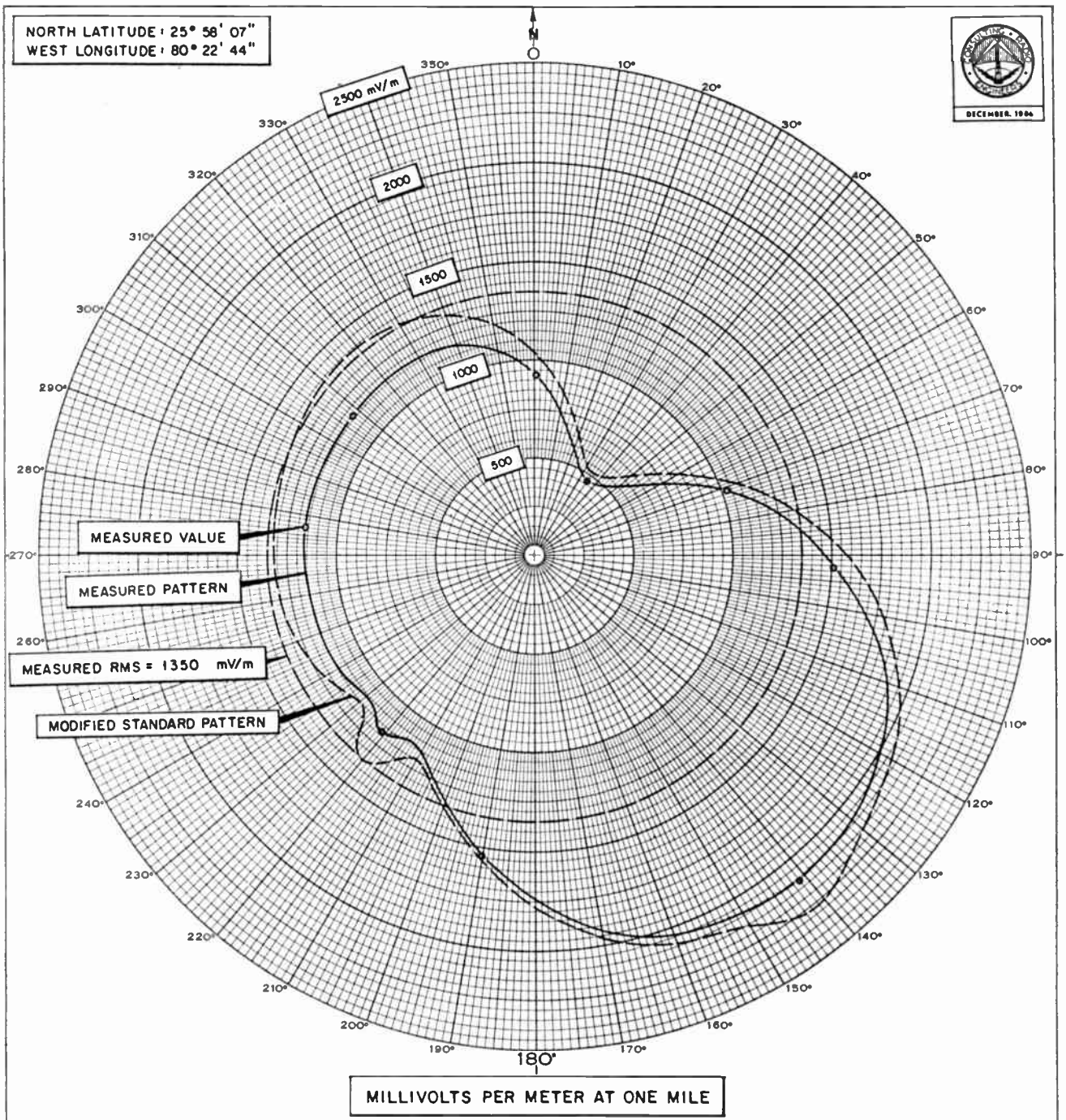
FIGURE 1

TOWER #1 (W)
NON-DIRECTIONAL RADIATION PATTERN

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.



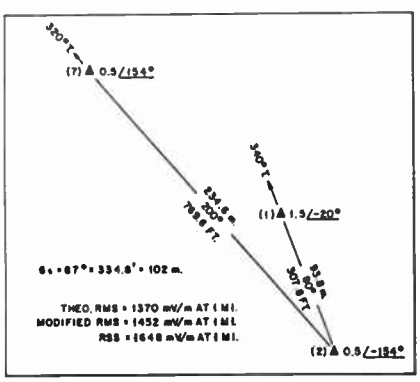


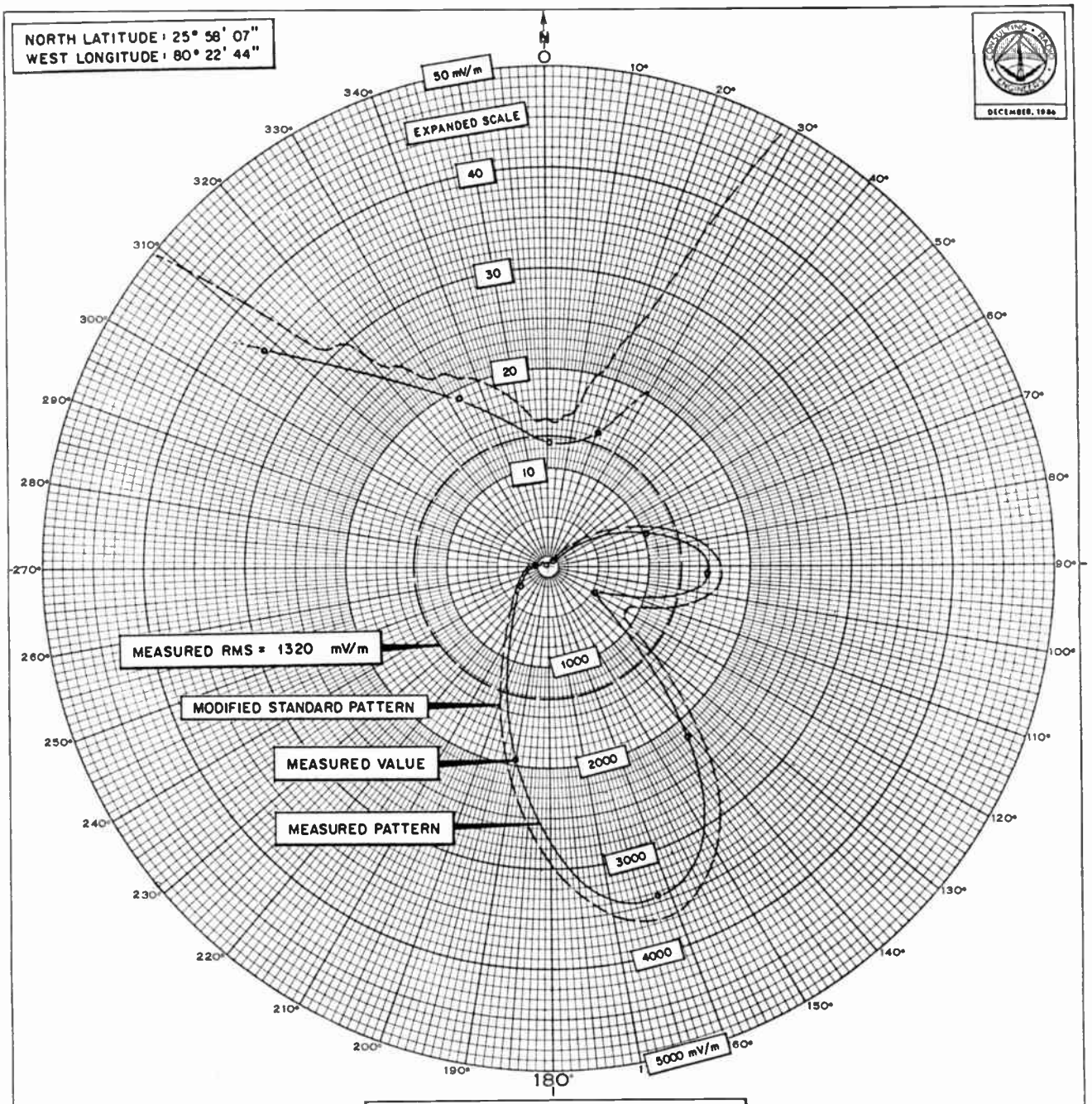
FIGURE 2

DAYTIME DIRECTIONAL MEASURED RADIATION PATTERN

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.



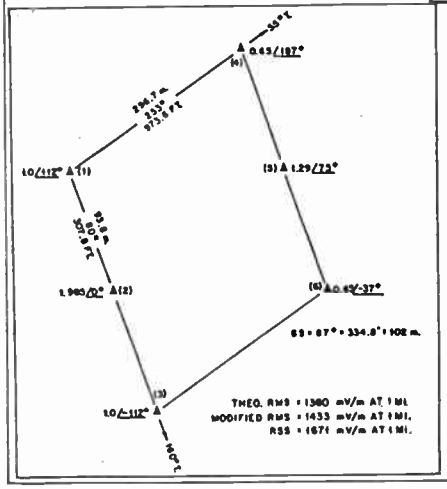


FIGURE 3

NIGHTTIME DIRECTIONAL MEASURED RADIATION PATTERN

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

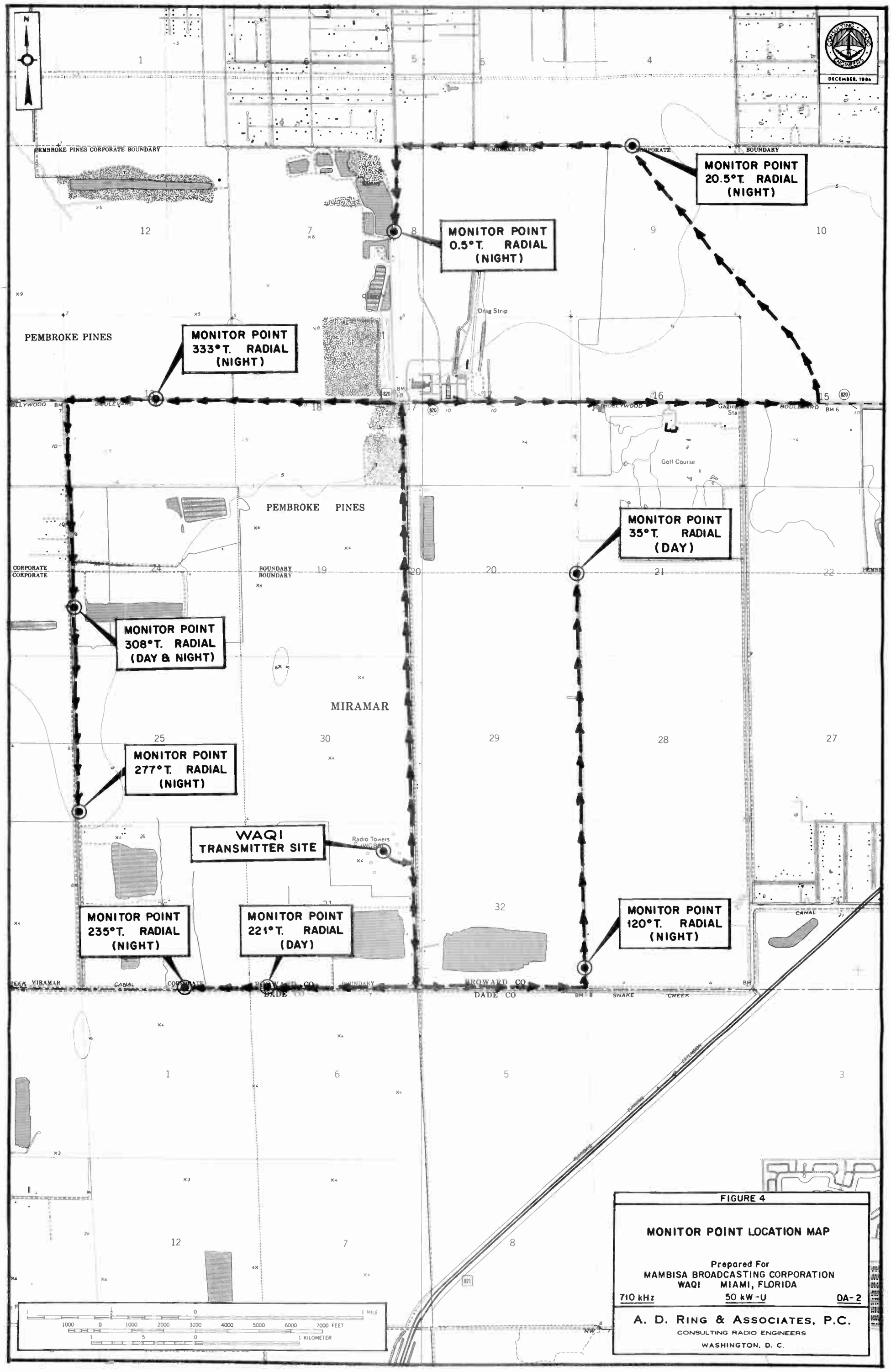


FIGURE 4

MONITOR POINT LOCATION MAP

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz 50 kW-U DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

FIGURE 5-A

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Nighttime 0.5 Degree Monitor Point

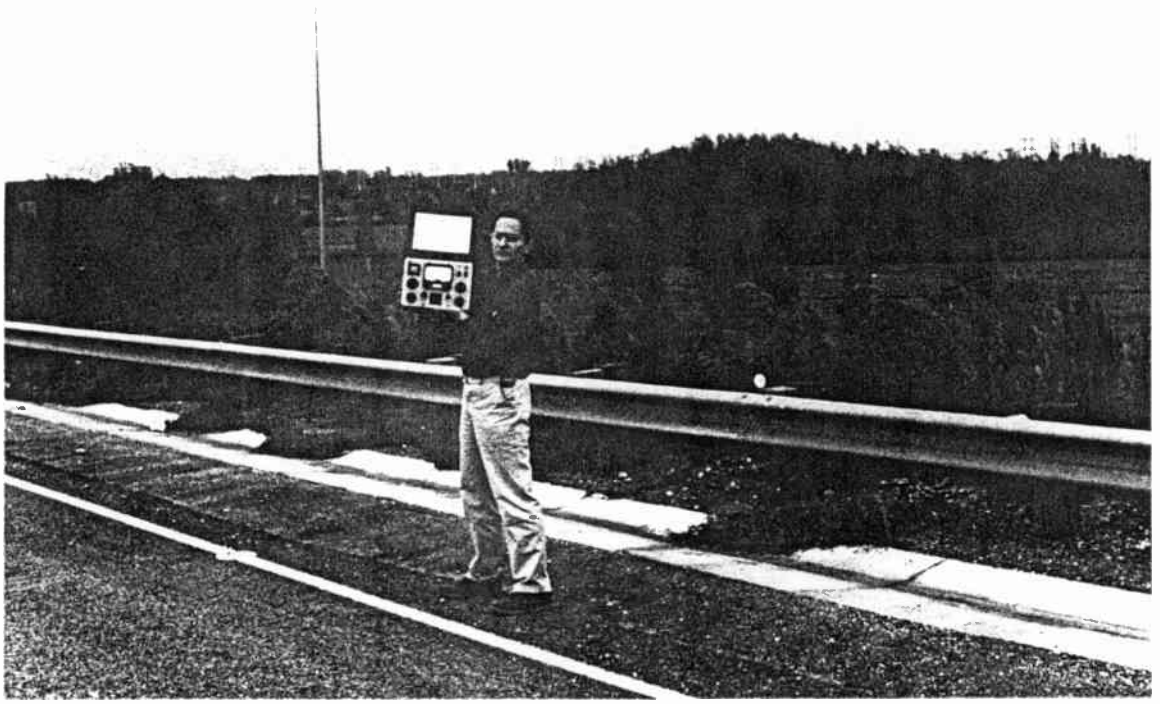
From the transmitter driveway, proceed north on NW 172nd Avenue for a distance of 2.75 miles (4.4 km.) to Hollywood Blvd (Pines Blvd). Turn right on Hollywood Blvd. (Pines Blvd.) and proceed east for a distance of 2.45 miles (3.9 km.) to the junction with Interstate I-75 North. Turn left onto I-75 North and proceed north for a distance of 2.0 miles (3.2 km.) to the West Sheridan Street exit. Proceed west on Sheridan Street for a distance of 1.6 miles (2.6 km.) to the intersecton with 172nd Avenue. Turn left (enter road to gravel pits) and proceed south for a distance of 0.5 miles (0.8 km.). The point is located at the spot on the west side of the road marked by a painted orange steel stake.

Radial Point Number	13
Distance from transmitter	2.65 miles (4.3 km)
Measured Field Strength	3.05 mV/m
Computed Permissible Field Strength	3.63 mV/m

FIGURE 5-B

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida



Nighttime 20.5 Degree Monitor Point

From the transmitter driveway, proceed north on NW 172nd Avenue for a distance of 2.75 miles (4.4 km.) to Hollywood Blvd (Pines Blvd). Turn right on Hollywood Blvd. (Pines Blvd.) and proceed east for a distance of 2.45 miles (3.9 km.) to the junction with Interstate I-75 North. Turn left onto I-75 North and proceed north for a distance of 2.0 miles (3.2 km.) to the West Sheridan Street exit. Proceed west on Sheridan Street for a distance of 0.1 miles (0.2 km.) to the west side of the I-75 overpass. The point is located at the spot on north side of the road marked by a painted orange steel stake.

Radial Point Number	12
Distance from Transmitter	4.45 miles (7.2 km)
Measured Field Strength	2.2 mV/m
Computed Permissible Field Strength	4.1 mV/m

FIGURE 5-C

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Daytime 35 Degree Monitor Point

From the transmitter site, proceed south on 172nd Avenue for a distance of 0.75 miles (1.2 km.) to the intersection with Honey Hill Road. Turn left and proceed east on Honey Hill Road for a distance of 1.0 miles (1.6 km.). Turn left on SW 160th Avenue (west side of canal and proceed north for a distance of 2.5 miles (4.0 km.). The point is located on the west side of the road, marked by a painted steel stake.

Radial Point Number	10
Distance from transmitter	2.03 miles (3.3 km)
Measured Field Strength	198 mV/m
Computed Permissible Field Strength	222 mv/m

FIGURE 5-D

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Nighttime 120 Degree Monitor Point

From the transmitter site, proceed south on 172nd Avenue for a distance of 0.75 miles (1.2 km.) to the intersection with Honey Hill Road. Turn left and proceed east on Honey Hill Road for a distance of 1.0 miles (1.6 km.). Turn left on SW 160th Avenue (west side of canal and proceed north for a distance of 0.1 miles (0.2 km.). The point is located on the west side of the road, marked by a painted steel stake.

Radial Point Number	6
Distance from transmitter	1.37 miles (2.2 km)
Measured Field Strength	248 mV/m
Computed Permissible Field Strength	425 mV/m

FIGURE 5-E

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Daytime 221 Degree Monitor Point

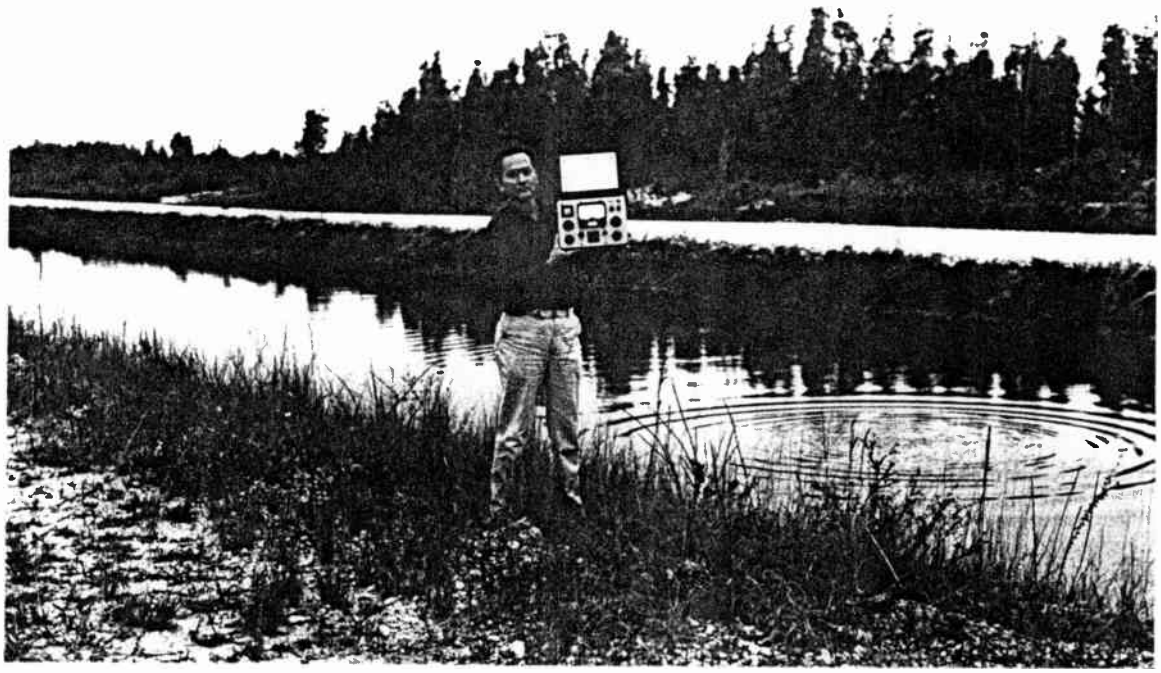
From the transmitter site, proceed south on 172nd Avenue for a distance of 0.75 miles (1.2 km.) to the intersection with Honey Hill Road. Turn right and proceed west on Honey Hill Road for a distance of 0.92 miles (1.5 km.). The point is located on the south side of the road, marked by a painted steel stake.

Radial Point Number	4
Distance from transmitter	1.04 miles (1.7 km)
Measured Field Strength	1100 mV/m
Computed Permissible Field Strength	1250 mV/m

FIGURE 5-F

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAOI Miami, Florida



Nighttime 235 Degree Monitor Point

From the transmitter site, proceed south on 172nd Avenue for a distance of 0.75 miles (1.2 km.) to the intersection with Honey Hill Road. Turn right and proceed west on Honey Hill Road for a distance of 1.35 miles (2.2 km.). The point is located on the south side of the road, marked by a painted steel stake.

Radial Point Number	7
Distance from transmitter	1.41 miles (2.3 km)
Measured Field Strength	268 mV/m
Computed Permissible Field Strength	356 mV/m

FIGURE 5-G

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Nighttime 277 Degree Monitoring Point

From the transmitter driveway, proceed north on NW 172nd Avenue for a distance of 2.75 miles (4.4 km.) to Hollywood Blvd (Pines Blvd). Turn left on Hollywood Blvd. (Pines Blvd.) and proceed west for a distance of 1.98 miles (3.2 km.) to the junction with SW 196th Street. Turn left and proceed south on SW 196th Street (east side of canal) for a distance of 2.46 miles (4.0 km.) The point is located at the spot on the west side of the road, marked by a painted orange steel stake.

Radial Point Number	8
Distance from transmitter	1.82 miles (2.9 km)
Measured Field Strength	71 mV/m
Computed Permissible Field Strength	111 mV/m

FIGURE 5-H

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

308 Degree Monitor Point

From the transmitter driveway, proceed north on NW 172nd Avenue for a distance of 2.75 miles (4.4 km.) to Hollywood Blvd (Pines Blvd). Turn left on Hollywood Blvd. (Pines Blvd.) and proceed west for a distance of 1.98 miles (3.2 km.) to the junction with SW 196th Street. Turn left and proceed south on SW 196th Street (east side of canal) for a distance of 1.25 miles (2.0 km.) The point is located at the spot on the west side of the road, marked by a painted orange steel stake.

Radial Point Number	11
Distance from transmitter	2.35 miles (3.8 km)
Day Measured Field Strength	510 mV/m
Computed Permissible Field Strength	595 mV/m
Night Measured Field Strength	10 mV/m
Computed Permissible Field Strength	14.1 mV/m

FIGURE 5-I

MONITOR POINT DESCRIPTION

prepared for
Mambisa Broadcast Corporation
WAQI Miami, Florida

Nighttime 333 Degree Monitor Point

From the transmitter driveway, proceed north on NW 172nd Avenue for a distance of 2.75 miles (4.4 km.) to Hollywood Blvd (Pines Blvd). Turn left on Hollywood Blvd. (Pines Blvd.) and proceed west for a distance of 1.45 mi. (2.3 km.). The point is located at this spot on the north side of the road and is marked by a painted orange steel stake.

Radial Point Number	13
Distance from transmitter	3.03 miles (4.9 km)
Measured Field Strength	9.1 mV/m
Computed Permissible Field Strength	10.3 mV/m

TABLE III-A

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

0.5 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.56	0.55	*	1500
2	0.82	0.82	*	860
3	0.96	0.96	*	750
4	1.09	1.09	*	660
5	1.23	1.23	*	600
6	1.37	1.37	*	560
7	1.51	1.51	*	520
8	1.64	1.64	*	470
9	1.78	1.78	*	440
10	1.91	1.91	*	400

* Non-directional airborne measurements were taken between 1158-1201 EST on December 2, 1986.

TABLE III-B

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

20.5 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.67	0.63	*	1850
2	0.83	0.79	*	1600
3	0.98	0.94	*	1450
4	1.28	1.25	*	930
5	1.41	1.38	*	815
6	1.53	1.50	*	730
7	1.66	1.63	*	640
8	1.78	1.75	*	585
9	1.92	1.89	*	500
10	2.06	2.03	*	440

* Non-directional airborne measurements were taken between 1210-1214 EST on December 2, 1986.

TABLE III-C

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

35 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.67	0.61	*	980
2	0.81	0.75	*	840
3	0.95	0.89	*	760
4	1.09	1.03	*	670
5	1.23	1.17	*	610
6	1.50	1.45	*	540
7	1.65	1.60	*	465
8	1.79	1.74	*	420
9	1.94	1.89	*	390

* Non-directional airborne measurements were taken between 1220-1223 EST on December 2, 1986.

TABLE III-D

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

71 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.87	0.78	*	950
2	1.02	0.93	*	780
3	1.18	1.09	*	660
4	1.33	1.24	#1025	620
5	1.46	1.37	*	520
6	1.59	1.50	*	480
7	1.72	1.63	*	440
8	1.85	1.76	*	410
9	1.98	1.89	*	380
10	2.11	2.02	*	360

* Non-directional airborne measurements were taken between 1242-1245 EST on December 2, 1986.
\# Ground measured point, measured on October 29, 1986 at 1025 EST.

TABLE III-E

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

92.5 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.63	0.54	*	1500
2	0.85	0.76	*	860
3	0.96	0.86	*	745
4	1.28	1.19	#1450	618
5	1.38	1.29	#1452	585
6	1.48	1.39	#1454	525
7	1.59	1.50	#1458	545
8	1.77	1.68	*	540
9	1.94	1.85	*	500
10	2.11	2.02	*	460

* Non-directional airborne measurements were taken between 1255-1258 EST on December 2, 1986.
\# Ground measured points, measured on October 24, 1986 EDT.

TABLE III-F

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

120 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.60	0.52	*	1500
2	0.88	0.80	*	860
3	1.03	0.95	*	750
4	1.17	1.09	*	670
5	1.31	1.23	*	600
6	1.45	1.37	#1344	650
7	1.55	1.47	*	470
8	1.65	1.57	#1346	495
9	1.82	1.74	*	370
10	1.98	1.90	*	350

* Non-directional airborne measurements were taken between 1322-1325 EST on December 2, 1986.
\# Ground measured points, measured on October 20, 1986 EDT.

TABLE III-G

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

141 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.58	0.51	*	1500
2	0.75	0.68	*	890
3	0.92	0.86	*	690
4	1.01	0.95	*	610
5	1.08	1.02	#0944	740
6	1.38	1.32	*	460
7	1.52	1.46	*	430
8	1.66	1.66	*	400
9	1.76	1.70	*	380
10	1.94	1.88	*	370

* Non-directional airborne measurements were taken between 1310-1313 EST on December 2, 1986.
\# Ground measured point, measured on October 28, 1986 EST.

TABLE III-H

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

162 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.56	0.52	*	1600
2	0.66	0.62	*	1400
3	0.76	0.72	*	990
4	0.86	0.82	#1132	1000
5	1.00	0.96	*	760
6	1.13	1.09	*	670
7	1.26	1.23	*	580
8	1.39	1.36	*	520
9	1.66	1.63	*	440
10	1.93	1.90	*	380

* Non-directional airborne measurements were taken between 1340-1343 EST on December 2, 1986.
\# Ground measured point, measured on December 1, 1986 EST.

TABLE III-I

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

190 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.50	0.51	*	1750
2	0.60	0.61	*	1500
3	0.79	0.80	#1130	1120
4	0.84	0.85	#1113	1120
5	0.96	0.97	*	760
6	1.08	1.09	*	690
7	1.21	1.22	*	610
8	1.33	1.34	*	550
9	1.58	1.59	*	470
10	1.82	1.83	*	410

* Non-directional airborne measurements were taken between 1355-1358 EST on December 2, 1986.
\# Ground measured points, measured on December 1, 1986.

TABLE III-J

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

221 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.48	0.54	*	1650
2	0.75	0.81	*	950
3	0.89	0.95	*	840
4	1.04	1.08	#1218	880
5	1.05	1.13	#1355	660
6	1.22	1.28	*	610
7	1.36	1.42	*	530
8	1.49	1.55	*	470
9	1.62	1.68	*	440
10	1.74	1.80	*	410

* Non-directional airborne measurements were taken between 1418-1421 EST on December 2, 1986.
\# Ground measured point, measured on October 28, 1986 EST.

TABLE III-K

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

235 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.52	0.59	*	1600
2	0.62	0.70	*	1500
3	0.85	0.93	*	880
4	0.97	1.05	*	780
5	1.09	1.17	*	680
6	1.21	1.29	*	620
7	1.33	1.41	#1438	690
8	1.36	1.46	#1508	630
9	1.56	1.64	*	470
10	1.74	1.82	*	440

* Non-directional airborne measurements were taken between 1418-1421 EST on December 2, 1986.
\# Ground measured point, measured on October 24, 1986 EDT.

TABLE III-L

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

277 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.53	0.63	*	1600
2	0.73	0.83	*	1000
3	0.86	0.96	*	850
4	0.98	1.08	*	750
5	1.11	1.21	*	670
6	1.23	1.33	*	600
7	1.43	1.53	#0950	610
8	1.72	1.82	#0952	555
9	1.77	1.87	#0957	480
10	1.89	1.99	*	420

* Non-directional airborne measurements were taken between 1455-1458 EST on December 2, 1986.
\# Ground measured point, measured on Dewcember 1,1986.

TABLE III-M

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

308 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.77	0.84	*	1000
2	0.87	0.95	*	900
3	0.98	1.06	*	830
4	1.15	1.23	*	690
5	1.31	1.39	*	600
6	1.47	1.55	*	530
7	1.63	1.71	*	470
8	1.79	1.87	*	430
9	1.95	2.03	*	390
10	2.11	2.19	*	370

* Non-directional airborne measurements were taken between 1510-1513 EST on December 2, 1986.

TABLE III-N

CLOSE-IN NON-DIRECTIONAL
MEASURED FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

333 Degrees True

Point Number	Distance from Tower #1(W) (Mi.)	Distance from Array Center	Time (EST)	Field Strength (mV/m)
1	0.62	0.66	*	1400
2	0.79	0.83	*	950
3	1.28	1.32	*	630
4	1.35	1.39	*	600
5	1.42	1.46	*	570
6	1.49	1.53	*	540
7	1.56	1.60	*	510
8	1.70	1.74	*	470
9	1.84	1.88	*	440
10	2.01	2.05	*	400

* Non-directional airborne measurements were taken between 1510-1513 EST on December 2, 1986.

TABLE IV-A

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

0.5 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-D (mV/m)	Log Ratio (DA/ND)
11	2.18	*1510	390	1228	405	0.0164
12	2.48	*1517	325	1145	325	0.0000
13	2.65	*1514	312	1148	285	-0.0393
14	3.03	*1512	273	1206	265	-0.0129
15	3.68	*1451	222	1157	235	0.0247
16	4.16	*1449	187	1159	282	0.1784
17	4.42	*1447	170	1201	278	0.2136
18	4.66	*1445	148	1203	131	-0.0530
19	5.18	*1441	145	1205	132	-0.0408
20	5.69	*1438	125	1208	118	-0.0250
21	6.18	*1435	112	1209	106	-0.0239
22	6.43	*1433	110	1210	105	-0.0202
23	8.10	1458	91.0	1217	85.0	-0.0296
24	8.60	1505	84.0	1214	81.0	-0.0158
25	9.50	1521	79.0	1223	64.0	-0.0914
26	9.90	1509	81.0	1226	92.0	0.0553
27	10.10	1516	66.0	1229	82.0	0.0943
28	10.75	*1416	62.0	1232	62.0	0.0000
29	11.02	*1407	61.0	1234	64.0	0.0209
					Average Log Ratio:	0.0132
					Antilog:	1.031
				Nondirectional Analyzed Field Strength (mV/m):		900
				Directional Analyzed Field Strength (mV/m):		928

Nondirectional measurements taken October 21, 1986
* Nondirectional measurements taken October 22, 1986
Directional measurements taken November 30, 1986

TABLE IV-B

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

35.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
10(MP)	2.03	1301	380	1449	198	-0.2831
11	3.26	1324	225	1454	123	-0.2623
12	5.12	1403	142	1505	72.0	-0.2950
13	5.72	1411	118	1509	59.0	-0.3010
14	6.34	1415	115	1511	58.0	-0.2973
15	6.58	1418	96.0	1513	51.0	-0.2747
16	7.03	1426	94.0	1517	49.0	-0.2829
17	7.85	1439	103	1522	50.0	-0.3139
18	8.50	1453	84.0	1528	43.0	-0.2908
19	9.02	1500	76.0	1532	39.0	-0.2897
20	9.52	1510	71.0	1544	36.0	-0.2950
21	10.50	1524	64.0	1552	34.5	-0.2684
22	11.43	1530	59.0	1556	31.5	-0.2725
23	12.47	1552	54.0	1608	27.5	-0.2931
24	13.40	1601	46.0	1615	24.0	-0.2825
25	14.70	1609	43.5	1622	20.5	-0.3267
26	15.56	1623	41.0	1632	21.0	-0.2906
27	16.47	1628	40.0	1655	22.0	-0.2596
28	17.65	1640	34.5	1703	18.5	-0.2706
29	18.90	1651	26.8	1710	15.0	-0.2520
30	19.80	1715	28.0	1732	15.5	-0.2568
					Average Log Ratio:	-0.2837
					Antilog:	.5203
					Nondirectional Analyzed Field Strength (mV/m):	900
					Directional Analyzed Field Strength (mV/m):	468

Nondirectional measurements taken on May 22, 1986
Directional measurements taken on June 1, 1986

TABLE IV-C

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

71.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
11	2.28	0944	320	1145	345	0.0327
12	4.37	1005	185	1207	193	0.0184
13	5.20	1011	142	1209	150	0.0238
14	6.48	1020	128	1214	125	-0.0103
15	6.98	1027	120	1558	138	0.0607
16	7.50	1116	97.0	1552	110	0.0546
17	8.54	1122	59.0	1547	72.0	0.0865
18	9.08	1130	86.0	1543	97.0	0.0523
19	9.60	1135	83.0	1539	92.0	0.0447
20	10.30	1142	70.0	1535	72.0	0.0122
21	11.16	1149	68.0	1527	74.0	0.0367
22	11.97	1202	57.0	1523	61.0	0.0295
23	13.00	1209	55.0	1517	60.0	0.0378
24	14.00	1224	35.5	1511	36.5	0.0121
25	15.04	1240	39.5	1500	41.5	0.0215
26	15.95	1249	45.0	1456	48.5	0.0325
27	17.30	1301	35.0	1442	36.5	0.0182
					Average Log Ratio:	0.0332
					Antilog:	1.079
				Nondirectional Analyzed Field Strength (mV/m):		950
				Directional Analyzed Field Strength (mV/m):		1025

Nondirectional measurements taken May 25, 1986
Directional measurements taken June 2, 1986

TABLE IV-D

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

92.5 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
7	1.50	*1703	540	1129	860	0.2021
11	2.19	1347	350	1151	550	0.1963
12	2.55	1352	325	1154	490	0.1783
13	2.89	1356	263	1158	420	0.2033
14	6.20	1411	133	1221	200	0.1772
15	6.90	1425	125	1227	185	0.1703
16	7.20	1420	115	1230	169	0.1672
17	7.70	1430	120	1233	180	0.1761
18	8.20	1439	95.0	1238	143	0.1776
19	8.72	1446	84.0	1244	128	0.1829
20	9.35	1513	73.0	1305	115	0.1974
21	10.24	1520	79.0	1310	120	0.1816
22	10.76	1526	51.0	1318	74.0	0.1617
23	11.87	1611	41.5	1326	63.0	0.1813
24	13.10	1619	40.0	1342	63.0	0.1973
25	14.07	1633	31.5	1355	42.5	0.1301
26	14.70	1650	44.0	1402	64.0	0.1627
27	16.06	1729	21.0	1422	30.5	0.1621
					Average Log Ratio:	0.1781
					Antilog:	1.507
				Nondirectional Analyzed Field Strength (mV/m):		1000
				Directional Analyzed Field Strength (mV/m):		1507
					Rounded to:	1510

Nondirectional measurements taken May 23, 1986
* Nondirectional measurements taken May 24, 1986
Directional measurements taken June 2, 1986

TABLE IV-E

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

141.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
11	2.15	0955	389	1000	898	0.3633
12	3.60	1030	231	1030	578	0.3983
13	4.02	1039	208	1035	450	0.3351
14	4.92	1056	198	1044	428	0.3348
15	5.33	1110	167	1048	360	0.3336
16	5.82	1126	138	1055	310	0.3515
17	6.40	1143	131	1103	285	0.3376
18	6.98	1154	108	1109	245	0.3557
19	7.40	1206	117	1114	249	0.3280
20	8.70	1225	88.5	1123	203	0.3606
21	9.65	1239	89.0	1131	203	0.3581
22	11.00	1257	71.5	1140	162	0.3552
23	12.16	1309	62.0	1149	145	0.3690
24	13.60	1325	41.5	1157	92.0	0.3457
25	15.35	1343	54.0	1215	126	0.3680
26	16.90	1404	36.5	1224	78.0	0.3298
27	18.40	1428	37.7	1239	77.5	0.3130
28	19.70	1444	29.5	1249	62.5	0.3261
					Average Log Ratio:	0.3480
					Antilog:	2.228
				Nondirectional Analyzed Field Strength (mV/m):		950
				Directional Analyzed Field Strength (mV/m):		2117
					Rounded to:	2120

Nondirectional measurements taken May 25, 1986
Directional measurements taken June 2, 1986

TABLE IV-F

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

190.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
11	2.88	1506	310	1023	512	0.2179
			310		500	**
12	3.93	1521	181	1018	298	0.2165
			250		310	**
13	4.50	##0937	170	1013	293	0.2364
			190		280	**
14*	5.15		140		260	0.2688
15*	6.95		130		180	0.1413
16*	7.94		120		150	0.0969
17*	8.95		75.0		150	0.3010
18	11.00	1743	67.5	1506	106	0.1960
			76.0		110	
19*	12.00		59.0		100	0.2291
20*	13.02		56.0		90.0	0.2061
21	13.90	#1708	27.5	1423	46.5	0.2281
			27.0		76.0	**
22	14.52	#1718	45.5	1415	72.0	0.1993
			55.0		71.0	**
23	15.77	#1734	36.2		60.5	0.2230
			49.0		60.0	**
24	16.80	#1746	34.0	1408	56.0	0.2167
			37.0		57.0	**
25	17.82	#1759	34.0	1402	55.0	0.2089
			38.0		54.0	**
26*	18.85		30.0		48.0	0.2041
27	19.90	#1806	26.0	1344	44.0	0.2285
			33.0		44.0	**

Average Log Ratio:	0.2120
Antilog:	1.629
Nondirectional Analyzed Field Strength (mV/m):	950
Directional Analyzed Field Strength (mV/m):	1548
Rounded to:	1550

(See page 2 for footnotes)

TABLE IV-F

Nondirectional measurements taken May 23, 1986
\# Nondirectional measurements taken May 24, 1986
\## Nondirectional measurements taken May 25, 1986
Directional measurements taken June 2, 1986
* Airborne measurement
** Airborne measurement above ground point, not included in average
Nondirectional airborne measurements taken 1547-1609 EDT on August 2, 1986
Directional airborne measurements taken 1615-1635 EDT on August 1, 1986

TABLE IV-G

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

221.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
4	1.04	1218	880	1210	1100	0.0969
			1200		1300	**
5	1.10	1355	660	1324	990	0.1761
			980		800	**
11*	2.25		420		600	0.1549
12*	2.50		350		520	0.1719
13	2.75	1423	290	1550	385	0.1231
			320		440	**
14	3.03	1406	260	1601	330	0.1035
			290		360	**
15	3.40	#1058	235	1612	275	0.0683
			270		320	**
16	3.75	#1051	258	1620	280	0.0355
			250		280	**
17	3.92	1341	223	1541	230	0.0134
			220		250	**
18*	4.50		200		230	0.0607
19*	5.00		180		200	0.0458
20*	5.50		160		180	0.0512
21*	6.00		150		160	0.0280
22*	6.50		120		150	0.0969
23	7.00	#1048	110	1425	132	0.0792
			110		140	**
24*	8.00		100		100	0.0000
25*	9.00		98.0		100	0.0088
26	10.05	1440	73.0	1436	88.0	0.0812
27*	11.00		68.0		72.0	0.0248
28	19.00	1615	33.0	1453	40.0	0.0835
					Average Log Ratio:	0.0746
					Antilog:	1.187
				Nondirectional Analyzed Field Strength (mV/m):		1000
				Directional Analyzed Field Strength (mV/m):		1187
					Rounded to:	1190

(See page 2 for footnotes)

TABLE IV-G

Nondirectional measurements taken October 28, 1986
\# Nondirectional measurements taken December 1, 1986
Directional measurements taken November 4, 1986
* Airborne measurement
** Airborne measurement above ground point, not included in average
Nondirectional airborne measurements taken 1714-1735 EDT on August 2, 1986
Directional airborne measurements taken 1655-1716 EDT on August 1, 1986

TABLE IV-H

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

277.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
7	1.53	0950	610	1530	750	0.0897
			500		720	**
8	1.82	0952	555	1528	670	0.0818
			420		630	**
9	1.87	0957	480	1525	600	0.0969
			410		600	**
11*	2.37		350		520	0.1719
12	2.87	1012	305	1515	370	0.0839
			300		360	**
13	3.34	1043	258	1434	312	0.0825
			220		325	**
14	3.39	1040	250	1432	300	0.0792
			210		260	**
15*	3.67		200		230	0.0607
16	3.95	1211	232	1455	295	0.1043
			170		220	**
17*	4.43		160		160	0.0000
18*	4.90		150		170	0.0545
19*	5.38		140		160	0.0580
20	5.85	1039	155	1300	178	0.0601
			120		180	**
21*	6.44		110		140	0.1047
22*	7.02		110		130	0.0726
23*	7.60		100		120	0.0792
24	8.18	1310	100	1320	127	0.1038
			100		95.0	**
25*	8.84		99.0		90.0	-0.0414
26	9.50	1256	79.0	1329	112	0.1516
			90.0		80.0	**

