ORIGINAL

Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
Expires 01/31/98

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY
FILE NO. BL-20180911ADH

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)
WIFREDO G. BLANCO-PI

MAILING ADDRESS (Line 1) (Maximum 35 characters)
EXT SAN AGUSTIN

MAILING ADDRESS (Line 2) (Maximum 35 characters)
1210 3RD ST.

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
SAN JUAN	PR	00926-1837

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
787 313 2153	WVOZ	72452

2. A. Is a fee submitted with this application? [✓] Yes [ ] No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section

[ ] Governmental Entity [ ] Noncommercial educational licensee [ ] Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M O R	0 0 0 1	$ 835.00	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	FOR FCC USE ONLY
M M R	0 0 0 1	$ 725.00	

ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.

TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
$ 1560.00	

FEE PAID ELECTRONICALLY. W.G. BP

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT WIFREDO G. BLANCO-PI		
MAILING ADDRESS EXT SAN AGUSTIN 1210 3RD ST.		
CITY SAN JUAN	STATE PR	ZIP CODE 00917

2. This application is for:

☑ Commercial ☐ Noncommercial

☑ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
WVOZ	AGUADILLA	BP-20170327AAF		12/28/2020

3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☐ Yes ☑ No

If No, explain in an Exhibit.

Exhibit No. 1

4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met?

☑ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect?

☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No.

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☑ Yes ☐ No

☐ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☑ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No.

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☑ Yes ☐ No

2. I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name	Signature	
WIFREDO G. BLANCO-PI	Wifredo G. Blanco Pi	
Title	Date	Telephone Number
LICENSEE	09/05/2018	787-313-2153

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant
WIFREDO G. BLANCO-PI

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☑ Station License ☐ Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
WVOZ	BP-20170327AAF	1580	UNLIMITED	1	1

2. Station location

State	City or Town
PUERTO RICO	AGUADILLA

3. Transmitter location

State	County	City or Town	Street address (or other identification)
PR	AGUADILLA	AGUADILLA	Bo. Palmar, PR-4443 INT

4. Main studio location

State	County	City or Town	Street address (or other identification)
PR	SAN JUAN	SAN JUAN	EXT SAN AGUSTIN 3RD ST.

5. Remote control point location (specify only if authorized directional antenna)

State	County	City or Town	Street address (or other identification)
PR	SAN JUAN	SAN JUAN	EXT SAN AGUSTIN 3RD ST

6. Has type-approved stereo generating equipment been installed? ☐ Yes ☑ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? ☑ Yes ☐ No ☐ Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No. EE

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
5.27	4.65

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
36	50	41	0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1	N/A	0	N/A	1	5.27	4.25
2	N/A	-93	N/A	0.87	0	3.7

Manufacturer and type of antenna monitor: POTOMAC INSTRUMENTS AM-19

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
GUYED TW	42.7	44.2	44.2	Exhibit No. N/A

Excitation ☑ Series ☐ Shunt

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

North Latitude	West Longitude
18 ° 24 ' 09 "	67 ° 08 ' 48 "

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

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No.

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

NONE

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

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.

Name (Please Print or Type)	Signature (check appropriate box below)
WIFREDO G. BLANCO-PI	Wifredo G. Blanco-Pi
Address (include ZIP Code) EXT SAN AGUSTIN 1210 3RD ST. SAN JUAN	Date 09/05/2018 Telephone No. (Include Area Code) 787 313 2153

☐ Technical Director

☑ Registered Professional Engineer

☐ Chief Operator

☐ Technical Consultant

☐ Other (specify)

PROGRAM TEST AUTHORITY REQUEST

Application for license to cover BP-20170327AAF is hereby filed. The construction has been done according to the Construction Permit (CP). All operating parameters comply with the authorized parameters in the CP. Accordingly, PROGRAM TEST AUTHORITY is respectfully requested beginning inmediately.

For this purpose, a waiver of the rule having to specify a date 10 days after filing FCC 302-AM is requested.
If the waiver is not granted anyway WVOZ-AM pretends to go on the air on September 15, 2018. (10 days from today), if authorized.

WVOZ Morovis, Puerto Rico has a silent period due September 25, 2018. WVOZ was granted a change of city license to Aguadilla, PR. WVOZ Aguadilla is ready to go on the air immediately. Puerto Rico is actually in the most critical month of the hurricane season, September. WVOZ is part of the WAPA RADIO network, the only network that maintained on the air during Hurricane Maria last year. WAPA-AM was the only AM, FM and/or TV station that maintained on the air in the San Juan/Metro Area.

SON

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Received & Inspected

SEP 10 2018

FCC Mailroom

APPLICATION FOR LICENSE ENGINEERING EXHIBIT (EE)

WVOZ-AM AGUADILLA, P.R. 1580 KHZ.

PROOF OF PERFORMANCE FOR DAYTIME DIRECTIONAL ANTENNA AND NIGHTIME NON-DIRECTIONAL 1KW, U

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
WIFREDO G. BLANCO-PI, LICENSEE / WVOZ-AM, AGUADILLA, P.R.
1580 Khz., 1 kw DA-D / 1kw NDA-N, U : BP-20170327AAF : AUGUST 30, 2018

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FIGURE 1

ENGINEERING STATATEMENT AND QUALIFICATION OF ENGINEER

And PHOTOGRAPHS SHOWING TERRAIN PROFILES ON NW, N, NE RADIALS

WIFREDO G. BLANCO-PI, P.E.
PROFESSIONAL ELECTRICAL ENGINEER PUERTO RICO LICENSE 5130

155 San Antonio St.
Urb. Floral Park
Hato Rey, P. R. 00917

Telephones: 787-313-2153
787-612-1178
787-759-9122

Email: wapa680@gmail.com

CERTIFICATION

I HEREBY CERTIFY THAT THE SUBSCRIBER, WIFREDO G. BLANCO-PI, MADE THE FIELD MEASUREMENTS, THE FIELD ADJUSTMENTS, AND PREPARED THIS REPORT. THAT MY QUALIFICATIONS AS AN ENGINEER ARE A MATTER OF RECORD AT THE FEDERAL COMMUNICATIIONS COMMISSION.

TO THE BEST OF MY KNOWLEDGE THE DATA PRESENTED IS TRUE AND ACCURATE.

Wifredo G. Blanco Pi

WIFREDO G. BLANCO-PI
July 30, 2018

Wifredo G. Blanco Pi

ENGINEERING STATEMENT PREPARED BY WIFREDO G. BLANCO-PI SUPPORTING APPLICATION FOR LICENSE OF WVOZ-AM

The engineering exhibit of which this statement is part was prepared on behalf of Wifredo G. Blanco-Pi, licensee of WVOZ-AM. The CP authorizes WVOZ-AM to change its city of license from Morovis to Aguadilla, P. R. The Morovis site is now silent since it didn't have electric power for more than 8 (eight) months since Hurricane Maria hit the Island and the emergency power generator collapsed. The decision was made to move the necessary equipment to the Aguadilla site (former site of WI3XSO) and the construction was fully completed according to the terms specified in BP-20170327AAF.
No deviation from CP parameters has been necessary.

The antenna monitoring employed is a Potomac Instruments (AM-19 type 204 s/n 692). Delta Electronics thoroidal transformers are employed at the base of each tower (TCT-3 s/n 17144 and 17132). The sampling lines consist of equal lengths of Andrew cable type LDF-50, ½ in. and have the recommended end connectors. The cables run thru PVC Schedule 40 pipes buried for protection and temperature stability.

GROUND SYSTEM:

The installed copper wires buried ground system is described in detail in figure 9 of this engineering exhibit.

ANTENNA SYTEM ADJUSTMENT:

The DAYTIME directional antenna was initially adjusted to theoretical parameters and have proven to work adequately according to the field data collected. Ratio current and phasing values were finally adjusted to the following parameters:

DAYTIME OPERATION (DIRECTIONAL ANTENNA):

CURRRENT RATIO (T2/T1): 0.87 PHASE (Degrees): Tower 2 lagging tower 1 = -93 degrees

FIELD STRENGTH MEASUREMENTS:

To adjust the daytime directional array a power of 250 watts or less was applied to the common point and final radial measurements were made using a power of 1.080 KW to compensate for the component losses of the phasor. A power of 1.0 kw was used for the NDA measurements. Tower # 2 floating for non-directional operation.

The transmitter site is surrounded specifically to the Northwest, North and Northeast by hills that make several points inaccessible. The non-directional measurements show a somewhat non-uniform radiation of 225 mv/m/km/kw (average). This radiation value is approximately 75% of the estimated

field for the 81 degree electrical height non directional tower as indicated by figure 8, section 73.190 of the Rules (299.7 mv/m/km/kw). A summary of the field strength data is shown in figure 2 while figure 3 is a tabulation of the measured field strength data. **In addition, the transmitter site has adjacent to it mountains that are almost as high as the towers in the NW and N directions.** As part of Figure 1 (Sheet 7 thru 12) Google Earth Satellite Photos of radials: 356, 32, 81 and 132 degree are included containing the mountain profiles for each. Measurements information is plotted in Figure 4.

FIELD STRENGTH MEASUREMENT ANALYSIS:

Field strength measurements were analyzed in accordance to the 'best fit' method outlined in section 73.186 of the FCC Rules. Graph 16, formerly contained in 47 CFR 73.184, was used to determine unattenuated fields and conductivity values.

As an aid in the analysis of the radials field strength data, the ratios of directional to non-directional field were averaged for each radial and the average ratio determined. The radial average ratio obtained was multiplied by the non-directional unattenuated field to determine directional radiation.

Figure 5 (Sheet 6 of 8) is a polar plot of the measured directional horizontal plane radiation pattern. The average ratio in each radial was multiplied by the unattenuated NonDA @ 1km (299.7 mv/m). For comparison purpose the standard radiation pattern is also shown. Figure 5(Sheet 7 of 8) is a polar plot of the measured non-da horizontal plane radiation pattern. In figure 5(Sheet 7 of 8) a REAL-DA polar plot was made multiplying the average ratio per radial by the measured non-da @1km

MONITOR POINT SELECTION:

An accessible monitor point has been selected for the radial specified for monitoring in the construction permit. The MP on radial 261 deg is located at coordinates: 18 23 49.88N 67 10 10.47W. Photographs and a more specific description of the monitor point and a map are included in Figure 6.

NON-DIRECTIONAL MEASUREMENT OF POWER:

For the purpose of determining the non-directional power, the impedance of tower number 1 was measured at the output of the antenna tuning in the non-directional mode. For non-directional operation the current was measured at the J-Plug immediately adjacent to the antenna input and ammeter. Tower #2 was floating.

RADIO FREQUENCY RADIATION CONSIDERATIONS:

The proposed operation of WVOZ (Day and Night) will not result in the exposure of workers or the general public to levels of radio frequency radiation in excess of the limits specified in 47 CFR 1.1310. A fence sorrounds each tower at a radial distance of 12 ft. to prevent electric and magnetic field exposure above FCC's specified levels.

If it becomes necessary for workers to enter the fenced areas close to the tower base for extended

periods of time WVOZ will reduce its power or even shut down if necessary to allow an appropriate level of radiation to human exposure and to assure human safety.

Wifredo G. Blanco Pi

ENG. WIFREDO G. BLANCO-PI
PE LICENSE 5130 (PR)
GENERAL RADIO TELEPHONE PG-22-611

Wifredo G. Blanco Pi

EXPERIENCE AND EDUCATION OF THE ENGINEER PREPARING THIS REPORT

My experience in radio engineering matters consists of approximately fifty-eight years as a radio engineer for several broadcast stations in Cuba, Republic of Panama and the Commonwealth of Puerto Rico.

During this time, I have installed, adjusted and maintained multiple two and three tower directional antenna systems, used an RF bridge for measuring the tower and common point impedances and performed field strength measurements.

My formal education consists of five years at the University of Havana, Cuba where I was graduated in 1956 as an Electrical Engineer. Since January 1967 I became a registered professional engineer at the Commonwealth of Puerto Rico (PE license 5130). I also hold a General Radio Telephone Operator License (PG-22-611) valid for LIFETIME.

Wifredo G. Blanco Pi

ENG. WIFREDO G. BLANCO-PI, P.E.

Wifredo G. Blanco Pi

SATELLITE PHOTOGRAPHS SHOWING THE ELEVATION PROFILE OF NW, N, NE RADIALS THAT WERE MEASURED

FIGURE 1 (SHEET 8 OF 12): Photo showing Radials going NW, N, NE from WVOZ transmitter site

Satellite Photo (Google Earth) showing the following radials: 351 deg, 326 deg, 30 deg, 81 deg and 132 deg. **Just 0.25 km North of WVOZ site** and extending from close to the West Seashore to the East for about 50 km extends the Jaicoa Mountain Chain. It's a chain of mountains approximately 4km long when crossing it South to North. Radials 351, 326 and 30 degrees all go thru this mountain chain S to N (approximately 4 km). Radial 81 degree goes thru the complete mountain chain (more than 50 km) from West to East.

FIGURE 1 (SHEET 9 of 12): Radial 30 degrees

Just 580 ft away from the ACR (Antenna Center of Radiation which is at 26 ft AMSL) the outgoing signal encounters the first mountain having 100 ft. AMSL and goes thru a chain of mountains up to 700 ft AMSL. Extending for more than 5km along the radial.

FIGURE 2 (SHEET 10 of 12): Radial 81 degrees

At 2,800 ft away from the ACR which is at 26 ft AMSL the outgoing signal encounters its first 100 ft AMSL mountain extending thru a continuous chain of mountains ranging up to 800ft AMSL. This situation extends for more than 50 km on this radial.

FIGURE 3 (SHEET 11 OF 12): Radial 326 degrees

At 700 ft from the ACR which is at 26 ft AMSL the outgoing signal encounters its first 100ft AMSL mountain extending thru a continuous chain of mountains ranging up to 300 ft. This situation extends for approximately 0.8km. on this radial.

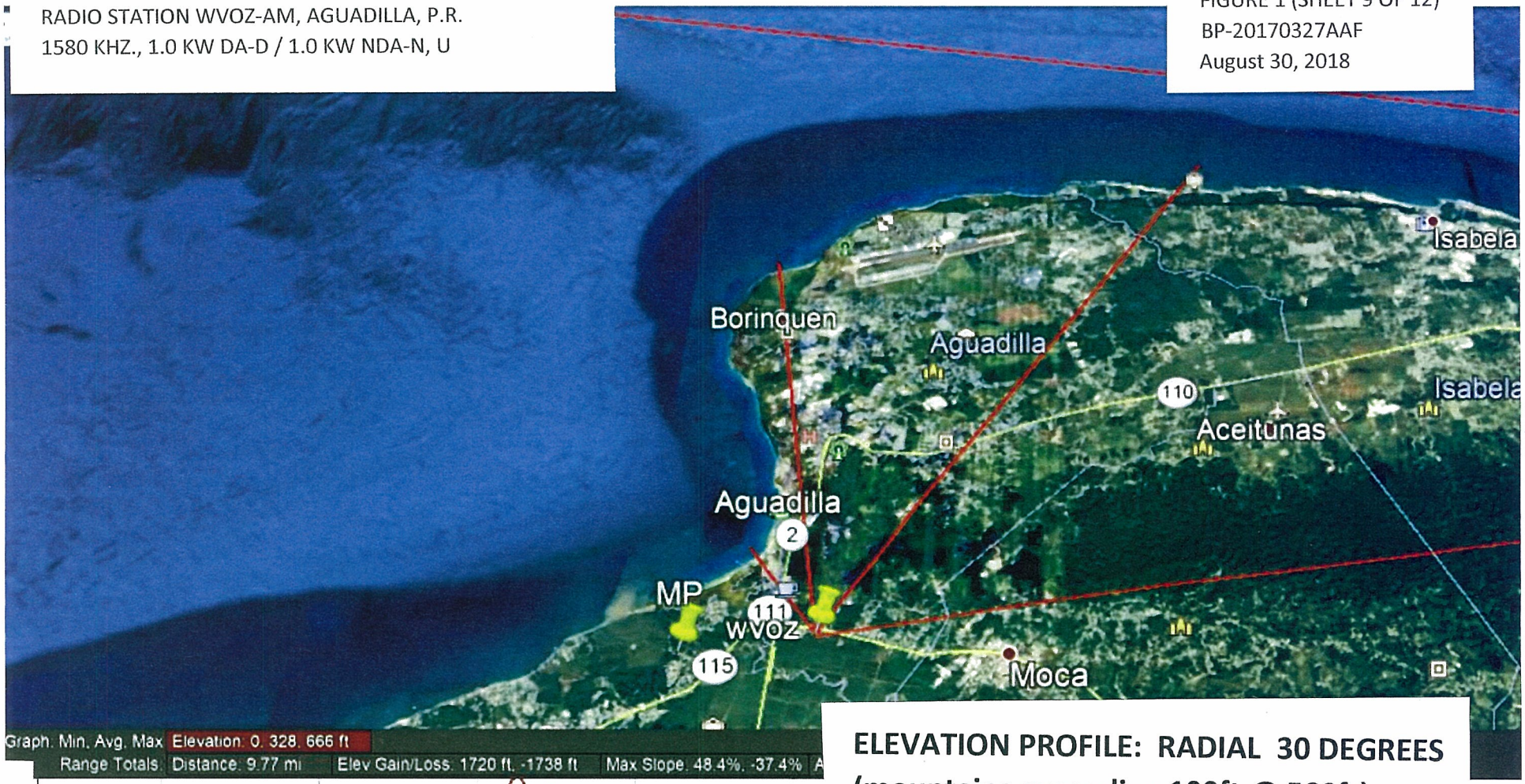
FIGURE 3 (SHEET 12 of 12): Radial 351 degrees

At 590 ft away from the ACR which is at 26 ft AMSL the outgoing signal encounters its firs 100ft AMSL mountain extending thru a continuous chain of mountains ranging up to 425 ft AMSL. This situation extends on this radial for approximately 3 km.

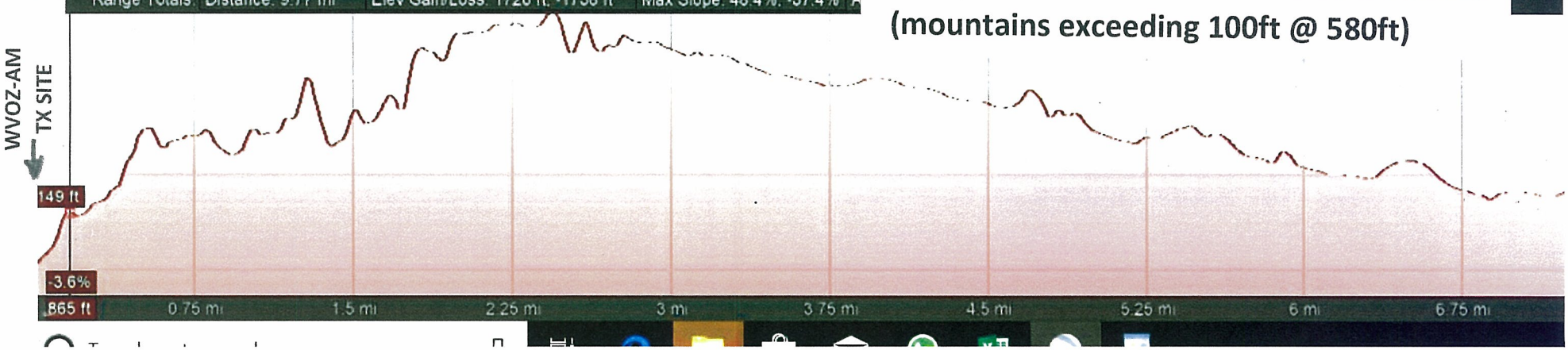

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U
Maleza Baja
Maleza Alta
Jobos
Bejuco
Guerrero
Guerrer
Borinquen
Aguadilla
Arenales
110
Aceitunas
Cabán
Aguadilla
Aguadilla
2
111
WVOZ
MP
115
Moca
Moca
FIGURE 1 (SHEET 8 OF 12)
BP-20170327AAF
August 30, 2018

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 1 (SHEET 9 OF 12)
BP-20170327AAF
August 30, 2018

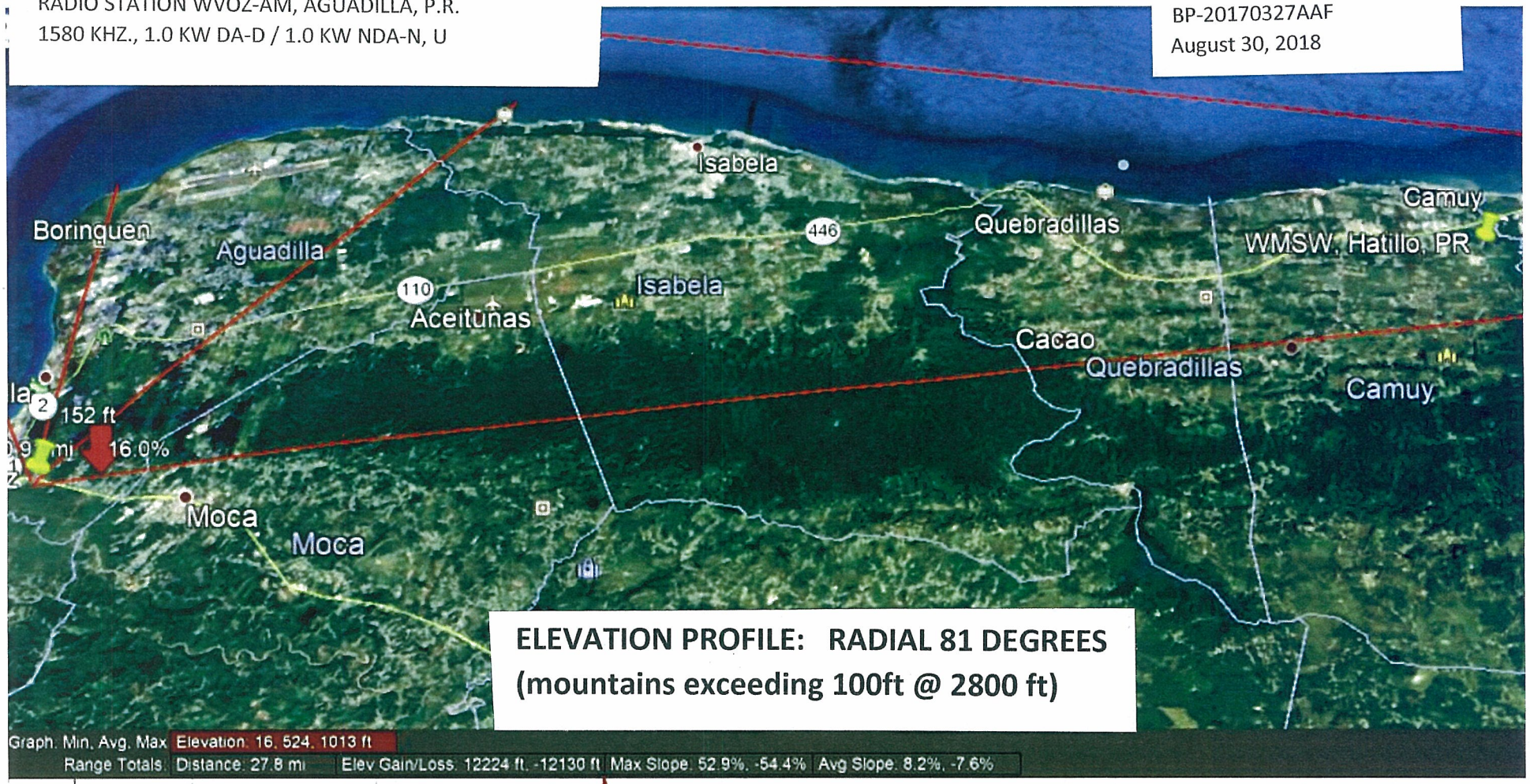


ELEVATION PROFILE: RADIAL 30 DEGREES
(mountains exceeding 100ft @ 580ft)



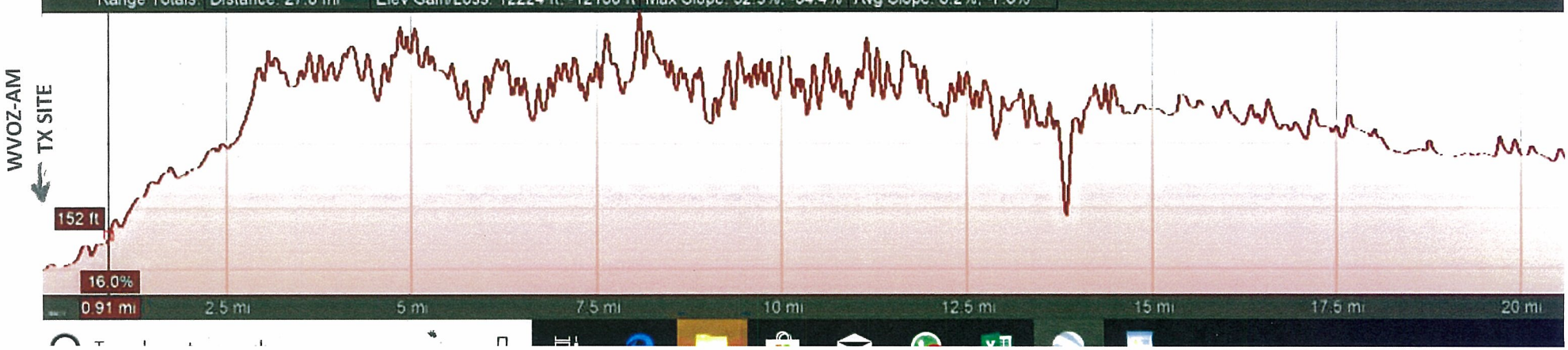
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 1 (SHEET 10 OF 12)
BP-20170327AAF
August 30, 2018



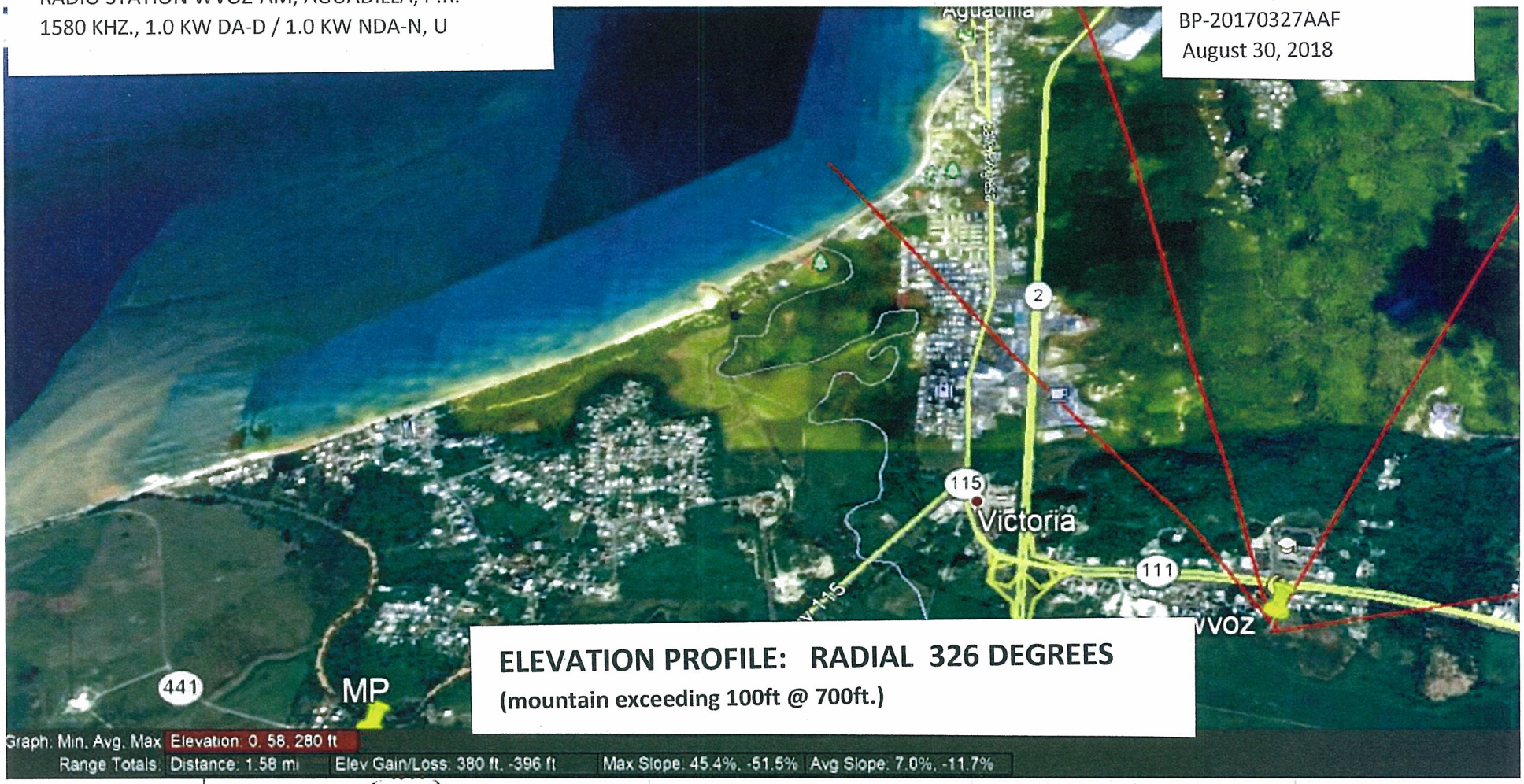
ELEVATION PROFILE: RADIAL 81 DEGREES
(mountains exceeding 100ft @ 2800 ft)

Graph. Min. Avg. Max Elevation: 16, 524, 1013 ft
Range Totals Distance: 27.8 mi Elev Gain/Loss: 12224 ft, -12130 ft Max Slope: 52.9%, -54.4% Avg Slope: 8.2%, -7.6%