TABLE IV-H

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
27*	10.60		84.0		75.0	-0.0492
28*	11.32		70.0		67.0	-0.0190
					Average Log Ratio:	0.0679
					Antilog:	1.169
					Nondirectional Analyzed Field Strength (mV/m):	1000
					Directional Analyzed Field Strength (mV/m):	1169
					Rounded to:	1170

Nondirectional and directional measurements taken December 1, 1986

* Airborne measurement

** Airborne measurement above ground point, not included in average

Nondirectional airborne measurements taken 1111-1103 EDT on August 3, 1986

Directional airborne measurements taken 0929-0950 EDT on August 2, 1986

TABLE IV-I

DAYTIME DIRECTIONAL MEASURED
FIELD STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

308.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EDT)	DA-D (mV/m)	Log Ratio (DA/ND)
11	2.35	1027	380	1343	510	0.1278
			370		520	**
12*	2.79		320		440	0.1383
13*	3.22		270		400	0.1707
14	3.68	1004	225	1348	300	0.1249
			210		320	**
15*	3.99		210		320	0.1829
16	4.29	1046	203	1353	262	0.1108
			200		250	**
17	4.35	1036	195	1351	248	0.1044
			180		240	**
18	4.55	1050	165	1358	225	0.1347
			180		230	**
19	4.80	1053	160	1359	220	0.1383
			170		190	**
20	5.10	1201	158	1449	213	0.1297
			160		160	**
21*	5.66		150		130	-0.0621
22*	6.21		140		110	-0.1047
23*	6.77		120		110	-0.0378
24	7.32	1242	100	1347	143	0.1553
			100		100	**
25*	7.89		95.0		100	0.0223
26	8.46	1234	89.0	1339	120	0.1298
			87.0		98.0	**
27*	9.03		84.0		93.0	0.0442
28*	9.60		80.0		88.0	0.0414
29	19.90	1410	37.0	1435	48.0	0.1130
			39.0		59.0	**

					Average Log Ratio:	0.0876
					Antilog:	1.223
				Nondirectional Analyzed Field Strength (mV/m):		950
				Directional Analyzed Field Strength (mV/m):		1162

(See page 2 for footnotes)

TABLE IV-I

Nondirectional and directional measurements taken on December 1, 1986

* Airborne measurement

** Airborne measurement above ground point, not included in average

Nondirectional airborne measurements taken 1156-1218 EDT on August 2, 1986

Directional airborne measurements taken 1020-1059 EDT on August 2, 1986

TABLE V-A

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

0.5 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11	2.18	** 1520	390	1154	4.90	-1.9009
12	2.48	** 1517	325	1140	3.20	-2.0067
13(MP)	2.65	** 1514	312	1146	3.05	-2.0099
14	3.03	** 1512	273	1204	3.00	-1.9590
15	3.68	** 1451	222	1222	2.85	-1.8915
16	4.16	** 1449	187	1228	1.60	-2.0677
17	4.42	** 1447	170	1230	1.50	-2.0544
18	4.66	** 1445	148	1233	1.65	-1.9528
19	5.18	** 1441	145	1236	1.30	-2.0474
20	5.69	** 1438	125	1241	1.20	-2.0177
21	6.18	** 1435	112	1245	2.75	-1.6099
22	6.43	** 1433	110	1250	2.25	-1.6892
23	8.10	* 1458	91.0	1235	0.92	-1.9953
24	8.60	* 1505	84.0	1232	0.84	-2.0000
25	9.50	* 1521	79.0	1224	0.62	-2.1052
26	9.90	* 1509	81.0	1220	1.80	-1.6532
27	10.10	* 1516	66.0	1215	2.90	-1.3571
28	10.75	** 1416	62.0	1208	2.40	-1.4122
29	11.02	** 1407	61.0	1211	1.90	-1.5066
					Average Log Ratio:	-1.8546
					Antilog:	.0140
				Nondirectional Analyzed Field Strength (mV/m):		900
				Directional Analyzed Field Strength (mV/m):		12.6

* Nondirectional measurements taken October 21, 1986
** Nondirectional measurements taken October 22, 1986
Directional measurements taken November 24, 1986

TABLE V-B

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

20.5 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Measured Field Non-DA (mV/m)	Measured Field Time (EST)	Measured Field DA-N (mV/m)	Quadrature Method Correction Factor	Log Ratio (DA/ND)
11	2.85	1420	308	1448	1.90	0.687	-2.3727
12(MP)	4.45	1425	205	1433	2.20	0.827	-2.0519
13	4.57	1427	200	1414	3.20	0.834	-1.8750
14	5.52	1432	162	1428	0.90	0.876	-2.3127
15	5.88	1434	128	1425	0.72	0.888	-2.3013
16	6.58	1437	130	1422	1.70	0.908	-1.9256
17	6.93	1439	125	1418	0.82	0.915	-2.2215
18	7.70	1447	102	1252	1.90	0.930	-1.7614
19	8.74	1451	62.0	1247	1.40	0.944	-1.6714
20	9.80	1455	75.0	1241	1.10	0.954	-1.8541
21	10.75	1505	61.0	1303	1.00	0.961	-1.8025
22	11.40	1509	60.0	1308	1.10	0.965	-1.7520
23	12.45	1514	55.0	1313	0.80	0.970	-1.8504
24	14.20	1521	41.0	1319	1.00	0.977	-1.6230
25	15.42	1528	42.5	1325	1.60	0.980	-1.4330
26	17.16	1534	32.5	1331	1.10	0.984	-1.4776
27	17.72	1538	30.0	1334	0.92	0.984	-1.5202
28	18.68	1543	27.0	1339	0.76	0.986	-1.5566
29	19.40	1546	25.8	1343	0.78	0.987	-1.5252
30	19.96	1550	25.5	1346	0.82	0.988	-1.4981
						Average Proximity Corrected Log Ratio:	-1.8193
						Antilog:	.0152
						Nondirectional Analyzed Field Strength (mV/m):	950
						Directional Analyzed Field Strength (mV/m):	14.4

Nondirectional measurements taken October 22, 1986
Directional measurements taken November 23, 1986

TABLE V-B

COMPUTED UNATTENUATED NEAR FIELD STRENGTHS

Point Number	Distance (miles)	Computed Unattenuated Radiation Theoretical (mV/m)	Measured (mV/m)	Standard (mV/m)
1	0.67	90.1	92.4	102
2	0.83	58.9	61.2	68.9
3	0.98	42.3	44.6	51.3
4	1.28	24.9	27.1	32.7
5	1.41	20.5	22.7	28.0
6	1.53	17.5	19.6	24.6
7	1.66	14.8	17.0	21.7
8	1.78	12.9	15.0	19.6
9	1.92	11.1	13.2	17.5
10	2.06	9.66	11.7	15.9
11	2.85	5.06	6.97	10.3
12	4.45	2.09	3.71	6.06
13	4.57	1.98	3.58	5.88
14	5.52	1.36	2.82	4.77
15	5.88	1.20	2.61	4.46
16	6.58	0.96	2.28	3.95
17	6.93	0.87	2.15	3.74
18	7.70	0.70	1.91	3.35
19	8.74	0.55	1.65	2.93
20	9.80	0.44	1.46	2.61
21	10.75	0.37	1.32	2.37
22	11.40	0.32	1.24	2.23
23	12.45	0.28	1.13	2.04
24	14.20	0.21	0.98	1.78
25	15.42	0.18	0.90	1.64
26	17.16	0.15	0.81	1.47
27	17.72	0.14	0.78	1.43
28	18.68	0.12	0.74	1.35
29	19.40	0.12	0.71	1.30
30	19.96	0.11	0.69	1.26

TABLE V-C

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

35.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
10	2.03	*1320	395	1109	28.5	-1.1418
11	3.26	*1438	250	1137	21.0	-1.0757
12	5.12	*1451	150	1147	13.5	-1.0458
13	5.72	*1455	115	1149	9.50	-1.0830
14	6.34	*1500	121	1152	7.20	-1.2255
15	6.58	*1505	102	1155	7.80	-1.1165
16	7.03	*1513	92.0	1157	8.50	-1.0344
17	7.85	*1520	98.0	1201	7.20	-1.1339
18	8.50	*1526	86.0	1208	5.60	-1.1863
19	9.02	*1548	80.0	1213	8.10	-0.9946
20	9.52	*1553	68.0	1219	7.50	-0.9574
21	10.50	*1559	66.0	1229	8.50	-0.8901
22	11.43	*1605	61.5	1234	7.30	-0.9256
23	12.47	*1610	49.0	1301	6.30	-0.8909
24	13.40	*1615	50.0	1321	6.70	-0.8729
25	14.70	*1621	45.0	1327	4.30	-1.0197
26	15.56	*1636	42.0	1336	3.00	-1.1461
27	16.47	**1443	38.0	1341	4.20	-0.9565
28	17.65	**1449	35.0	1352	3.20	-1.0389
29	18.90	**1456	27.0	1400	2.20	-1.0889
30	19.80	**1519	28.0	1420	2.20	-1.1047
					Average Log Ratio:	-1.0442
					Antilog:	.0903
				Nondirectional Analyzed Field Strength (mV/m):		900
				Directional Analyzed Field Strength (mV/m):		81.3

* Nondirectional measurements taken October 24, 1986
** Nondirectional measurements taken October 25, 1986
Directional measurements taken November 25, 1986

TABLE V-D

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

71.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11	2.28	1300	327	1128	420	0.1087
12	4.37	1337	180	1136	215	0.0772
13	5.20	1345	145	1139	185	0.1058
14	6.48	1351	132	1143	132	0.0000
15	6.98	1358	121	1147	117	-0.0146
16	7.50	1404	109	1151	107	-0.0080
17	8.54	1409	51.0	1155	63.0	0.0918
18	9.08	1413	92.0	1200	95.0	0.0139
19	9.60	1415	91.0	1205	89.0	-0.0097
20	10.30	1419	66.0	1208	69.0	0.0193
21	11.16	1425	59.0	1218	68.0	0.0617
22	11.97	1436	61.0	1222	59.0	-0.0145
23	13.00	1443	54.0	1226	54.0	0.0000
24	14.00	1450	39.5	1231	39.5	0.0000
25	15.04	1459	42.0	1238	40.0	-0.0212
26	15.95	1506	41.5	1244	49.0	0.0721
27	17.30	1513	38.0	1253	35.0	-0.0357
					Average Log Ratio:	0.0263
					Antilog:	1.062
				Nondirectional Analyzed Field Strength (mV/m):		950
				Directional Analyzed Field Strength (mV/m):		1009
					Rounded to:	1010

Nondirectional measurements taken October 25, 1986
Directional measurements taken November 26, 1986

TABLE V-E

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

92.5 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11	2.19	*1524	365	1501	630	0.2370
12	2.55	*1526	312	1459	515	0.2177
13	2.89	*1530	275	1455	450	0.2139
14	6.20	*1614	105	1440	220	0.3212
15	6.90	**1358	115	1434	185	0.2065
16	7.20	**1402	110	1431	163	0.1708
17	7.70	**1406	121	1428	198	0.2139
18	8.20	**1412	98.0	1423	148	0.1790
19	8.72	**1416	90.0	1422	132	0.1663
20	9.35	**1434	72.0	1406	110	0.1841
21	10.24	**1440	82.0	1358	115	0.1469
22	10.76	**1445	55.0	1353	96.0	0.2419
23	11.87	**1453	40.5	1349	62.0	0.1849
24	13.10	**1511	44.0	1345	68.0	0.1891
25	14.07	**1517	28.5	1331	53.0	0.2694
26	14.70	**1525	38.0	1320	57.0	0.1761
27	16.06	**1535	27.0	1308	38.0	0.1484
					Average Log Ratio:	0.2039
					Antilog:	1.599
				Nondirectional Analyzed Field Strength (mV/m):		1000
				Directional Analyzed Field Strength (mV/m):		1599
					Rounded to:	1600

* Nondirectional measurements taken October 24, 1986
** Nondirectional measurements taken October 25, 1986
Directional measurements taken November 26, 1986

TABLE V-F

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

120.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
6(MP)	1.37	1344	650	1329	248	-0.4185
11	3.60	1410	208	1346	98.0	-0.3268
12	4.78	1416	175	1350	100	-0.2430
13	4.93	1431	162	1402	88.0	-0.2650
14	6.10	1440	118	1409	66.0	-0.2523
15	6.45	1446	128	1412	63.0	-0.3079
16	7.03	1453	115	1416	64.0	-0.2545
17	7.33	1457	112	1418	61.0	-0.2639
18	8.60	1509	82.0	1425	44.0	-0.2704
19	9.15	1516	86.0	1431	41.0	-0.3217
20	9.70	1522	79.0	1435	39.5	-0.3010
21	10.25	1537	61.0	1442	33.0	-0.2668
22	10.86	1540	60.0	1445	28.5	-0.3233
23	11.60	1548	54.0	1449	27.5	-0.2931
24	12.59	1553	62.0	1455	26.0	-0.3774
25	13.25	1602	45.5	1500	23.5	-0.2869
26	13.80	1608	52.0	1504	25.5	-0.3095
27	14.35	1613	53.0	1508	24.5	-0.3351
28	14.83	1618	45.5	1510	24.0	-0.2778
29	15.87	1627	38.5	1518	23.0	-0.2237
30	16.50	1633	51.0	1520	28.5	-0.2527
31	17.70	1647	29.5	1524	23.5	-0.0988
32	18.50	1659	48.5	1530	28.5	-0.2309
					Average Log Ratio:	-0.2827
					Antilog:	.5216
				Nondirectional Analyzed Field Strength (mV/m):		1000
				Directional Analyzed Field Strength (mV/m):		522

Nondirectional measurements taken October 20, 1986
Directional measurements taken November 24, 1986

TABLE V-G

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

141 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11	2.15	*0959	385	1041	808	0.3220
12	3.60	1000	230	1058	540	0.3707
13	4.02	1008	210	1102	545	0.4142
14	4.92	1020	195	1108	530	0.4342
15	5.33	1035	165	1112	410	0.3953
16	5.82	1044	135	1118	350	0.4137
17	6.40	1052	130	1126	325	0.3979
18	6.98	1056	110	1130	225	0.3108
19	7.40	1100	115	1134	220	0.2817
20	8.70	1115	86.0	1144	225	0.4177
21	9.65	1122	88.0	1155	208	0.3736
22	11.00	1130	72.0	1202	192	0.4260
23	12.16	1135	60.0	1210	132	0.3424
24	13.60	1145	43.5	1217	71.0	0.2128
25	15.35	1155	55.0	1226	132	0.3802
26	16.90	1158	37.0	1239	82.0	0.3456
27	18.40	1205	36.5	1251	83.0	0.3568
28	19.70	1210	30.5	1259	62.0	0.3081
					Average Log Ratio:	0.3613
					Antilog:	2.298
				Nondirectional Analyzed Field Strength (mV/m):		950
				Directional Analyzed Field Strength (mV/m):		2183
					Rounded to:	2180

Nondirectional measurements taken October 29, 1986
* Nondirectional measurements taken October 28, 1986
Directional measurements taken November 29, 1986

TABLE V-H

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

162.0 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11	2.94	*1011	315	1518	1100	0.5431
12	5.05	1353	168	1456	640	0.5809
13	5.58	1343	155	1503	520	0.5257
14	6.10	1331	104	1442	440	0.6264
15	7.22	1322	98.0	1436	355	0.5590
16	9.20	1310	78.0	1429	282	0.5582
17	9.90	1300	76.0	1425	258	0.5308
18	10.27	1250	85.0	1421	300	0.5477
19	11.05	1241	73.0	1410	235	0.5077
20	12.40	1228	58.0	1405	214	0.5670
21	13.00	1220	57.0	1401	200	0.5452
22	14.25	1210	46.5	1355	175	0.5756
23	15.12	1205	52.0	1349	188	0.5582
24	16.08	1153	32.0	1343	135	0.6252
25	17.13	1146	36.0	1337	125	0.5406
26	18.19	1137	24.0	1332	89.0	0.5692
27	19.08	1131	36.5	1326	118	0.5096
28	19.87	1124	24.5	1322	92.0	0.5746
					Average Log Ratio:	0.5580
					Antilog:	3.614
				Nondirectional Analyzed Field Strength (mV/m):		950
				Directional Analyzed Field Strength (mV/m):		3434
					Rounded to:	3430

Nondirectiona measurements taken October 28, 1986
* Nondirectional measurements taken December 1, 1986
Directional measurements taken November 29, 1986

TABLE V-I

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

190 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11	2.88	1513	330	0958	660	0.3010
			290		530	**
12	3.93	1523	190	0955	375	0.2953
			210		430	**
13	4.50	1533	185	0951	360	0.2891
			180		320	**
14*	5.15		150		280	0.2711
15*	6.95		110		210	0.2808
16*	7.94		94.0		190	0.3056
17*	8.95		77.0		165	0.3310
18	11.00	1626	67.0	1059	143	0.3293
			58.0		140	**
19*	12.00		53.0		120	0.3549
20*	13.02		44.0		95.0	0.3343
21	13.90	#0946	27.5	1041	56.0	0.3089
			47.0		92.0	**
22	14.52	#0951	44.5	1037	85.0	0.2811
			42.0		78.0	**
23	15.77	#1127	38.0	1119	78.0	0.3123
			38.0		76.0	**
24	16.80	#1019	33.0	1124	72.0	0.3388
			33.0		65.0	**
25	17.82	#1030	32.0	1129	69.0	0.3337
			29.0		56.0	**
26*	18.85		30.0		55.0	0.2632
27	19.90	#1046	28.0	1134	55.0	0.2932
			26.0		50.0	**

Average Log Ratio:	0.3073
Antilog:	2.029
Nondirectional Analyzed Field Strength (mV/m):	950
Directional Analyzed Field Strength (mV/m):	1927
Rounded to:	1930

(See page 2 for footnotes)

TABLE V-I

Nondirectional measurements taken October 27, 1986 except for those marked #, taken on October 28, 1986
Directional measurements taken November 30, 1986
* Airborne measurement
** Airborne measurement above ground point, not included in average
Nondirectional airborne measurements taken 0930-0940 EST on December 4, 1986
Directional airborne measurements taken 0900-0914 EST on December 3, 1986

TABLE V-J

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

235 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EDT)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Quadrature Method Correction Factor	Log Ratio (DA/ND)
7(MP)	1.41	1438	690	1022	268	0.797	-0.5094
			540				**
8	1.46	1508	630	1146	262	0.803	-0.4765
			520				**
11*	2.32		380		200	0.868	-0.3404
12*	2.75		320		170	0.886	-0.3271
13*	2.97		280		160	0.894	-0.2917
14	3.18	1518	278	1216	100	0.900	-0.4896
			150		260		**
15	3.37	1524	235	1219	95.0	0.906	-0.4364
			250		73.0		**
16	3.66*		240		74.0	0.913	-0.5507
17	3.95	1533	223	1223	92.0	0.918	-0.4214
			220		78.0		**
18	4.05	1540	260	1228	89.0	0.920	-0.5016
			210		74.0		**
19	4.32*		170		65.0	0.925	-0.4514
20	4.58*		160		43.0	0.929	-0.6026
21	4.84*		160		45.0	0.933	-0.5812
22	5.10	1559	143	1239	48.0	0.936	-0.5029
			160		41.0		**
23	5.30	1602	135	1237	47.0	0.938	-0.4859
			140		45.0		**
24	5.72	1618	125	1243	41.5	0.943	-0.5046
			120		36.0		**
25	6.50	1614	86.0	1324	30.5	0.949	-0.4729
			120		30.0		**
26*	7.28		95.0		31.0	0.954	-0.5066

Average Proximity Corrected Log Ratio: -0.4696
Antilog: .3391
Nondirectional Analyzed Field Strength (mV/m): 1000
Directional Analyzed Field Strength (mV/m): 339

(See page 2 for footnotes)

TABLE V-J

Point Number	Distance (miles)	Computed Unattenuated Radiation Theoretical (mV/m)	Measured (mV/m)	Standard (mV/m)
1	0.52	1414	1363	1526
2	0.62	1091	1045	1183
3	0.85	702	663	768
4	0.97	588	552	646
5	1.09	505	472	556
6	1.21	441	411	487
7	1.41	364	337	404
8	1.46	349	322	387
9	1.56	322	296	357
10	1.74	282	258	314
11	2.32	201	182	225
12	2.75	165	149	186
13	2.97	151	136	170
14	3.18	140	126	158
15	3.37	131	118	148
16	3.66	120	107	135
17	3.95	110	98.2	124
18	4.05	107	95.5	121
19	4.32	99.8	88.9	113
20	4.58	93.6	83.3	106
21	4.84	88.2	78.3	%100.0
22	5.10	83.3	73.9	94.5
23	5.30	79.9	70.9	90.7
24	5.72	73.7	65.2	83.7
25	6.50	64.3	56.8	73.1
26	7.28	57.0	50.2	64.9

Nondirectional measurements taken on October 24, 1986
Directional measurements taken on November 29, 1986
Nondirectional airborne measurements taken 1010-1031 EST on December 4, 1986
Directional airborne measurements taken 1005-1020 EST on December 3, 1986

* Airborne measurement

** Airborne measurement above ground point, not included in average

TABLE V-K

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

277 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
7	1.53	0950	610	#0949	62.0	-0.9929
			520			**
8(MP)	1.82	0952	555	1507	71.0	-0.8930
			460			**
9	1.87	0957	480	1503	59.5	-0.9067
			450			**
11*	2.37		380		72.0	-0.7225
12	2.87	1012	305	#1513	37.5	-0.9103
			310		46.0	**
13	3.34	1043	258	1447	28.5	-0.9568
			270		33.0	**
14	3.39	1040	250	1442	29.0	-0.9355
			260		32.0	**
15*	3.67		250		28.0	-0.9508
16	3.95	1211	232	##1115	23.0	-1.0038
			230		27.0	**
17*	4.43		200		28.0	-0.8539
18*	4.90		180		24.0	-0.8751
19*	5.38		170		26.0	-0.8155
20	5.85	1039	155	##1020	16.5	-0.9728
			150		16.0	**
21*	6.44		130		18.0	-0.8587
22*	7.02		120		18.0	-0.8239
23*	7.60		100		14.0	-0.8539
24	8.18	1310	100	1348	12.2	-0.9136
			88.0		12.0	**
25*	8.84		78.0		11.0	-0.8507
26	9.50	1256	79.0	1411	11.7	-0.8294
			73.0		7.30	**

TABLE V-K

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
27*	10.60		79.0		7.10	-1.0464
28*	11.32		69.0		7.50	-0.9638
					Average Log Ratio:	-0.9014
					Antilog:	.1255
			Nondirectional Analyzed Field Strength (mV/m):			1000
			Directional Analyzed Field Strength (mV/m):			125

Nondirectional measurements taken December 1, 1986
Directional measurements taken November 30, 1986
\# Directional measurements taken December 1, 1986
\## Directional measurements taken November 29, 1986
Nondirectional airborne measurements taken 1038-1056 EST on December 4, 1986
Directional airborne measurements taken 1045-1050 EST on December 3, 1986
* Airborne measurement
** Airborne measurement above ground point, not included in average

TABLE V-L

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

308 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11(MP)	2.35	1027	380	1349	10.0	-1.5798
			320		12.0	**
12*	2.79		260		13.5	-1.2846
13*	3.22		210		6.90	-1.4834
14	3.68	1004	225	#1010	3.20	-1.8470
			109		4.70	**
15*	3.99		180		3.30	-1.7368
16	4.29	1046	203	1358	5.20	-1.5915
			170		4.90	**
17	4.35	1036	195	1356	4.80	-1.6088
			160		5.90	**
18	4.55	1050	165	1402	6.00	-1.4393
			160		6.60	**
19	4.80	1053	160	1404	5.60	-1.4559
			150		5.00	**
20	5.10	1201	158	#1040	5.90	-1.4278
			130		3.70	**
21	5.66		110		5.70	-1.2855
22*	6.21		100		7.70	-1.1135
23*	6.77		92.0		6.40	-1.1576
24*	7.32		100		6.80	-1.1675
			89.0		3.80	**
25*	7.89		86.0		3.40	-1.4030
26	8.46	1234	89.0	1457	4.30	-1.3159
			75.0		2.70	**
27*	9.03		72.0		1.90	-1.5786
28*	9.60		65.0		2.30	-1.4512
29*	19.90	1410	37.0	1534	2.30	-1.2065

					Average Log Ratio:	-1.4281
					Antilog:	.0373
					Nondirectional Analyzed Field Strength (mV/m):	950
					Directional Analyzed Field Strength (mV/m):	35.4

(See page 2 for footnotes)

TABLE V-L

Nondirectional measurements taken December 1, 1986
Directional measurements taken November 23, 1986
\# Directional measurements taken November 24, 1986
Nondirectional airborne measurements taken 1110-1133 EST on December 4, 1986
Directional airborne measurements taken 1138-1200 EST on December 3, 1986
* Airborne measurement
** Airbotne measurement above ground point, not included in average

TABLE V-M

NIGHTTIME DIRECTIONAL MEASURED FIELD
STRENGTH DATA AND NUMERICAL ANALYSIS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

333 Degrees True

Point Number	Distance (Mi)	Measured Field Time (EST)	Non-DA (mV/m)	Time (EST)	DA-N (mV/m)	Log Ratio (DA/ND)
11*	2.38		320		8.70	-1.5656
12*	2.71		260		9.90	-1.4193
13(MP)	3.03	1032	310	#0950	9.10	-1.5323
			235		7.10	**
14*	3.36		200		4.75	-1.6243
15*	3.68		180		5.10	-1.5477
16*	4.00		160		3.70	-1.6359
17	4.32	1100	183	1415	2.80	-1.8153
			160		3.35	**
18	4.75	1102	180	1412	1.60	-2.0512
			150		2.60	**
19*	5.28		130		2.00	-1.8129
20*	5.81		110		1.70	-1.8109
21*	6.34		110		2.30	-1.6797
22	6.86	1119	92.5	##1426	1.60	-1.7620
			90.0		2.40	**
23	6.98	1116	71.0		1.90	-1.8970
			86.0		1.75	**
24	7.15	1622	96.0	1423	1.85	-1.7151
			81.0		1.80	**
25	7.70	1625	94.0	1430	2.15	-1.6407
			81.5		1.10	**
26*	8.35		73.0		2.80	-1.4162
27	9.00	1515	79.0	#1048	1.30	-1.7837
			67.0		1.55	**
28*	11.24	1531	63.0	#1205	0.90	-1.8451
29*	13.70	1653	49.0	#1528	2.70	-1.2588

					Average Log Ratio:	-1.6742
					Antilog:	.0212
					Nondirectional Analyzed Field Strength (mV/m):	900
					Directional Analyzed Field Strength (mV/m):	19.1

(See page 2 for footnotes)

Nondirectional measurements taken December 1, 1986
Directional measurements taken November 23, 1986
Directional measurements taken November 24, 1986
Directional measurements taken November 30, 1986
Nondirectional airborne measurements taken 1145-1203 EST on December 4, 1986
Directional airborne measurements taken 1330-1402 EST on December 3, 1986
* Airborne measurement
** Airborne measurement above ground point, not included in average

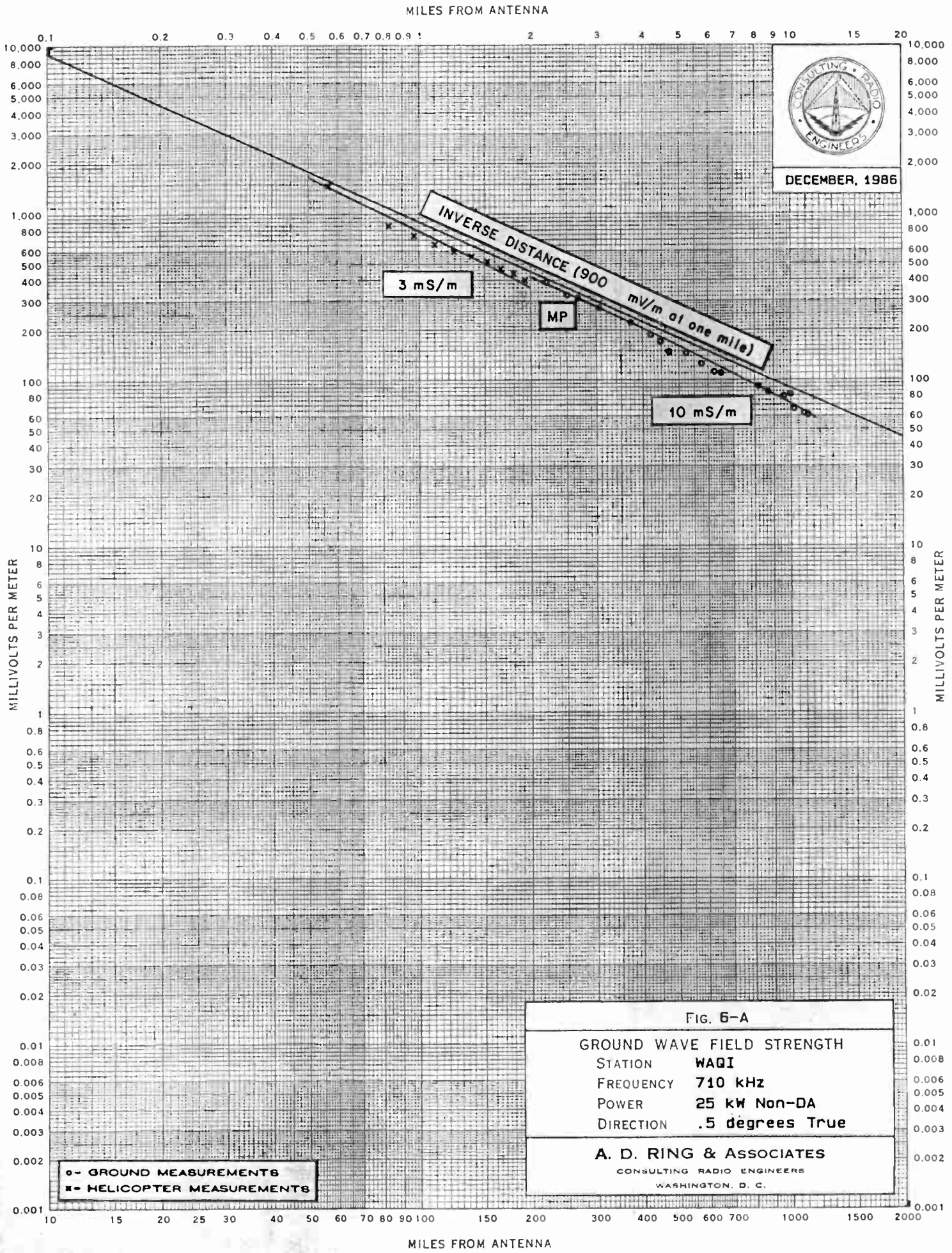


FIG. 6-A

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	.5 degrees True

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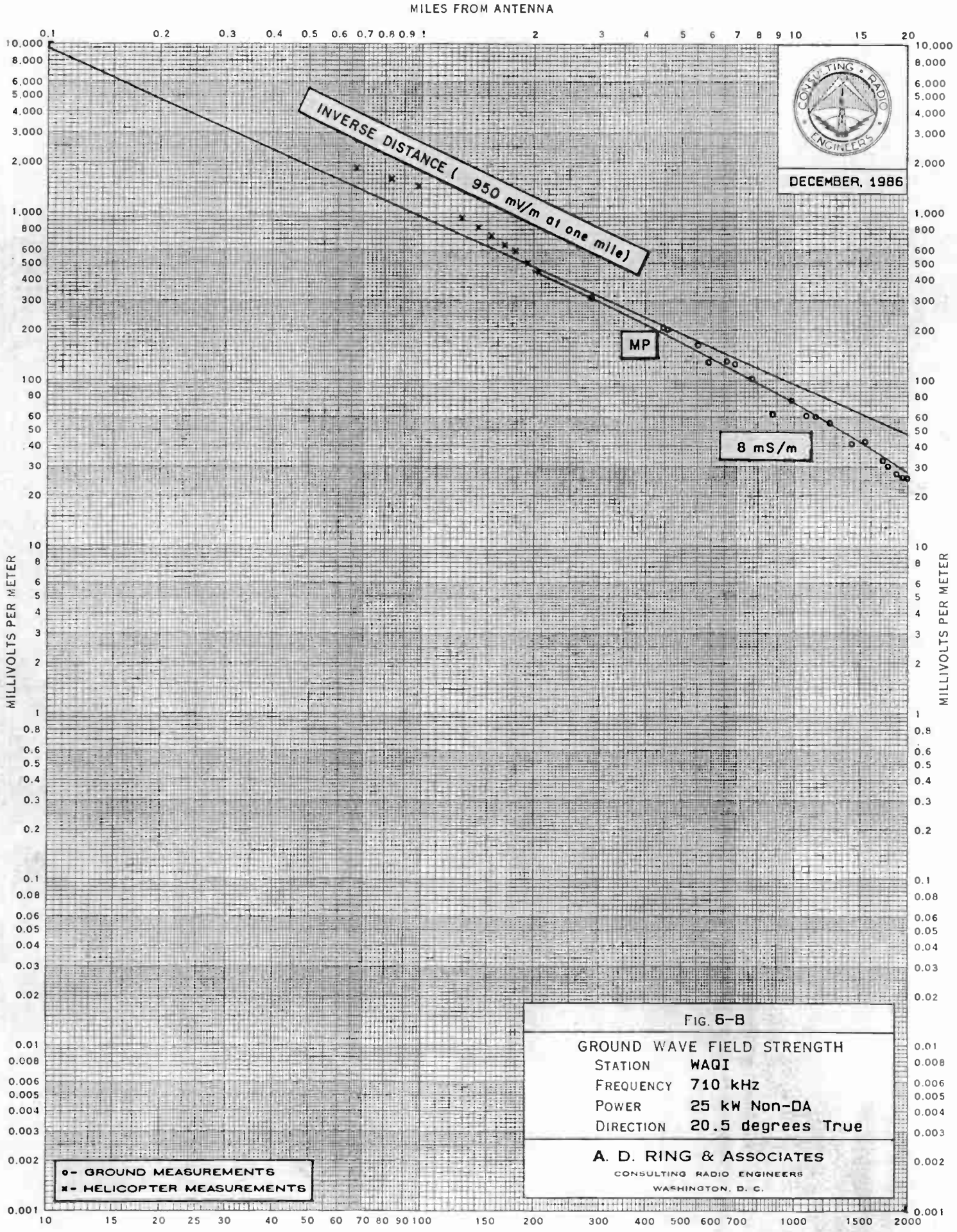

FIG. 6-8

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	20.5 degrees True

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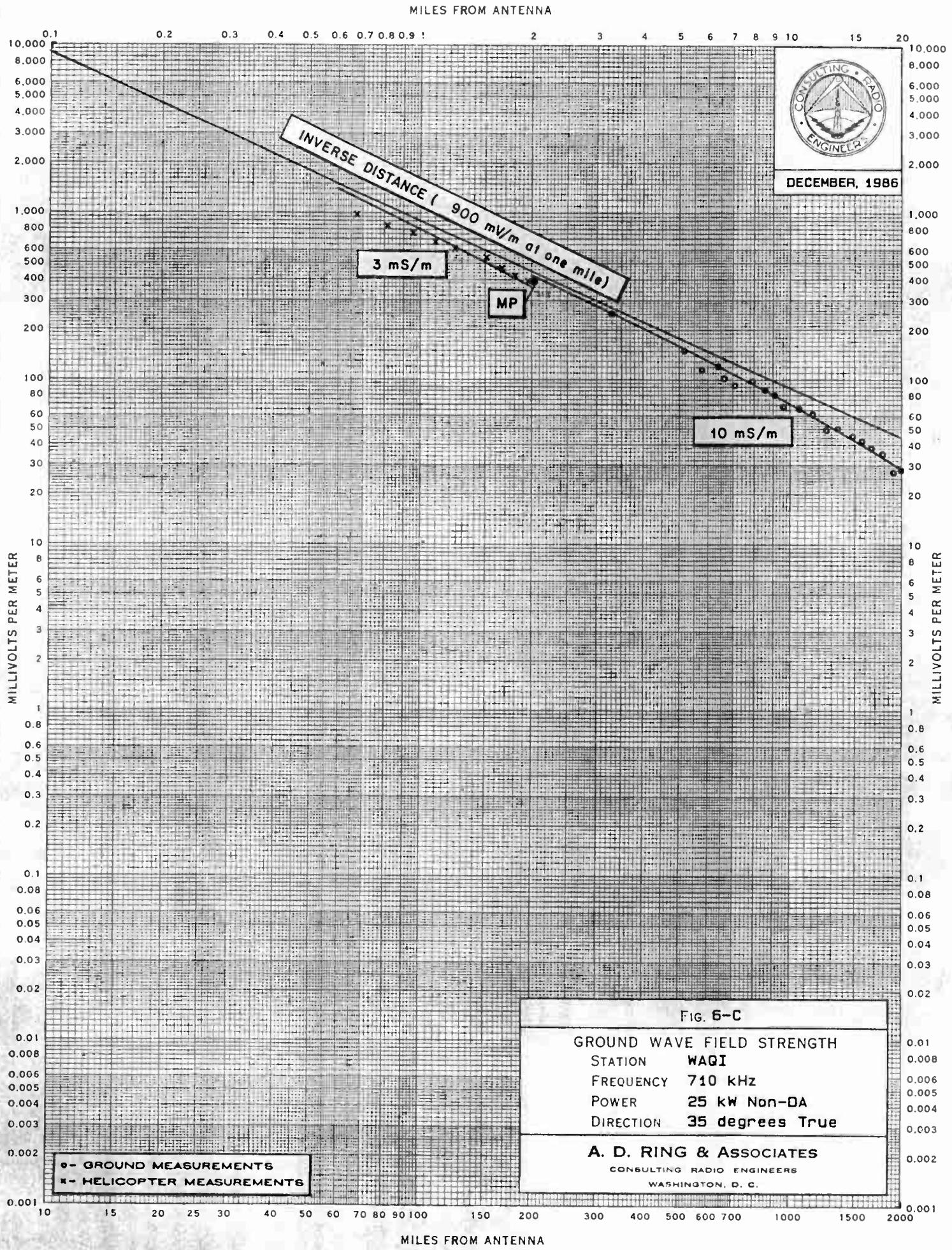

FIG. 6-C

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	35 degrees True

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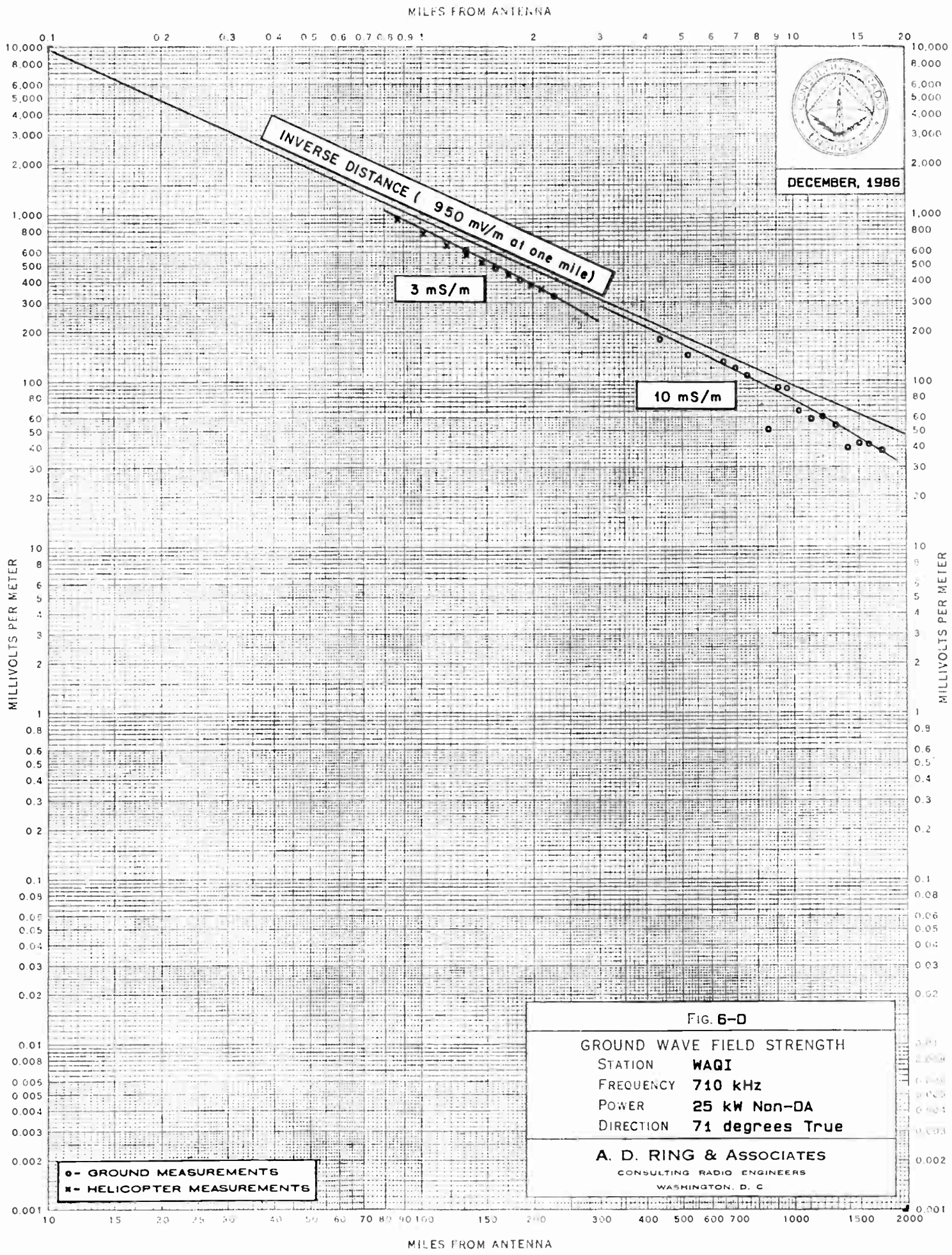