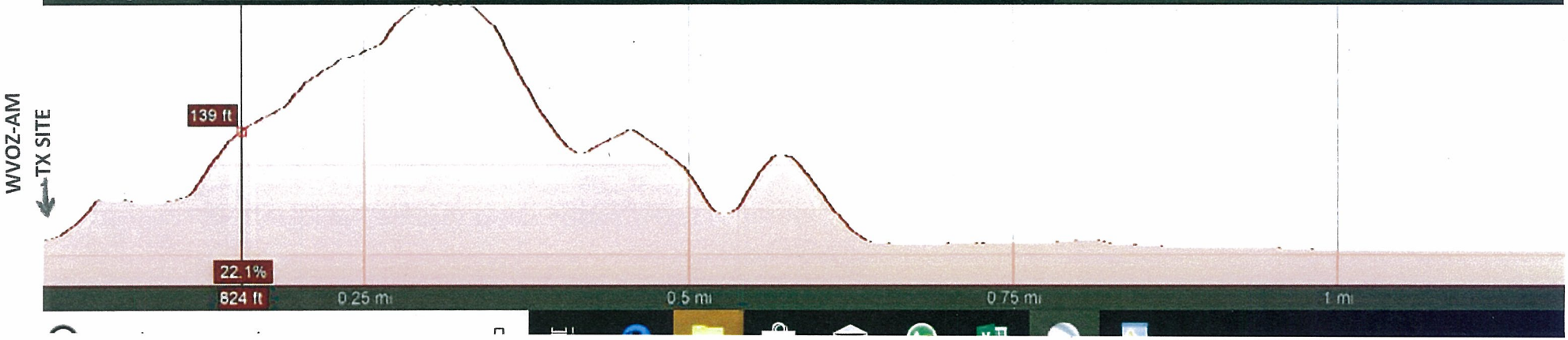
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 1 (SHEET 11 OF 12)
BP-20170327AAF
August 30, 2018



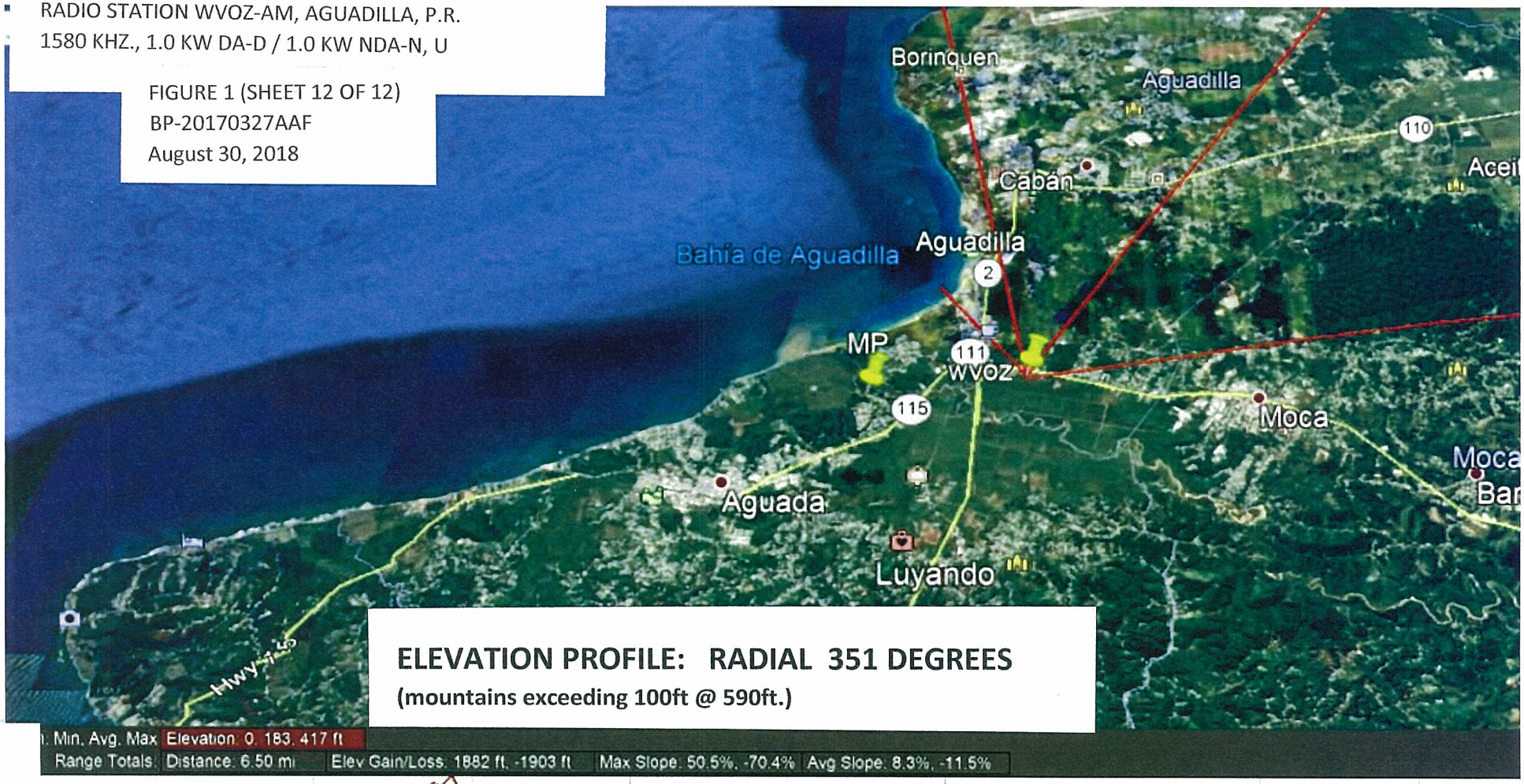
ELEVATION PROFILE: RADIAL 326 DEGREES
(mountain exceeding 100ft @ 700ft.)

Graph. Min. Avg. Max Elevation: 0, 58, 280 ft
Range Totals: Distance: 1.58 mi | Elev Gain/Loss: 380 ft, -396 ft | Max Slope: 45.4%, -51.5% | Avg Slope: 7.0%, -11.7%



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 1 (SHEET 12 OF 12)
BP-20170327AAF
August 30, 2018



ELEVATION PROFILE: RADIAL 351 DEGREES
(mountains exceeding 100ft @ 590ft.)

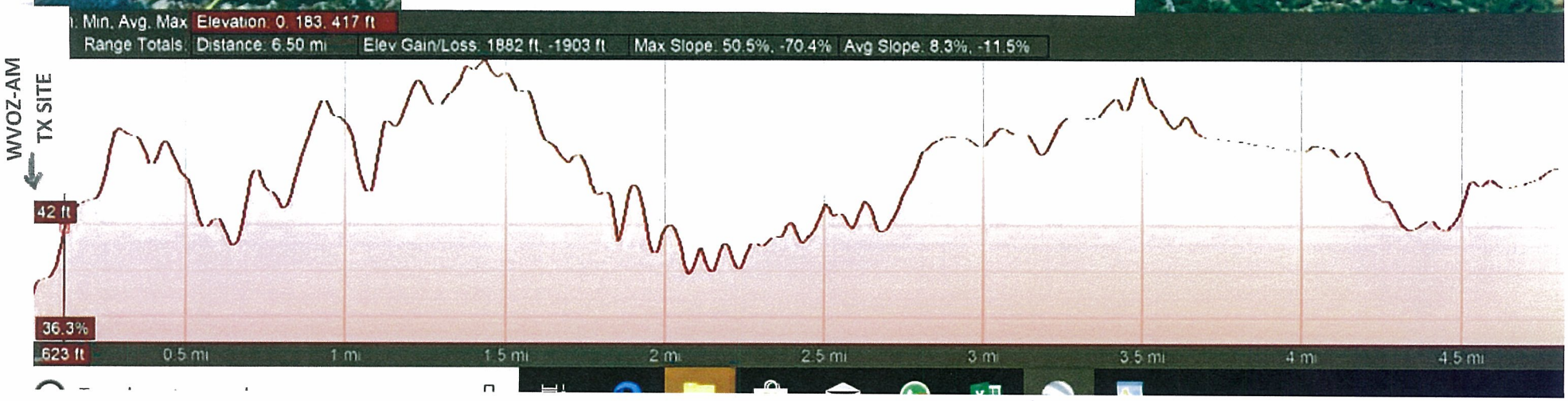


FIGURE 2

SUMMARY OF MEASURED FIELD STRENGTH DATA

SUMMARY OF MEASURED FIELD STRENGTH DATA

DAYTIME PATTERN: 1.08 KW, PHASE: -93 DEG. / RATIO: 0.87

NIGHTIME NON-DIRECTIONAL ANTENNA: 1.0 kw

RADIAL (DEG)	MEASURED NON-DA mv/m @ 1km	MEASURED DA mv/m @ 1 km	STANDARD DA mv/m @ 1km
30	230	385	424
81	240	401	455
132	240	384	427
171	245	285	321
196	265	195	220
***261**	240	33.2	58
326	180	195	211
351	130	293	314

*RADIAL TO BE MONITORED

FIGURE 3

TABULATION OF MEASURED FIELD STRENGTH DATA

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 2 of 12)
BP-20170327AAF
30-Aug-18

RADIAL 30 DEGREES

Measurements taken on: Sunday, June 17/2018 using Potomac FIM-21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.45	465	600	1.2903	1.6649
2	0.6	400	515	1.2875	1.6577
3	0.8	300	385	1.2833	1.6469
4	0.9	240	310	1.2917	1.6685
5	1.15	140	180	1.2857	1.653
6	1.35	130	170	1.3077	1.7101
7	1.7	85	110	1.2941	1.6747
8	2.15	46	59	1.2826	1.6451
9	2.45	44	56	1.2727	1.6198
10	2.7	38	50	1.3158	1.7313
11	3.5	22	29	1.3118	1.7208
12	4.3	15	19.2	1.28	1.6384
13	5.3	9	11.5	1.2778	1.6328
14	7.15	5	6.4	1.2888	1.6384
15	8.9	3	3.8	1.2667	1.6045
16	11.1	3.2	4.1	1.2812	1.6415
17	12	2.2	2.8	1.2727	1.6198
18	12.4	1.5	1.9	1.2667	1.6045
19	13.5	1.2	1.54	1.2833	1.6469
20	14.2	1	1.25	1.25	1.5625
				25.6816	32.9821
			/20	1.284	1.649

IF (DIRECTIONAL) = 1.284 x 299.7 = 384.81 MV/M

DIRECTIONAL POWER @ 30 DEG: 1.649 x 1.0 kw = 1.65 kw

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 3 of 12)
BP-20170327AAF
30-Aug-18

RADIAL 81 DEGREES

Measurements taken on Monday, June 18/2018 using FIM 21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.35		NO GOOD NULL TO TAKE MESUREMENT		
2	0.65	380	522	1.3736	1.96
3	0.85	310	425	1.3709	1.96
4	1.2	190	256	1.3473	1.9014
5	1.55	150	204	1.36	1.9413
6	1.8	140	191	1.3642	1.9399
7	1.95	125	172	1.25	1.9825
8	2.3	90	122	1.376	1.9265
9	2.7	80	109	1.3625	1.96
10	4	40	54	1.35	1.8906
11	5.1	28	37	1.3214	1.8417
12	6.1	26	35	1.3461	1.9171
13	7.25	15	20	1.3333	1.929
14	10	5.8	8	1.3793	1.96
15	12.1	1.2	1.57	1.3083	1.7777
16	14.1	1.1	1.47	1.3363	1.8594
17	19.1	0.28	0.38	1.3571	1.9399
18	19.9	0.25	0.34	1.36	1.96
19	23.1	0.3	0.37	1.2333	1.521
20	24.5	0.22	0.29	1.3118	1.7208
21	26	0.2	0.27	1.35	1.8225
22	28.1	0.18	0.24	1.3333	1.7769
				28.1247	39.4882
			/21	1.3393	1.88

IF DIRECTIONAL: 1.3393 x 299.7 = 401.4 mv/m @ 1km
DIRECTIONAL POWER @ 81 DEG: 1.88 X 1KW = 1.88KW

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 4 of 12)
BP-20170327AAF
30-Aug-18

RADIAL 132 DEGREES

Measurements taken on: Tuesday and Wednesday, June 19-20/2018 using Potomac FIM-21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.2	NO GOOD NULL TO TAKE MESUREMENT			
2	0.35		"	"	"
3	0.6	420	546	1.3	1.69
4	0.8	320	420	1.3125	1.7227
5	1.1	220	290	1.3182	1.7377
6	1.4	160	205	1.2813	1.6417
7	1.75	125	163	1.304	1.7
8	2.3	90	118	1.3111	1.719
9	2.8	75	98	1.3067	1.7075
10	4.1	50	65	1.3	1.69
11	4.6	32	42	1.3125	1.7227
12	5.2	10.4	13.5	1.298	1.6848
13	7.8	8	10	1.25	1.5625
14	9.1	7	9.2	1.3143	1.7274
15	9.7	6.6	7.9	1.1969	1.4326
16	11.2	3	3.7	1.2333	1.521
17	12.2	2.4	3.2	1.3333	1.7777
18	13	2.3	3.1	1.3478	1.8166
19	14.1	2.4	3	1.25	1.5625
20	16.4	2	2.6	1.3	1.69
21	18	0.9	1.2	1.3333	1.7769
22	19.5	0.5	0.6	1.2	1.44
23	22.1	0.48	0.69	1.2706	1.6144

RADIAL 132 DEGREE (CONTINUED)

24	24.7	0.45	0.57	1.2667	1.6045
25	26.8	0.4	0.5	1.25	1.5625
26	29.6	0.25	0.3	1.2	1.44
			/24	29.4513	39.545

IF (DIRECTIONAL): 1.102 x 299.7 = 383.8 mv/m
DIRECTIONAL POWER @ 132 DEG: 1.6477 X 1KW= 1.65 kw

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 6 of 12)
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30-Aug-18

RADIAL 171 DEGREES

Measurements taken on Thursday and Friday, June 21-22, 2018 using FIM-21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.3	NO GOOD NULL TO TAKE MESUREMENT			
2	0.5	425	400	0.9411	0.8857
3	0.7	340	323	0.95	0.9025
4	0.8	270	254	0.9407	0.8849
5	1.6	130	123	0.9461	0.8951
6	1.9	98	95	0.9693	0.9395
7	2.55	76	72	0.9473	0.8974
8	3.05	58	52	0.8965	0.8037
9	3.9	50	46	0.92	0.8464
10	4.4	30	28.5	0.95	0.9025
11	5.8	20	20	1	1
12	6.35	19	17	0.8947	0.8005
13	6.95	16.5	15	0.909	0.8263
14	7.3	13	12.3	0.9461	0.8951
15	8.2	11.9	10.5	0.8823	0.7785
16	9.2	9.7	9.3	0.9587	0.9191
17	10.1	9.5	9	0.9473	0.8974
18	11.3	5.5	5.4	0.9818	0.9639
19	12.4	3	3.1	1.0333	1.068
20	13.8	2.9	2.7	0.931	0.8668
21	15.5	2.4	2.4	1	1
22	17.7	1.29	1.2	0.9302	0.8653
23	20.5	0.83	0.8	0.9638	0.9289

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 7 of 12)
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RADIAL 171 DEGREE (CONTINUED)

24	21.8	0.5	0.46		0.92	0.8464
25	24.2	0.4	0.38	/21	0.95	0.9025
26	25.8	0.32	0.31		0.9687	0.9384
27	27.6	0.31	0.3		0.9677	0.9364
28	28	0.24	0.24		1	1
29	30	0.28	0.26		0.9285	0.8621
					26.5741	25.2533
				/28	0.949	0.9019

IF (DIRECTIONAL) 0.949 X 299.7 = 284.4 MV/M
DIRECTIONAL POWER @ 171 DEG: 0.902 X 1KW = 0.902KW

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 8 of 12)
BP-20170327AAF
30-Aug-18