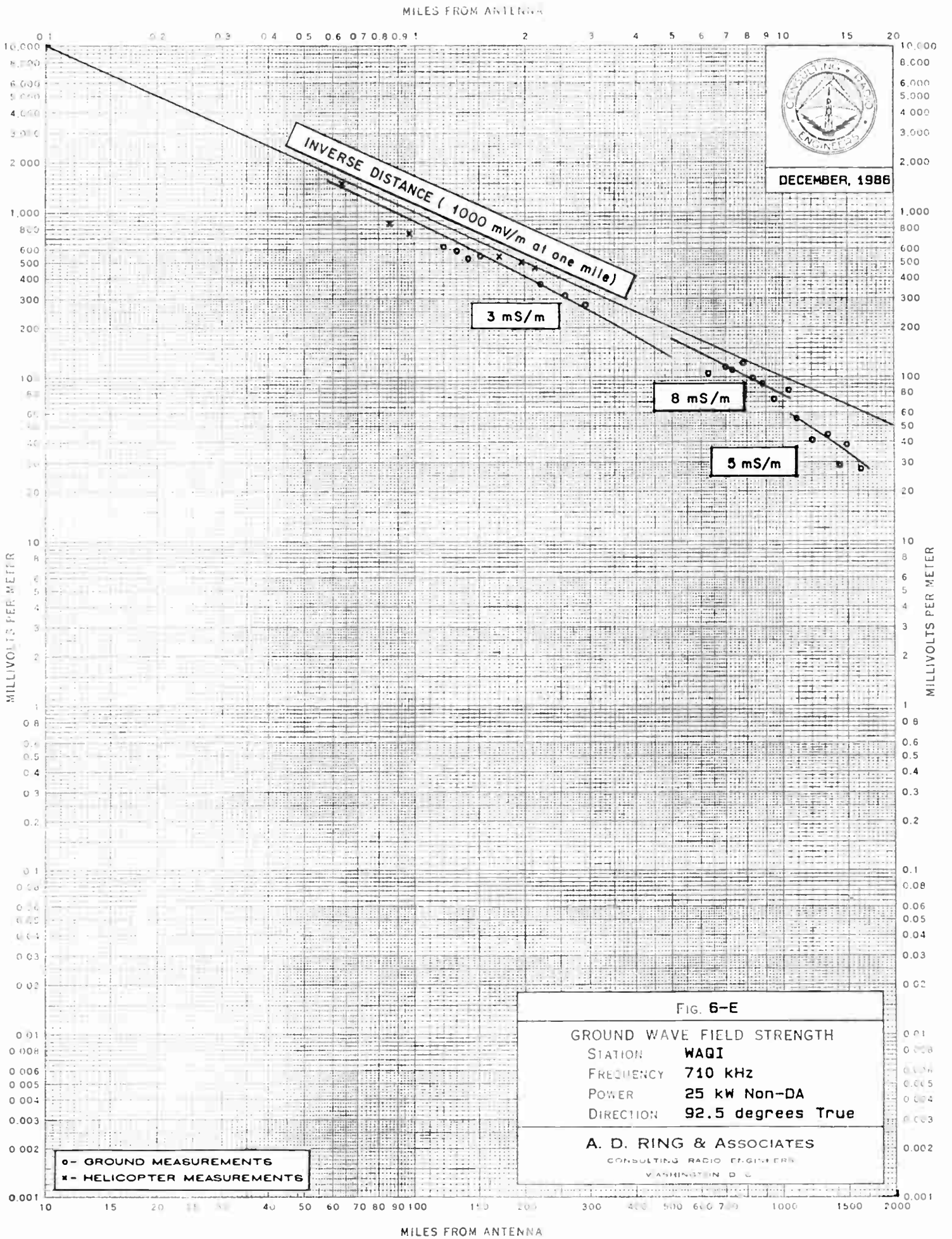

FIG. 6-E

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	92.5 degrees True

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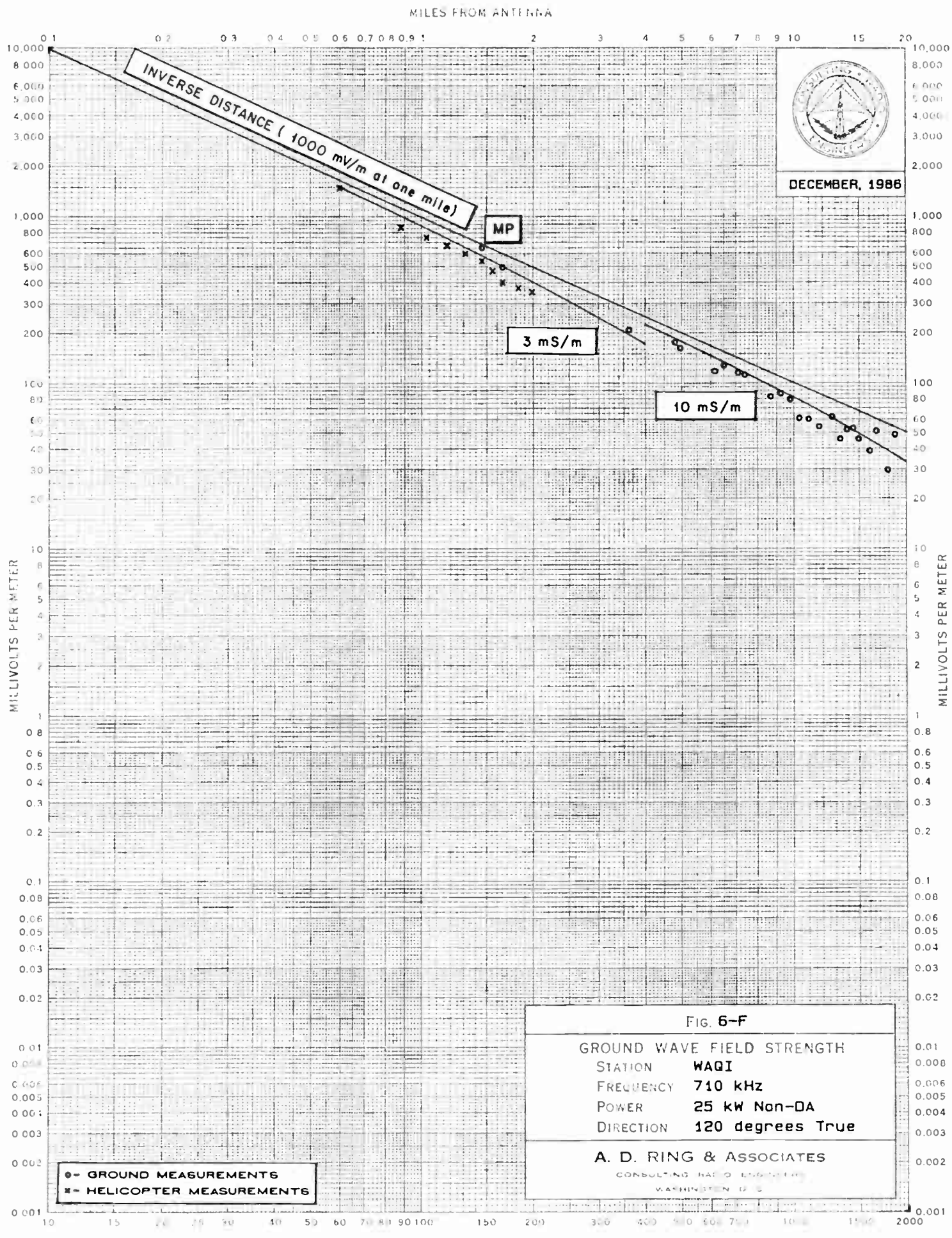

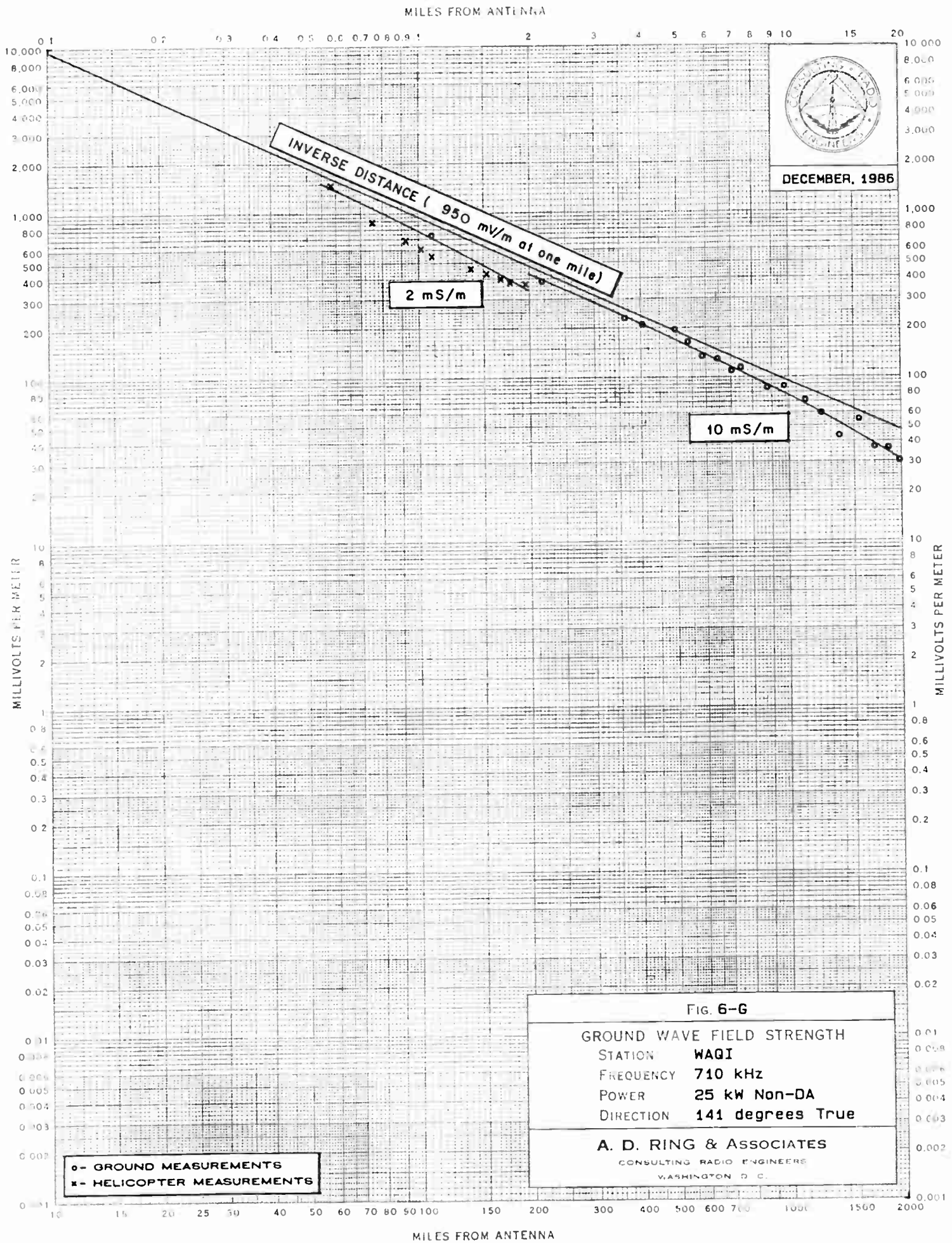

FIG. 6-G

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	141 degrees True

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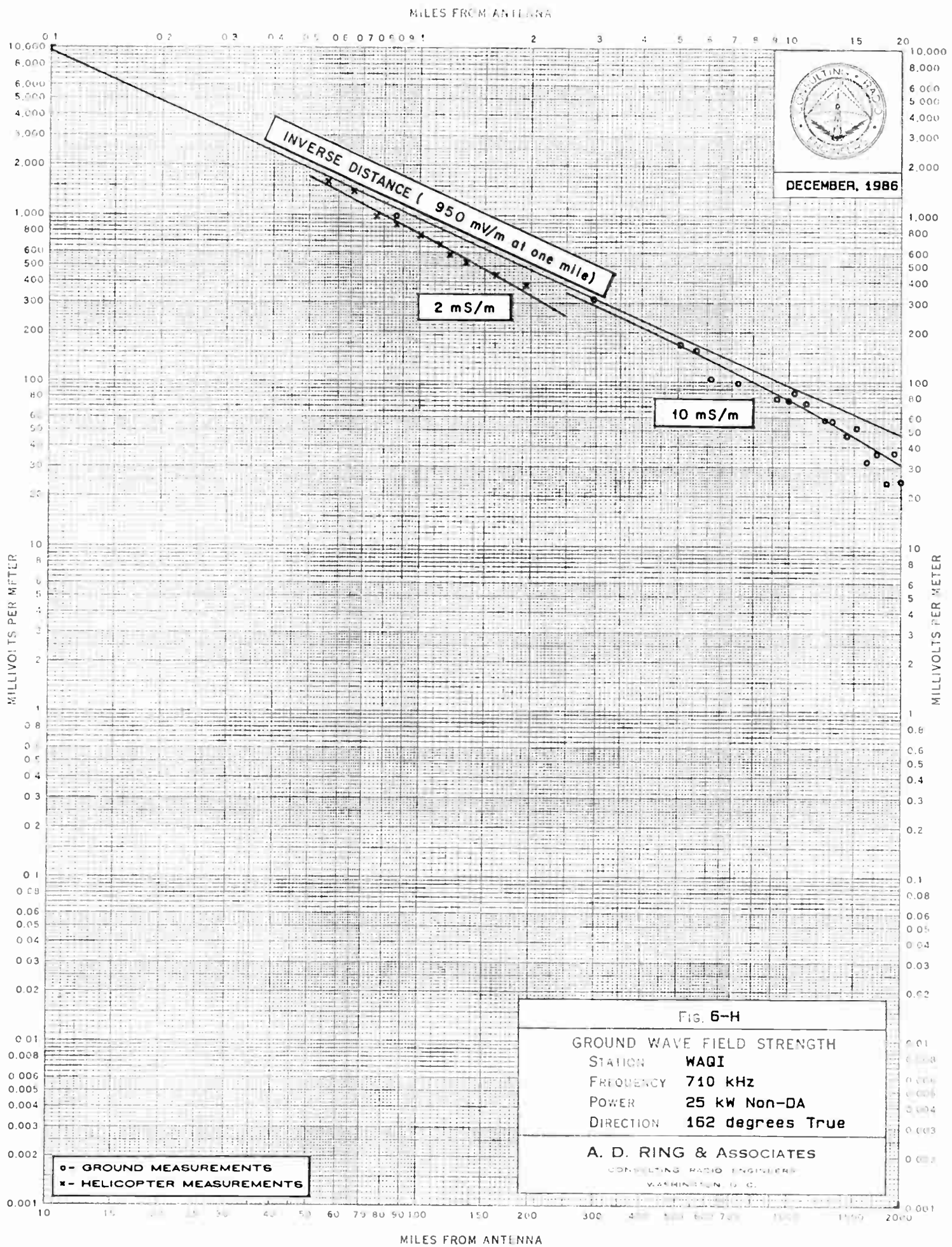

FIG. 6-H

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	162 degrees True

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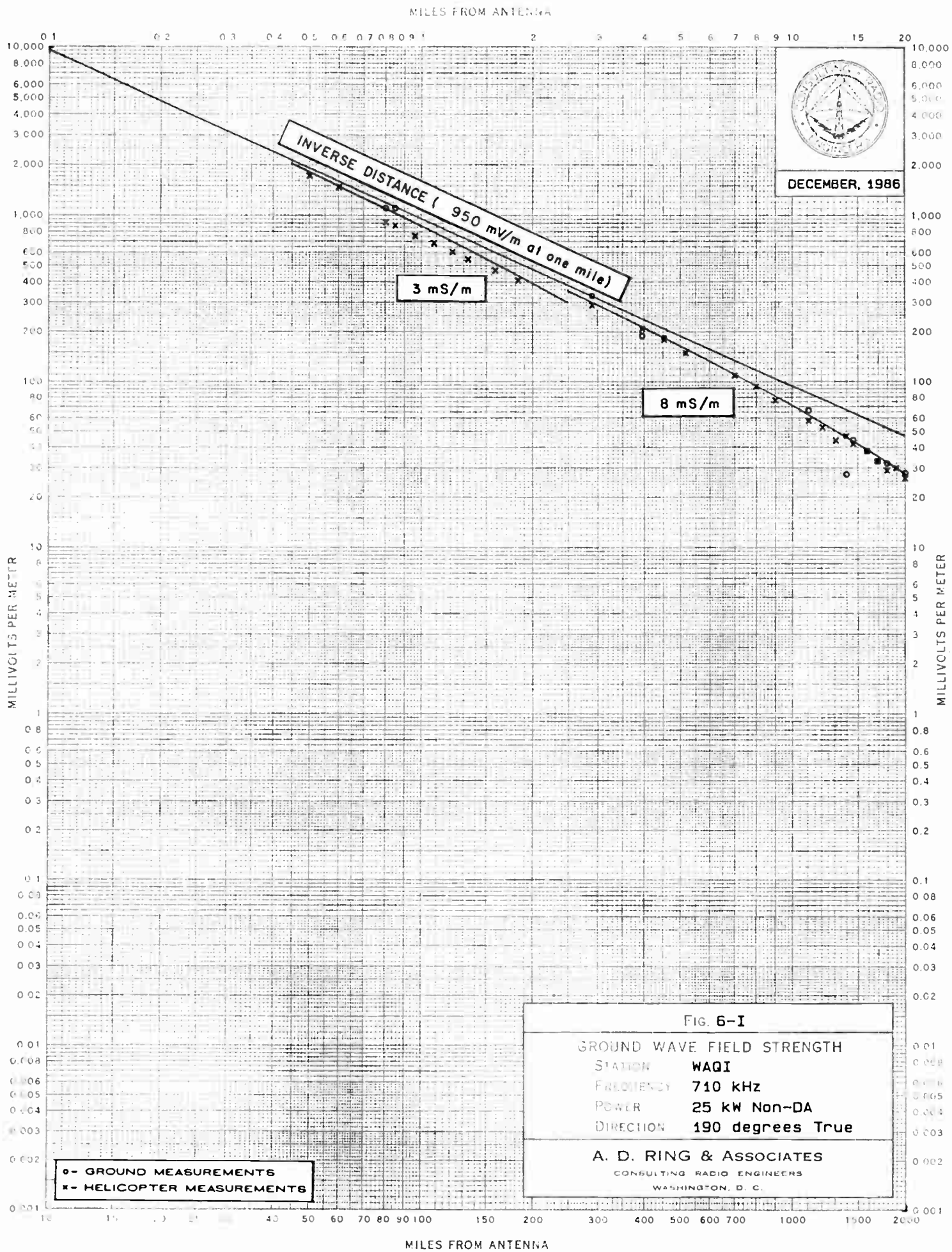

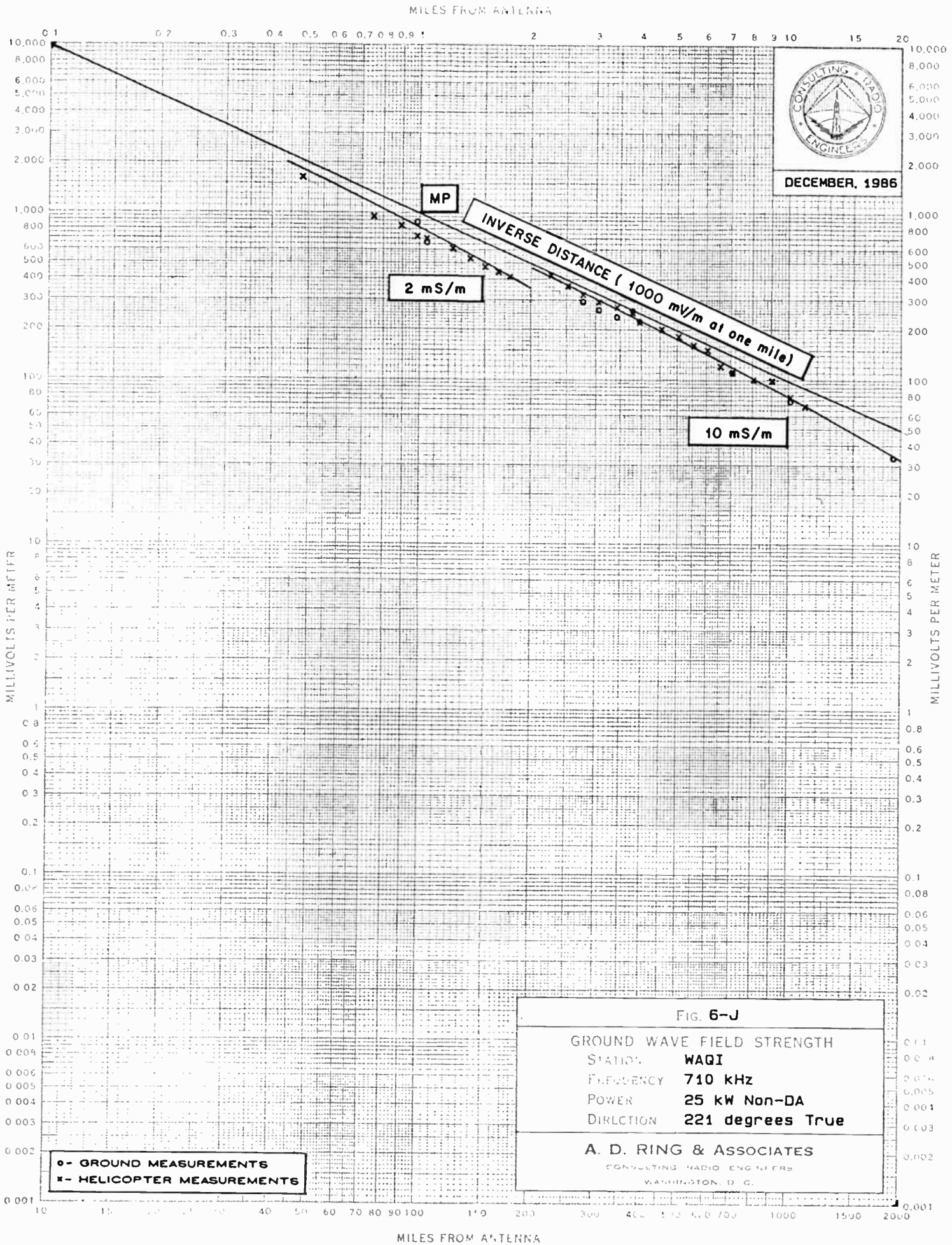

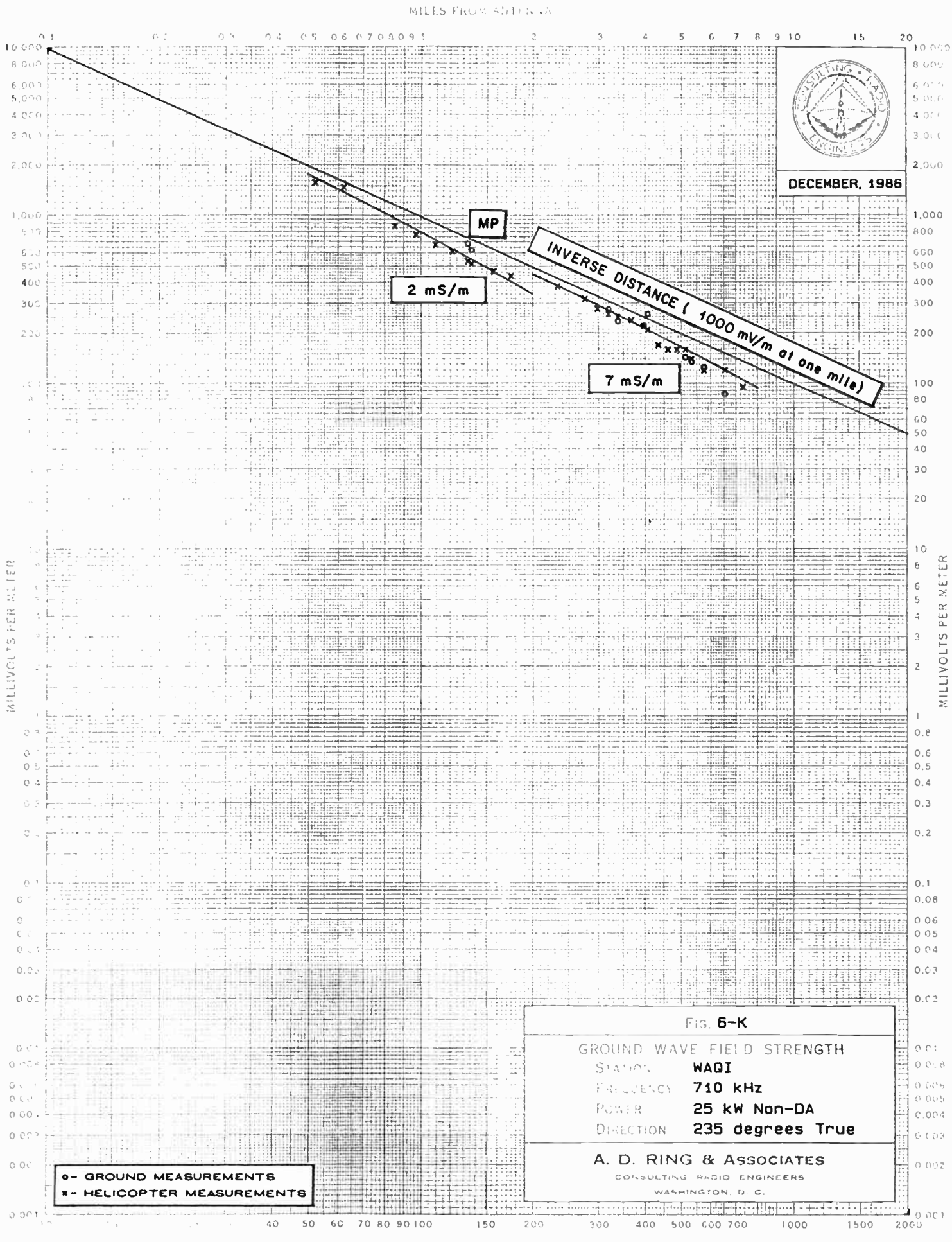

FIG. 6-K

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	235 degrees True

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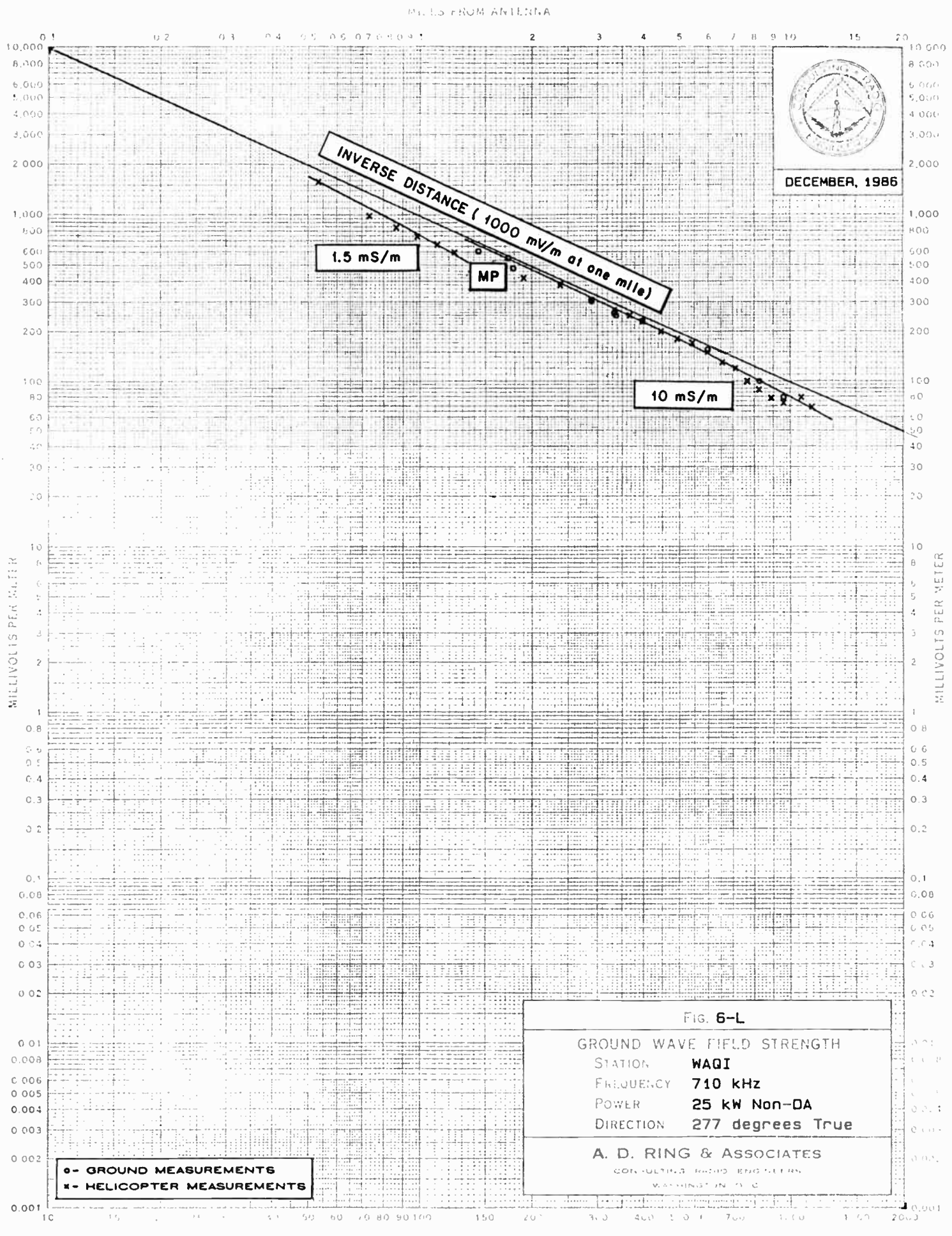

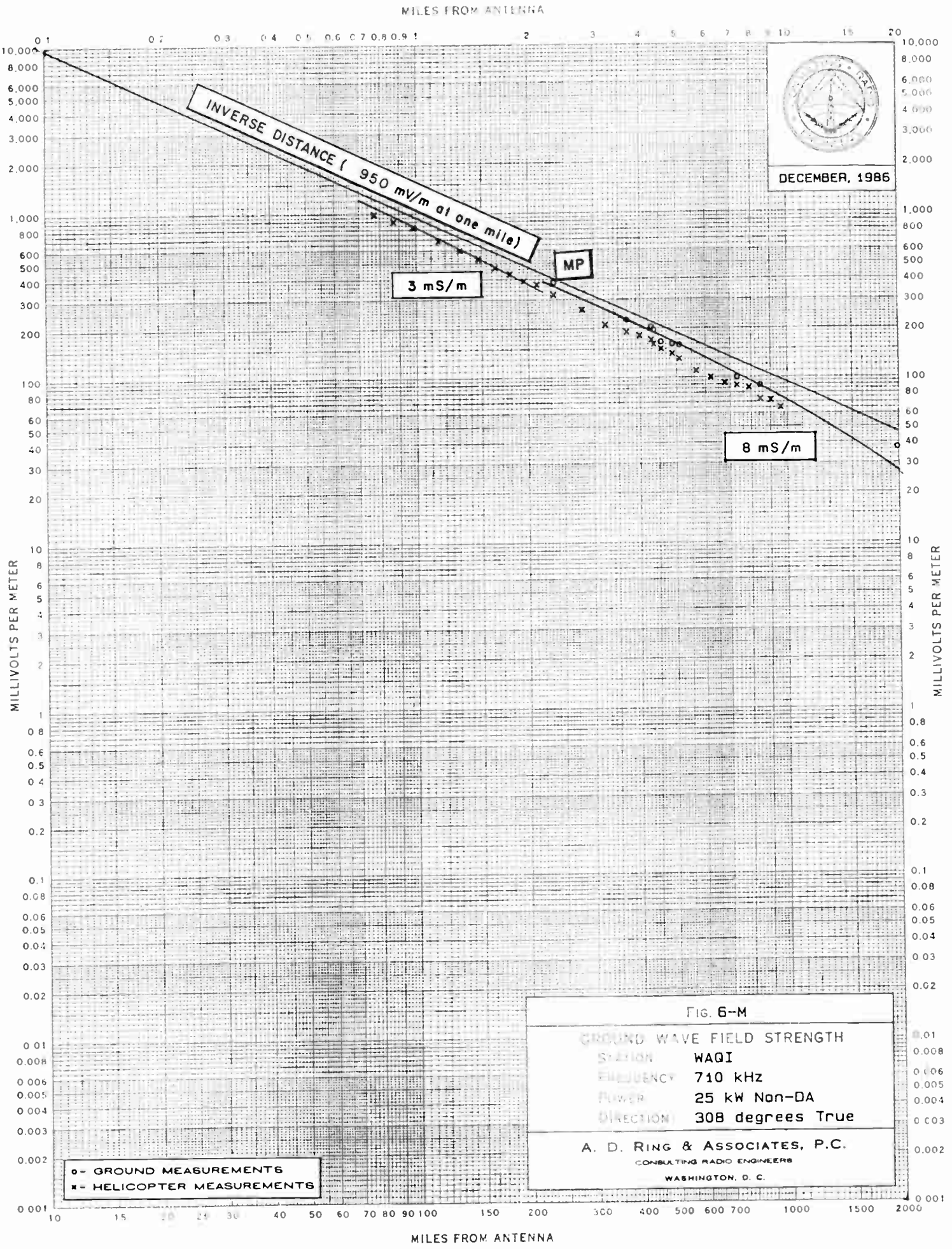

FIG. 6-M

GROUND WAVE FIELD STRENGTH

STATION: WAQI

FREQUENCY: 710 kHz

POWER: 25 kW Non-DA

DIRECTION: 308 degrees True

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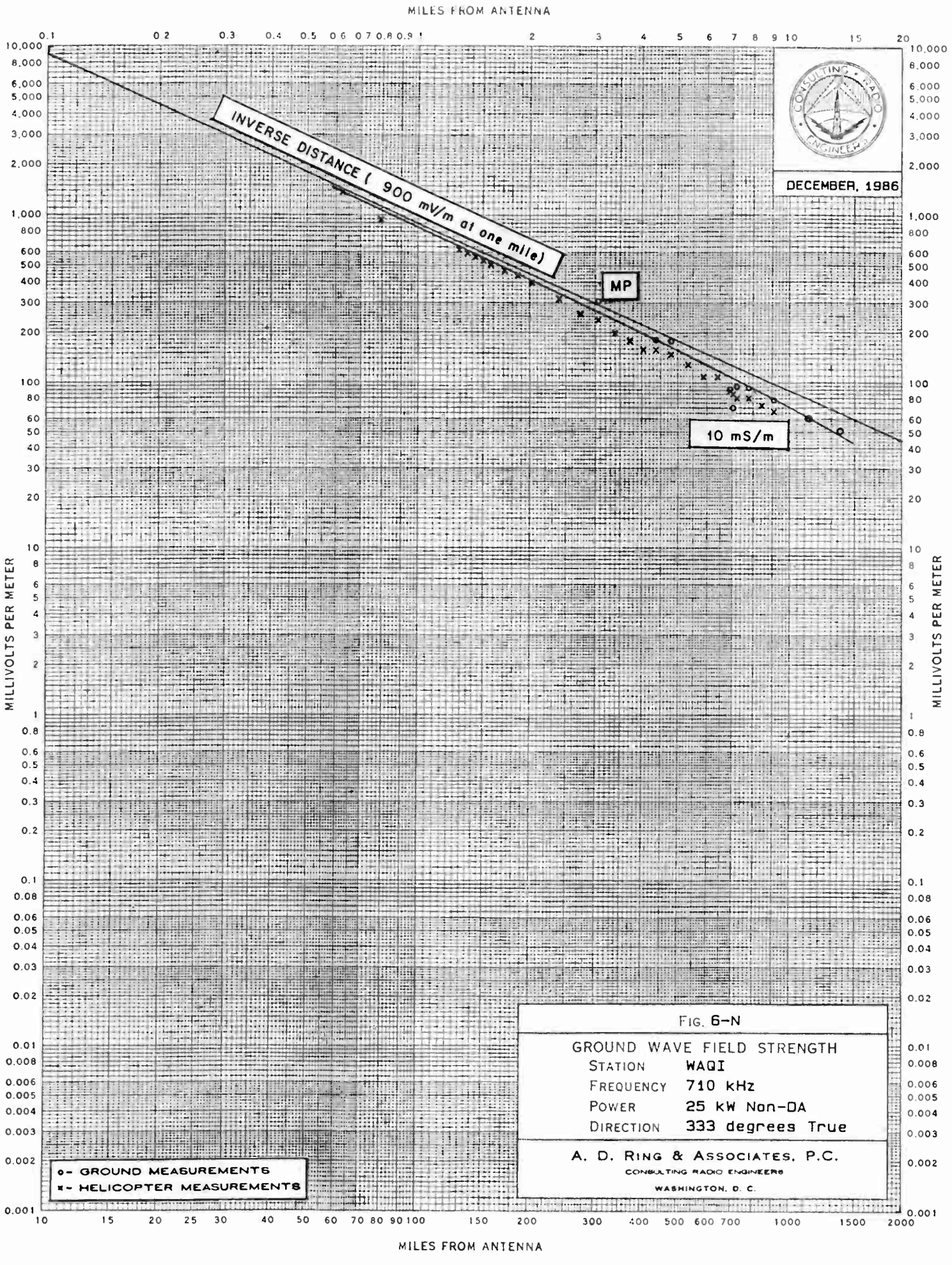

FIG. 6-N

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	25 kW Non-DA
DIRECTION	333 degrees True

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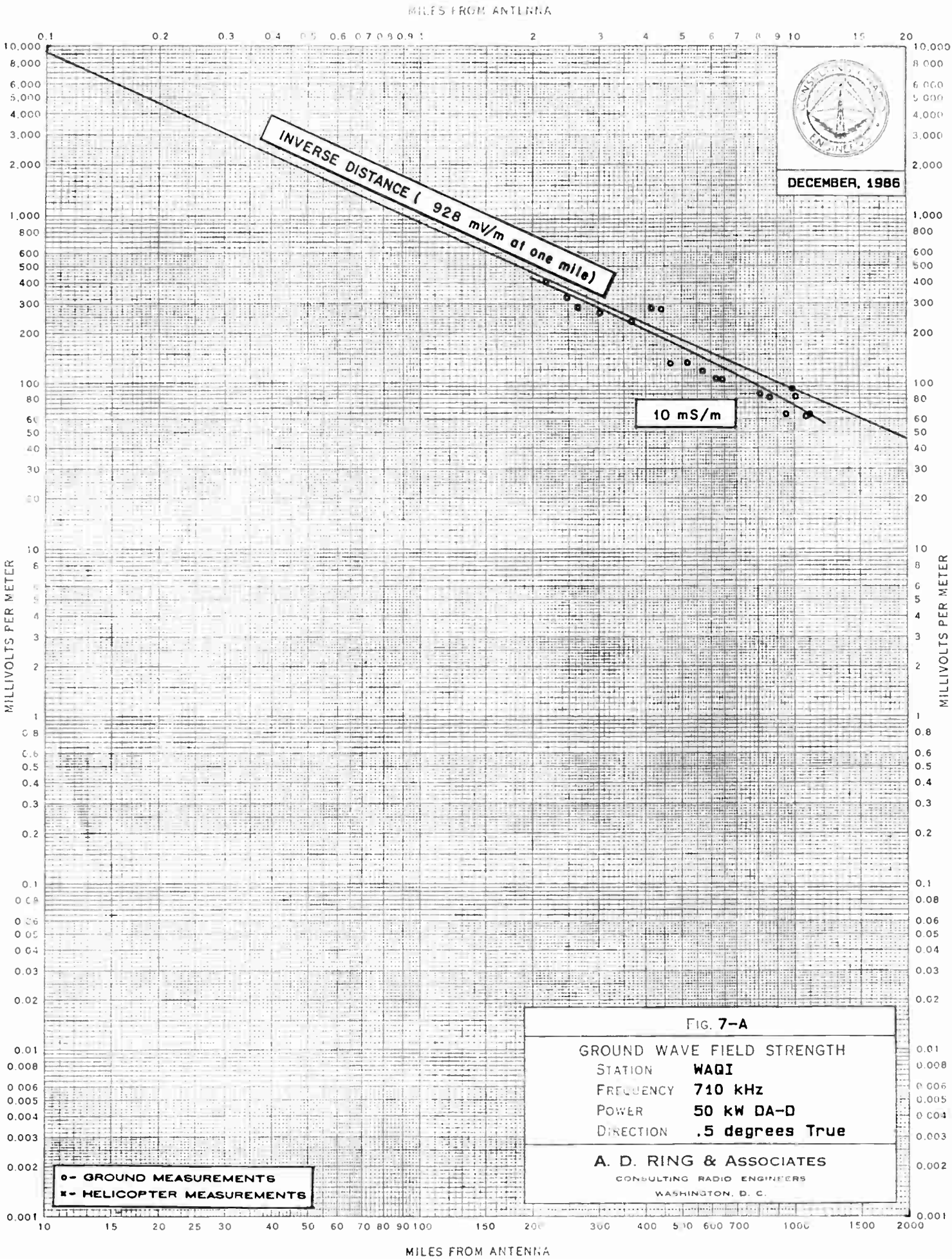

FIG. 7-A

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-D
DIRECTION	.5 degrees True

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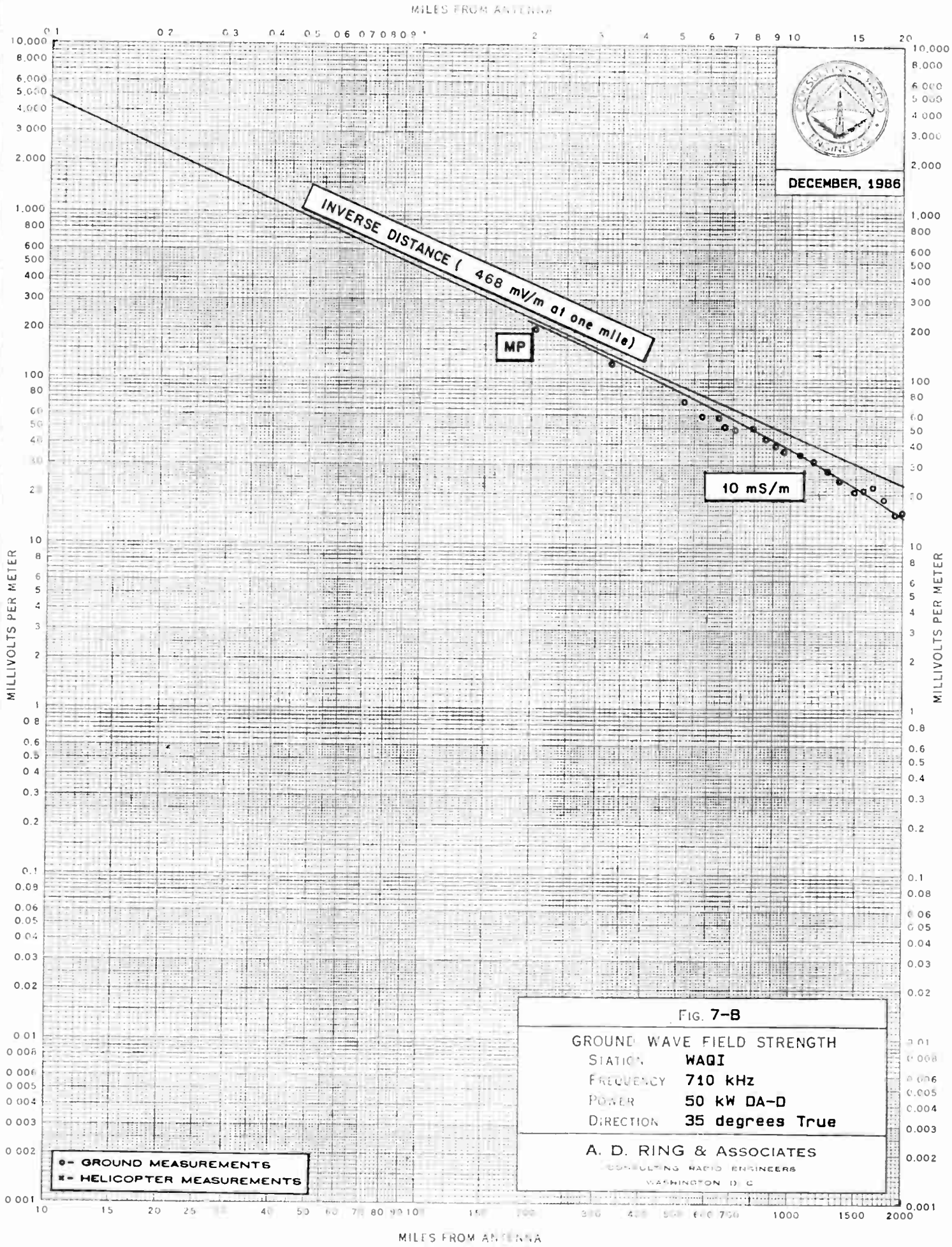

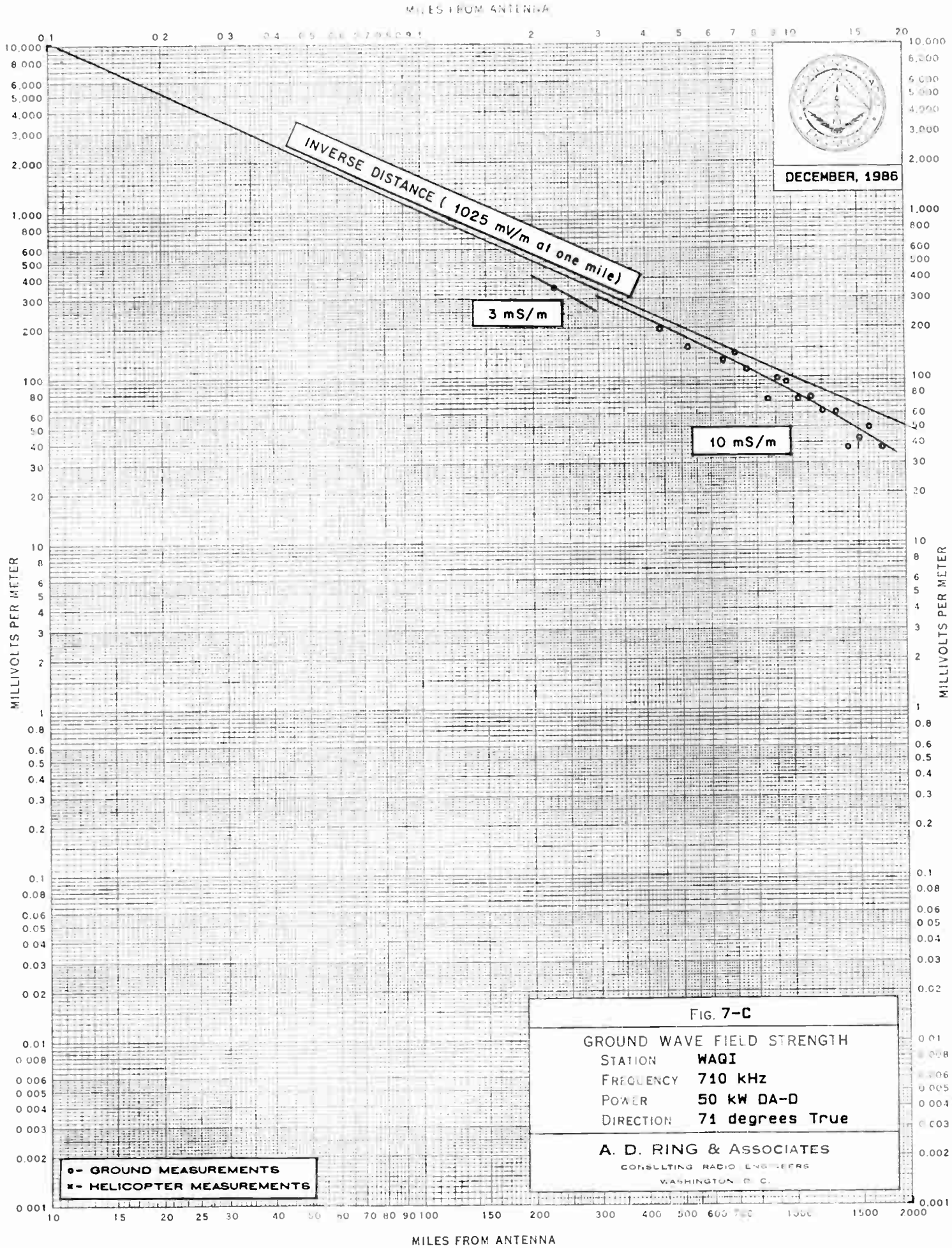

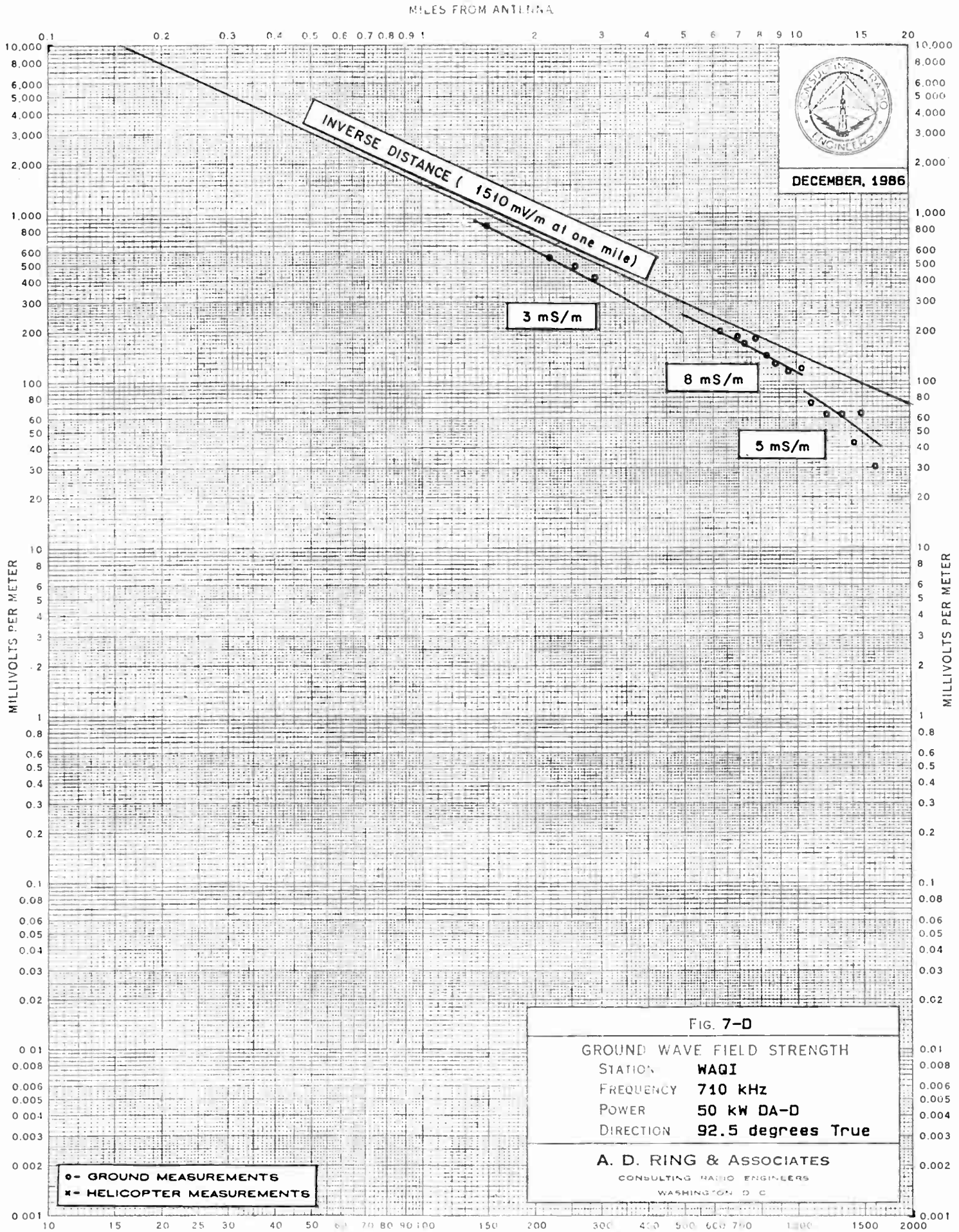

FIG. 7-D

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-D
DIRECTION	92.5 degrees True

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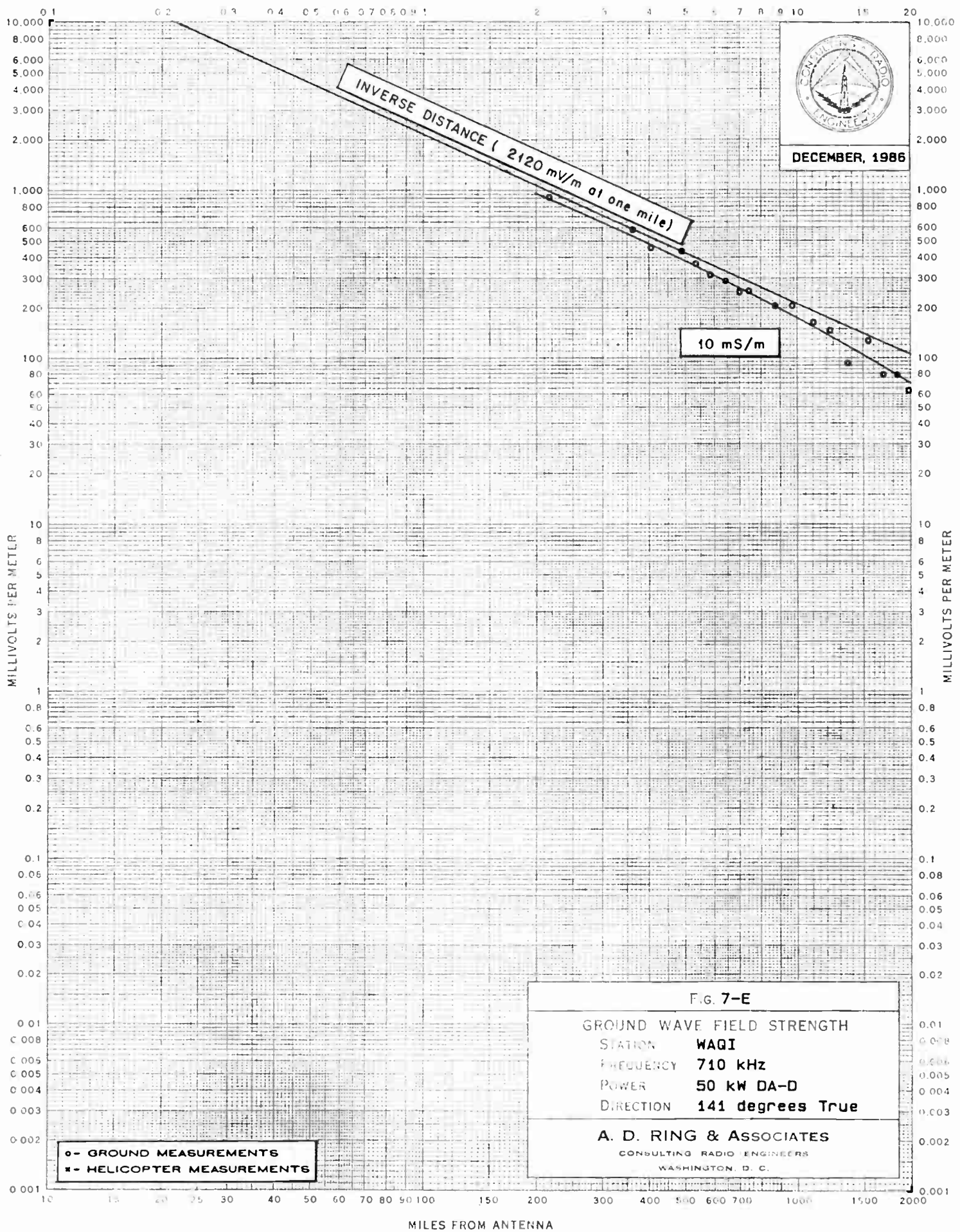

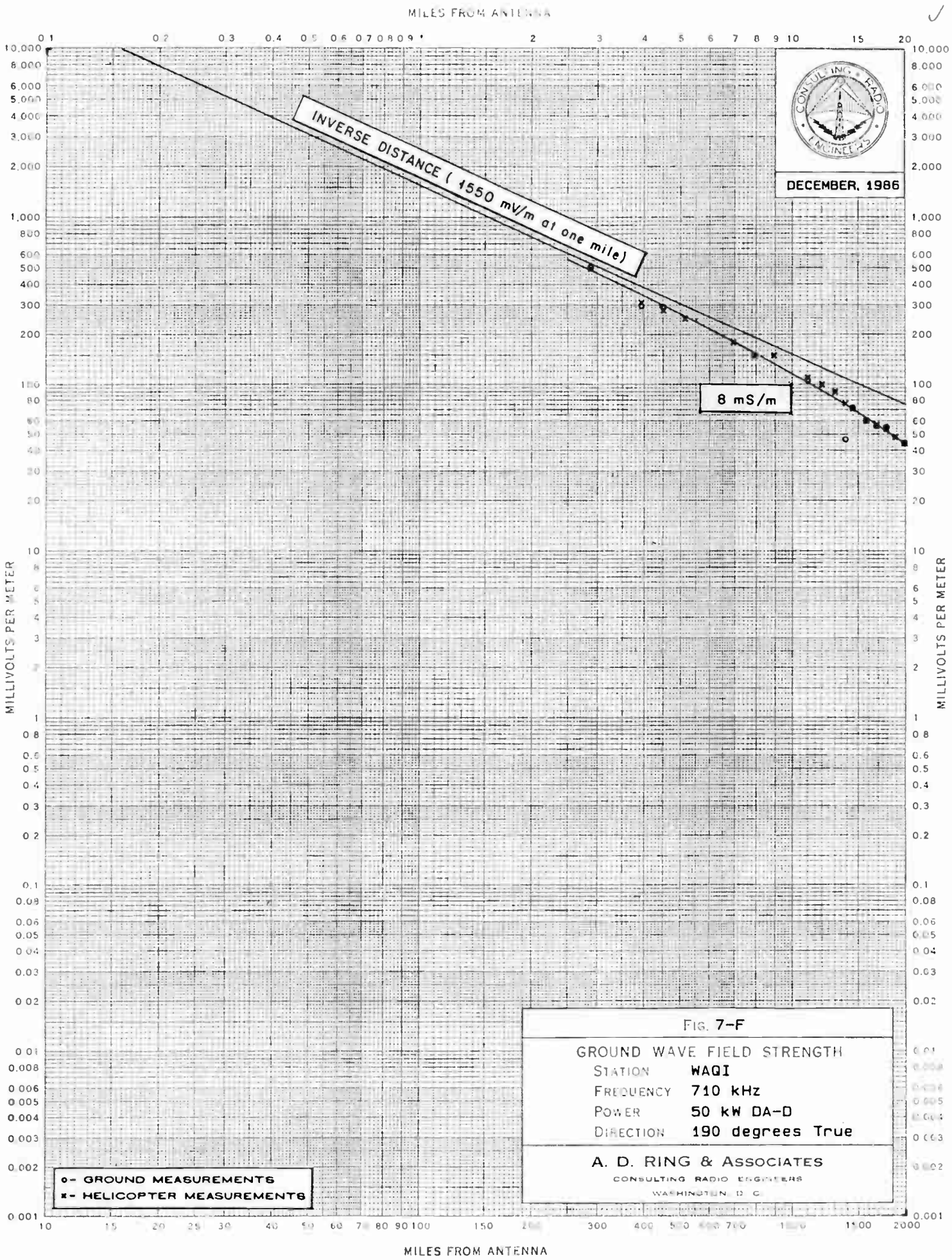

FIG. 7-F

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-D
DIRECTION	190 degrees True

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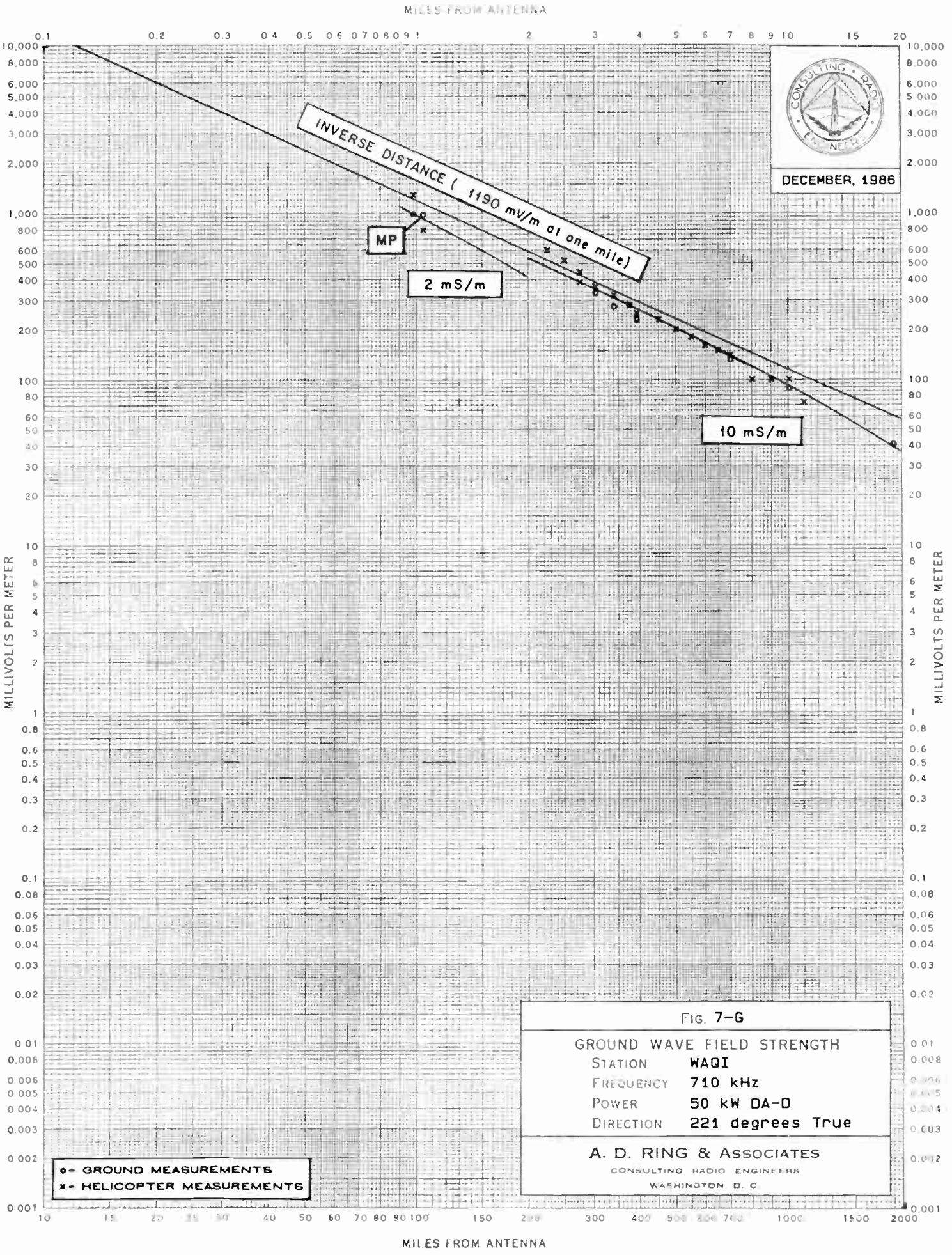

FIG. 7-G

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-D
DIRECTION	221 degrees True

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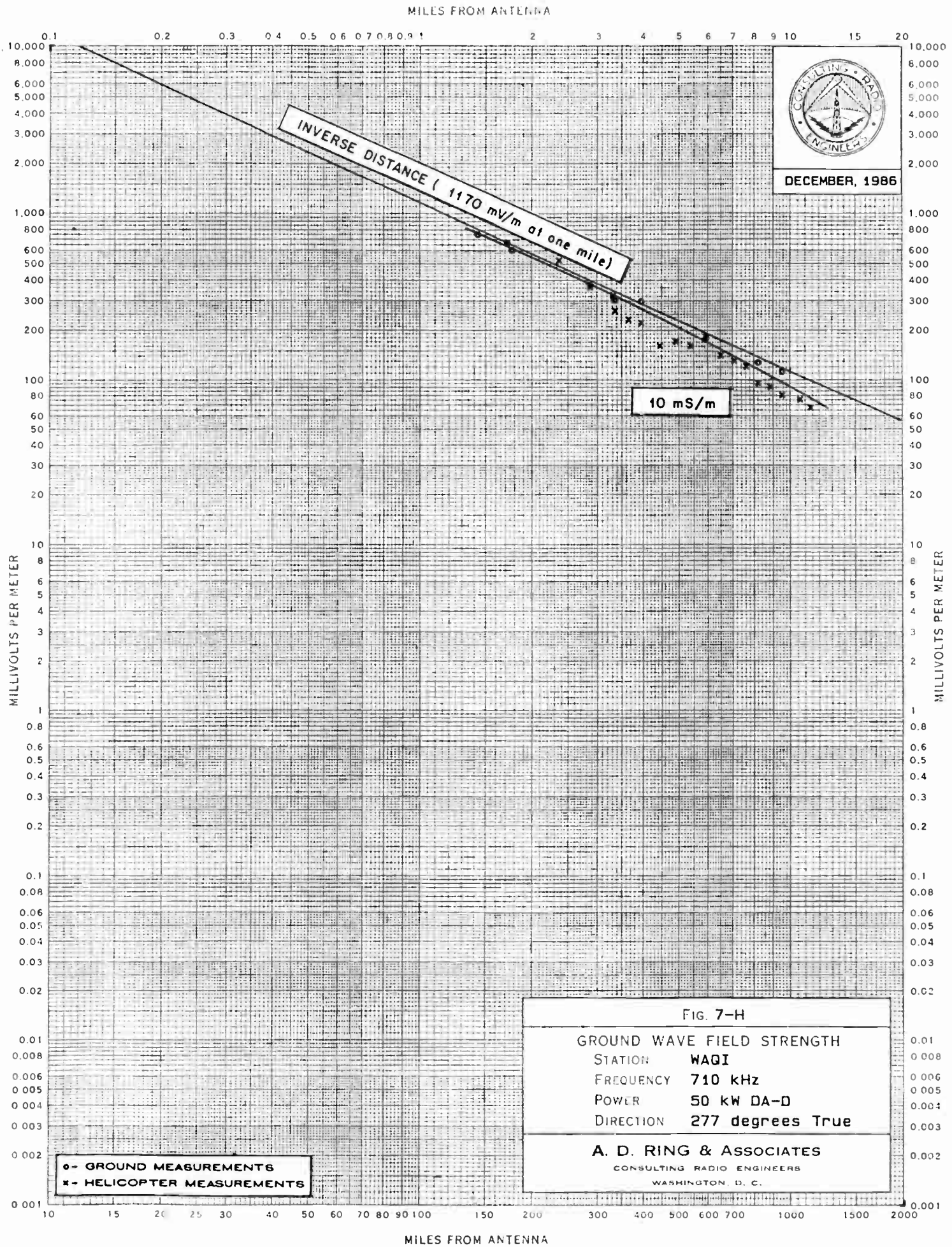

FIG. 7-H

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-D
DIRECTION	277 degrees True

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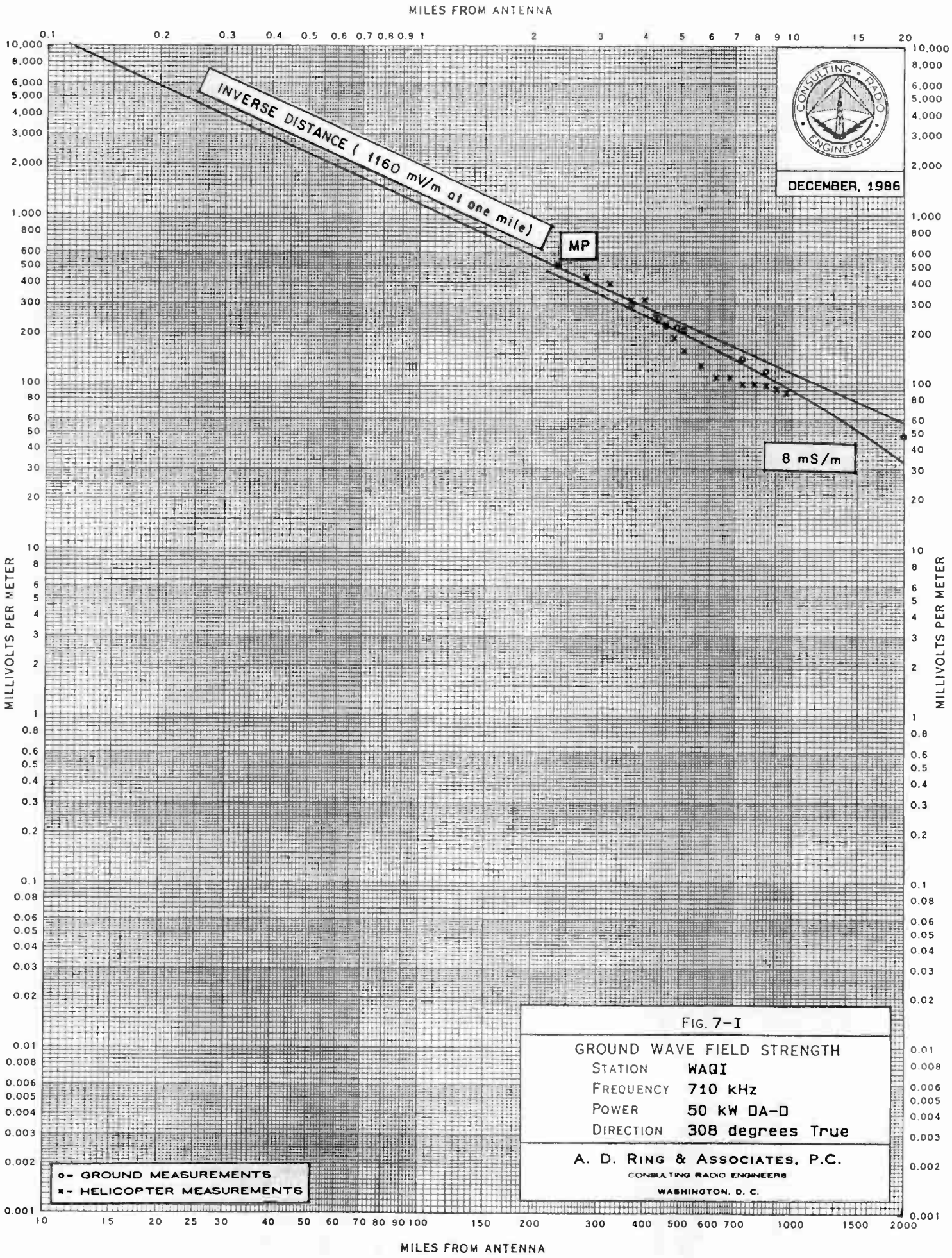
MILES FROM ANTENNA
INVERSE DISTANCE (1160 mV/m at one mile)
MP
8 mS/m
DECEMBER, 1986
MILLIVOLTS PER METER
MILES FROM ANTENNA
o- GROUND MEASUREMENTS
x- HELICOPTER MEASUREMENTS
FIG. 7-I
GROUND WAVE FIELD STRENGTH
STATION WAQI
FREQUENCY 710 kHz
POWER 50 kW DA-D
DIRECTION 308 degrees True
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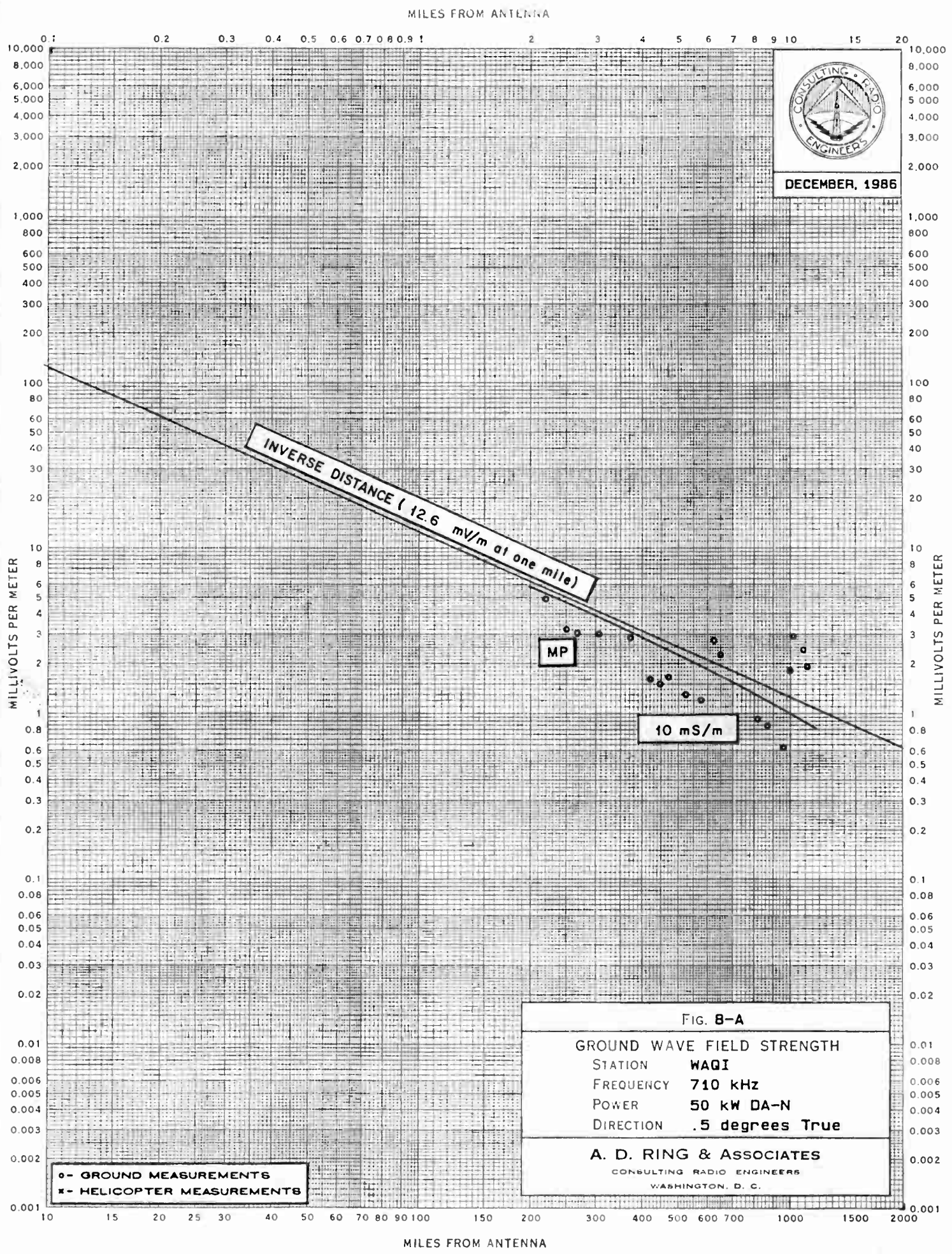

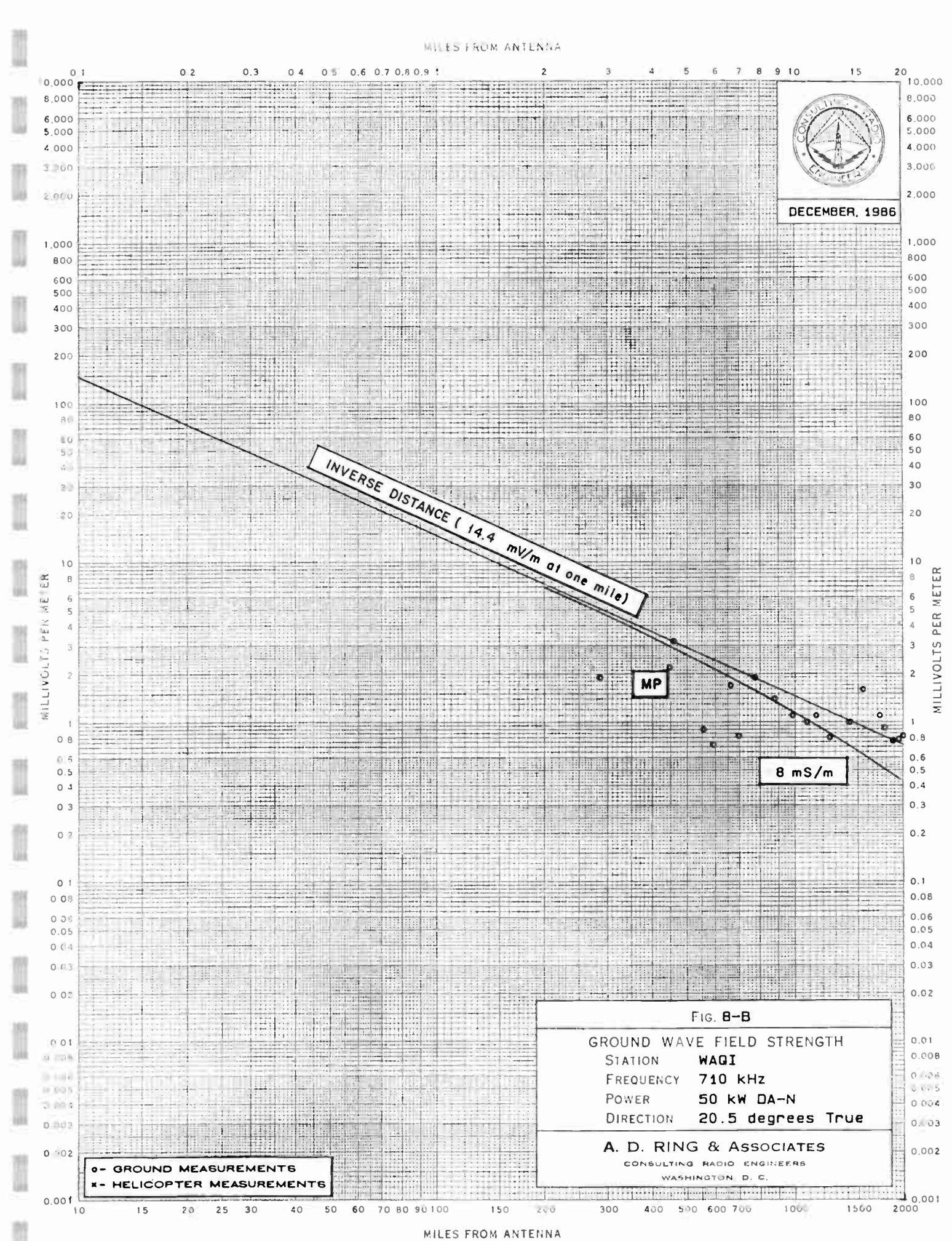

FIG. 8-B

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	20.5 degrees True

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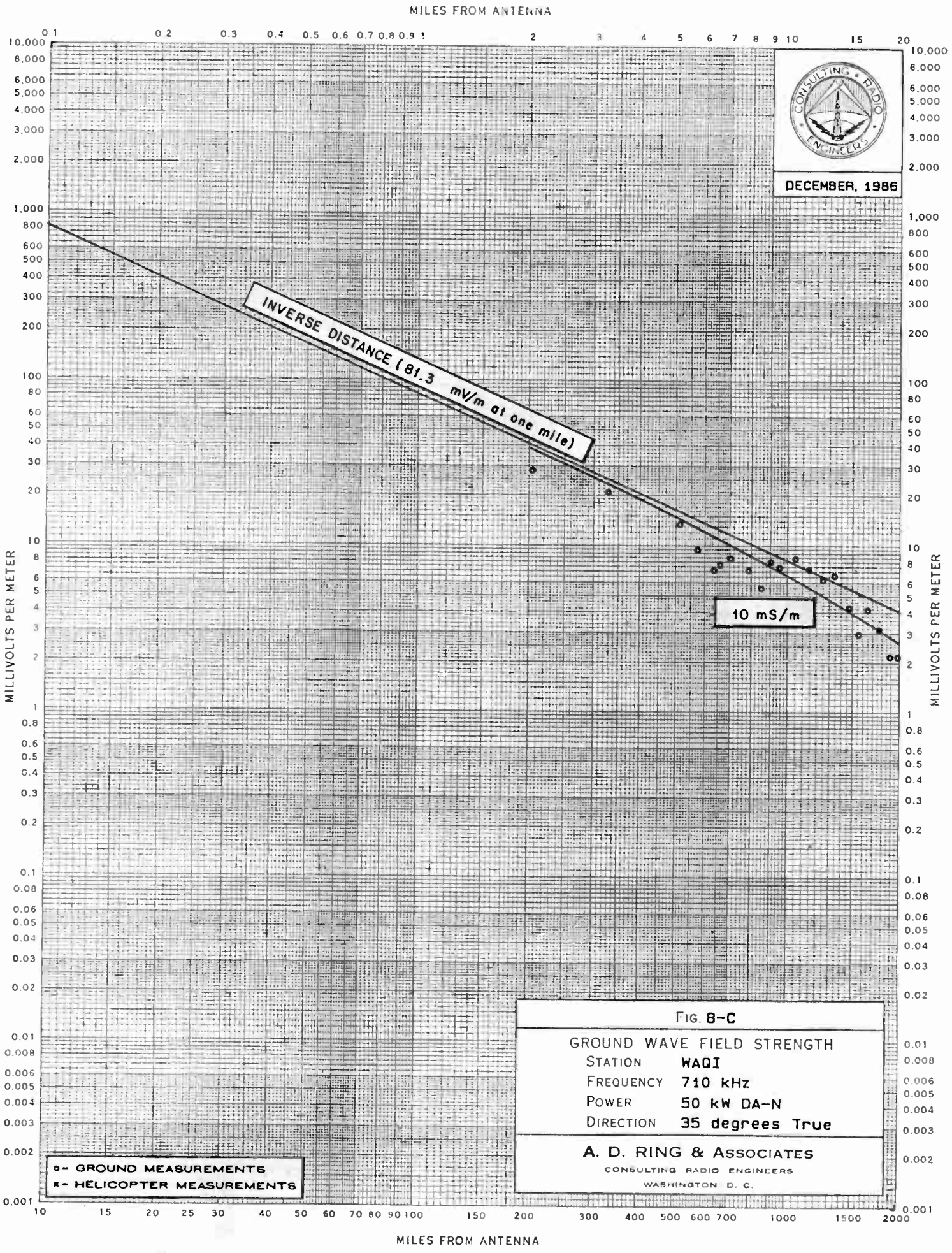

FIG. 8-C

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	35 degrees True

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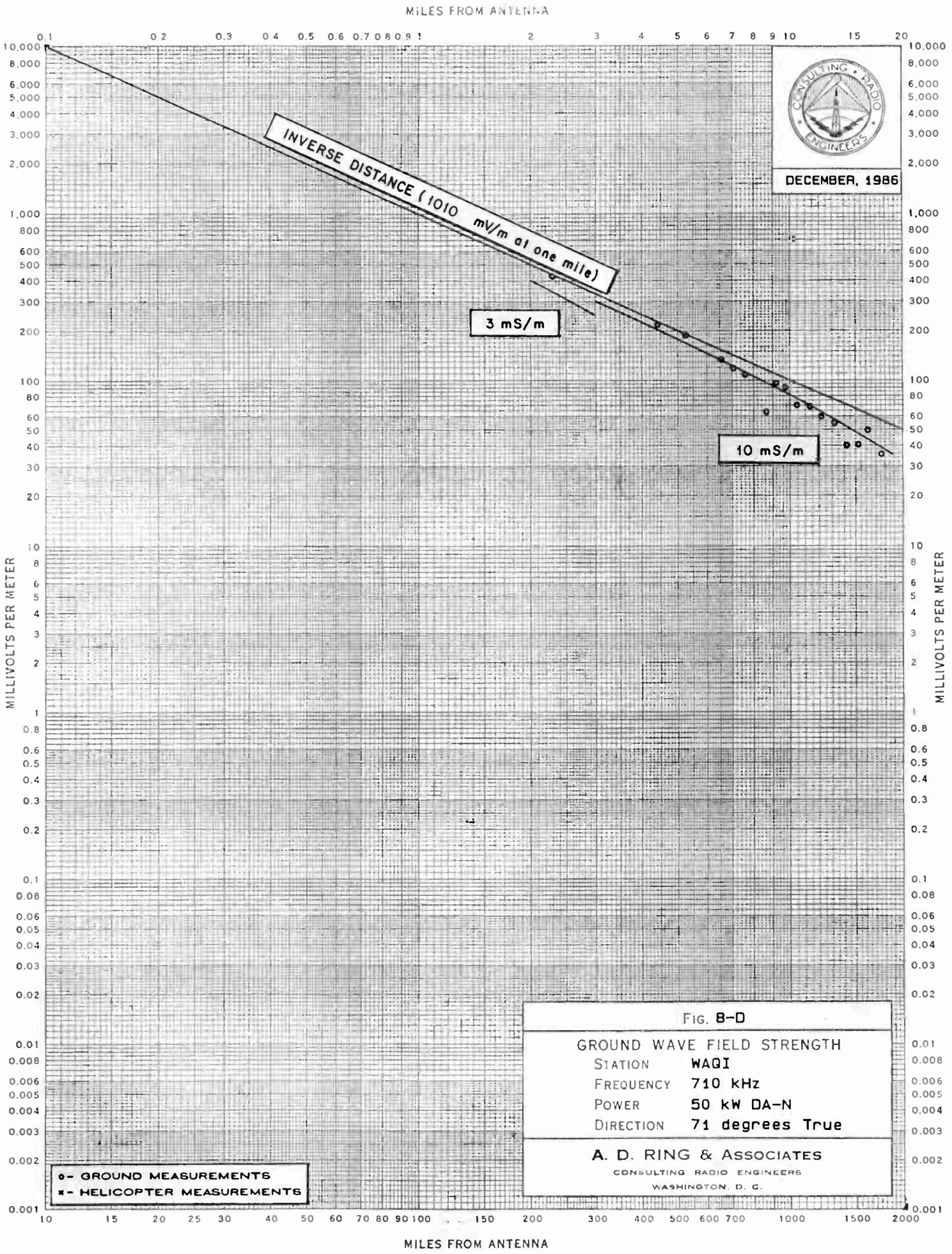