RADIAL 196 DEGREES

Measurements taken on Saturday and Sunday June 23-24, 2018 using FIM=21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.7	340	220	0.647	0.4186
2	1	280	185	0.6607	0.4365
3	1.3	200	135	0.675	0.4556
4	1.45	170	108	0.6353	0.4036
5	1.75	150	98	0.6533	0.4268
6	2.5	110	72	0.6545	0.4284
7	2.8	100	65	0.65	0.4225
8	3.37	80	52.8	0.66	0.4356
9	3.7	75	50	0.6667	0.4449
10	4.1	50	33	0.66	0.4356
11	4.9	38	25	0.6578	0.4327
12	5.7	35	23	0.6571	0.4318
13	6.1	30	20	0.6667	0.4449
14	6.7	24	15	0.625	0.3906
15	8.15	18	11	0.6111	0.3734
16	9.7	4.4	2.9	0.659	0.4343
17	11.1	3.8	2.4	0.6316	0.3989
18	11.7	3	1.95	0.65	0.4225
19	12.4	2.6	1.7	0.6538	0.4275
20	13.6	2.2	1.4	0.6363	0.4049
21	14.8	1.7	1.14	0.6705	0.4496
				13.6814	8.9192
			/21	0.6515	0.4272

IF (DIRECTIONAL) : 0.6515 x 299.7 = 195.25

DIRECTIONAL POWER @ 196 DEG: .4272 x 1000 = 0.427 kw

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 9 of 12)
BP-20170327AAF
30-Jul-18

RADIAL 261 DEGREES

Measurements taken on: Friday, June 15/2018 using Potomac FIM 21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.55	460	55	0.1195	
2	0.75	384	38	0.0989	1.96
3	1.05	220	26	0.1182	1.96
4	1.55	140	15	0.1071	1.9014
5	2.2	90	10	0.1111	1.653
6	2.35	80	8.9	0.1112	1.9413
(MP) 7	2.46	70	7.8	0.1114	1.9825
		U.S. RESERVED AREA / NO ACCESS PERMITTED			
8	2.7	34	4	0.1176	1.96
9	4	31	3.2	0.1032	1.8906
				0.9982	0.1109
			/9	0.1109	0.0123

IF DIRECTIONAL: 0.1109 x 299.7 = 33.2 mv/m @ 1km
DIRECTIONAL POWER @ 261 DEG: .0 123 x 1.0 kw = 0.0123 kw (12.3 watts)

MONITORING POINT INFORMATION: Point #7 @ 2.46 km from WVOZ RADIAL: 261 DEGREES

DIRECTIONAL MAXIMUM IDF @ 1KM: 58 mv/m (according to CP)
DIRECTIONAL MAXIMUM IDF - 5% @ 1KM: 55 mv/m
DIRECTIONAL MEASURED IDF (2.46 KM. from Antenna Center of Radiation): 21 mv/m
NORMAL READING: 7.8 mv/m
MAXIMUM READING: 15.3 (21-13.5 = 7.5 So, 7.8 + 7.5 = 15.3)
ND READING: 70 mv/m (would be normal non-da reading)

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 10 of 12)
BP-20170327AAF
30-Aug-18

RADIAL 326 DEGREES

Measurements taken on Monday, June 25, 2018 using a Potomac FIM-21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)	DA (mv/m)	RATIO (DA/NDA)	RATIO
1	0.8	NO GOOD NULL TO TAKE MEASUREMENT			
2	0.95	"	"	"	
3	1	180	118	0.6555	0.9661
4	1.1	150	96	0.64	0.9779
5	1.65	120	79	0.6558	1
6	2.2	103	68	0.6601	0.8859
7	2.8	85	55	0.6471	0.8265
8	3.1	72	46	0.6389	1
9	3.25	60	39	0.65	0.9384
10	3.35	55	36	0.6545	0.9245
11	3.5	50	32	0.64	0.9183
				5.8418	8.4376
			/9	0.649	0.9375

IF DIRECTIONAL: 0.6490 X 299.7 = 194.5 mv/m

DIRECTIONAL POWER @ 326 DEG: 0.9375 X 1KW = 0.938 KW

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ AGUADILLA, P.R.
1580 KHZ., 1KW DA-D, 1KW NDA-N, U

FIGURE 3 (Sheet 11 of 12)
BP-20170327AAF
30-Aug-18

RADIAL 351 DEGREES

Measurements taken on : Saturday, May 12/2018 using Potomac FIM-21 s/n: 578

POINT	DISTANCE (km)	NON-DA (mv/m)		RATIO (DA/NDA)	RATIO
1	0.8	175	177	1.0114	1.023
2	0.95	135	134	0.9926	0.9853
3	1	117	115	0.9829	0.9661
4	1.1	90	89	0.9889	0.9779
5	1.65	50	50	1	1
6	2.2	34	32	0.9412	0.8859
7	2.8	22	20	0.9091	0.8265
8	3.1	17	17	1	1
9	3.25	16	15.5	0.9687	0.9384
10	3.35	13	12.2	0.9615	0.9245
11	3.5	12	11.5	0.9583	0.9183
12	3.8	10	10.1	1.01	1.0201
13	4.9	6.5	6.4	0.9846	0.9694
14	5	6	6	1	1
15	5.1	5.6	5.5	0.9821	0.9645
16	5.6	5.2	5.3	1.0192	1.0388
17	5.8	4.4	4.3	0.9772	0.9549
18	6.4	4.6	3.9	0.975	0.9506

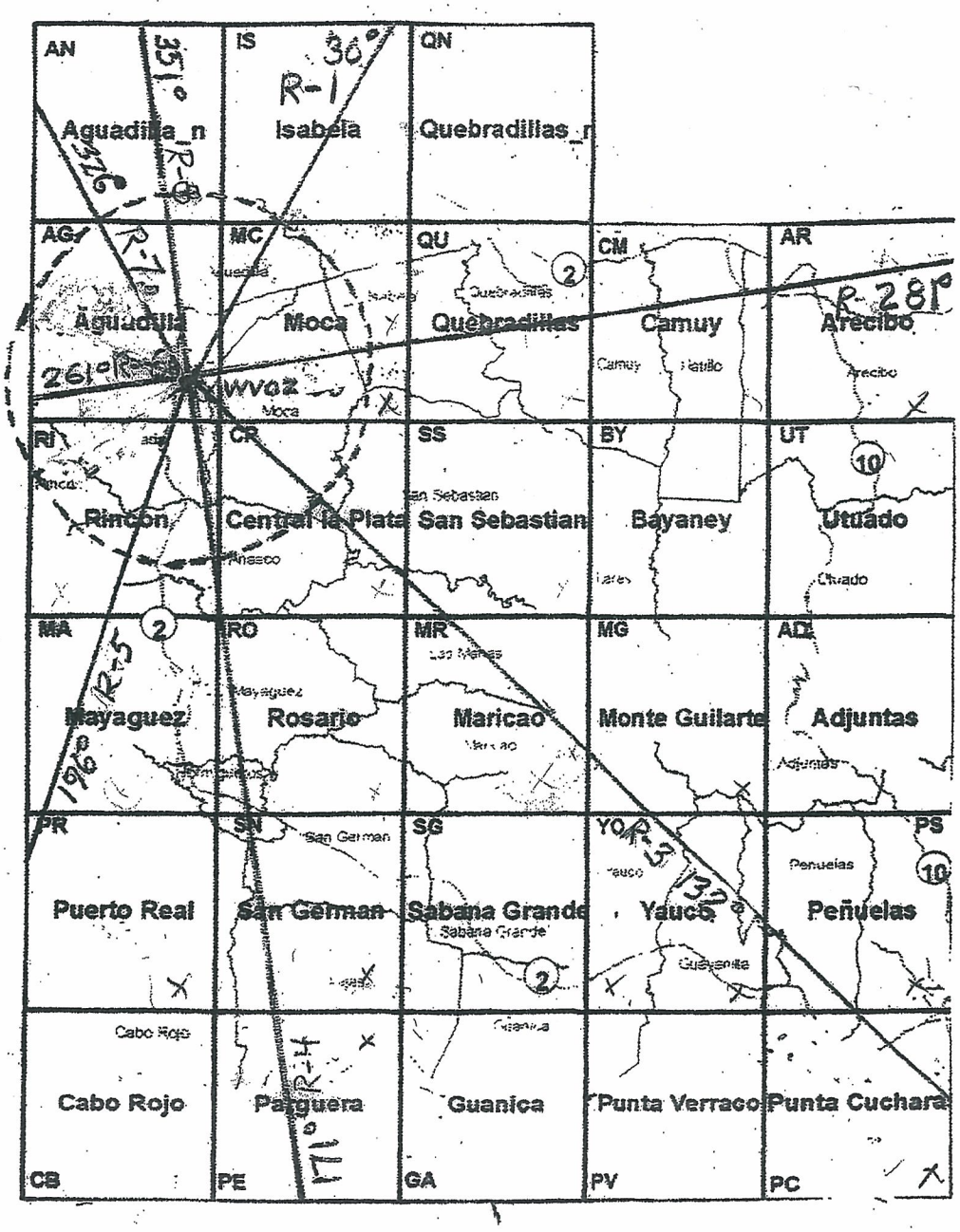
RADIAL 351 DEGREES (CONTINUED)

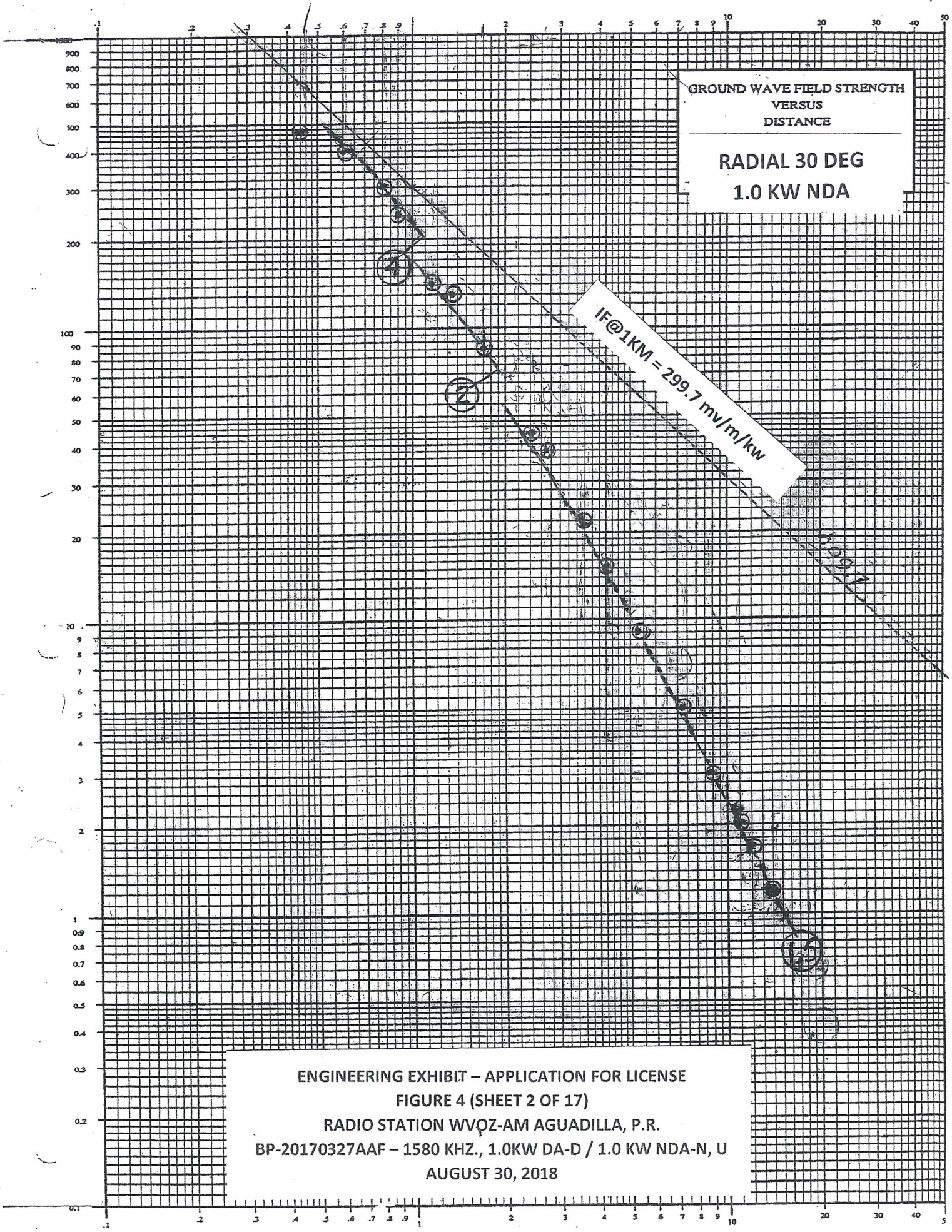
19	7.2	2.25	2.2	0.9777	0.9559
20	8.3	2.1	2	0.9524	0.9071
21	8.8	1.6	1.5	0.9375	0.8789
				20.5303	20.0861
			/21	0.9776	0.9565