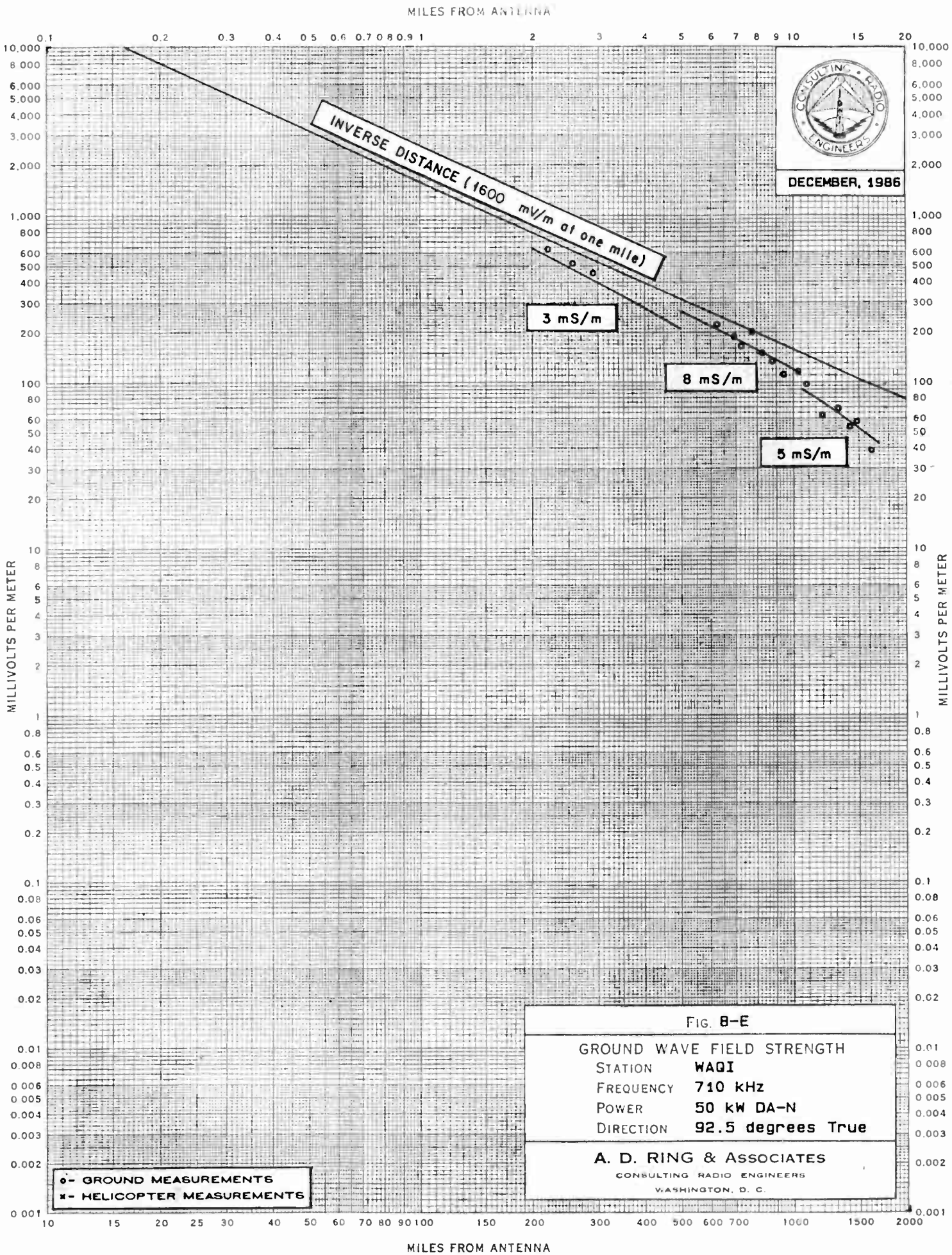

FIG. 8-E

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	92.5 degrees True

A. D. RING & ASSOCIATES
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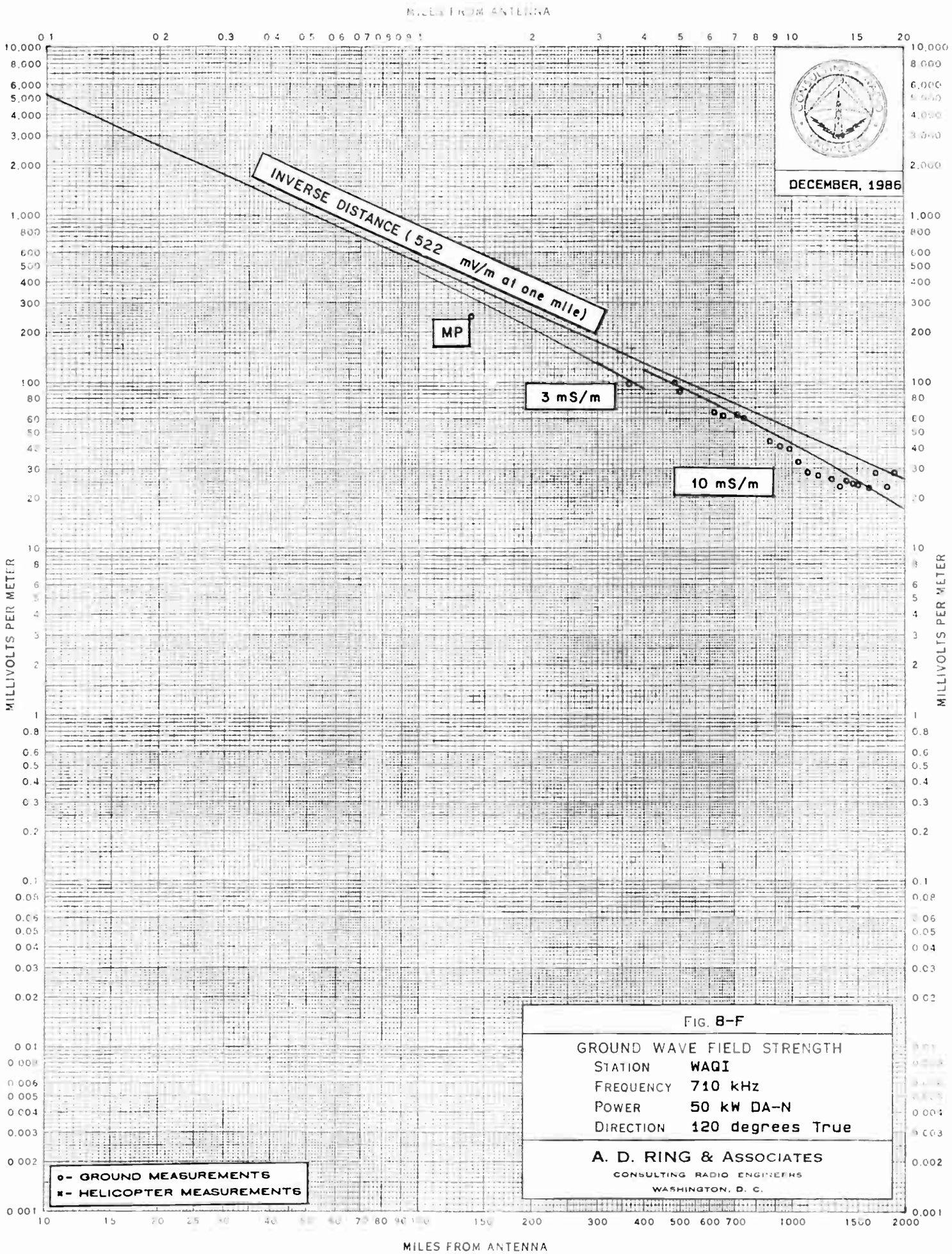

FIG. 8-F

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	120 degrees True

A. D. RING & ASSOCIATES
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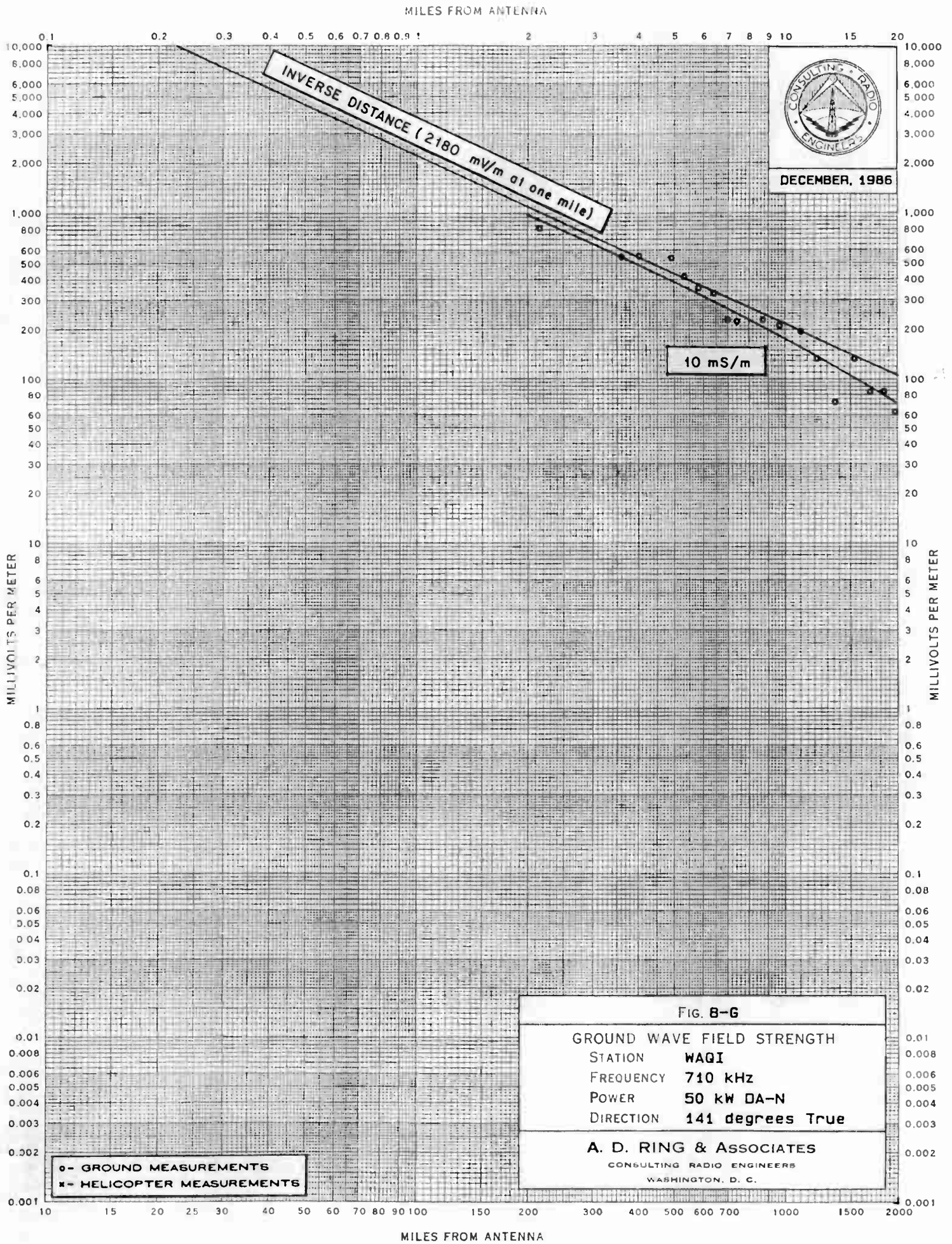
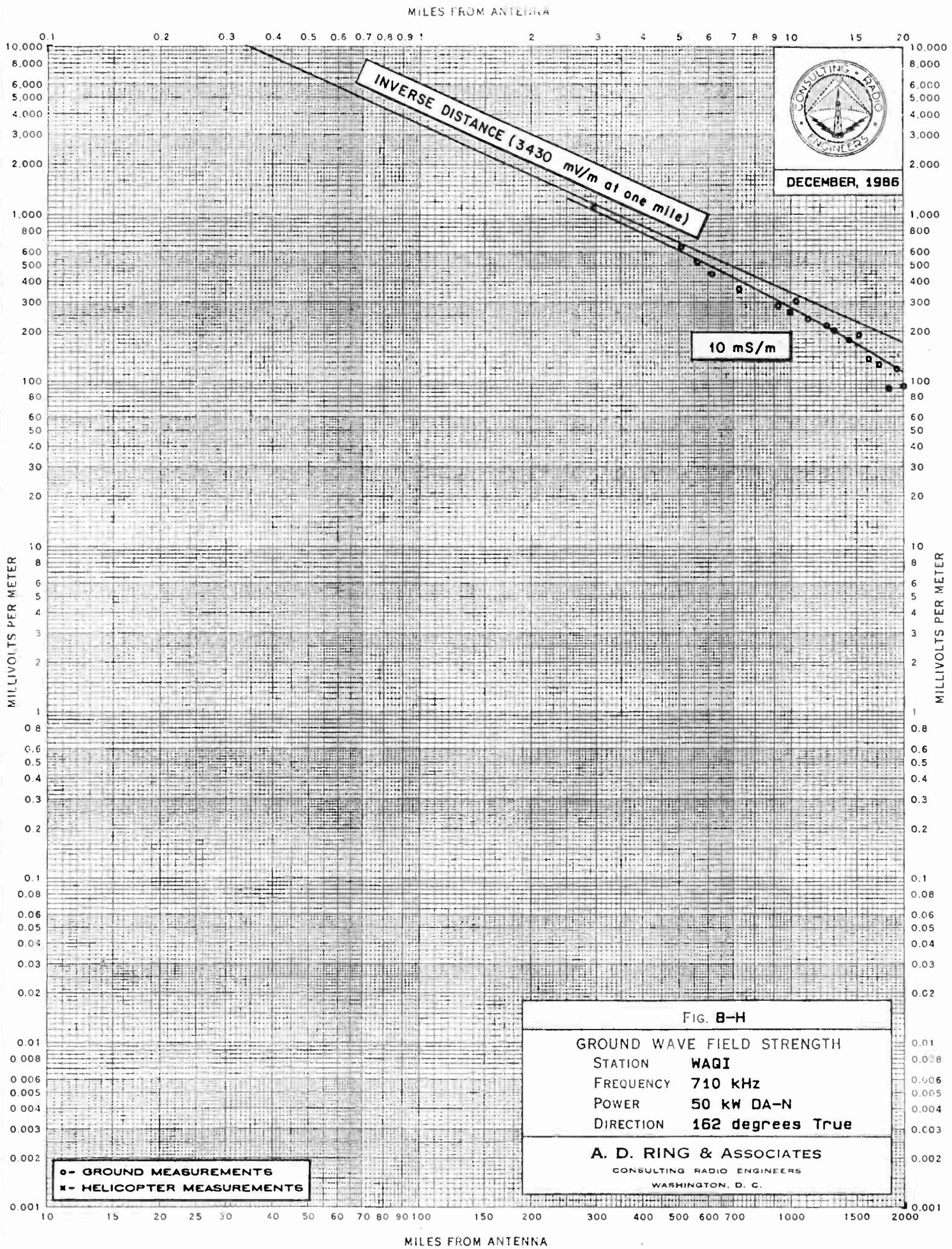
WASHINGTON, D. C.


MILES FROM ANTENNA
INVERSE DISTANCE (2180 mV/m at one mile)
10 mS/m
DECEMBER, 1986
MILLIVOLTS PER METER
MILLIVOLTS PER METER
MILES FROM ANTENNA
o- GROUND MEASUREMENTS
x- HELICOPTER MEASUREMENTS
FIG. 8-G
GROUND WAVE FIELD STRENGTH
STATION WAQI
FREQUENCY 710 kHz
POWER 50 kW DA-N
DIRECTION 141 degrees True
A. D. RING & ASSOCIATES
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.



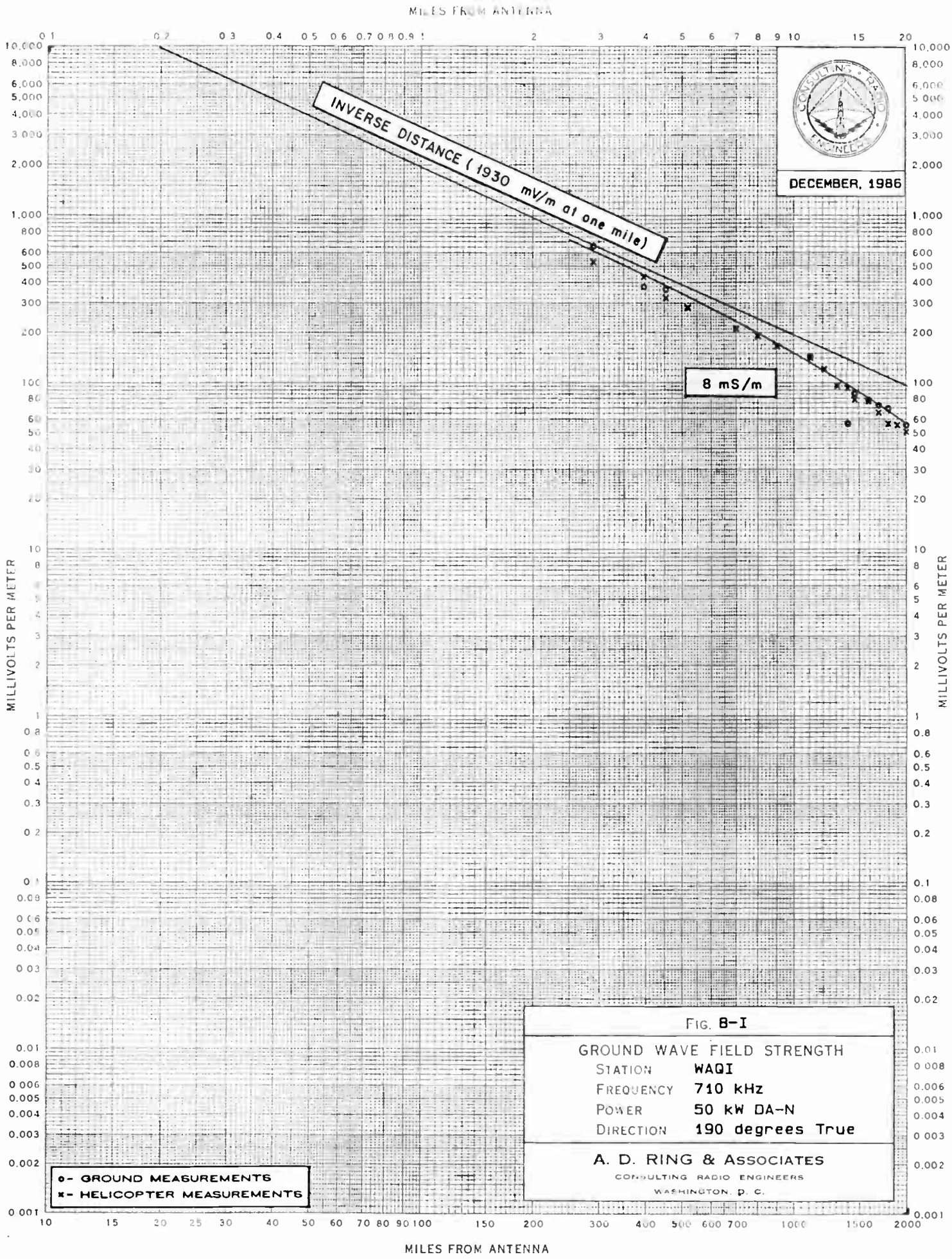


FIG. 8-I

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	190 degrees True

A. D. RING & ASSOCIATES
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WASHINGTON, D. C.

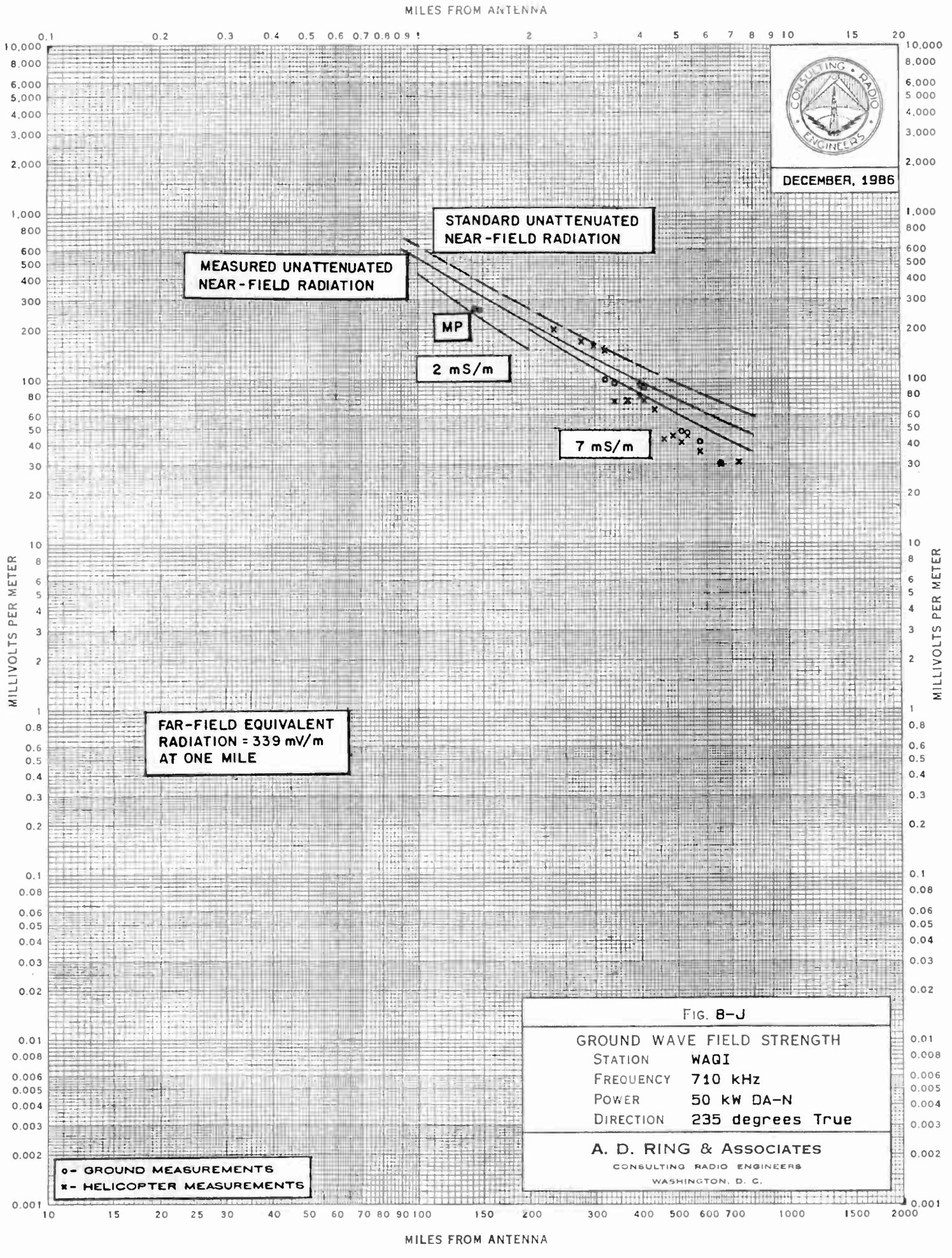

FIG. 8-J

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	235 degrees True

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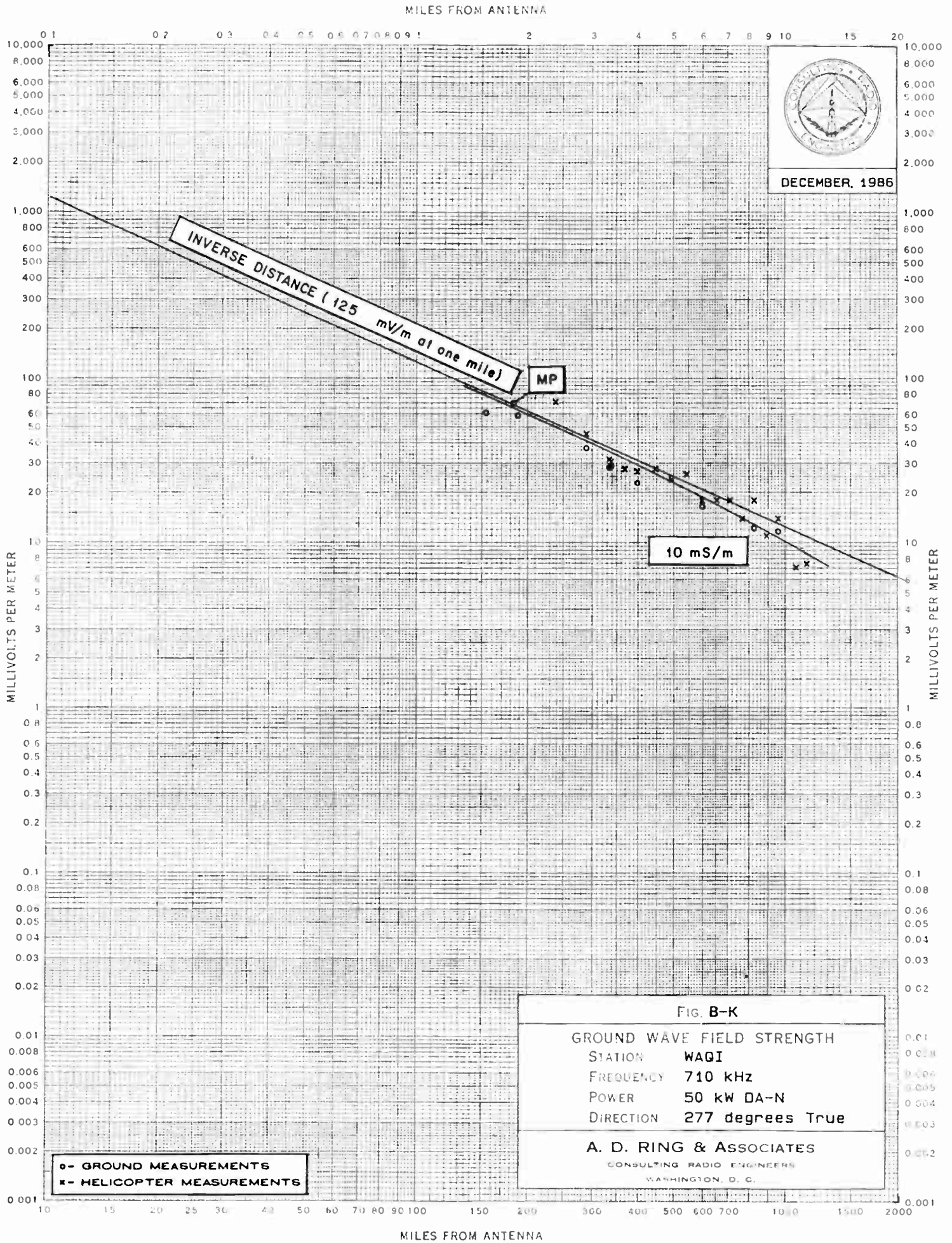
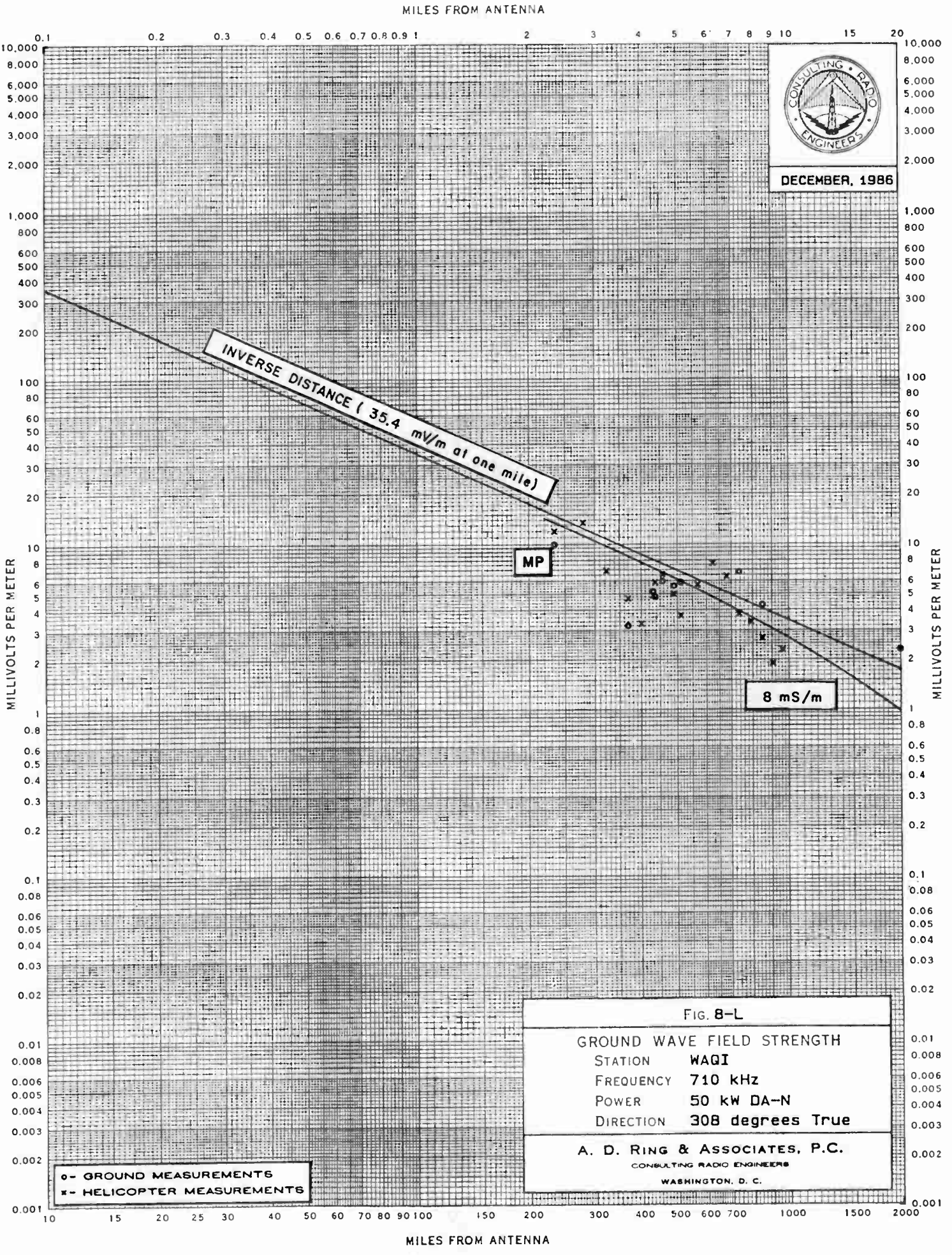
WASHINGTON, D. C.





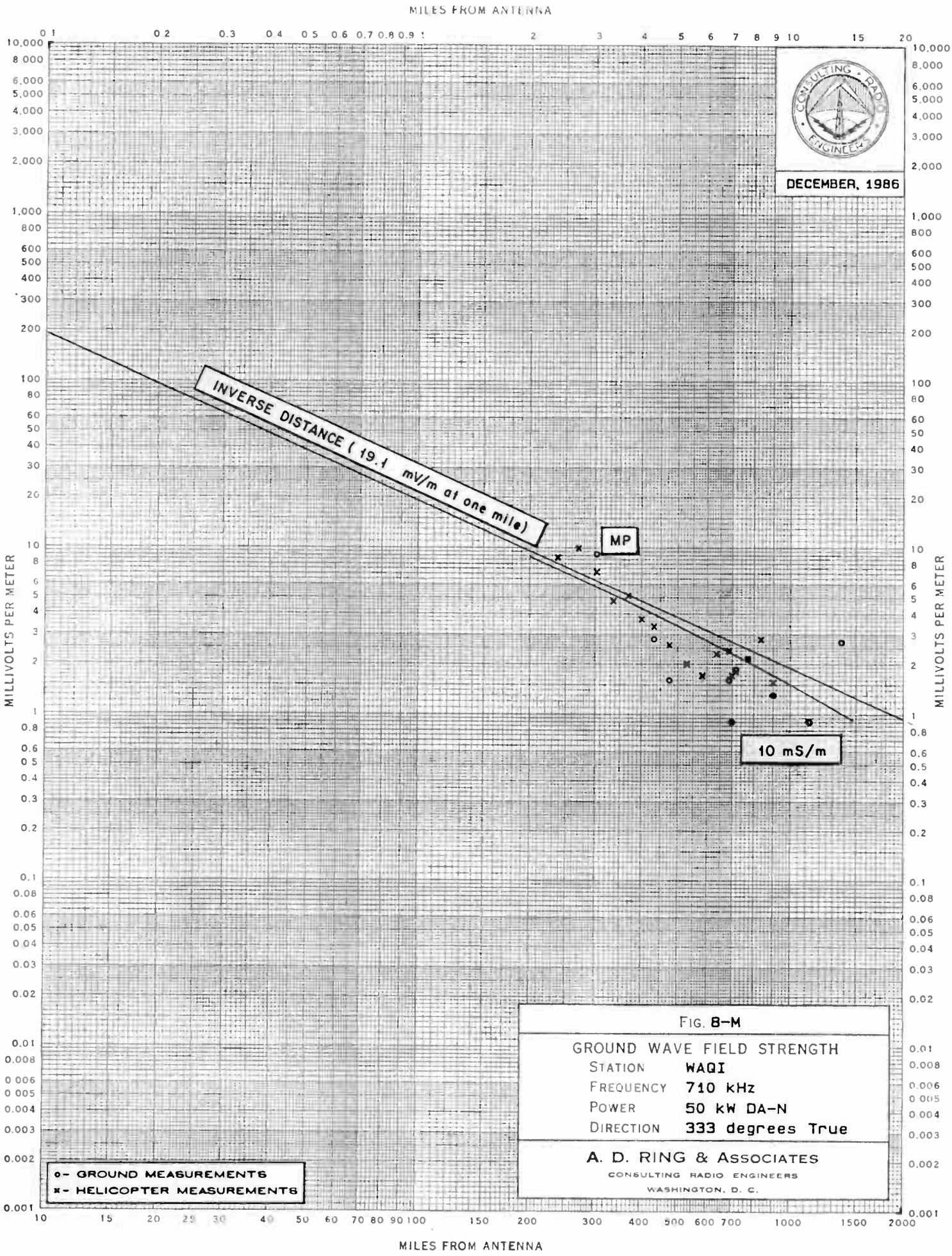


FIG. 8-M

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	333 degrees True

A. D. RING & ASSOCIATES
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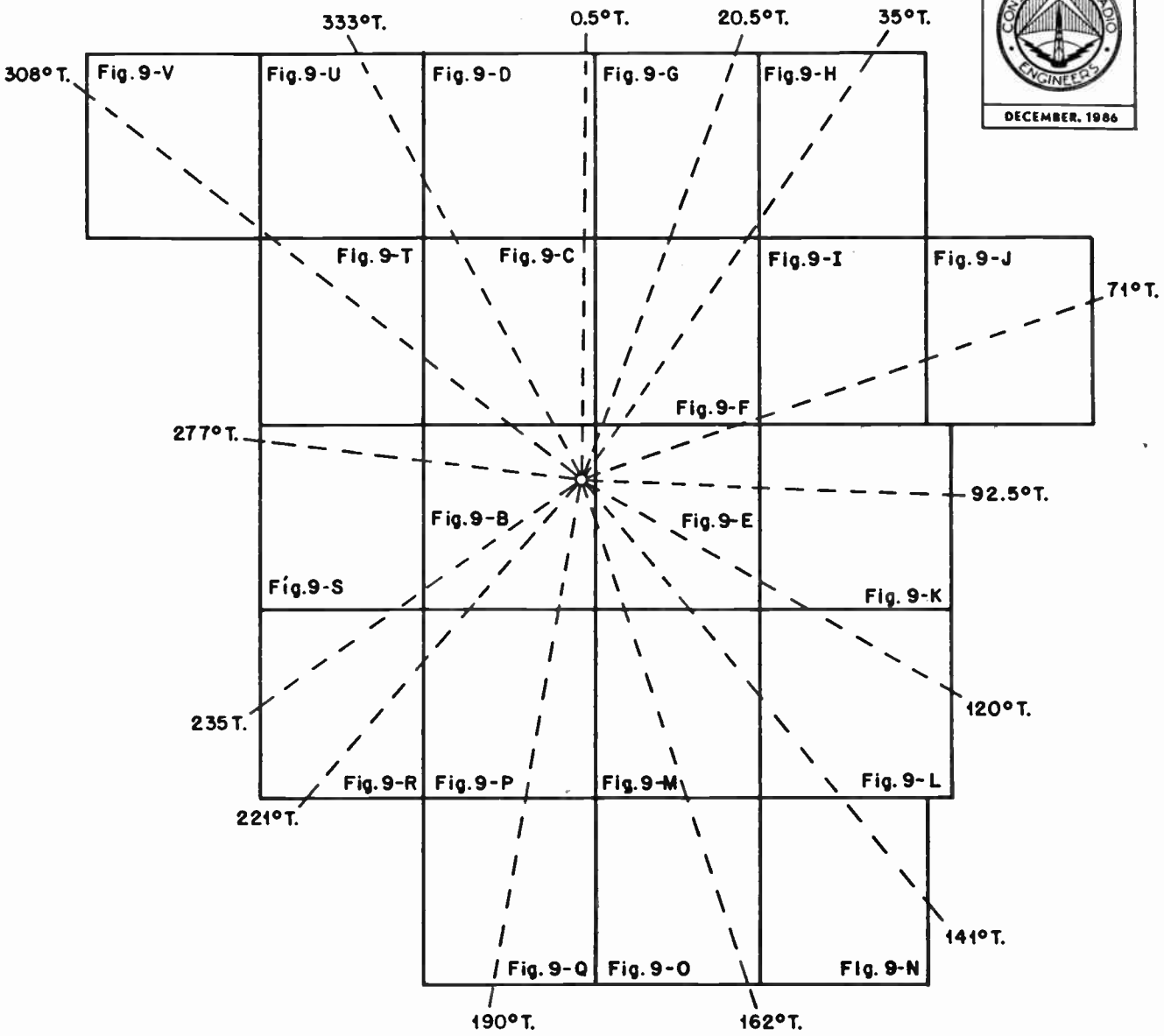
WASHINGTON, D. C.



CONSULTING · RADIO ENGINEERS

DECEMBER, 1986

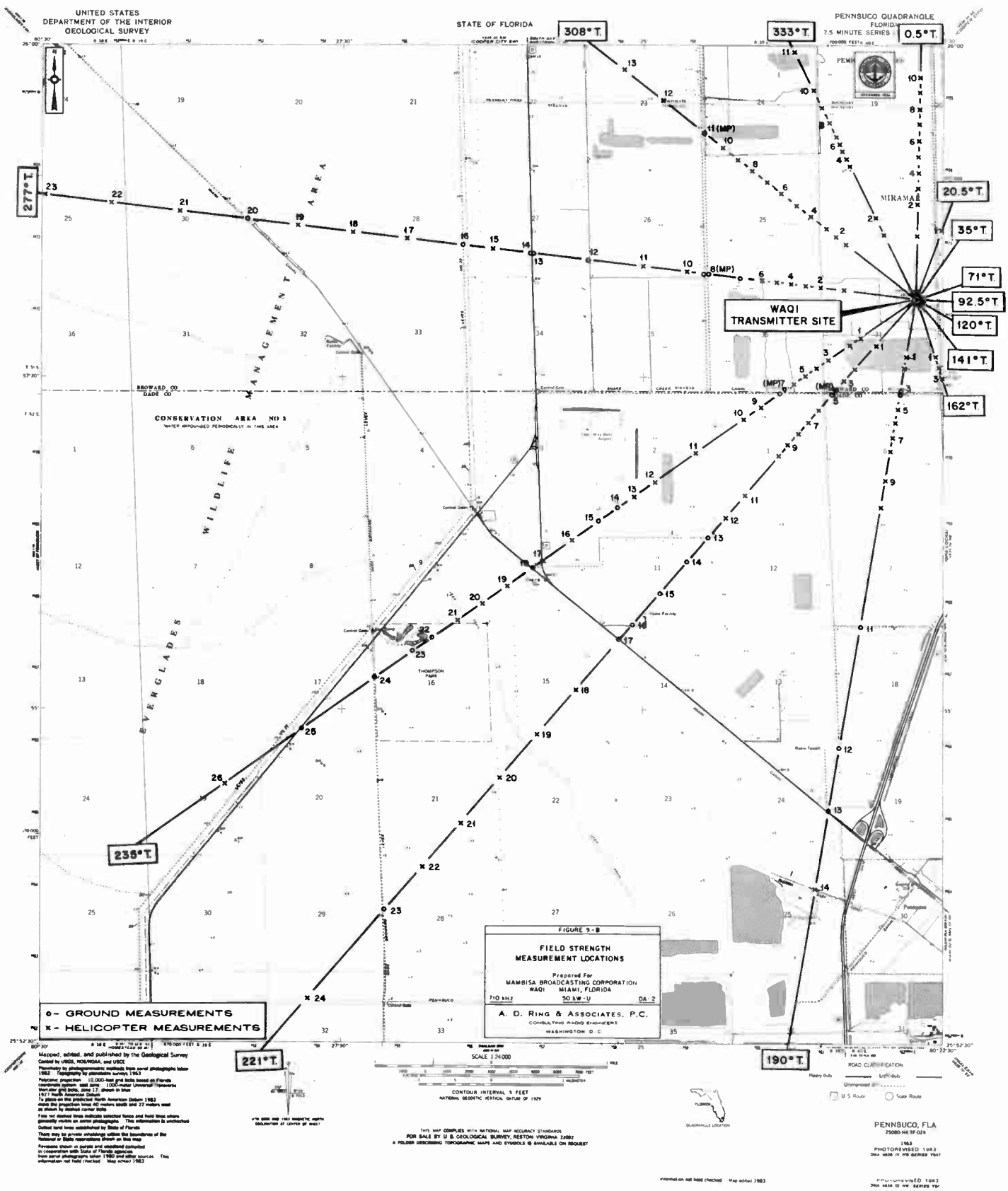
FIGURE 9-A

INDEX TO MEASURING LOCATIONS

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.



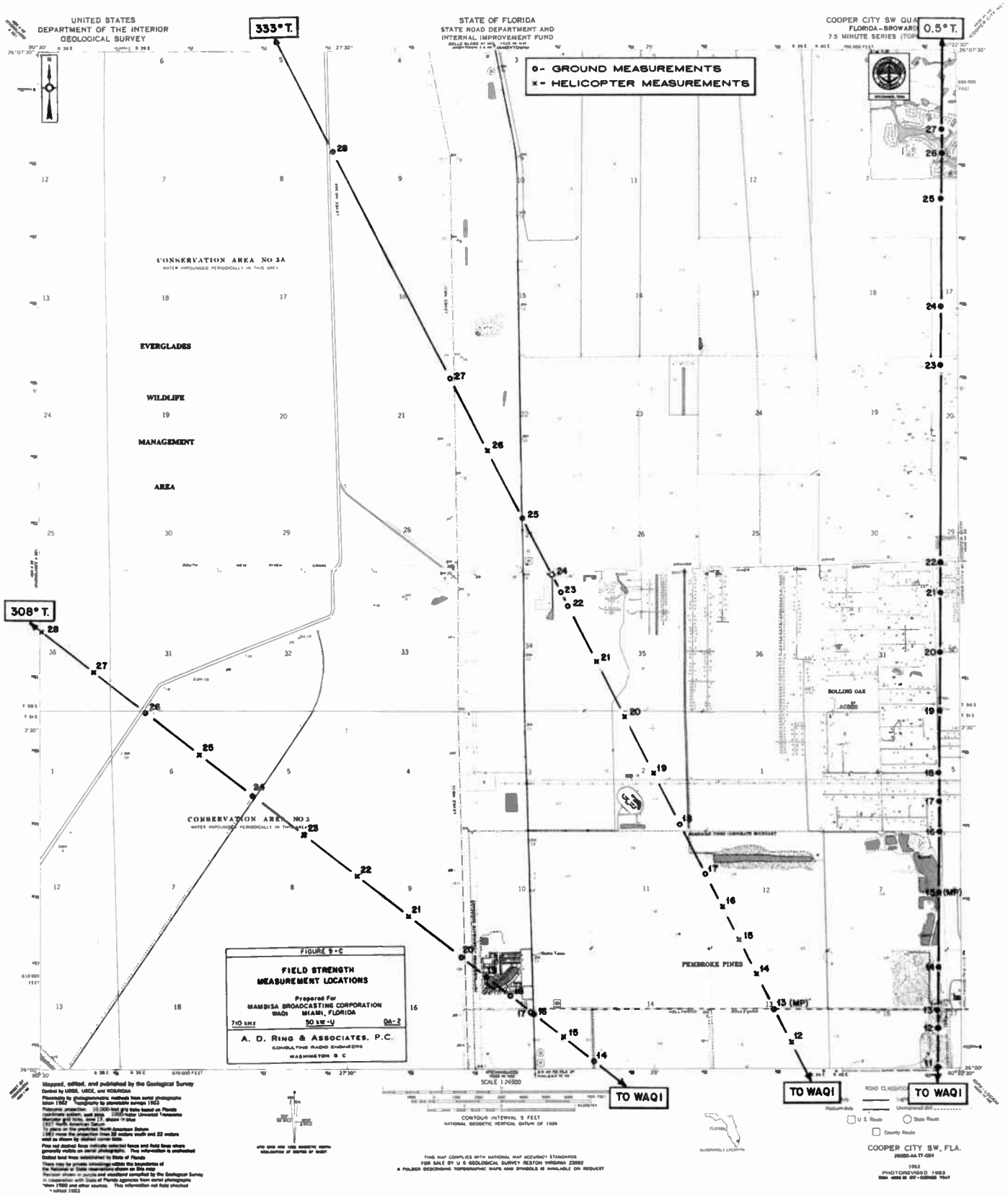


FIGURE 9-C

FIELD STRENGTH MEASUREMENT LOCATIONS

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

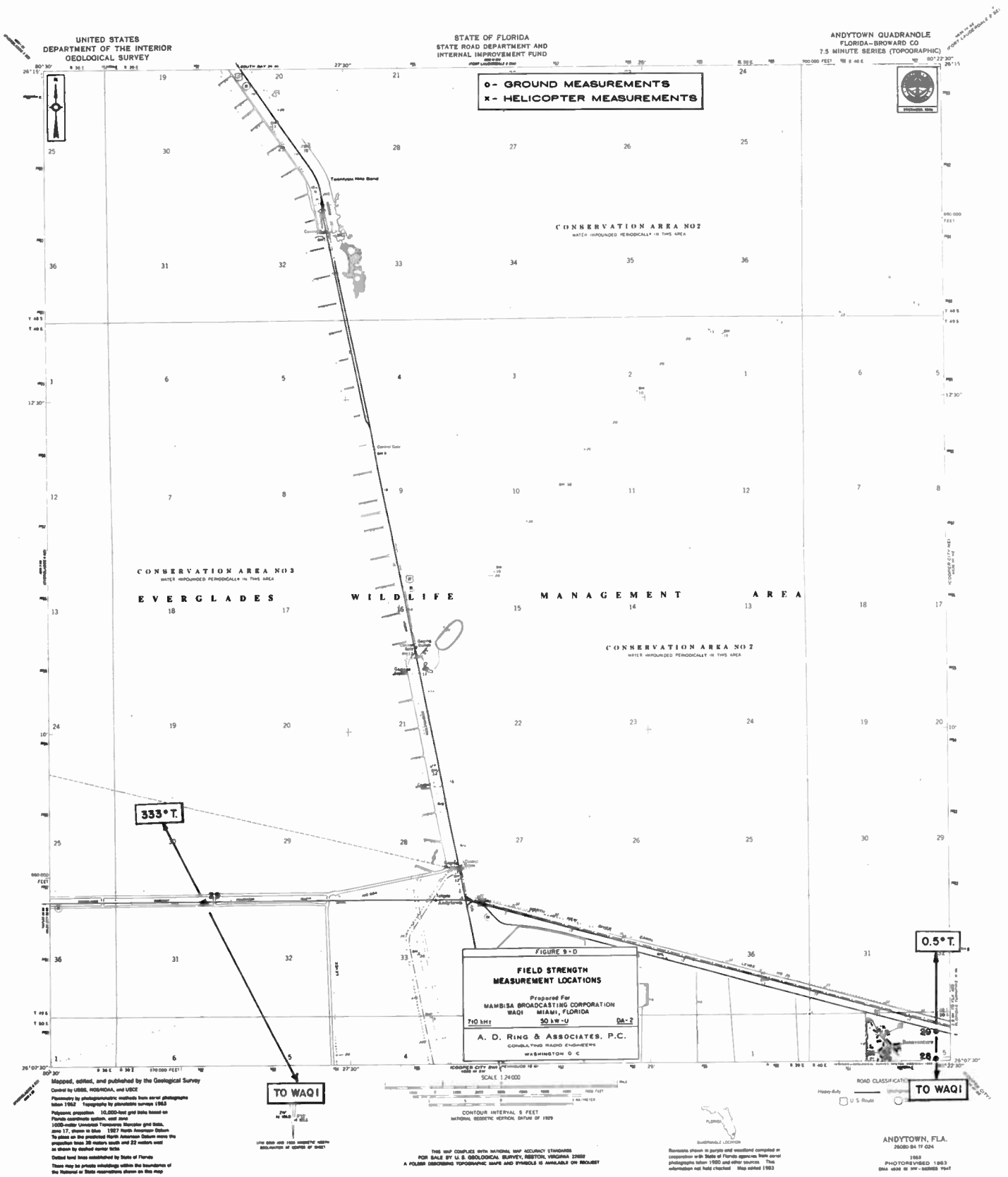
710 kHz | 50 kW-U | DA-2

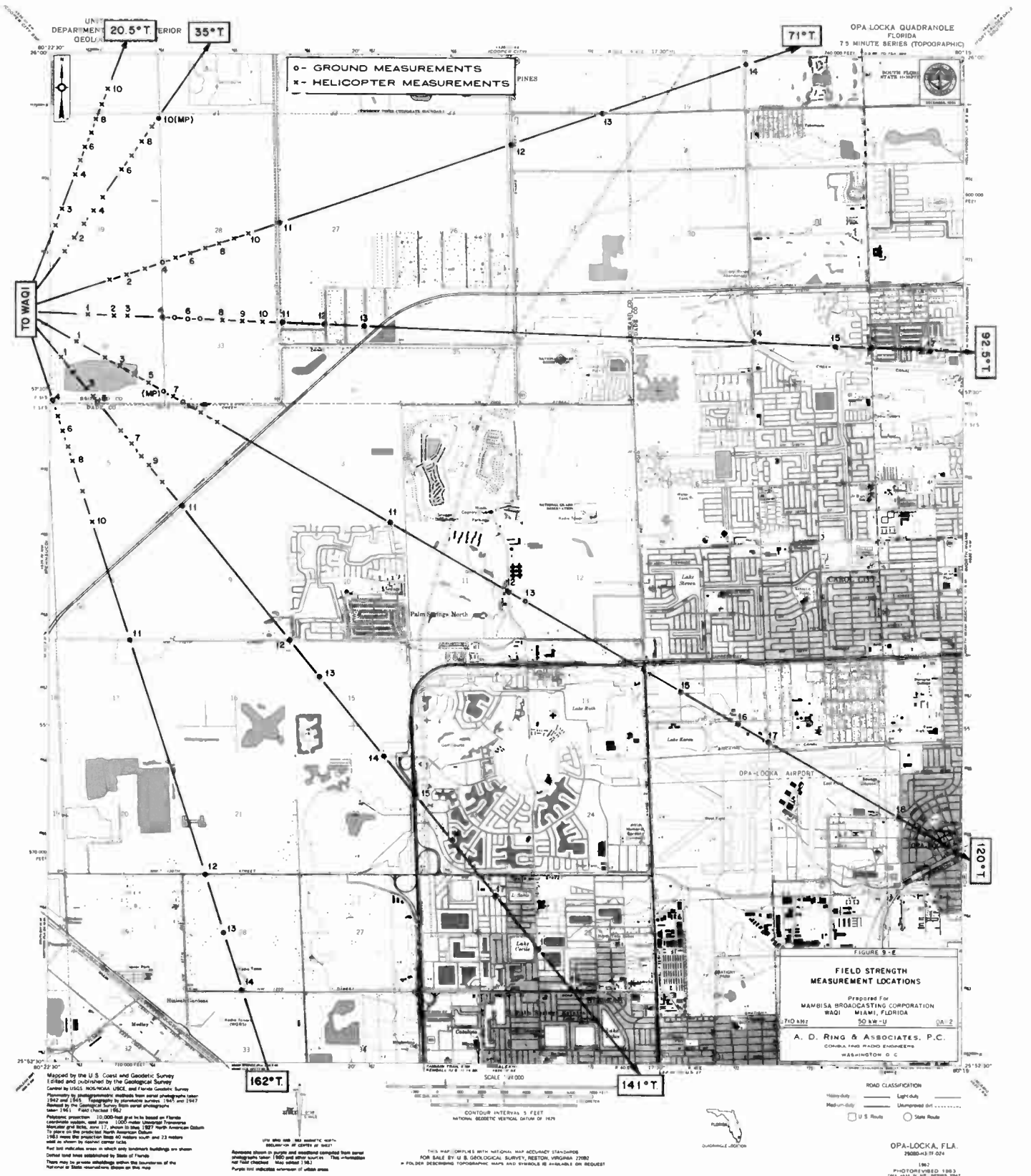
A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON D.C.

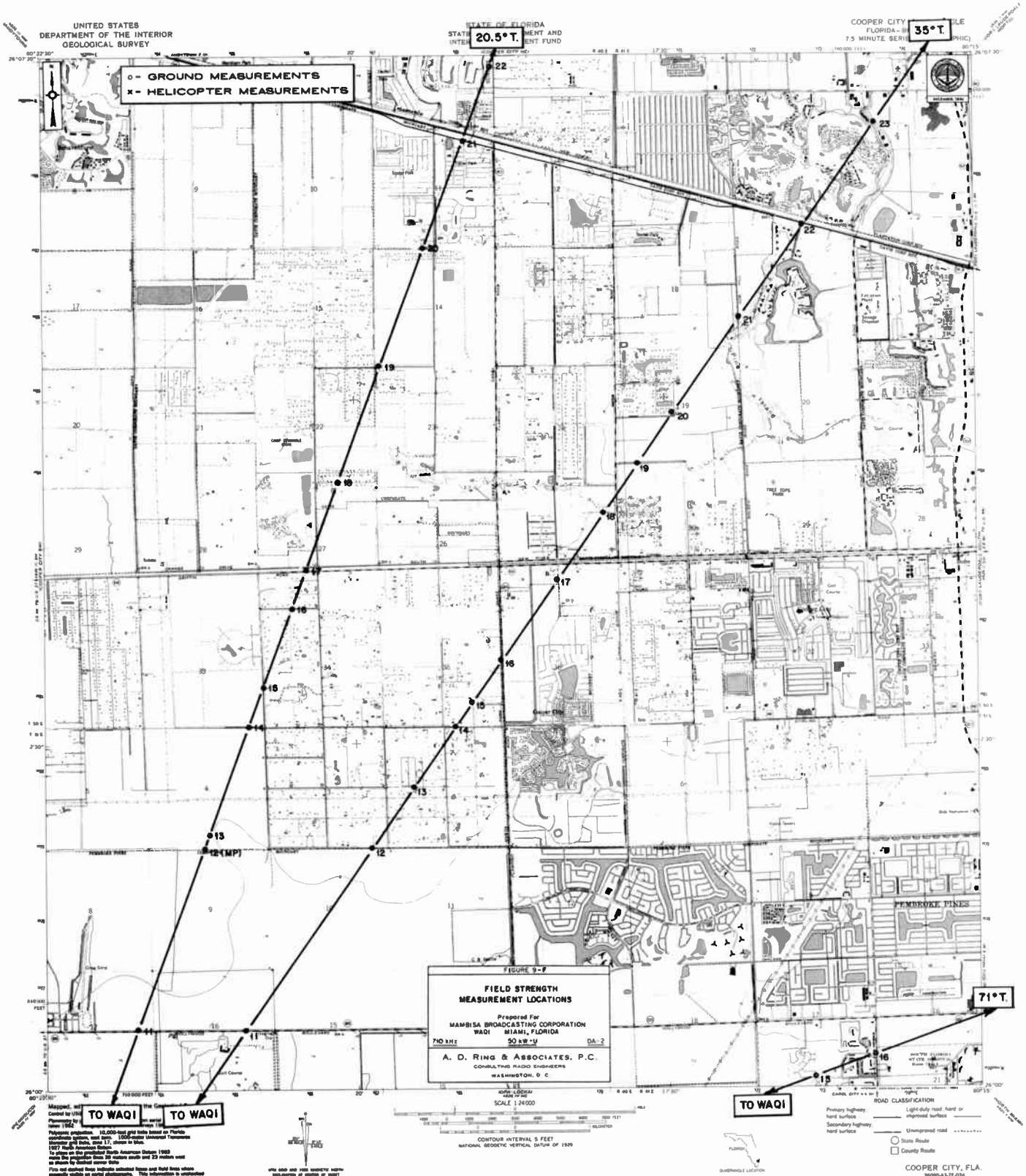
Mapped, edited, and published by the Geological Survey
Control by USGS, USCE, and NOS/NOAA
Photography by photogrammetric methods from aerial photographs taken 1962 Topography by plane-table surveys 1963
Polyconic projection. 10,000-foot grid ticks based on Florida coordinate system, east zone 2,000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue
1927 North American Datum
To place on the projection lines 22 meters south and 22 meters east as shown by dashed corner ticks
Fine red dashed lines indicate selected fences and field lines where generally visible on aerial photographs. This information is unchecked
Dotted land lines established by State of Florida
There may be private inholdings within the boundaries of the National or State reservations shown on this map
Revision shown in purple and woodland compiled by the Geological Survey in cooperation with State of Florida agencies from aerial photographs taken 1960 and other sources. This information not field checked
Polyconic projection 1983

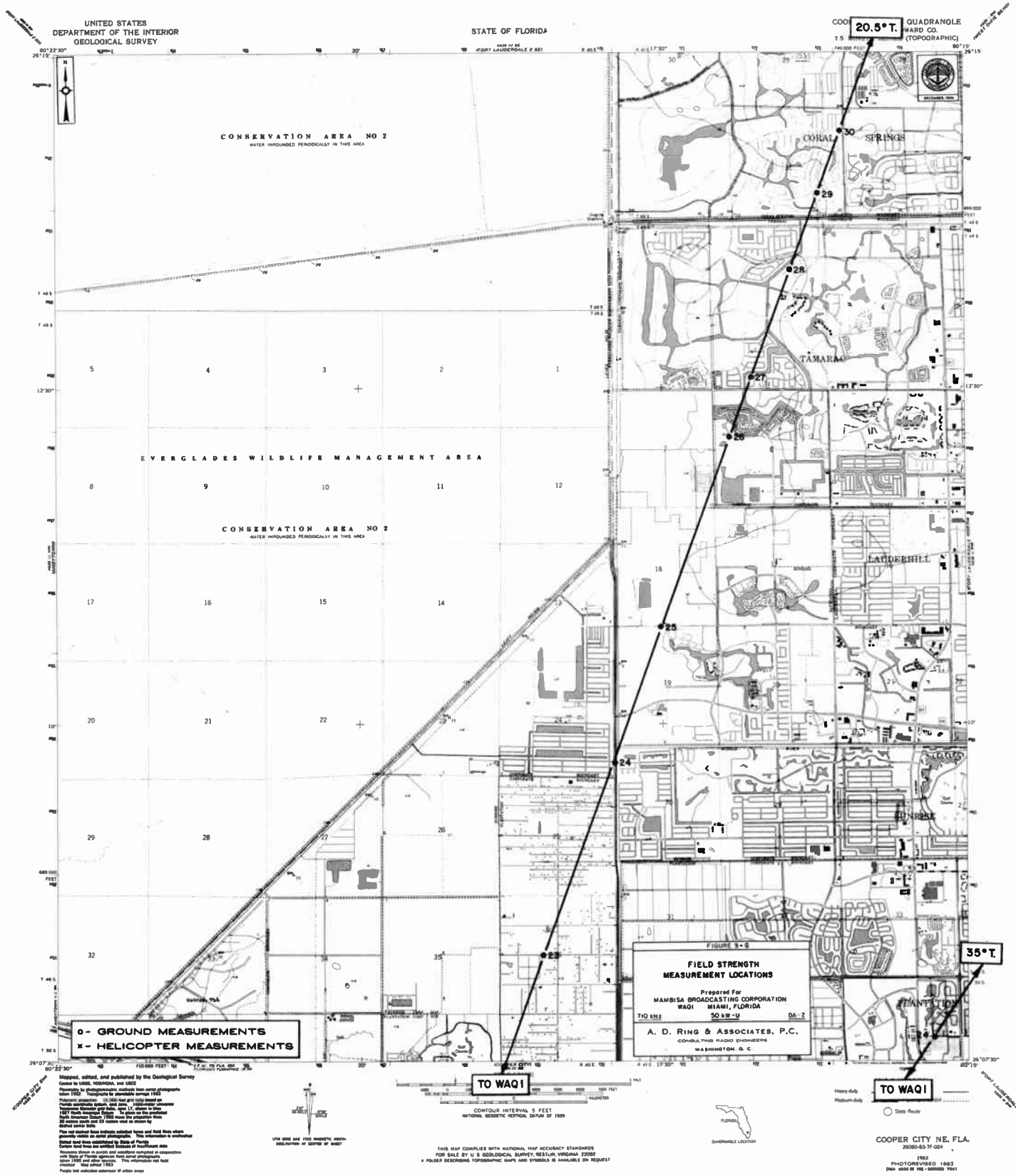
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U S GEOLOGICAL SURVEY RESTON VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

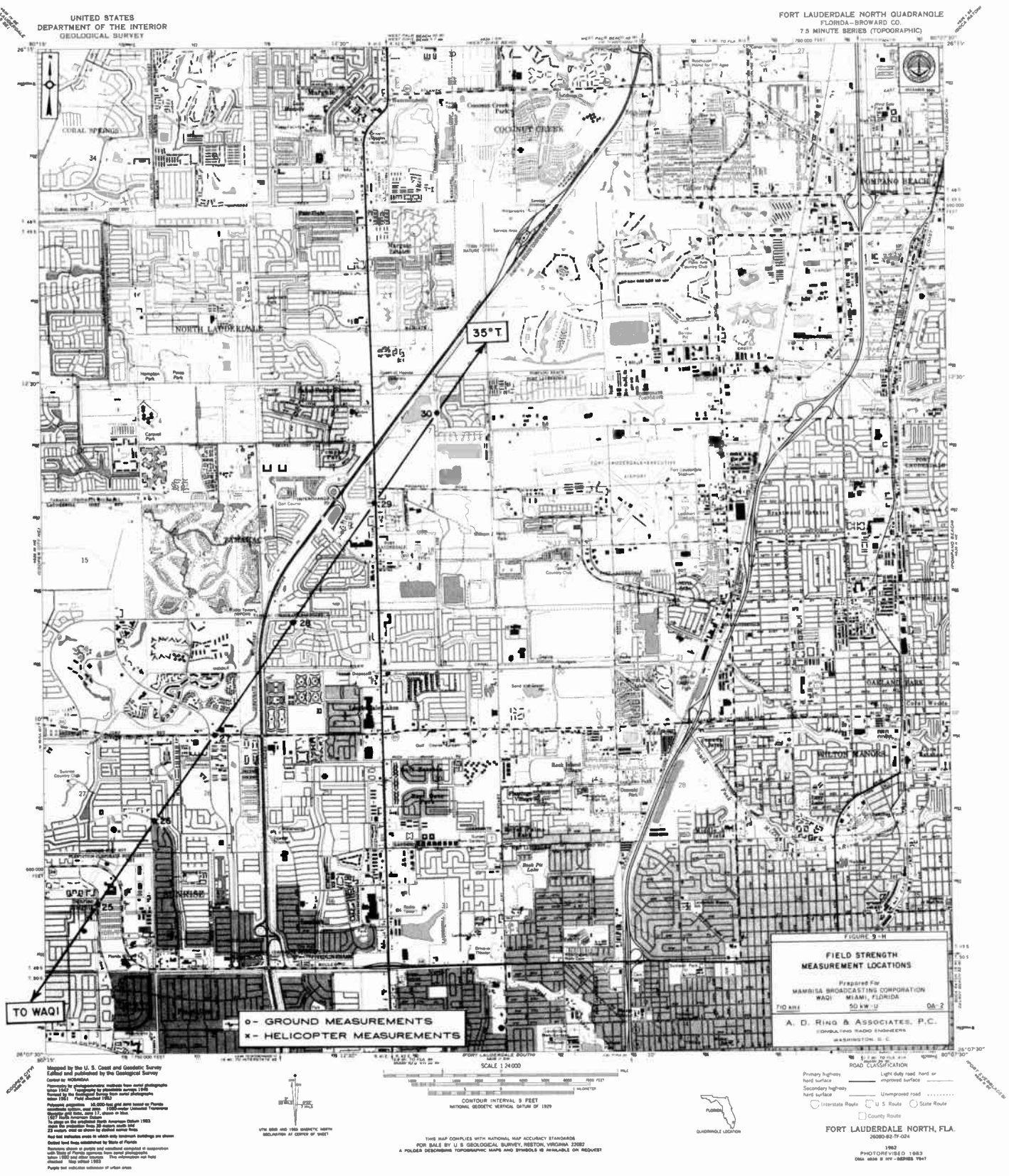
ROAD CLASSIFICATION
Heavy-duty
Unimproved dirt
U.S. Route
State Route
County Route

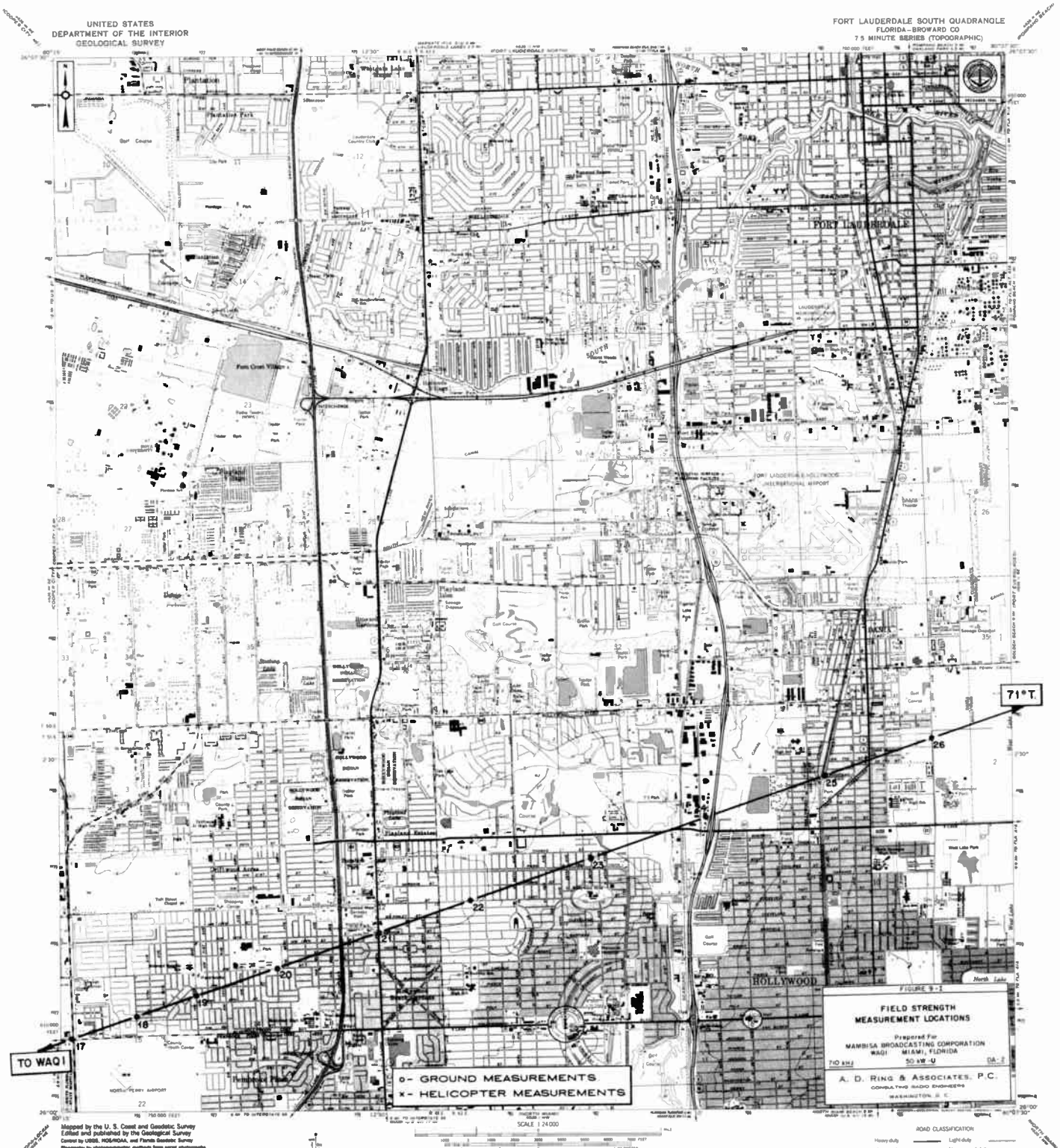












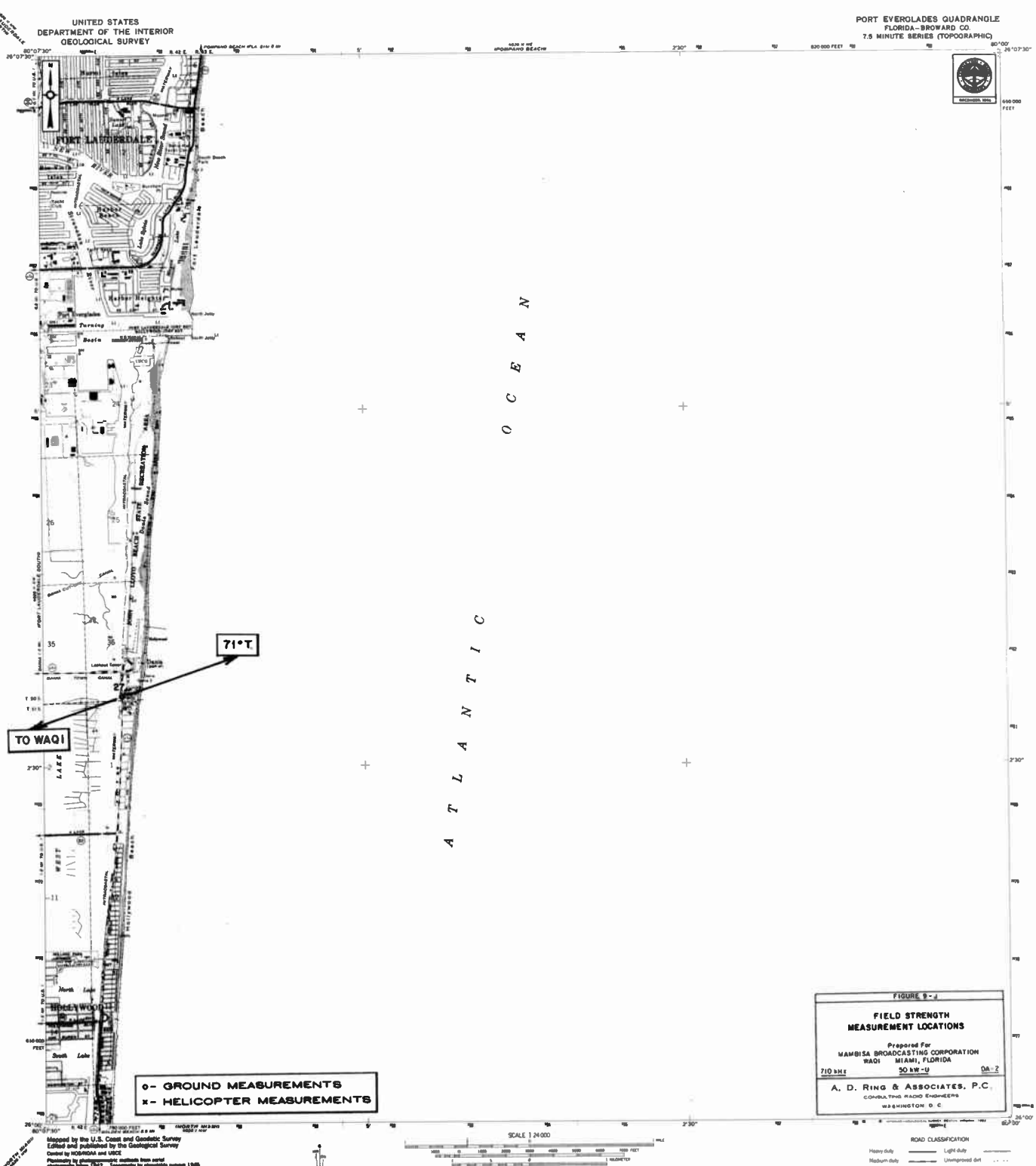


FIGURE 9-4

FIELD STRENGTH MEASUREMENT LOCATIONS

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON D. C.

PORT EVERGLADES, FLA.
26080-41-TF-024
1962
PHOTOREVISED 1983

Mapped by the U.S. Coast and Geodetic Survey
Edited and published by the Geological Survey

Control by NOS/NOAA and USCE

Planimetry by photogrammetric methods from aerial photographs taken 1962. Topography by photogrammetric surveys 1945. Revised by the Geological Survey from aerial photographs taken 1962. Field checked 1963

Selected hydrographic data compiled from NOS charts 1248 (1961) and 590 (1958). This information is not intended for navigational purposes

Polyconic projection. 10,000-foot grid ticks based on Florida coordinate system, east zone. 1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue. 1927 North American Datum. To place on the projected North American Datum 1983 shown the projection tics 39 meters south and 24 meters west as shown by dashed corner ticks

Red tint indicates areas in which only landmark buildings are shown

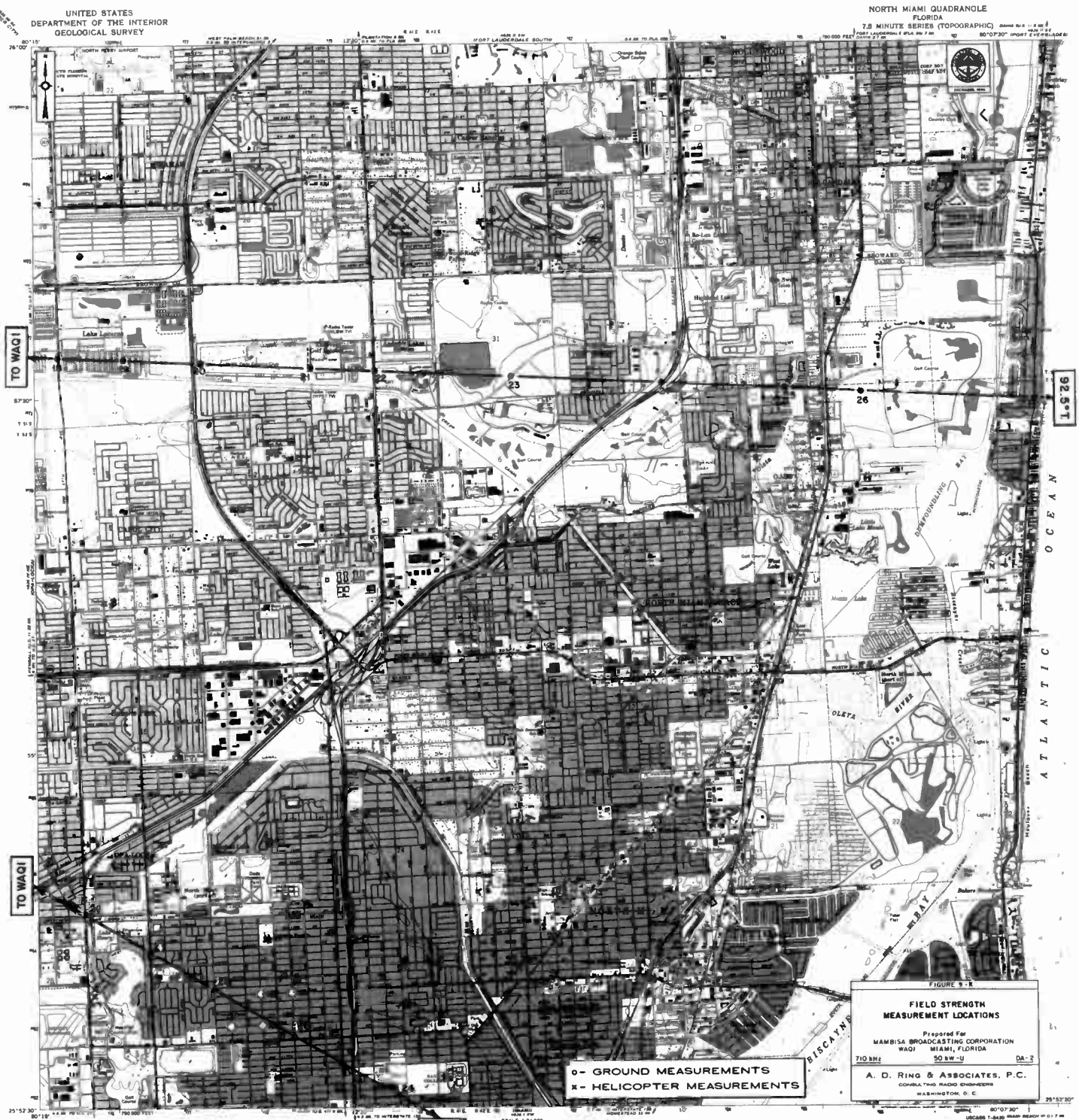
There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1983 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Revisions shown in purple and woodland compiled by the Geological Survey in cooperation with State of Florida agencies from aerial photographs taken 1980 and other sources. This information not field checked. Map edited 1983

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 2.6 FEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



Mapped by the U. S. Coast and Geodetic Survey
Edited and published by the Geological Survey

Control by USC&GS, USCE, and Florida Geodetic Survey

Planimetry by photogrammetric methods from aerial photographs taken 1942 and 1945. Topography by plantable surveys 1938 and 1939. Revised by the Geological Survey from aerial photographs taken 1961. Field checked 1962

Selected hydrographic data compiled from USC&GS Chart 847 (1963). This information is not intended for navigational purposes

Polyconic projection. 1927 North American datum
10,000-foot grid based on Florida coordinate system, east zone
1000-meter Universal Transverse Mercator grid ticks, zone 17, shown in blue

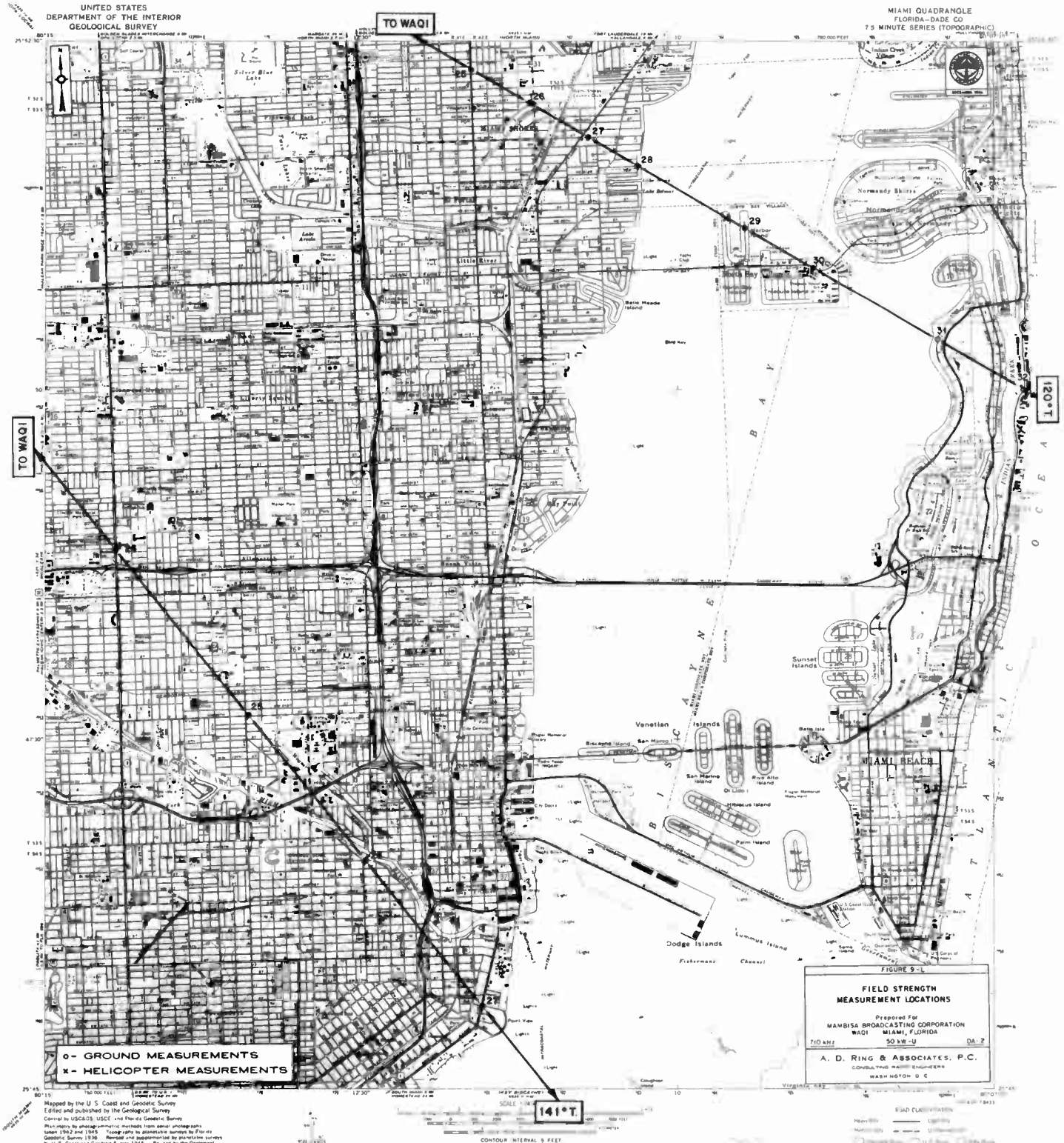
Red tint indicates areas in which only landmark buildings are shown

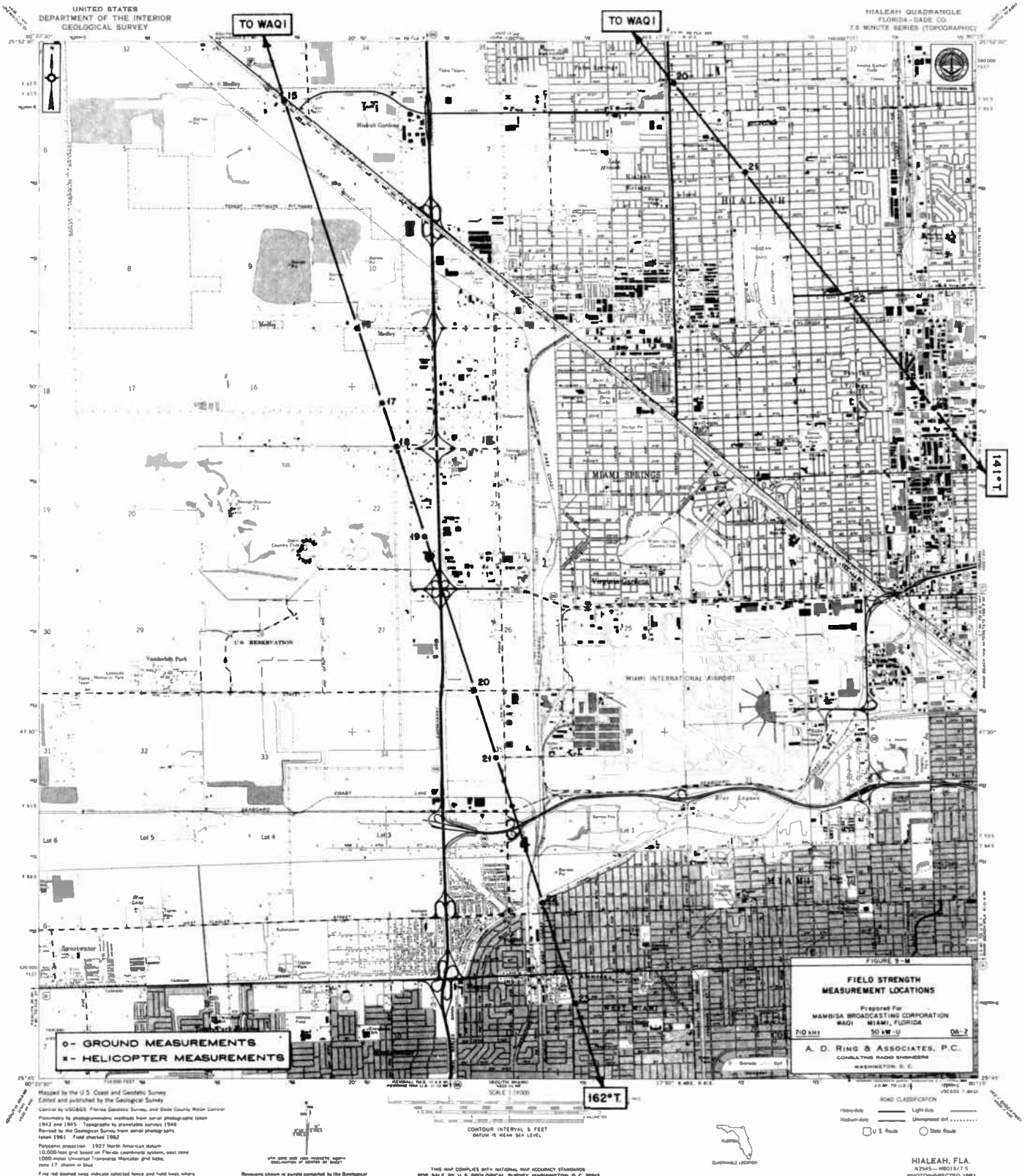
Dotted land lines established by State of Florida