IF DIRECTIIONAL: 0.9776 X 299.7 = 293 MV/M
DIRECTIONAL POWER @ 351 DEG: 0.9565 X 1000 = .96 KW

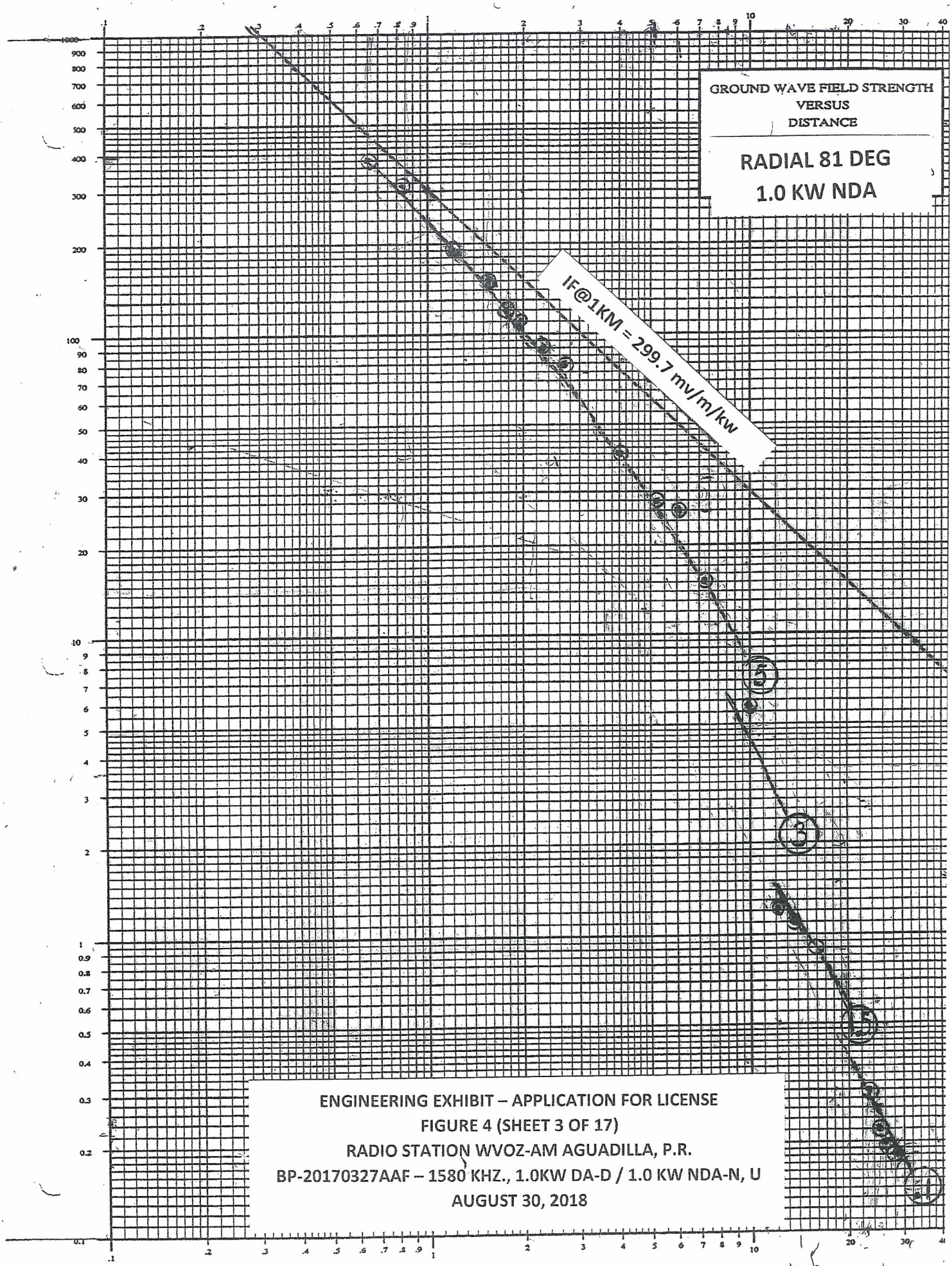
FIGURE 4

GRAPHS OF MEASURED FIELD STRENGTH DATA



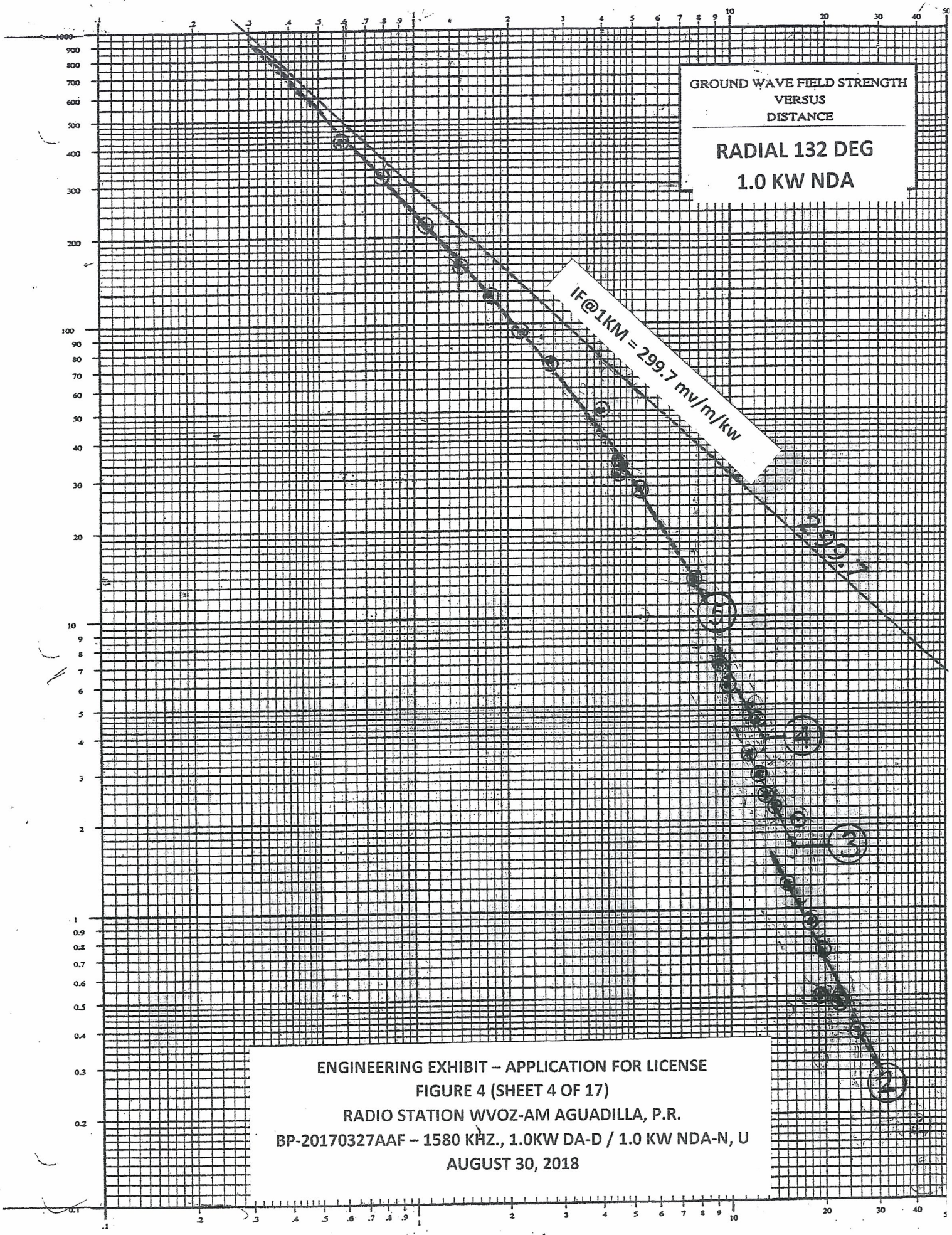


ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 2 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018

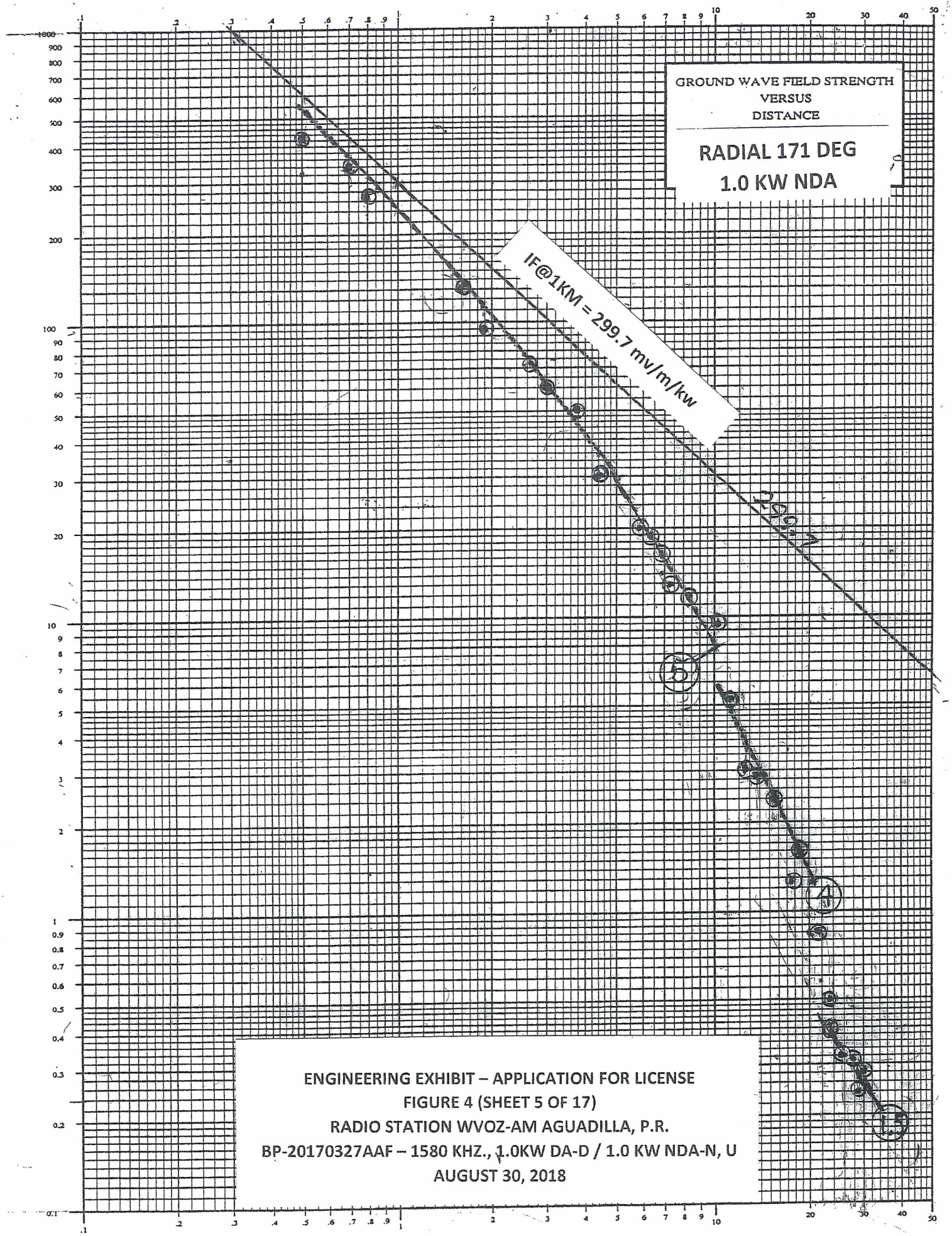


ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 3 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018

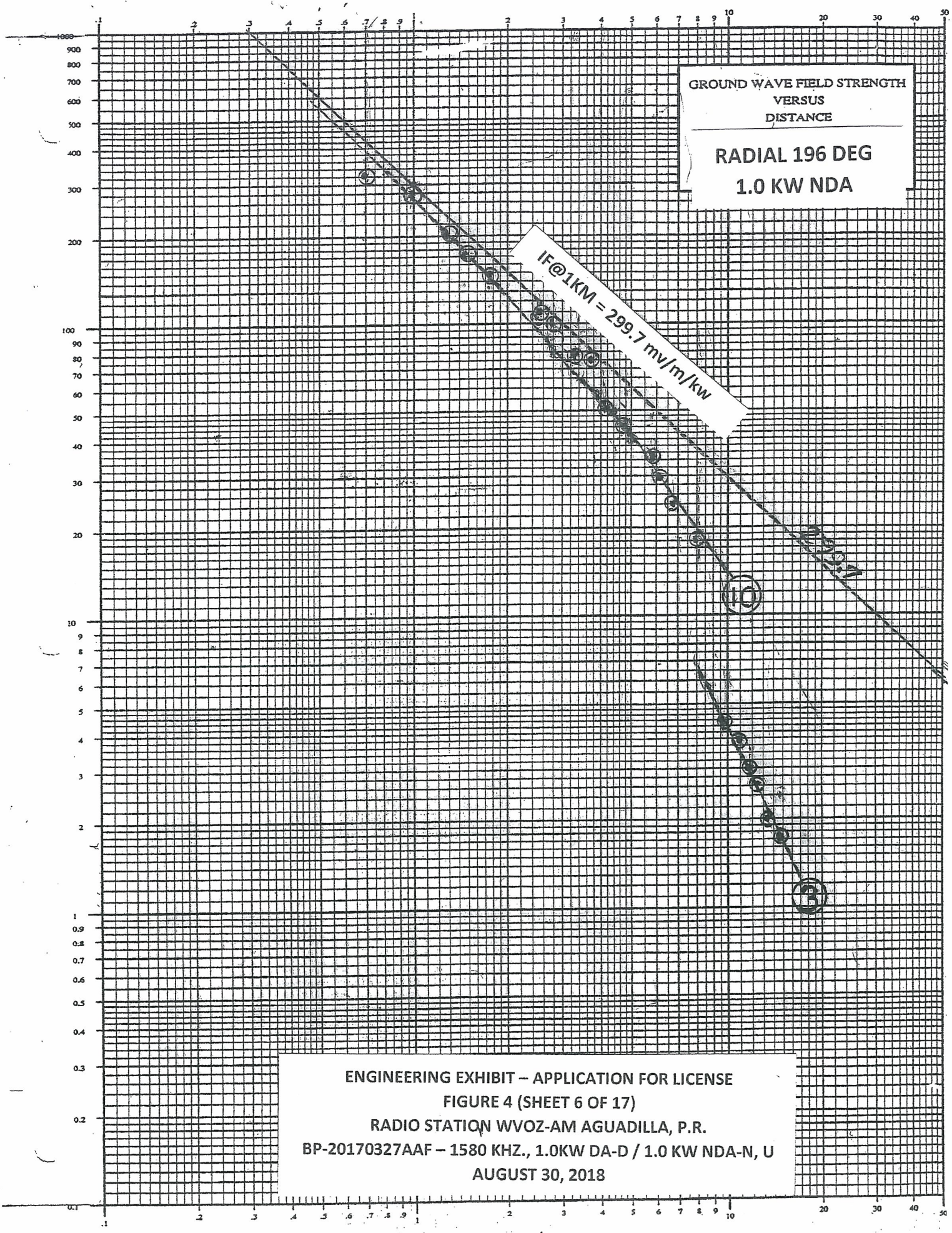
1 1.5 2450



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 4 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 5 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 6 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
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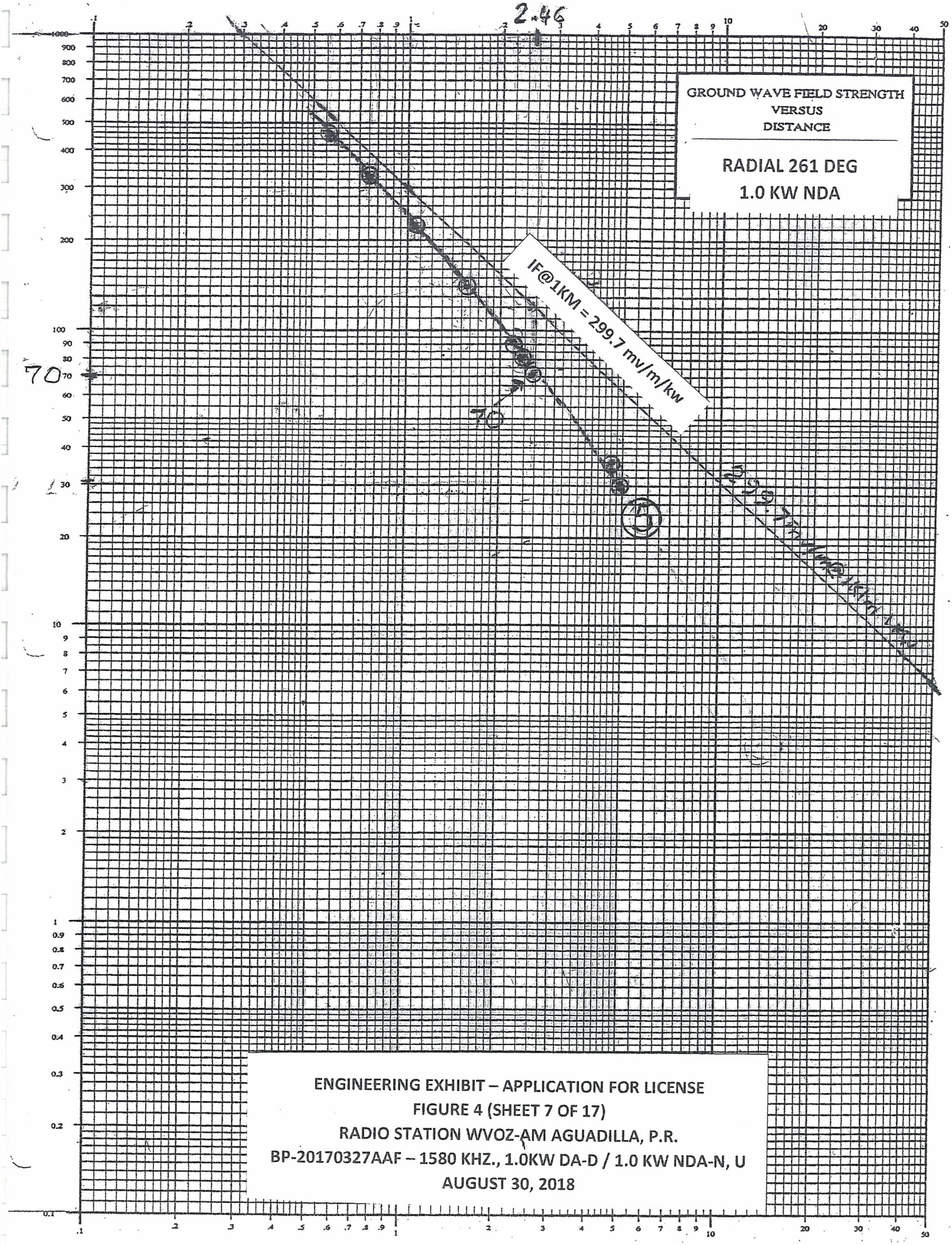

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 7 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
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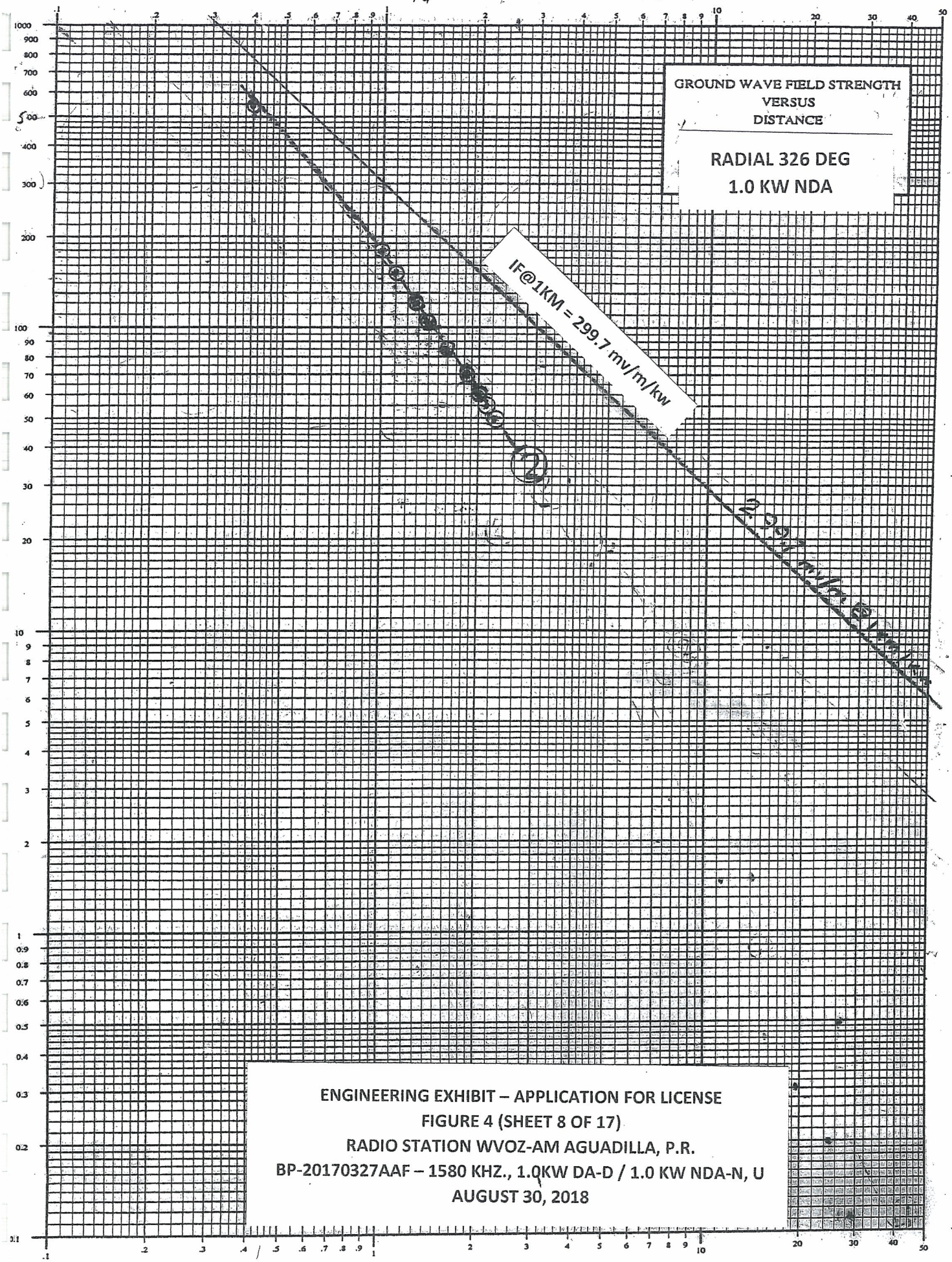
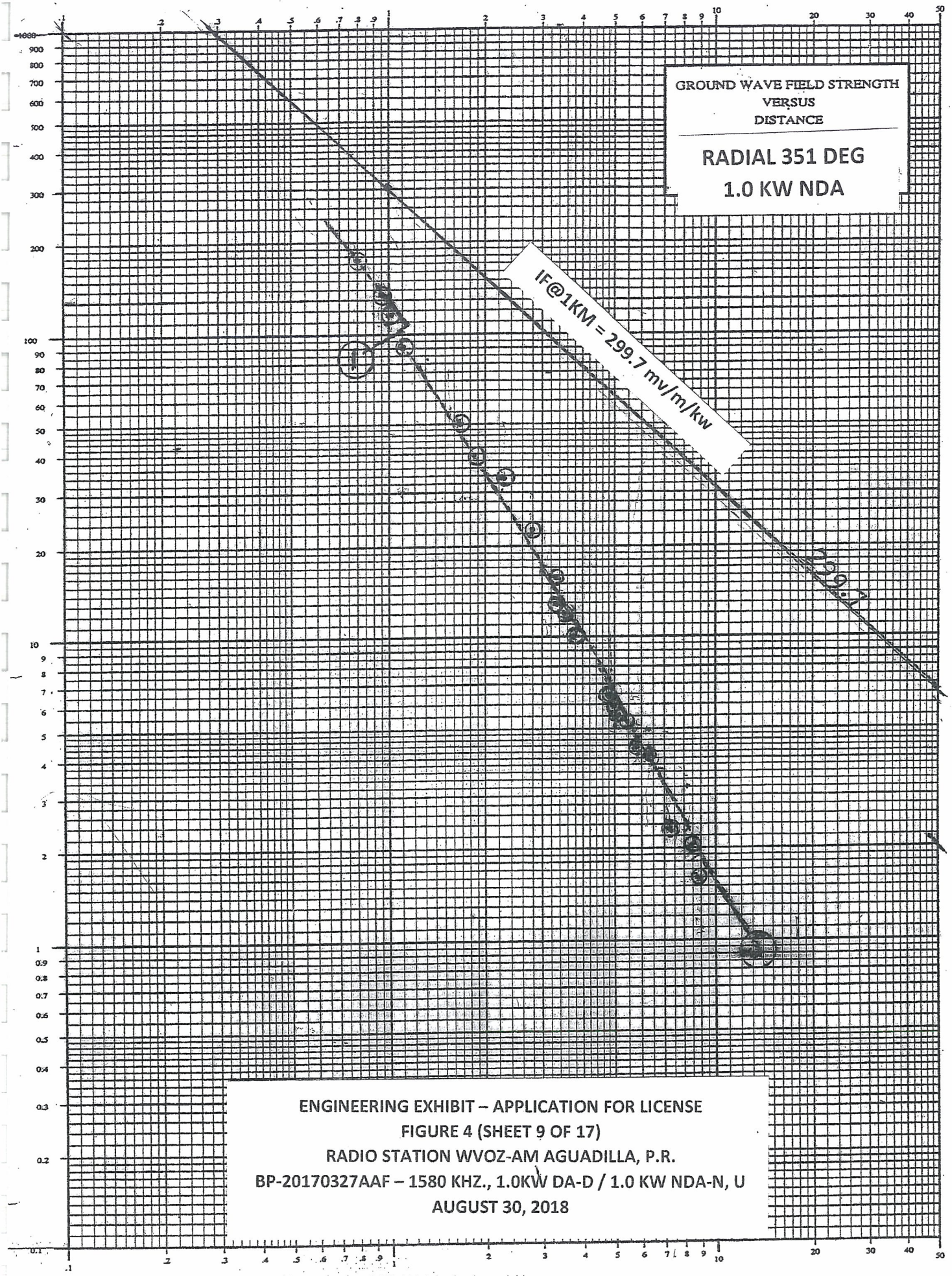
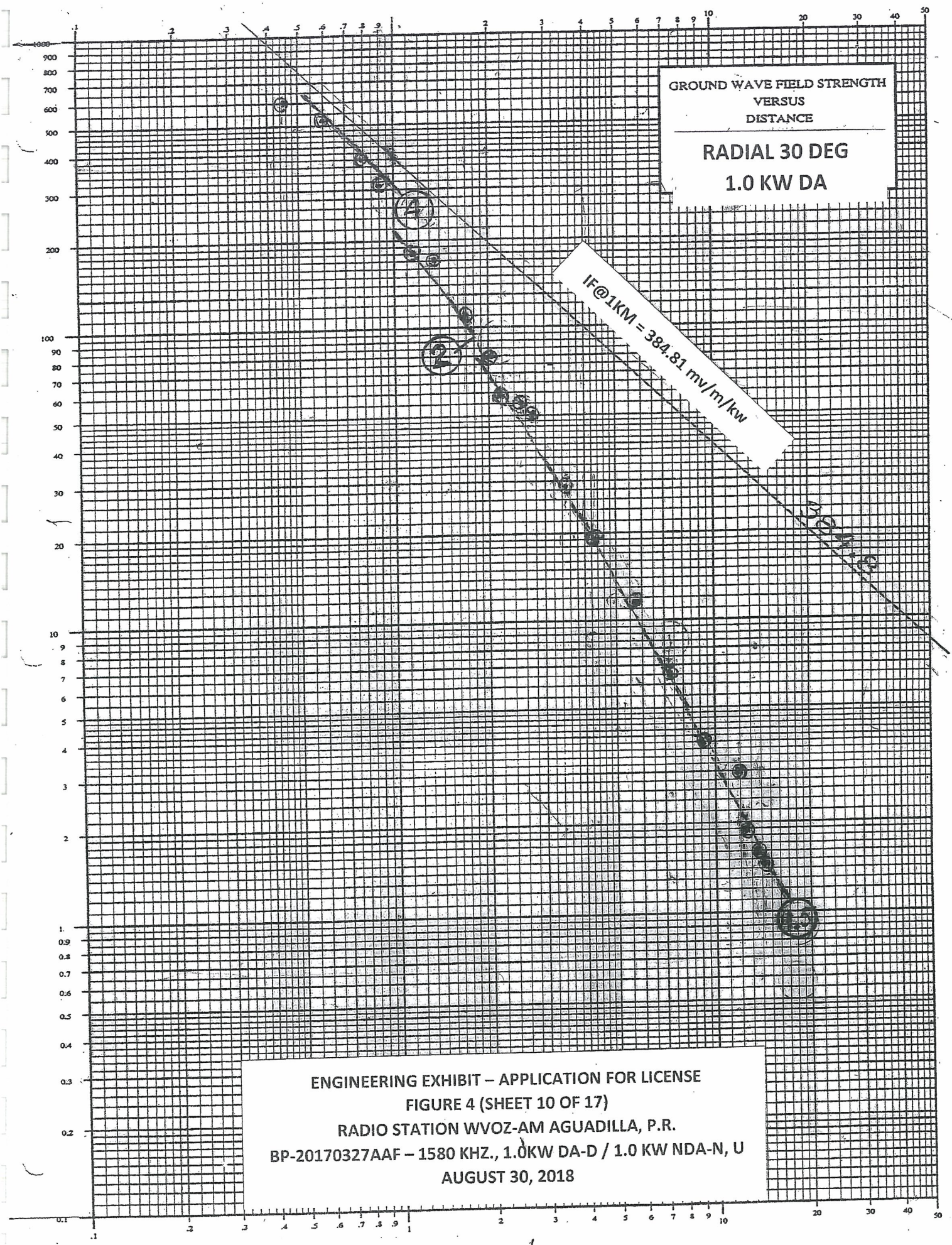
WVOZ - 326 NDA



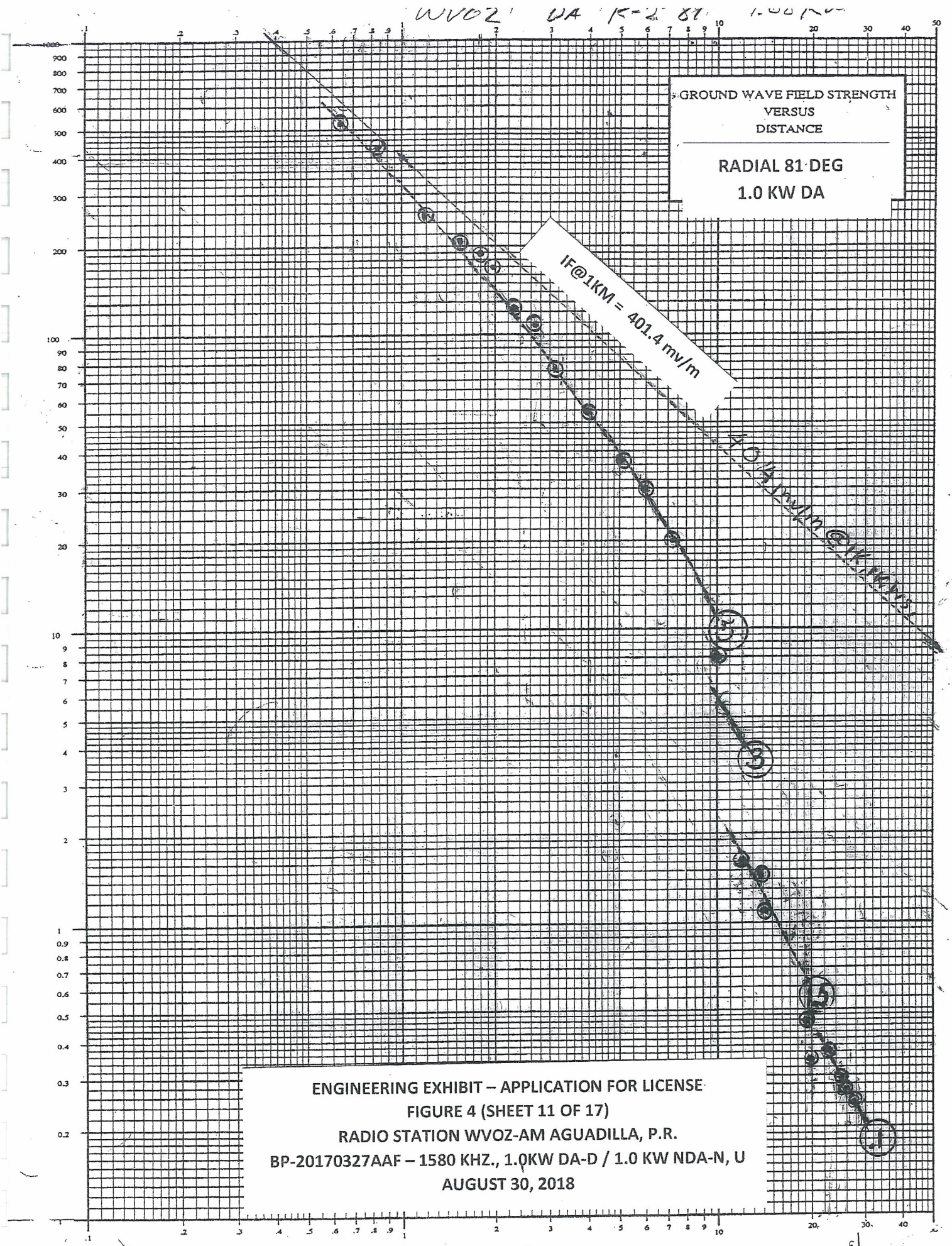
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 8 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