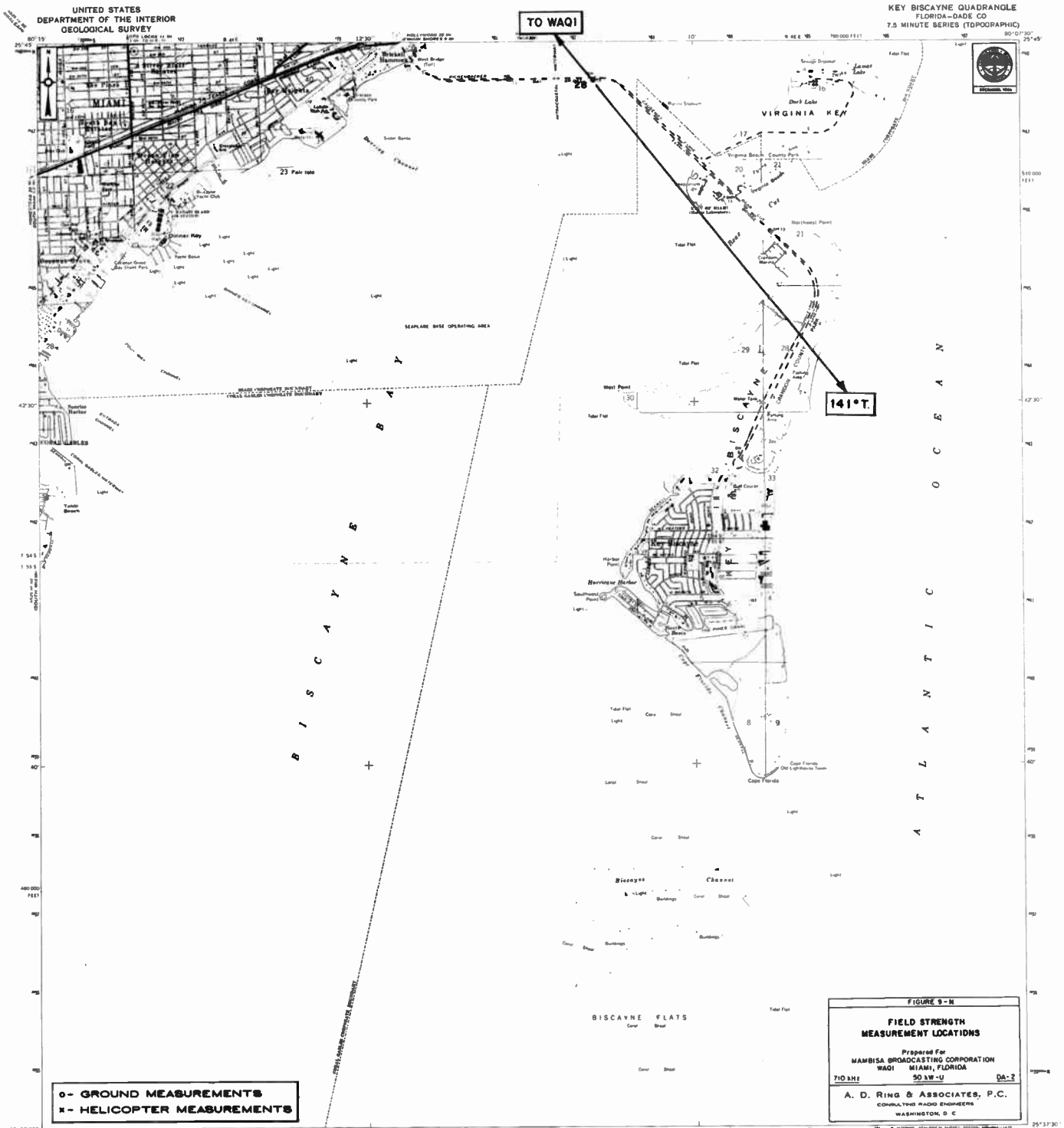
Revisions shown in purple compiled in cooperation with State of Florida agencies from aerial photographs taken 1969 and 1972. This information not field checked

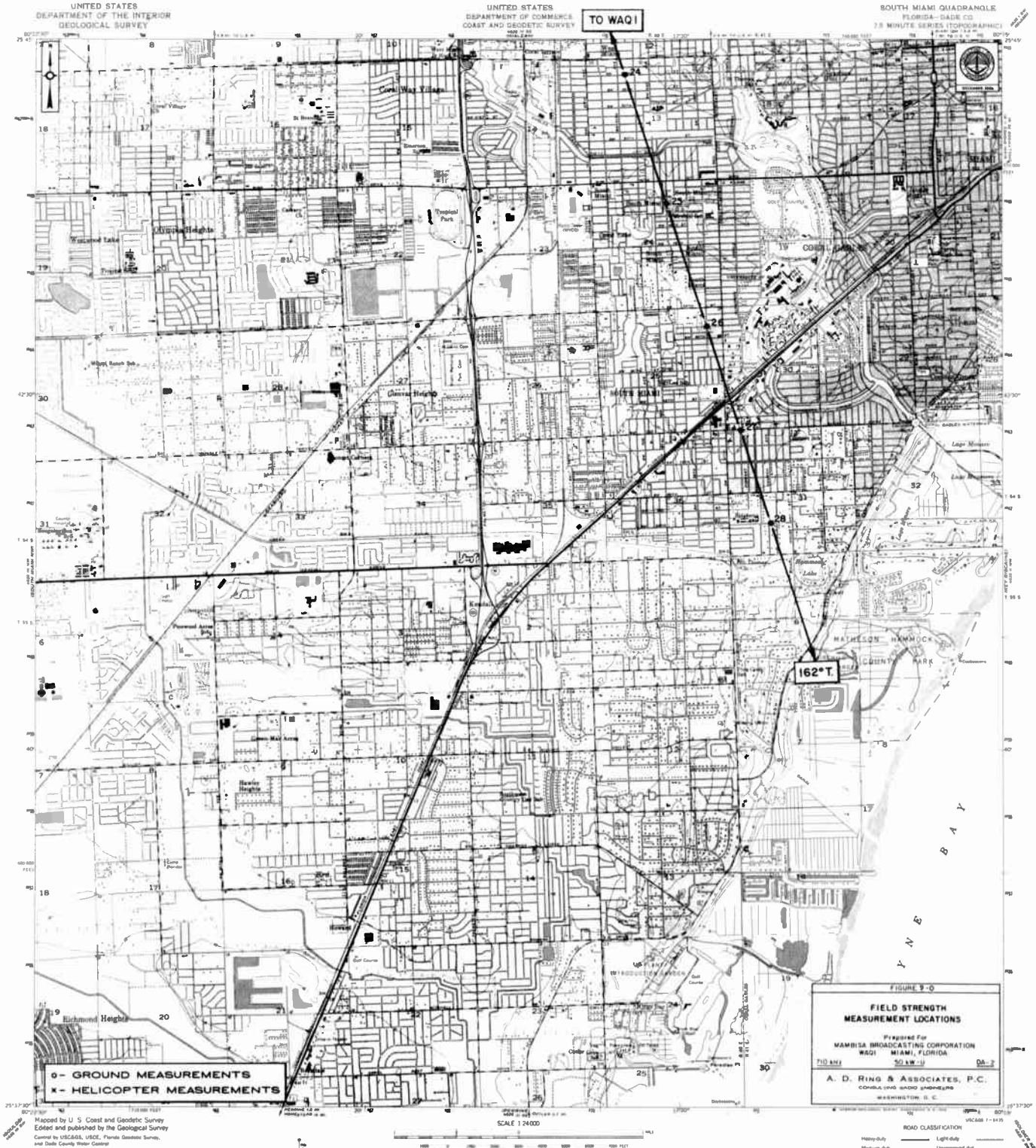
Purple tint indicates extension of urban areas

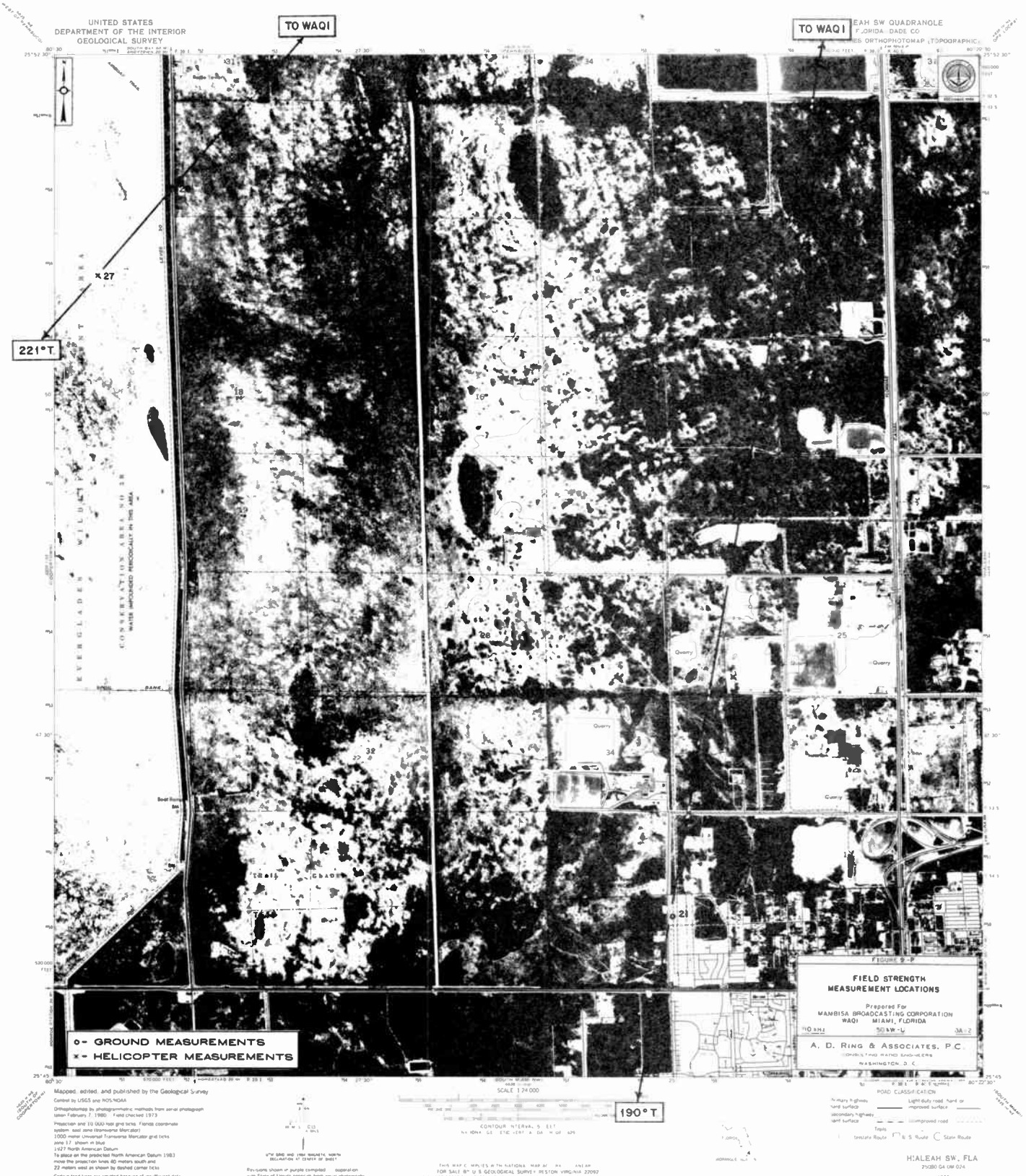
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

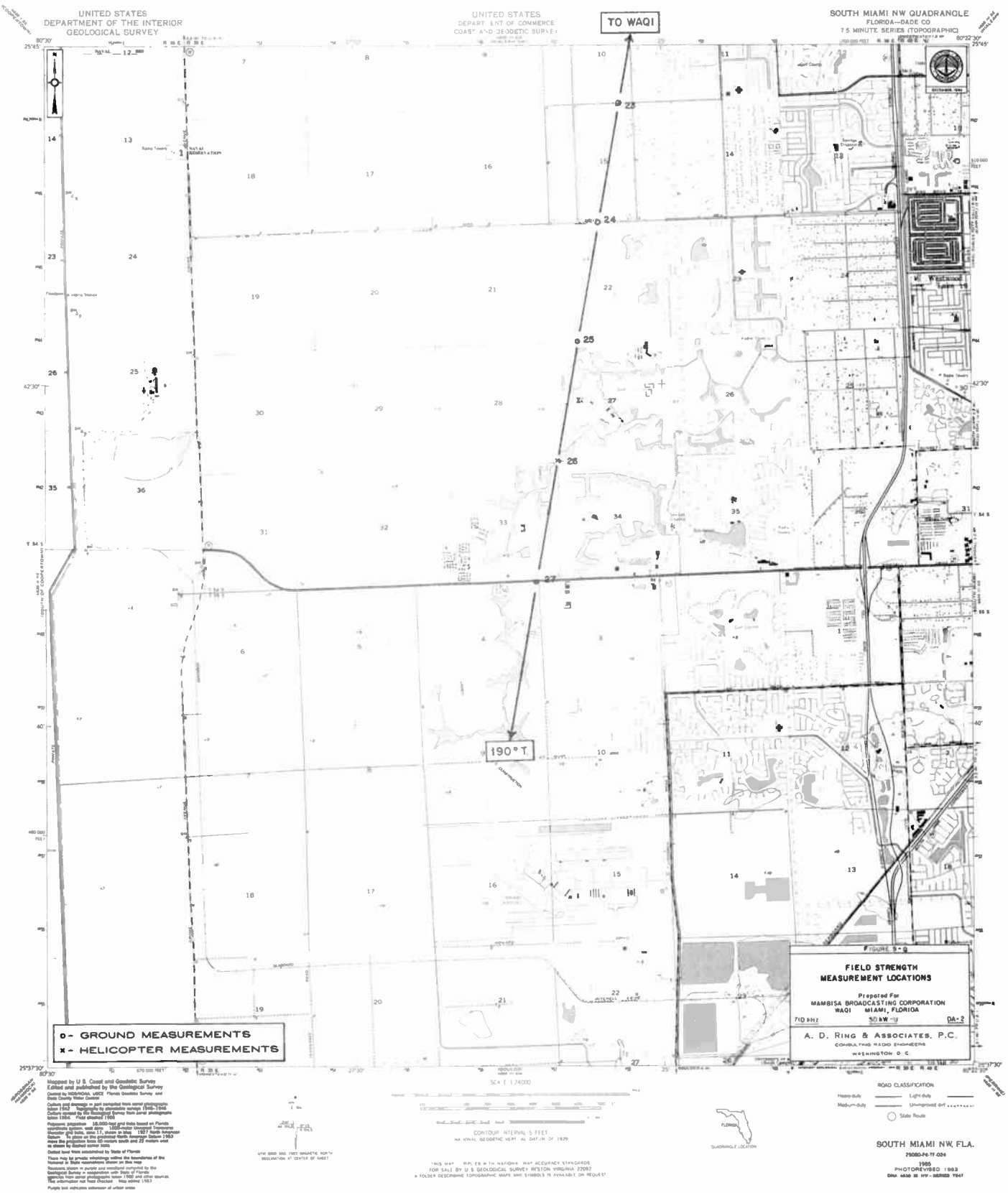


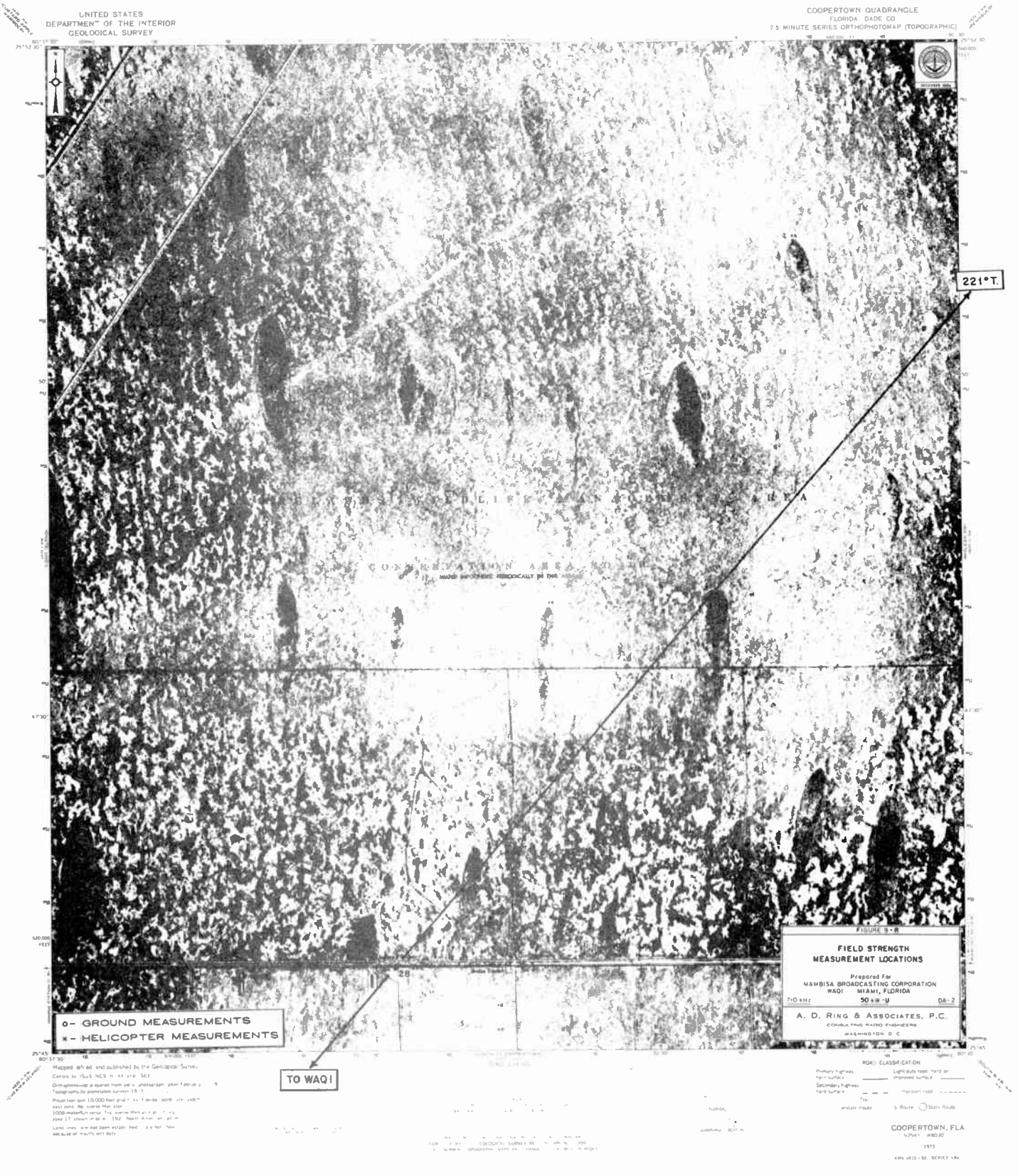


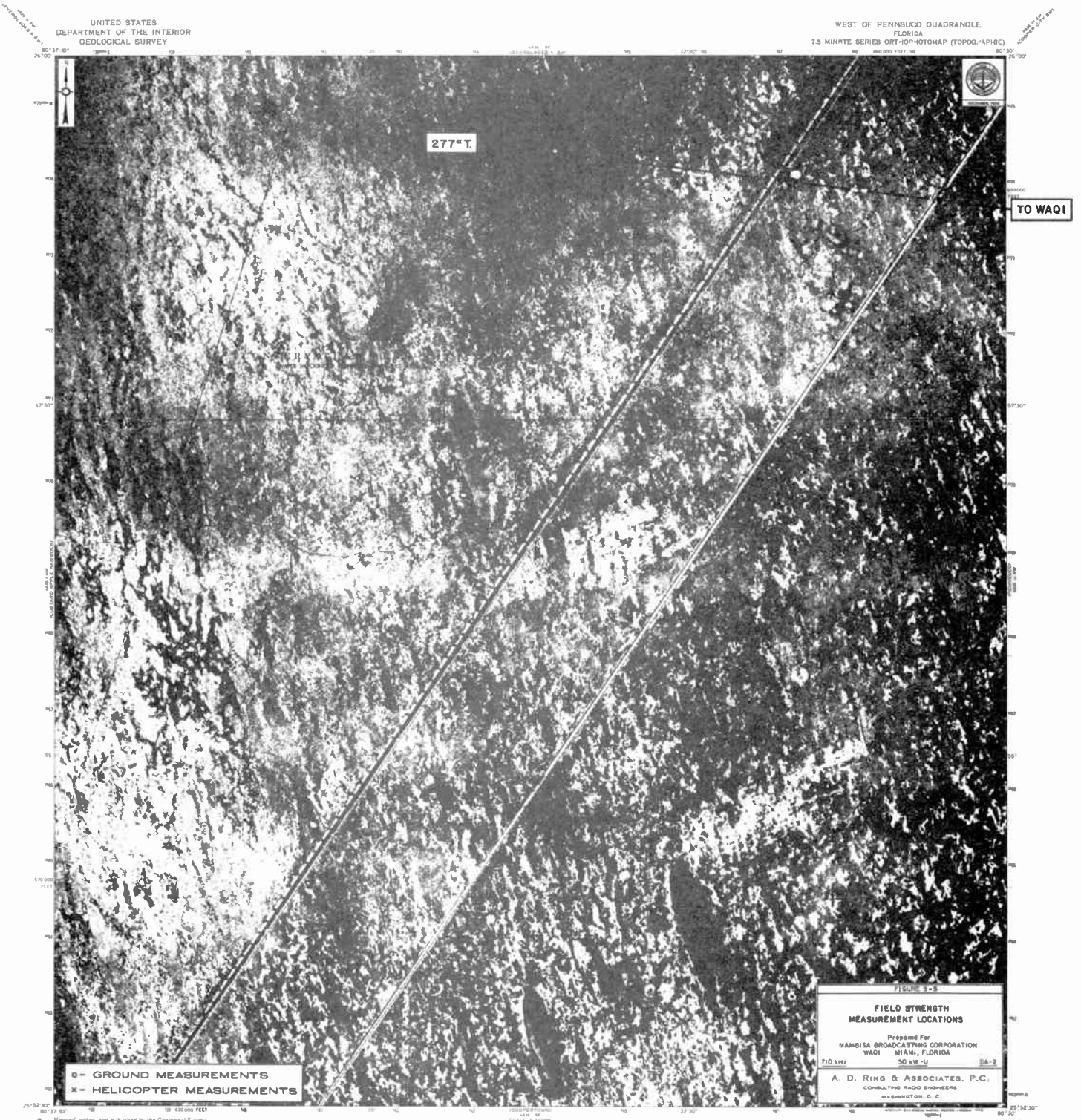






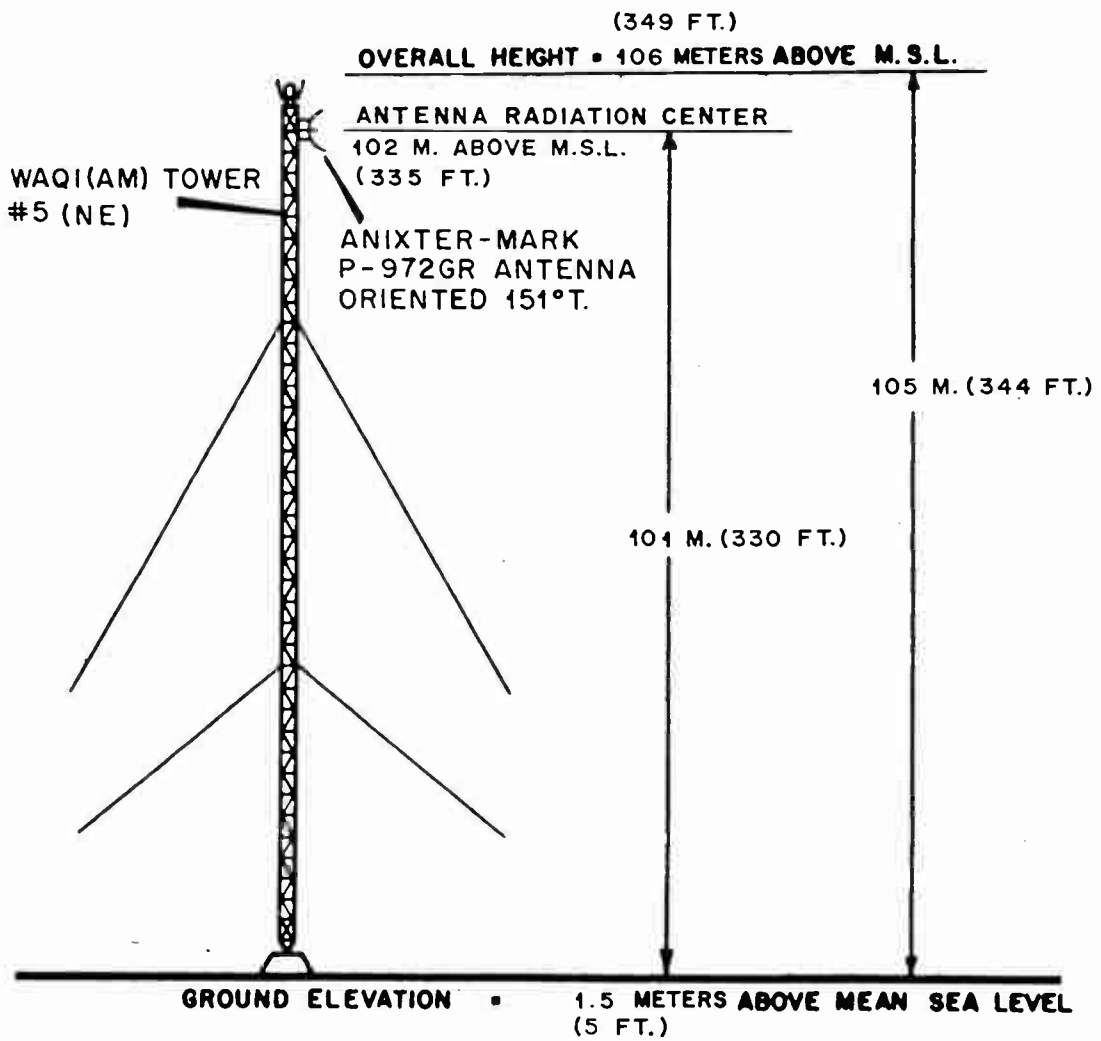






NORTH LATITUDE : 25° 58' 07"
WEST LONGITUDE : 80° 22' 44"

DECEMBER, 1986



NOT DRAWN TO SCALE

FIGURE 10

STL RECEIVE ANTENNA

PREPARED FOR
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

APPENDIX i

DETUNING OF UNUSED TOWERS

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

It is well known that unused towers can act as parasitic reradiators, distorting the directional antenna pattern produced by driven radiators. This is especially true for directional arrays exhibiting extremely high radiation suppression, such as the WAQI nighttime antenna system. If unused towers are properly detuned, they will have little impact, if any, on the radiation pattern produced.

Tower #7(NW) is unused during nighttime operation at WAQI. The tower was detuned by adjusting a terminating inductive reactance to produce a current distribution which results in approximately zero radiated field in the horizontal plane. Figure i-1 illustrates the current distribution obtained. The data from which Figure i-1 was plotted is set forth in Table i-I. As expected, a current minimum or "crossover" occurs at approximately one-third the tower height. The current areas above and below the crossover point are approximately equal, resulting in near zero reradiated field in the horizontal plane.

Current distribution measurements were obtained by having a tower rigger ascend the tower, stopping every 10 feet to measure the current using an adapted field strength meter. The Potomac Instruments field strength meters actually measure magnetic field strength, which is directly proportional to current in the immediate vicinity of a conductor, such as a tower. The meter used was fitted with a wooden spacing block to facilitate uniform positioning of the meter with respect a tower leg at each measurement location, resulting in comparable data. The gap in the loop antenna shield was short-circuited in order to desensitize the field strength meter.

For daytime and nondirectional operational modes, detuning of unused towers was accomplished by monitoring the current at one-third the tower height and adjusting the terminating reactance for a minimum indication. Based on the data obtained for tower #7 and our experience, it is believed that this method is wholly adequate for the daytime directional and nondirectional modes.

TABLE i-I

TOWER #7(NW) CURRENT DISTRIBUTION DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Height Above Base Insulator (feet)	Relative Current (percent)
2.6 — 10	250
5.2 20	256
7.8 30	217
10.4 — 40	194
13.0 — 50	156
15.6 — 60	128
18.2 70	106
20.8 80	83
23.4 90	61
100	43
110	25
120	22
130	31
140	47
150	56
160	67
170	83
180	89
190	89
200	94
210	100
57.1 220	100
230	100
240	94
250	83
260	81
270	78
280	69
290	58
300	58
310	49
320	29
86 330	14

DECEMBER, 1986

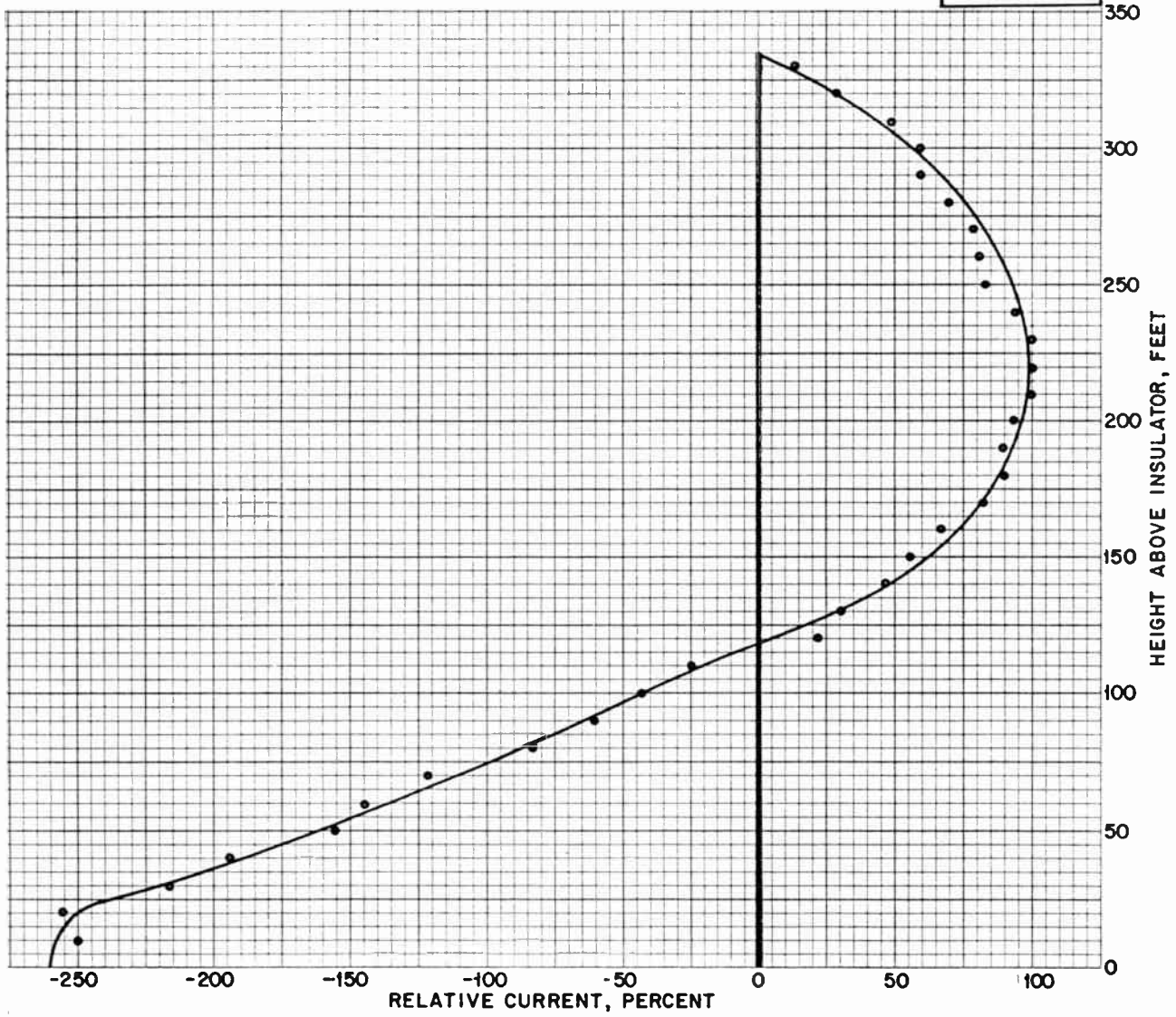


FIGURE i-1

UNUSED TOWER #7
CURRENT DISTRIBUTION

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

APPENDIX ii

EVALUATION OF SEASONAL GROUND CONDUCTIVITY CHANGES

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Field strength measurements made in conjunction with the WAQI proof of performance were conducted over a period of approximately seven months, from late May until early December. Although contemporaneous directional and nondirectional measurements are available in all cases, precluding seasonal effects (if any) from distorting the numerical (ratio) analysis of measured data, there may remain some question of mixing data taken during different seasons on field strength measurement graphs.

The environmental conditions which lead to significant seasonal ground conductivity changes do not exist in South Florida, where WAQI is located. Foliage conditions are virtually constant throughout the year. Temperature variations are minimal, as indicated by the NOAA publication "Local Climatological Data - Annual Summaries for 1984". The difference between the highest Normal Daily Maximum and lowest Normal Daily Minimum temperatures for Miami, Florida is 30 degrees Fahrenheit. By comparison, the corresponding difference at Washington, D.C. is 60 degrees; the figure for Syracuse, N.Y. is 66 degrees.

Figures ii-1, -2, and -3 and the corresponding Tables ii-I, -II, and -III present a comparison of nondirectional field strength readings obtained along the 35, 141, and 190 degree radials early and late during the project. As can be readily observed, there is no discernable difference in ground conductivity for measurements taken in distinctly different times of the year.

These radial bearings were randomly chosen and are believed to be representative of the situation as a whole. Sufficient ground measurements taken during May and June were not available for westerly radials such as 277 degrees and 308 degrees in order to make a statistically valid comparison. However, the terrain along westerly bearings is swampland similar in nature to that along the 190 degree radial. Similar performance is expected.

Based on the nature of the land and the data shown, it is not believed that any seasonal conductivity changes of any significant sort occur in the vicinity of the WAQI transmitter site. Intermixture of data taken during different parts of the year should cause no distortion of analysis results.

TABLE ii-I

SEASONAL FIELD STRENGTH VARIATION DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

35 Degrees True, Nondirectional

Point Number	Distance (Miles)	Date 1986	Time (EDT)	Field Strength (mV/m)	Date 1986	Time (EDT)	Field Strength (mV/m)
10	2.03	5-22	1301	380	10-24	1320	395
11	3.26	"	1324	225	"	1438	250
12	5.12	"	1403	142	"	1451	150
13	5.72	"	1411	118	"	1455	115
14	6.34	"	1415	115	"	1500	121
15	6.58	"	1418	96	"	1505	102
16	7.03	"	1426	94	"	1513	92
17	7.85	"	1439	103	"	1520	98
18	8.50	"	1453	84	"	1526	86
19	9.02	"	1500	76	"	1548	80
20	9.52	"	1510	71	"	1553	68
21	10.50	"	1524	64	"	1559	66
22	11.43	"	1530	59	"	1605	61.5
23	12.47	"	1552	54	"	1610	49.0
24	13.40	"	1601	46	"	1615	50.0
25	14.70	"	1609	43.5	"	1621	45.0
26	15.56	"	1623	41.0	"	1636	42.0
27	16.47	"	1628	40.0	10-25	1443	38.0
28	17.65	"	1640	34.5	"	1449	35.0
29	18.90	"	1651	26.8	"	1456	27.0
30	19.80	"	1715	28.0	"	1519	28.0

TABLE ii-II

SEASONAL FIELD STRENGTH VARIATION DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

141 Degrees True, Nondirectional

Point Number	Distance (Miles)	Date 1986	Time (EDT)	Field Strength (mV/m)	Date 1986	Time (EDT)	Field Strength (mV/m)
5	1.02	5-25	0904	742	10-28	0944	740
11	2.15	"	0955	389	"	0959	385
12	3.60	"	1030	231	10-29	1000	230
13	4.02	"	1039	208	"	1008	210
14	4.92	"	1056	198	"	1020	195
15	5.33	"	1110	167	"	1035	165
16	5.82	"	1126	138	"	1044	135
17	6.40	"	1143	131	"	1052	130
18	6.98	"	1154	108	"	1056	110
19	7.40	"	1206	117	"	1100	115
20	8.70	"	1225	88.5	"	1115	86
21	9.65	"	1239	89.0	"	1122	88
22	11.00	"	1257	71.5	"	1130	72
23	12.16	"	1309	62.0	"	1135	60
24	13.60	"	1325	41.5	"	1145	43.5
25	15.35	"	1343	54.0	"	1155	55.0
26	16.90	"	1404	36.5	"	1158	37.0
27	18.40	"	1428	37.7	"	1205	36.5
28	19.70	"	1444	29.5	"	1210	30.5

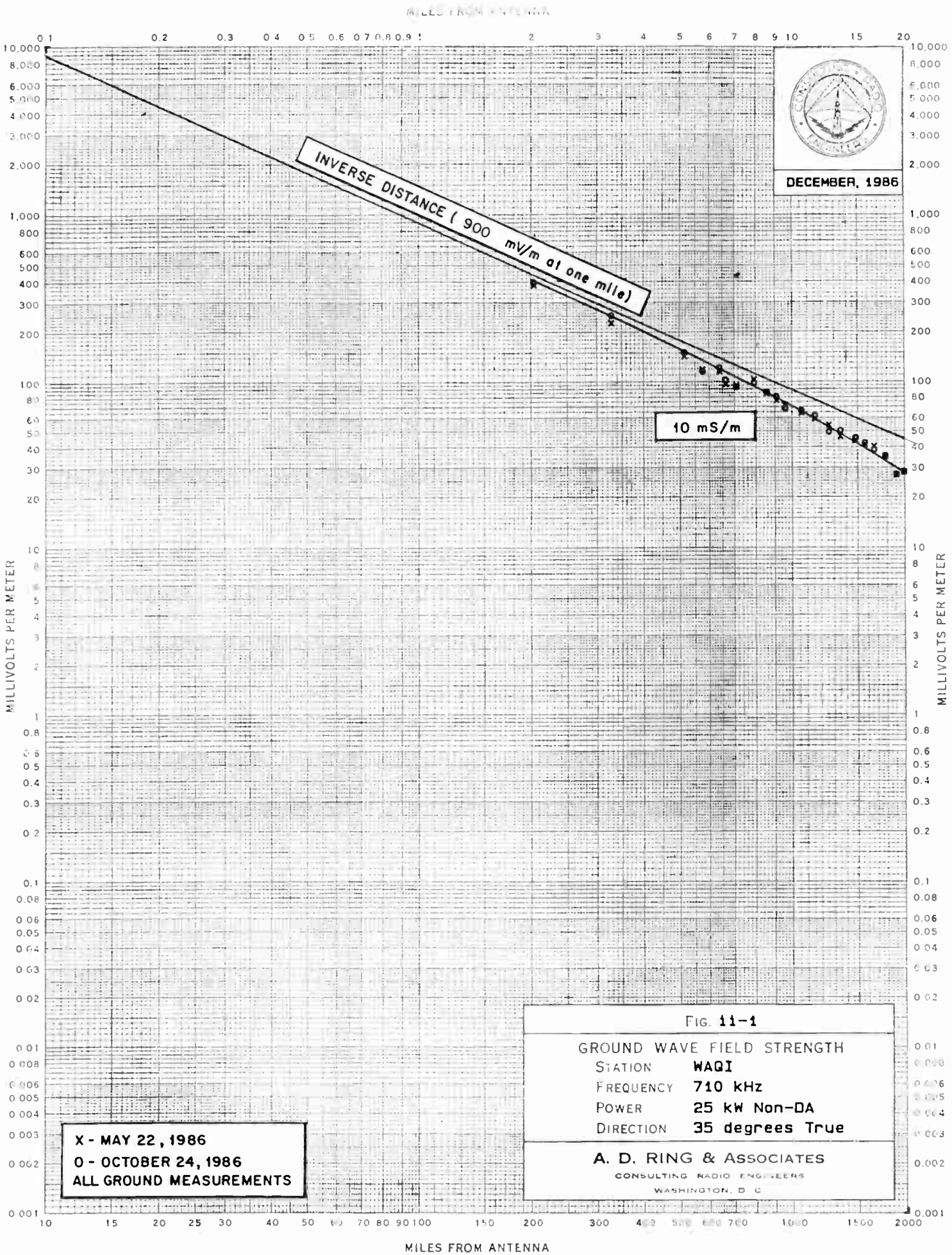
TABLE ii-III

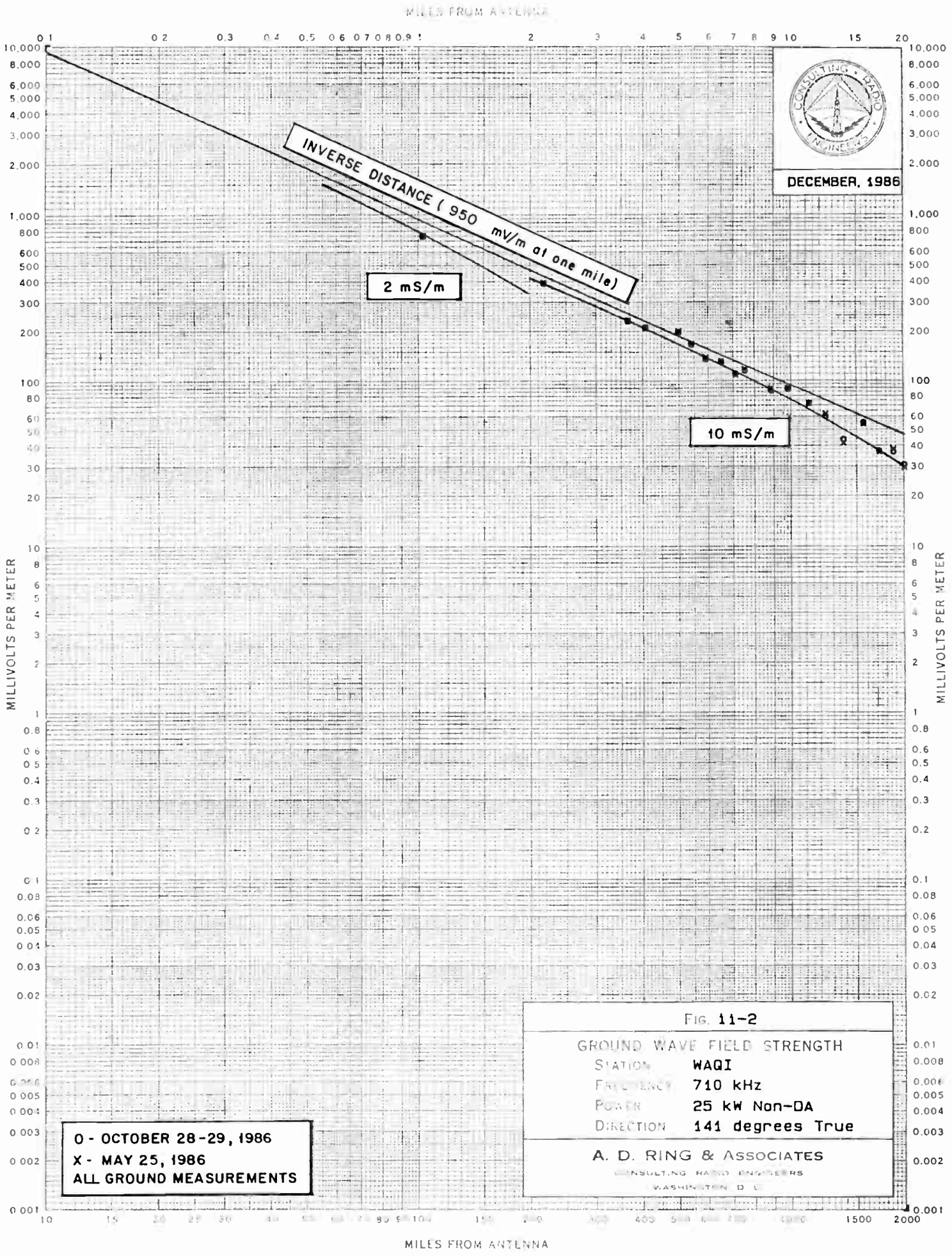
SEASONAL FIELD STRENGTH VARIATION DATA

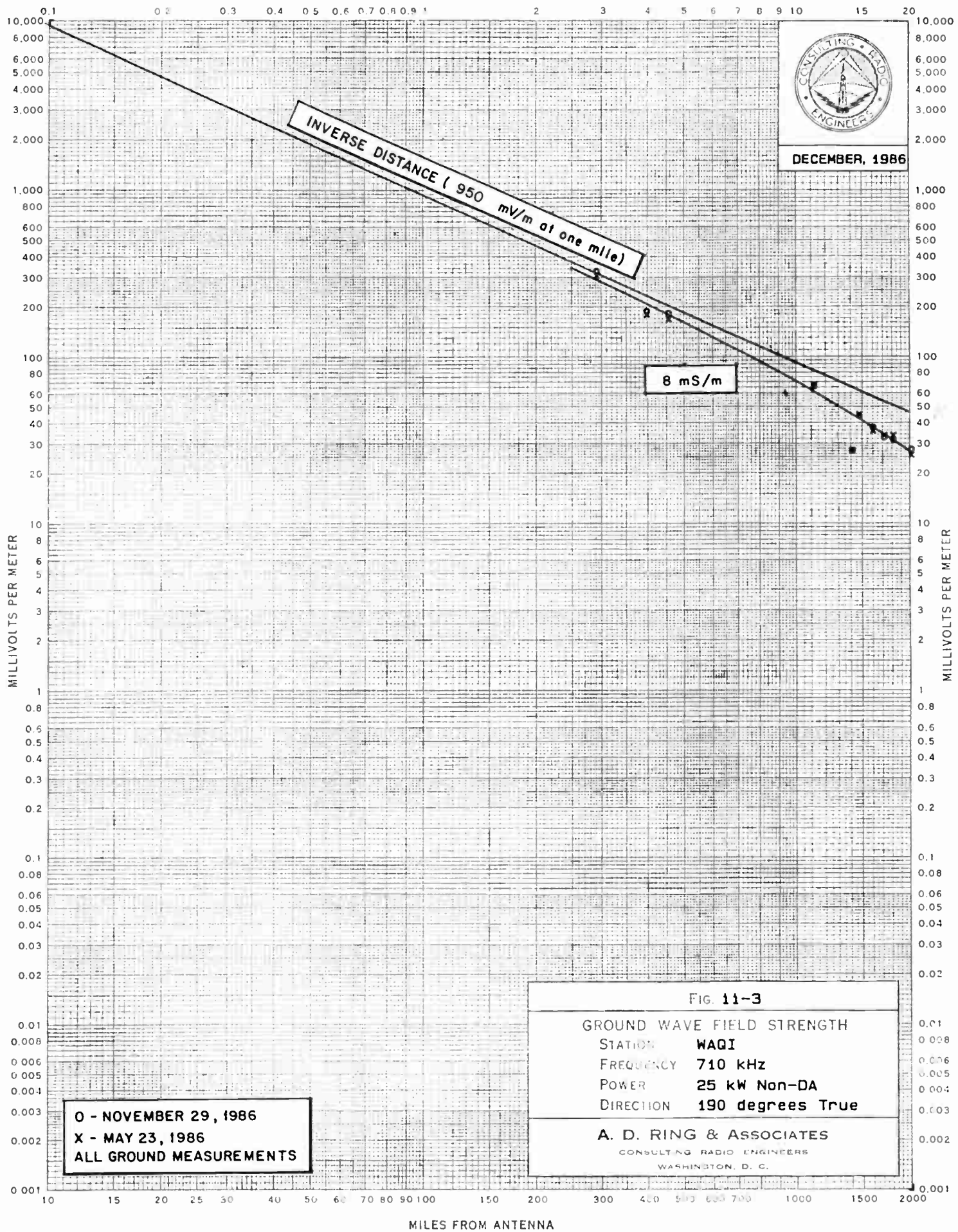
prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