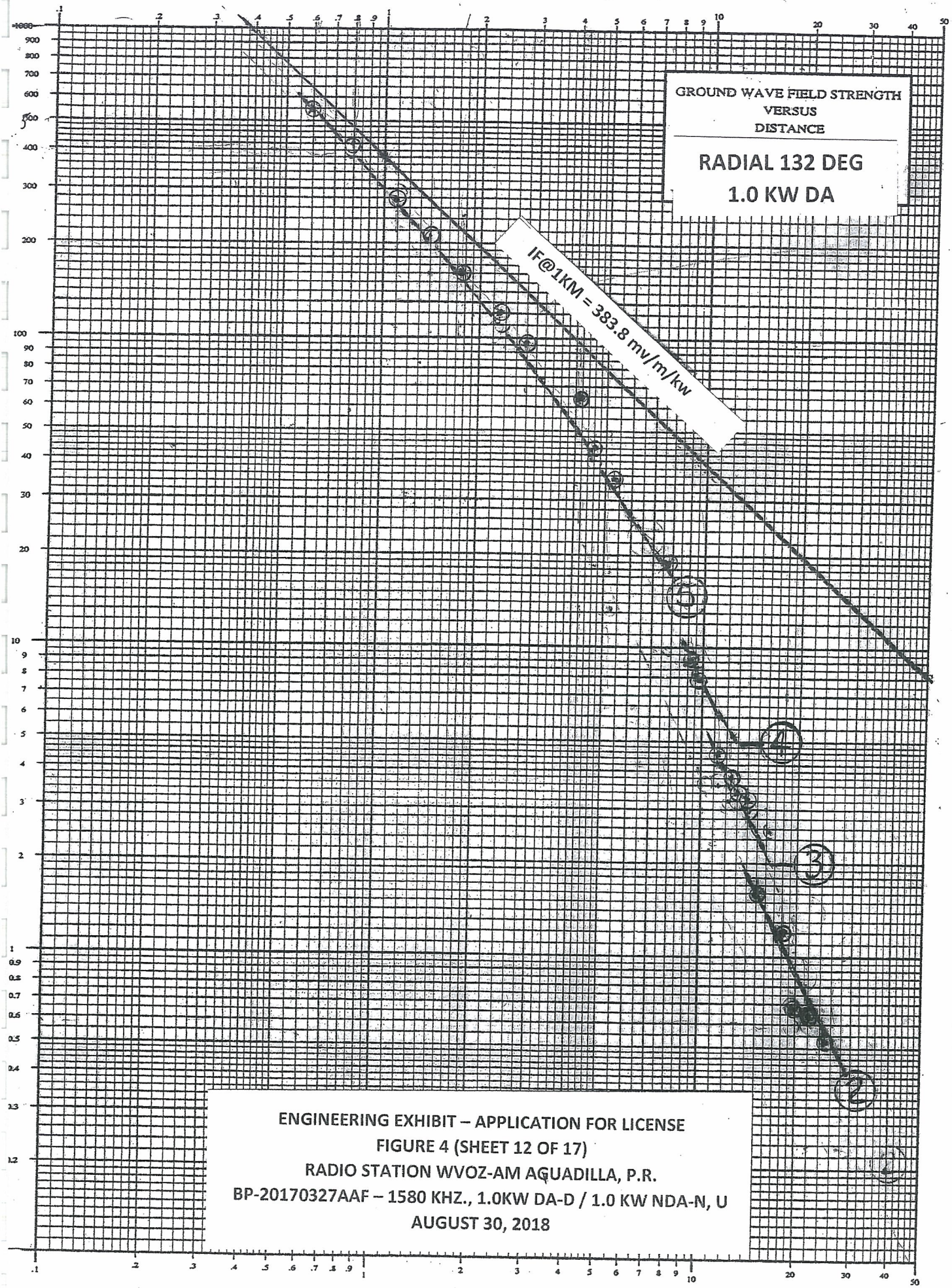
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 9 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



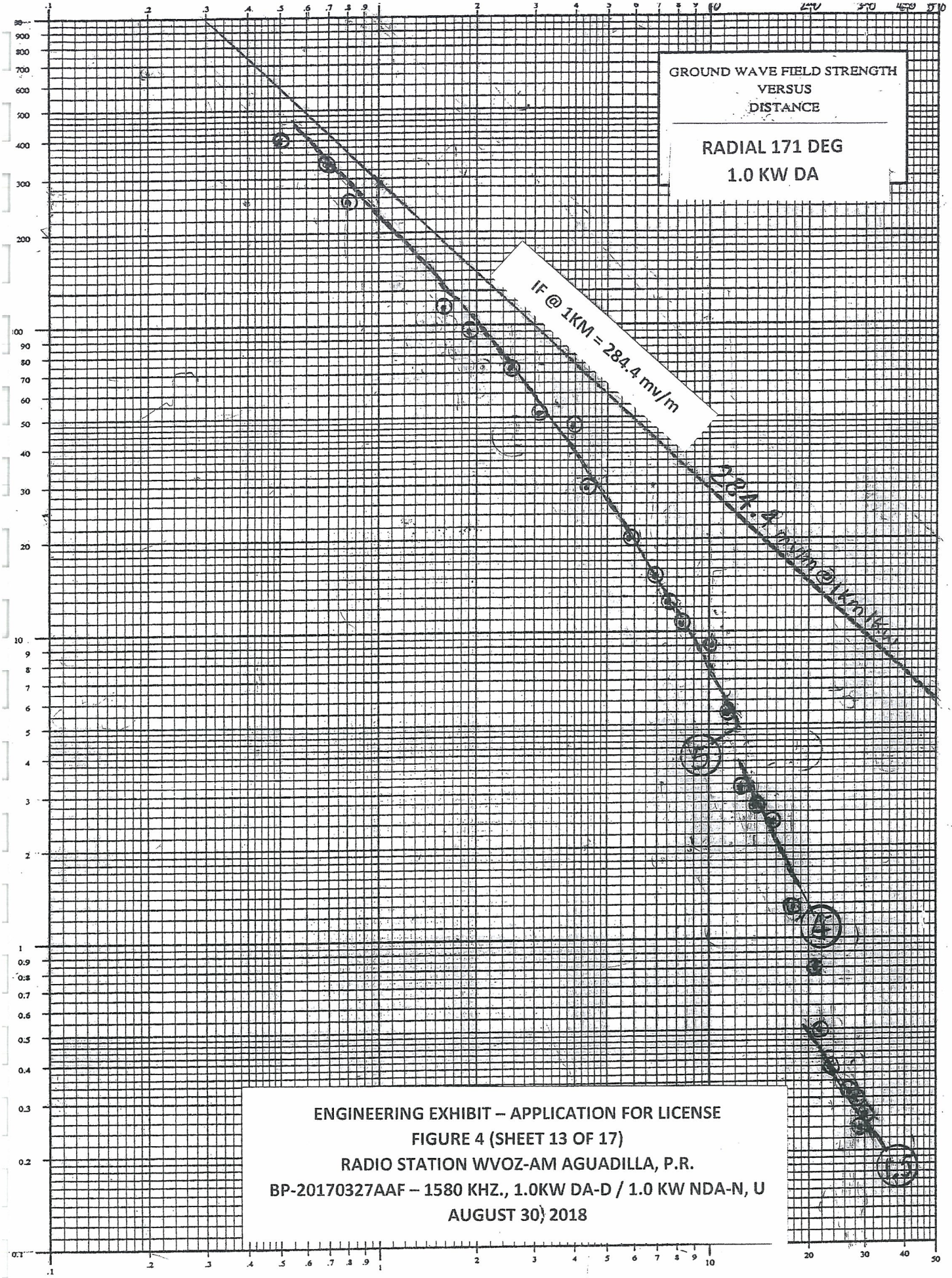
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 10 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



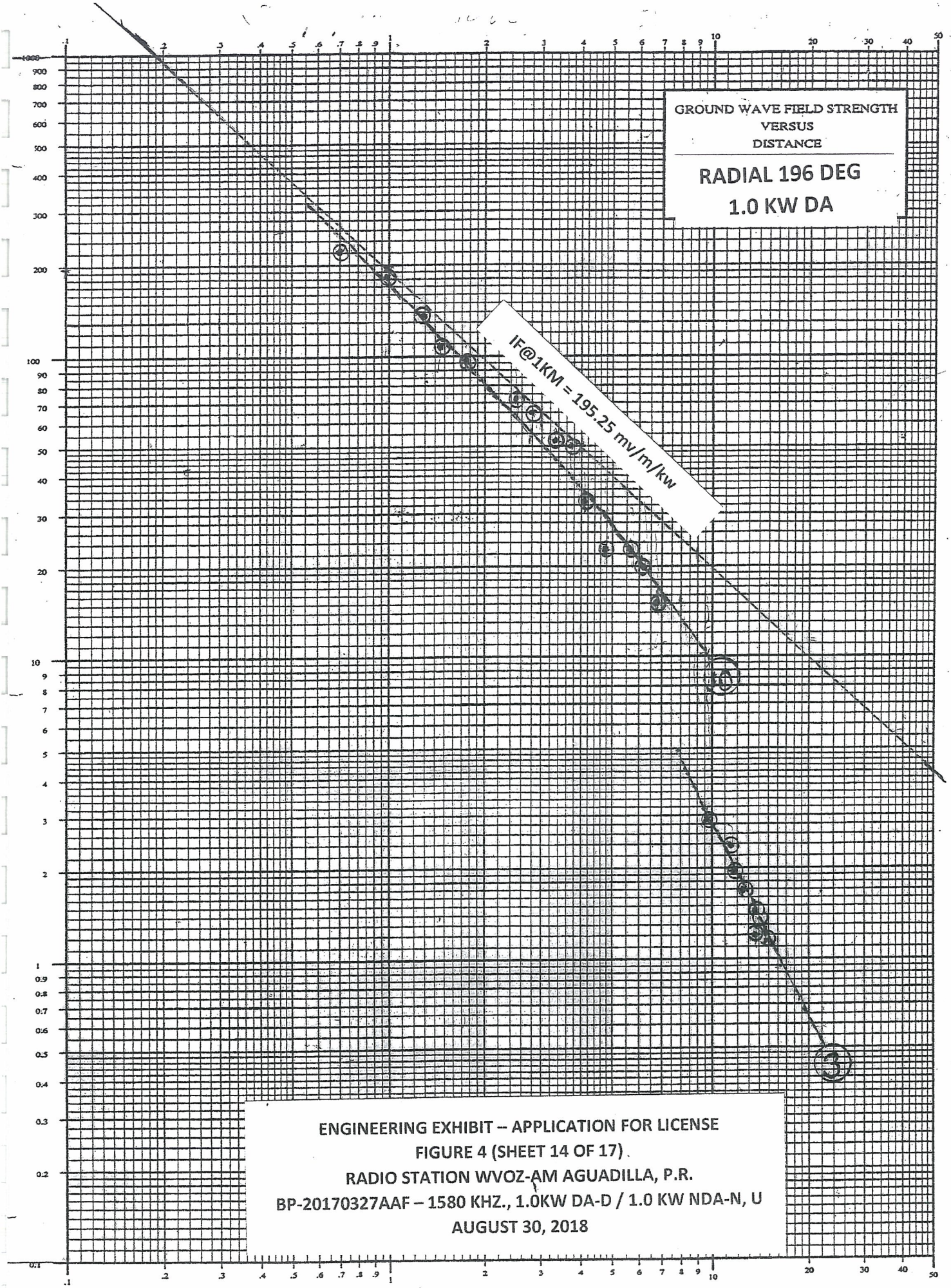
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 11 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



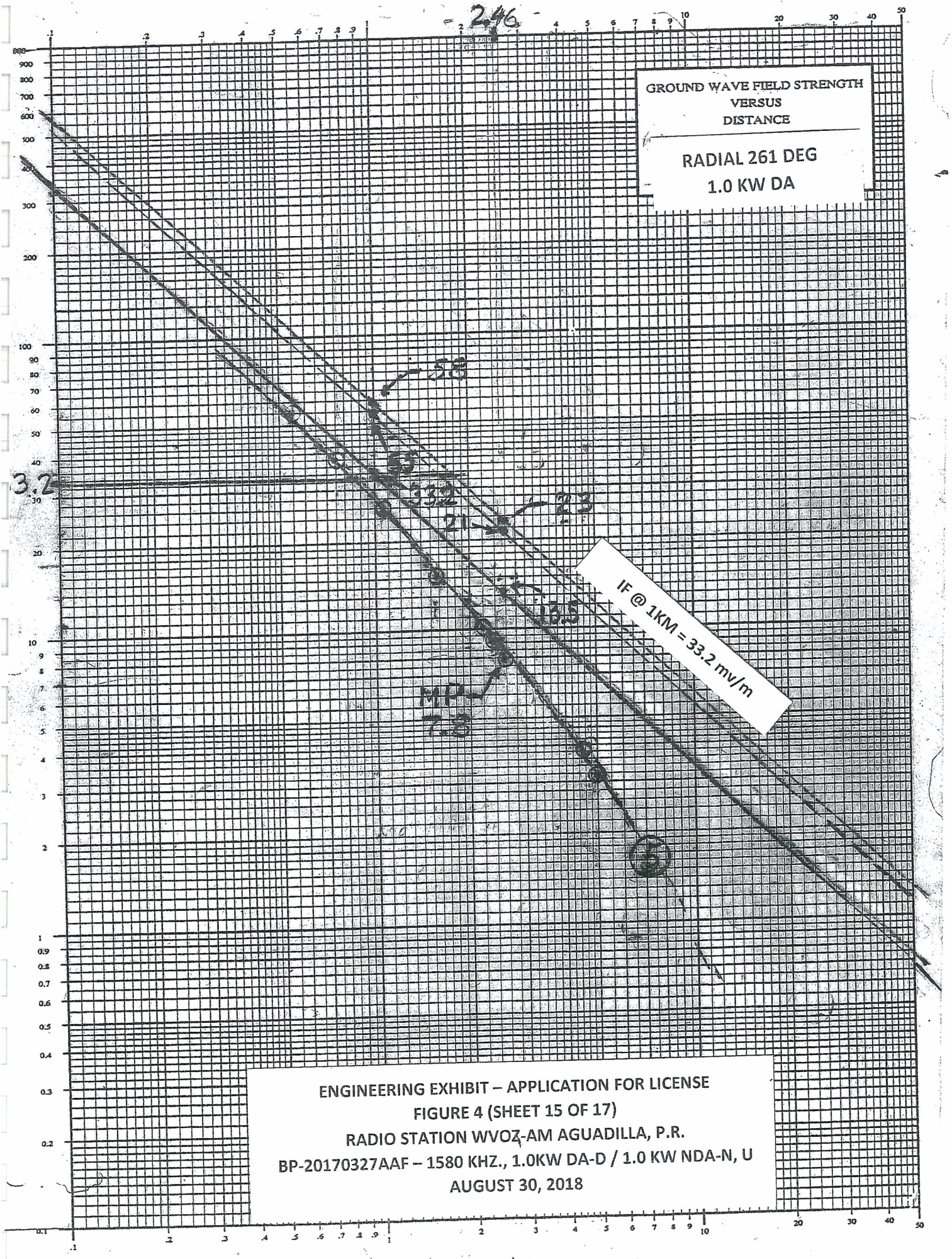
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 12 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