190 Degrees True, Nondirectional

Point Number	Distance (Miles)	Date 1986	Time (EDT)	Field Strength (mV/m)	Date 1986	Time (EDT)	Field Strength (mV/m)
11	2.88	5-23	1506	310	10-27	1513	330
12	3.93	"	1521	181	"	1523	190
13	4.50	5-25	0937	170	"	1533	185
18	11.00	5-23	1743	67.5	"	1626	67
21	13.90	5-24	1708	27.5	10-28	0946	27.5
22	14.50	"	1718	45.5	"	0951	44.5
23	15.77	"	1734	36.2	"	1127	38.0
24	16.80	"	1746	34.0	"	1019	33.0
25	17.82	"	1759	34.0	"	1030	32.0
27	19.90	"	1806	26.0	"	1046	28.0







APPENDIX iii

FIELD STRENGTH MEASUREMENTS BY HELICOPTER

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

The WAQI transmitter site is located in marshland near the Florida Everglades. Areas to the south, southwest, west, and northwest of the transmitter site have few roads which may be used to access field strength measurement locations. The area is inhabited by numerous species of unfriendly reptiles, discouraging access by foot. Consequently, a limited number of ground-accessable measuring locations are available. Airborne measurement of field strength using a helicopter was necessary in these directions in order to obtain sufficient measurement data.

Measurement Equipment

Measurements were conducted using a Bell 206B JetRanger II helicopter contracted from Crescent Airways of Pembroke Pines, Florida. The loop antenna of a Potomac Instruments field strength meter was mounted on a retractable boom assembly, which was attached to the landing skids of the helicopter. A cable connected the loop antenna to the meter itself, which was, in turn, connected to an Esterline-Angus model 601C chart recorder. The meter and recorder were located in the rear passenger compartment of the helicopter. The loop, cable, and meter have been calibrated as a system by Potomac Instruments, Inc. Figure iii-1 illustrates two views of the boom assembly in the measuring position. The boom is raised when the helicopter is landing. This assembly was originally developed by AM broadcast station WNOE, New Orleans, Louisiana. Further details may be found in the Commission's engineering file for WNOE. The

installation of the assembly on the helicopter was inspected and approved in accordance with the requirements of the Federal Aviation Administration.

Calibration Procedure

The chart recorder was calibrated to duplicate the indications of the field strength meter. Measurements were taken along the 35 degree True radial in order to check the correlation between ground measurements and airborne measurements. The helicopter was flown out the radial at essentially constant speed, with the chart recorder operating at a velocity of 3 inches per minute. As measurement locations established on the ground were passed, tick marks were placed on the chart. The field strength values measured on the ground and read off the recorded chart are presented in Table iii-I.

Airborne readings are compared to nondirectional data taken during May and October. In both cases, excellent correlation was obtained. Figure iii-2 illustrates the comparison of airborne data with the May ground measurements; Figure iii-3 illustrates the comparison with the October measurements.

The nature of the apparatus employed suggests that use of a correlation factor to determine equivalent on-the-ground field strength data is inappropriate. The data of Table iii-1 establishes that minimal differences in readings exist; differences well within the range of instrument and parallax errors. For the measurements conducted in connection with the proof of performance of WNOE, no correlation factor was used. Given the nature of the equipment, the data obtained, and the prior experience, use of a correlation factor is deemed inappropriate for this case.

Measurement Method

For close-in nondirectional field strength measurements, a known starting point was established by reference to landmarks, approximately 2 miles from the transmitter site. The helicopter was flown at a constant speed directly to the nondirectional radiator (tower #1), with the starting, ending, and any intermediate ground reference marked on the recorded chart of field strength versus time.

For complete radial measurements, a combination of visual and electronic navigation was employed. A Texas Instruments TI-9200 Loran C aircraft navigation receiver was used, tuned to the Southeast chain of Loran C stations. The navigation system was initialized as the helicopter sat on the ground near the center of the WAQI antenna array, whose geographic coordinates are known. In flight, the system provides accurate information concerning the distance in nautical miles and bearing with respect to True North from the initial reference point. As a backup, the helicopter's radio Automatic Direction Finder (ADF), tuned to WAQI, was also used.

Two runs were flown for each complete radial and mode of operation, inbound and outbound. As ground measurement points or other identifiable landmarks were passed, tick marks were placed on the recorded chart of field strength versus time. Where no landmarks were available, mileages were marked based on Loran C distance indications. Use of this procedure permits interpretation of distances on the chart with a high degree of confidence and repeatability. Measurements were made as far as periodic landmark availability permitted.

Data Analysis

The field strength versus time charts for each run along each radial were first read for airborne field strengths at ground measurement points. A correlation analysis was then conducted to determine the combination of directional and nondirectional runs that best approximated results obtained on the ground. Those runs were then read in detail.

Intermediate airborne measurement points were selected between ground points by evenly dividing the chart between adjacent ground point tick marks in order to achieve an approximately equal interval of distance (time) between adjacent measurement points, both ground and air. It is believed that this practice of evenly dividing the recorded chart between adjacent ground points largely eliminates errors in point location attributable to variations in helicopter speed.

Personnel

The JetRanger II helicopter was piloted by James Hunter, an employee of Crescent Airways. Timothy Z. Sawyer of this firm, a licensed fixed-wing pilot, served as navigator. The equipment was operated by Lyndon H. Willoughby, its designer, during the August measurement program and by Paul L. Whitney, during the December work.

Conclusion

It is believed that the measurement procedure employed results in as accurate and repeatible field strength measurements as can possibly be obtained in a moving aircraft.

FIGURE iii - 1

LOOP ANTENNA MOUNTING
FOR HELICOPTER MEASUREMENTS

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz 50 kW - U DA - 2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

TABLE iii-I

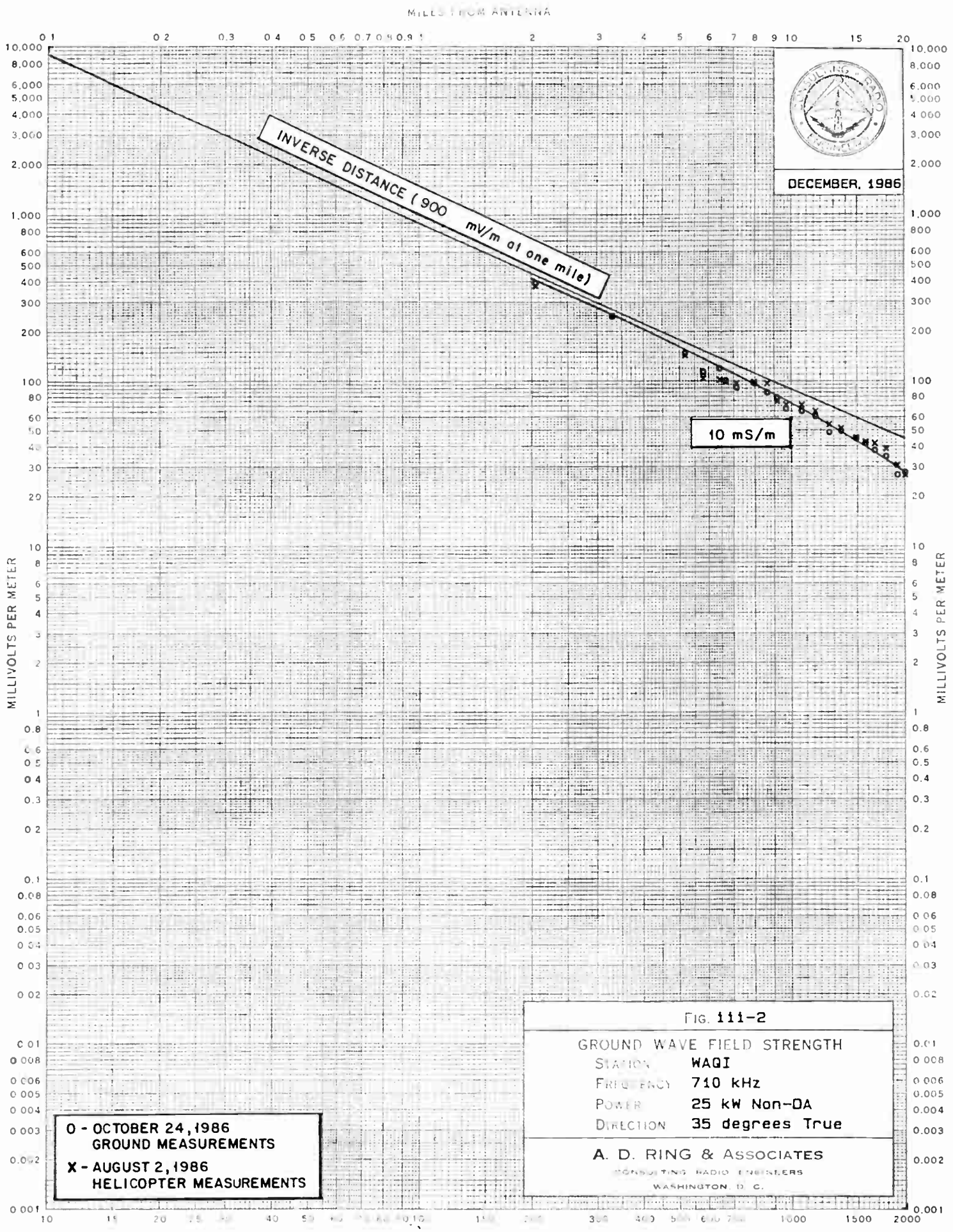
HELICOPTER FIELD STRENGTH MEASUREMENT CALIBRATION DATA

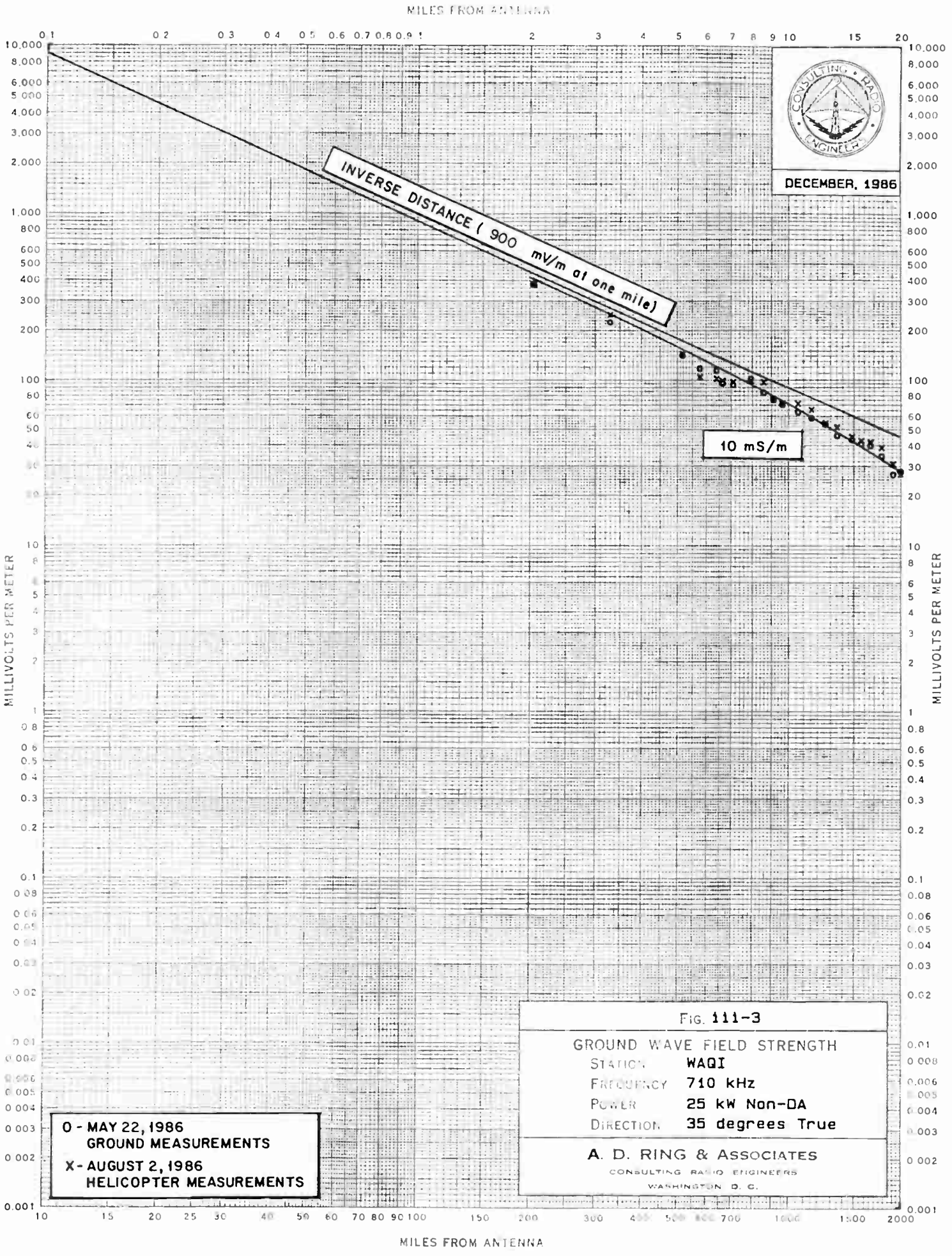
prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

Point Number	Distance (Mi)	May Ground (mV/m)	October Ground (mV/m)	August Air (mV/m)	Ratio (Air/May)	Ratio (Air/Oct)
10	2.03	380	395	380	1.0000	0.9620
11	3.26	225	250	250	1.1111	1.0000
12	5.12	142	150	145	1.0211	0.9667
13	5.72	118	115	105	0.8898	0.9130
14	6.34	115	121	103	0.8957	0.8512
15	6.58	96.0	102	100	1.0417	0.9804
16	7.03	94.0	92.0	98.0	1.0426	1.0652
17	7.85	103	98.0	100	0.9709	1.0204
18	8.50	84.0	86.0	98.0	1.1667	1.1395
19	9.02	76.0	80.0	76.0	1.0000	0.9500
20	9.52	71.0	68.0	72.0	1.0141	1.0588
21	10.50	64.0	66.0	72.0	1.1250	1.0909
22	11.43	59.0	61.5	66.0	1.1186	1.0732
23	12.47	54.0	49.0	55.0	1.0185	1.1224
24	13.40	46.0	50.0	52.0	1.1304	1.0400
25	14.70	43.5	45.0	45.5	1.0460	1.0111
26	15.56	41.0	42.0	43.0	1.0488	1.0238
27	16.47	40.0	38.0	42.0	1.0500	1.1053
28	17.65	34.5	35.0	39.0	1.1304	1.1143
29	18.90	26.8	27.0	31.0	1.1567	1.1481
30	19.80	28.0	28.0	27.0	0.9643	0.9643
				Average Ratio:	1.0449	1.0286

See Table ii-I for ground measurement times

Airborne measurements conducted on August 2, 1986 from 1504 to 1523





APPENDIX iv

FIELD STRENGTH MEASUREMENT in the PRESENCE of SIGNIFICANT COCHANNEL INTERFERENCE

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

WAQI is a Spanish language station serving southern Florida on 710 kilohertz. Monitoring reports by the Field Operations Bureau (FOB) of the Federal Communications Commission (FCC) indicate that a cochannel station with an estimated power of 50 kilowatts is operated near Havana, Cuba, some 388 kilometers from the WAQI transmitter site. This Cuban station produces significant field strength, on the order of 0.8 to 1.5 millivolts per meter (mV/m), in the vicinity of the WAQI transmitter site. Consequently, accurate measurements of WAQI field strength below 10 mV/m may be obscured by cochannel interference. Reliable field strength measurement is not possible unless the WAQI signal can be detected and measured separately.

A. Theory of Instrumentation

AM broadcast field strength meters include an envelope detector circuit. Such a circuit approximates a product device. Two signals, differing in frequency, applied to the detector input will result in sum and difference components at the detector output. If the amplitude of one signal is held constant, the sum or difference signal output will be directly proportional to the amplitude of the signal which varies.

If two signals are applied to the detector, one being the desired signal received from a broadcast station and the other a locally generated, constant amplitude signal injected into the receiver circuit by appropriate means, a beat frequency will be

produced, corresponding to the frequency difference between the signals, with its amplitude proportional to that of the received signal. For example, two signals separated in frequency by 20 Hertz will produce a beat of that frequency at the detector output.

Assume that three signals are applied to an envelope detector. The frequencies of these signals are 709.950, 709.980, and 710.000 kilohertz. Audio beat frequencies are produced at 20 (710.000-709.980), 30 (709.980-709.950), and 50 (710.000-709.950) Hertz. If the amplitude of the 709.950 kilohertz signal is held constant, the 30 Hertz product amplitude is directly proportional to the amplitude of the 709.980 kilohertz signal, within the dynamic range of the equipment used. The 30 Hertz component can be easily isolated by means of a narrow, adjustable audio bandpass filter.

In order to accurately measure the WAQI signal in the presence of significant Cuban interference, a frequency relationship similar to that of the foregoing example was established, as illustrated by Figure iii-1. The WAQI carrier frequency set approximately 20 Hertz below that of the Cuban station. A locally generated signal, approximately 30 Hertz below the WAQI carrier frequency, was injected into a field strength meter. The resultant audio output was fed to a narrowband adjustable audio filter and precision detector, the output of which is metered and can feed a chart recorder.

B. Apparatus Configuration

Figure iii-2 is a block diagram illustrating the equipment configuration employed. A Potomac Instruments SD-31 synthesized signal generator was used as the local signal source. Its output was injected into the Potomac Instruments FIM-41 field strength meter (FSM) input through a suitable potentiometer and isolation

resistor. The detector (recorder) output of the field strength meter was connected to a Sine Systems FSV-1 frequency-sensitive audio voltmeter (FSV), which was custom made for this project. Figure iii-3 is a photograph of the instrument system. Each component is firmly bolted to a base plate, in order to eliminate any chance of measurement inconsistency attributable to component physical position.

C. Instrument Linearity

Field strength meter detector linearity was tested on the bench, where it was noted that significant clipping of the audio beat frequency was occurring. Increase in the capacitance of C129 in the field strength meter fully resolved this problem. Once again, calibration was checked against an unmodified meter. No differences were noted.

To test linearity and dynamic range of the apparatus system, two locally generated signals were applied to the Potomac FSM input. These signals were adjusted for a difference in frequency of 30 Hertz. The amplitude of one signal was adjusted for an indication of 7 millivolts (mV) on the FSM. The other signal signal was adjusted to 2.0 mV. The FSV tuning was adjusted for maximum indication and the gain was calibrated to result in an FSV meter reading of 2.0. The amplitude of the second signal was varied in discrete steps from 0.2 to 3.0 mV and the FSV reading recorded. It was found that, up through 2.0 mV, the FSV reading tracked the second signal amplitude within the degree of accuracy to which the meters could be read by the naked eye, i.e., there was virtually no error between second signal amplitude and FSV indication. Above 3.0 mV, significant errors were noted, as predicted by theory.

The same test was repeated for first signal amplitude of 70 mV with second signal range of 2 to 30 mV. Comparable results

were obtained. There were no significant tracking errors noted over the range 0.02 mV to 20 mV, provided that the proper ranges were selected for both the FSM and FSV units and the signal amplitude being measured did not exceed one-third of the constant signal level.

The bandwidth of the Sine Systems FSV-1 unit is quite narrow, approximately 5 percent of the center frequency, precluding errors caused by the addition of undesired beat frequency signals to the signal under measurement. The unit features variable tuning and a readout of the frequency to which it is tuned, facilitating accurate setup and use.

D. Apparatus Calibration

Since the Potomac Instruments FSM was modified by adding an input jack for the local oscillator signal and connecting this jack to the meter input via a high resistance, its calibration was carefully checked against an unmodified meter. All connections were as described above, but the local oscillator was shut off. No difference between modified and unmodified meter indications were noted at several measurement locations and with several different ambient signal levels. Furthermore, the effect of the layout of the three instruments on measured field strengths was determined in a similar manner by comparison to the readings of the FSM standing alone. No differences in readings were noted. Consequently, it is concluded that the FSM modifications made and instrument mounting scheme used have no adverse affect on instrument calibration.

Prior to taking actual field strength measurements, at a measurement location where WAQI field strength was sufficiently greater than the cochannel interfering signal, the instrument system was calibrated. First, the FSM was calibrated in the normal manner with the local oscillator (SD-31) off. The WAQI

field strength was then read. The local oscillator was activated and set for a signal injection level appropriate to the FSM and FSV ranges selected. The FSV calibration was adjusted to match the FSM indication previously obtained.

Measurement Results

The field strength readings obtained by conventional FSM and unconventional FSV measurement are presented for the 0.5 and 20.5 degree nighttime radials by Tables iv-I and iv-II, respectively. The difference in readings obtained is illustrated graphically by Figures iv-4 and iv-5. As can be readily seen, the difference between FSM and FSV indications is minimal for signal strengths exceeding 3 millivolts per meter, becoming more pronounced as signal strength decreases. This is to be expected, since the interfering Cuban station's signal amplitude becomes significant with respect to and, eventually, greater than the WAQI signal amplitude, dominating the reading of the FSM.

FIGURE iv-1

BEAT FREQUENCY RELATIONSHIP

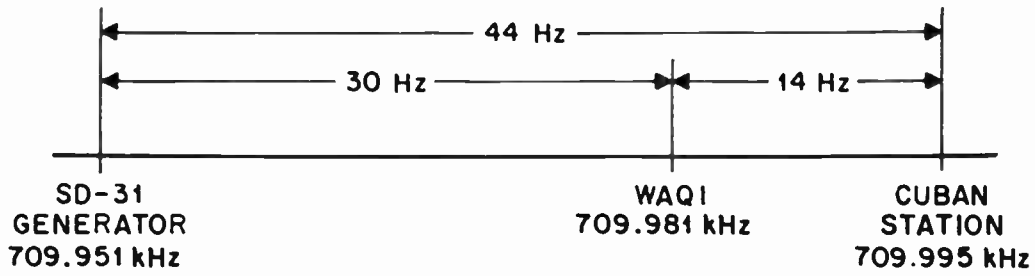
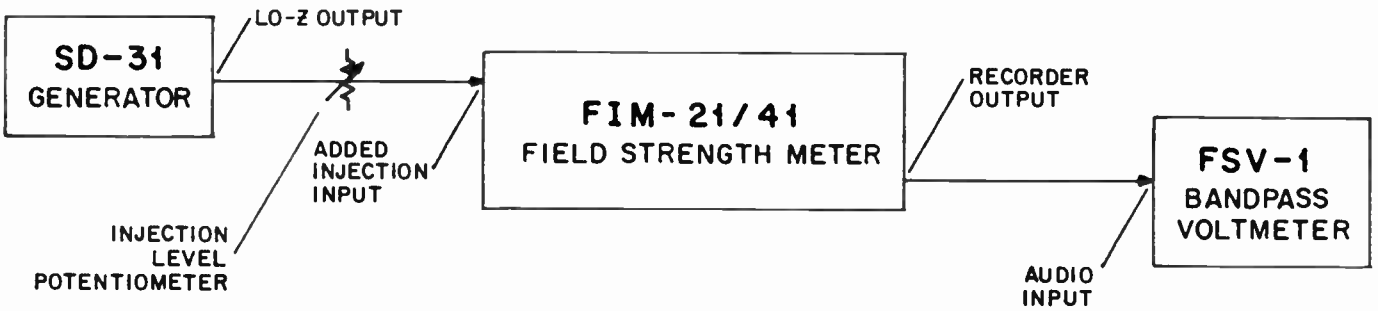


FIGURE iv-2



INSTRUMENT CONFIGURATION

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

DRAWN BY: FGA	DRAWING NUMBER: NONE
SCALE: NONE	
DATE: DEC., 1986	APPROVED BY: KDL

WASHINGTON, D. C — A. D. RING & ASSOCIATES — CONSULTING RADIO ENGINEERS

FIGURE iv-3

BEAT FREQUENCY FIELD
STRENGTH MEASUREMENT APPARATUS

Prepared For
MAMBISA BROADCASTING CORPORATION
WAQI MIAMI, FLORIDA

710 kHz | 50 kW-U | DA-2

A. D. RING & ASSOCIATES, P.C.
CONSULTING RADIO ENGINEERS
WASHINGTON, D. C.

TABLE iv-I

TOTAL AND INTERFERENCE-FREE FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

0.5 Degrees True, Nighttime Directional

Point Number	Distance (Miles)	Total Field Time (EST)	Total Field FSM (mV/m)	WAQI Field Time (EST)	WAQI Field FSV (mV/m)
11	2.18	1154	4.90	1156	4.90
12	2.48	1140	3.20	1143	3.20
13	2.65	1146	3.10	1148	3.05
14	3.03	1202	3.10	1204	3.00
15	3.68	1218	3.00	1222	2.85
16	4.16	1225	1.90	1228	1.60
17	4.42	1229	1.80	1230	1.50
18	4.66	1231	2.00	1233	1.65
19	5.18	1234	1.70	1236	1.30
20	5.69	1239	1.35	1241	1.20
21	6.18	1242	2.80	1245	2.75
22	6.43	1247	2.40	1250	2.25
23	8.10	1234	1.25	1235	0.92
24	8.60	1231	1.20	1232	0.84
25	9.50	1223	0.72	1224	0.62
26	9.90	1219	1.90	1220	1.80
27	10.10	1215	3.25	1215	2.90
28	10.75	1207	2.60	1208	2.40
29	11.02	1210	2.25	1211	1.90

All measurements conducted on November 24, 1986

TABLE iv-II

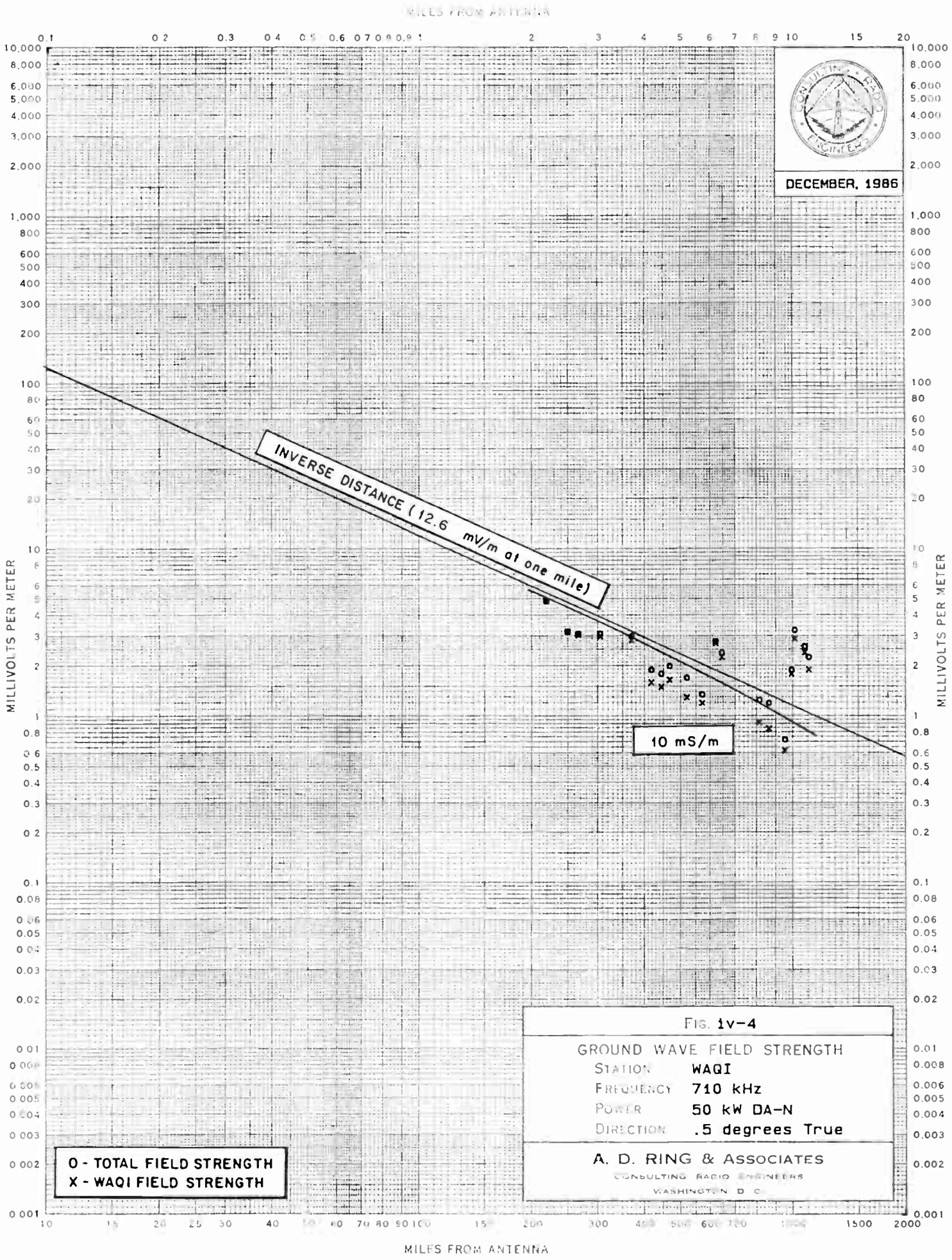
TOTAL AND INTERFERENCE-FREE FIELD STRENGTH DATA

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

20.5 Degrees True, Nighttime Directional

Point Number	Distance (Miles)	Total Field Time (EST)	Total Field FSM (mV/m)	WAQI Field Time (EST)	WAQI Field FSV (mV/m)
11	2.85	1447	2.00	1448	1.90
12	4.45	1432	2.30	1433	2.20
13	4.57	1413	3.70	1414	3.20
14	5.52	1427	1.20	1428	0.90
15	5.88	1424	0.82	1425	0.72
16	6.58	1421	1.70	1422	1.70
17	6.93	1417	1.00	1418	0.82
18	7.70	1251	2.00	1252	1.90
19	8.74	1246	1.45	1247	1.40
20	9.80	1240	1.10	1241	1.10
21	10.75	1304	1.20	1303	1.00
22	11.40	1307	1.30	1308	1.10
23	12.45	1312	1.00	1313	0.80
24	14.20	1318	1.20	1319	1.00
25	15.42	1324	1.80	1325	1.60
26	17.16	1330	1.25	1331	1.10
27	17.72	1333	1.20	1334	0.92
28	18.68	1338	0.98	1339	0.76
29	19.40	1342	1.10	1343	0.78
30	19.96	1345	1.20	1346	0.82

All measurements conducted on November 23, 1986



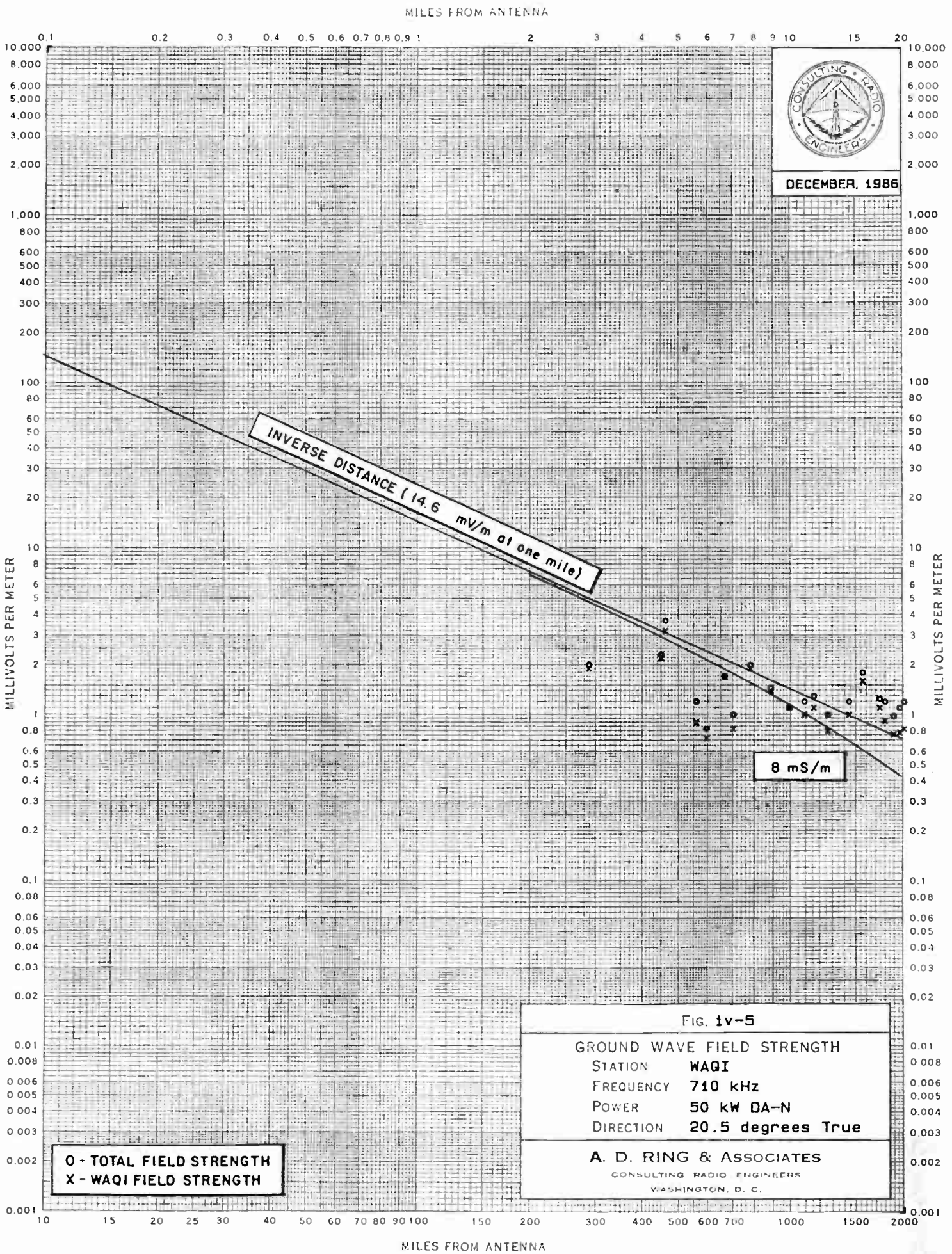


FIG. 1v-5

GROUND WAVE FIELD STRENGTH

STATION	WAQI
FREQUENCY	710 kHz
POWER	50 kW DA-N
DIRECTION	20.5 degrees True

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

APPENDIX v

GEOMETRIC MEASUREMENT DISTORTION (PROXIMITY)
CORRELATION METHOD

prepared for
Mambisa Broadcasting Corporation
WAQI Miami, Florida

It is well known that, for directional arrays with wide interelement spacing, measured field strengths will not always follow an approximate inverse relationship with respect to increasing distance from the transmitter site. This is because the inverse relationship holds only where the bearing from each tower in the array to the measurement point is identical. Where such a relationship does not obtain, the field vectors from each tower will have slightly different relative magnitudes and phases with respect to the assumed ideal, resulting in different computed radiation. This effect is especially significant in directions of high radiation suppression.

Field strength measurements subject to such distorting effects cannot be analyzed by conventional graphical or numerical means. Instead, an approximation of the expected field strength versus distance relationship must be employed to correlate the data obtained with theoretical effects.

For the purpose of conducting numerical analysis of data subjected to proximity effects, the Quadrature Method of proximity correlation (correction) has been devised. This method has been accepted by the Commission in connection with the Applications for License of AM broadcast stations WCAR, Livonia, Michigan (File Number BL-800404AA, as amended October 24, 1985), KHYT, South

Tucson, Arizona (File Number BL-850321AE), and KTNN, Window Rock, Arizona (File Number BL-860221AA). Method theory is set forth in detail in the former two applications and will not be repeated herein. The essential purpose of the Quadrature Method procedure is to apply correlation factors to measured data to permit an "equivalent" inverse distance analysis. WAQI field strength measurements were evaluated for proximity effects using the Quadrature Method.

In this application, the use of the Quadrature Method has been expanded to provide unattenuated and attenuated field strength versus distance curves, correlated to measured data. Consequently, it is possible to construct a field strength versus distance curve for the theoretical, measured, and standard pattern cases to illustrate fit of measured data to these conditions, without modification of the raw field strength data before it is plotted.

The standard pattern equivalent field strength, taking into account proximity effects, can be computed for any location relatively simply. The theoretical "near-field" signal strength for that location is computed, taking into account the complete geometry of the situation. That value is normalized to one kilometer by multiplying it by the distance from the center of the array to the point. The normalized theoretical value obtained is then applied to Equation (2) of Section 73.150(b) and the equation of Section 73.152(c)(2)(ii) of the Rules to find the modified standard field strength, which then can be denormalized by dividing it by the distance to the point. The result is the standard pattern field strength at the point.

The Quadrature Method involves a convergent determination of the quadrature difference between measured and theoretical radiation. This difference value, at one kilometer, can also be combined with the theoretical near-field signal strength to determine the measured unattenuated radiation at the point. The equations describing this procedure are as follows:

$$E_q^2 = E_m^2 - E_{tf}^2$$

where: E_q = Quadrature error magnitude

E_{tf} = Theoretical far-field radiation in measured radial direction, at one kilometer

E_m = Analyzed measured radiation at one kilometer

$$E_p = \frac{1}{d} E_{tn}^2 + E_q^2$$

where: E_p = Measured unattenuated radiation at point

E_{tn} = Theoretical near-field radiation at point, normalized to one kilometer

d = Distance from array center to point

Having determined a correlated unattenuated field strength versus distance relationship, the attenuated case can be easily derived by scaling appropriate conductivity attenuation factors to the curves drawn.

If proximity correlation has been properly applied, two conditions will obtain. First, the measured field strength data points will fit the correlated conductivity curves reasonably. Second, the measured unattenuated field strength curve will fall below the curve for the standard pattern case. Tables V-B and V-J and Figure 8-J of the WAQI Proof of Performance illustrate application of this technique to the instant situation.