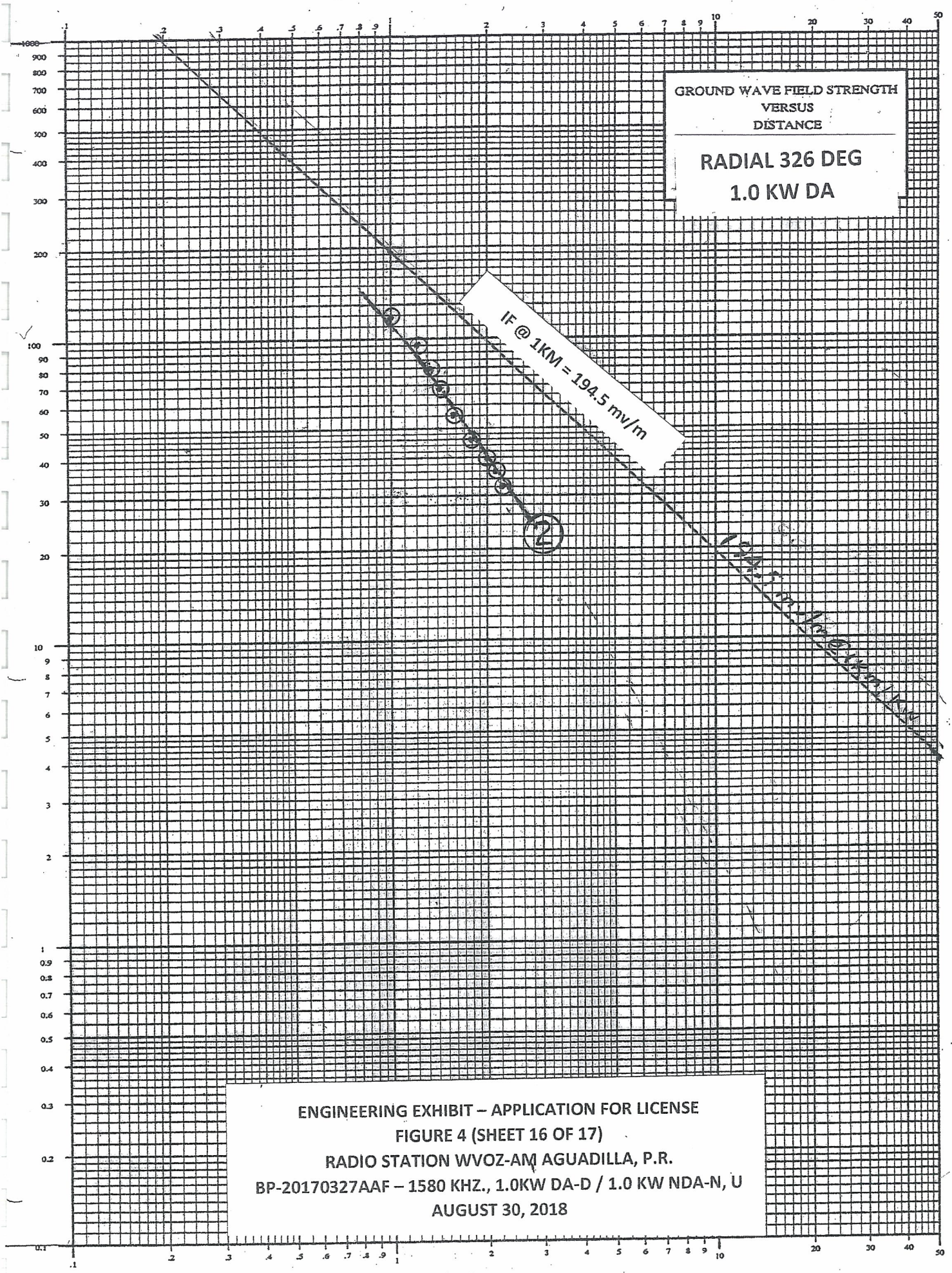
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 13 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



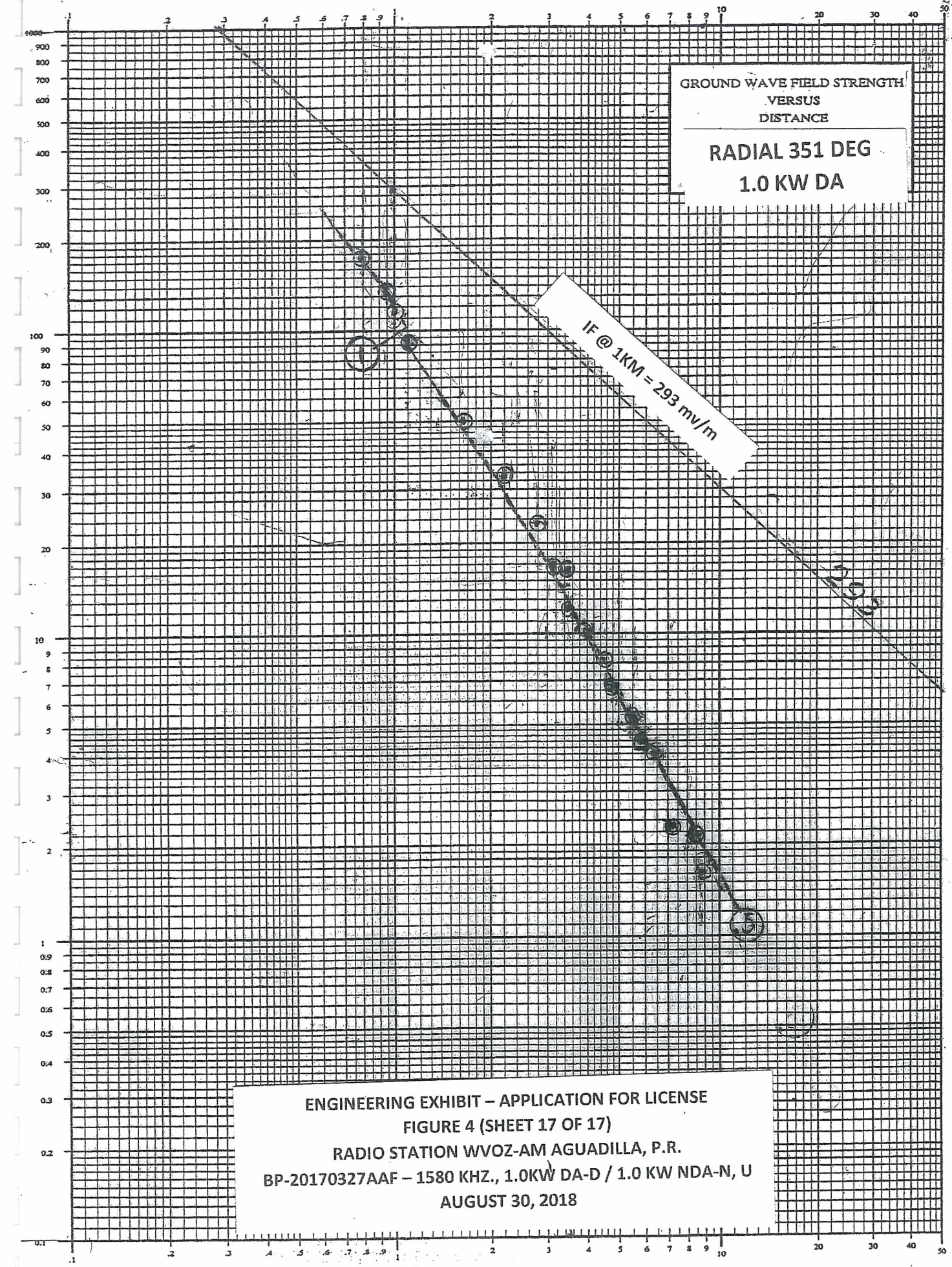
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 14 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 15 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 16 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
FIGURE 4 (SHEET 17 OF 17)
RADIO STATION WVOZ-AM AGUADILLA, P.R.
BP-20170327AAF – 1580 KHZ., 1.0KW DA-D / 1.0 KW NDA-N, U
AUGUST 30, 2018

FIGURE 5
RMS CALCULATION OF DAYTIME DIRECTIONAL ANTENNA
and
MEASURED DAYTIME AND NIGHTIME PATTERN GRAPHS

RMS CALCULATION TABLE DIRECTIONAL/DAY
(1.080 KW)

AZIMUTH		FIELD (mv/m)	FIELD SQUARED (mv/m)
10		346	119,716
20		368	135,424
30	30 DEG: 384	384	147,456
40		392	153,664
50		393	154,449
60		394	155,236
70		400	160,000
80	81 DEG: 401	401	160,801
90		400	160,000
100		398	158,404
110		392	153,664
120		390	152,100
130	132 DEG: 384	384	147,456
140		378	142,884
150		355	126,025
160		320	102,400
170	171 DEG: 287	287	82,369
180		245	60,025
190		210	44,100
200	196 DEG: 194	165	27,225
210		125	15,625
220		95	9,025
230		60	3,600
240		40	1,600
250		40	1,600
260	261 DEG: 33.2	33	1,156
270		40	1,600
280		40	1,600
290		50	2,500
300		90	8,100
310		125	15,625
320		170	28,900

(continued on next page)

RMS CALCULATION TABLE DIRECTIONAL/DAY (cont'd)

(1.080 KW)

AZIMUTH		FIELD (mv/m)	FIELD SQUARED (mv/m)
330	326 DEG: 194	215	46,225
340		255	65,025
350	351 DEG: 287	290	84,100
360		320	102,400

SUM OF ALL SQUARED FIELDS = 2,932,079

RMSmeas = sqr(2,932,079/36) = sqr(81,447) = 285.39 mv/m @ 1km
RMStheor = 305 mv/m @ 1km
RMSstd = 321 mv/m @ 1km

RMS CALCULATION TABLE NON-DA /NIGHT
(1.0 KW)

AZIMUTH		FIELD (mv/m)	FIELD SQUARED (mv/m)
10		205	42,025
20		230	52,900
30	30 DEG: 230	230	52,900
40		230	52,900
50		230	52,900
60		230	52,900
70		240	57,600
80	81 DEG: 240	240	57,600
90		240	57,600
100		240	57,600
110		240	57,600
120		240	57,600
130	132 DEG: 240	240	57,600
140		240	57,600
150		240	57,600
160		240	57,600
170	171 DEG: 245	240	57,600
180		260	67,600
190		260	67,600
200	196 DEG: 265	260	67,600
210		260	67,600
220		250	62,500
230		250	62,500
240		250	62,500
250		240	57,600
260	261 DEG: 240	240	57,600
270		230	52,900
280		215	46,225
290		200	40,000
300		195	38,025
310		190	36,100
320		185	30,625

(continued on next page)

RMS CALCULATION TABLE NON-DA / NIGHT (cont'd)

(1.0 KW)

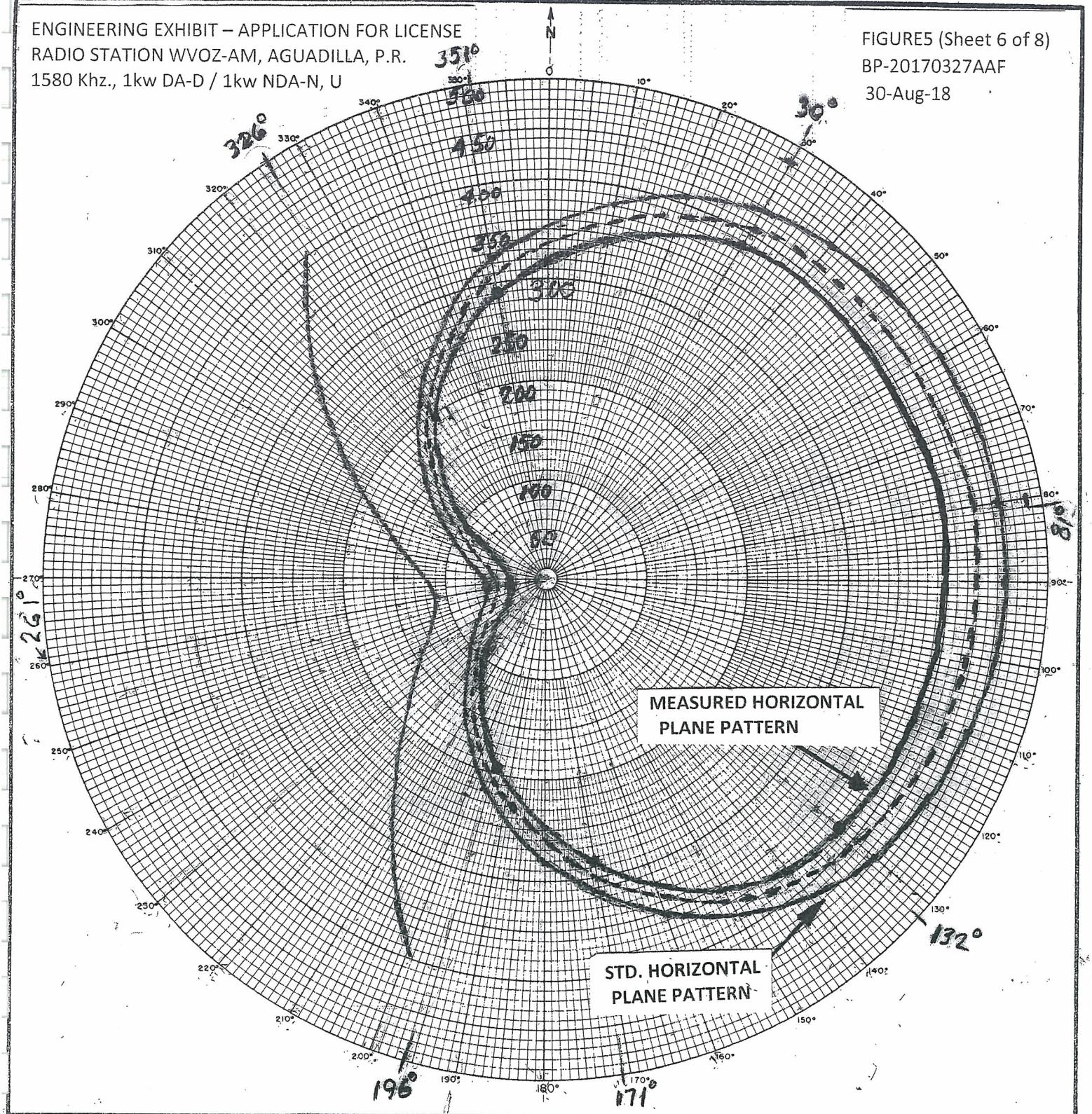
AZIMUTH		FIELD (mv/m)	FIELD SQUARED (mv/m)
330	326 DEG: 180	175	25,600
340		150	22,500
350	351 DEG: 130	130	16,900
360		155	24,025

SUM OF ALL SQUARED FIELDS = 1,816,125

RMSmeas = sqr(1,816,125/36) = sqr(50448) = 225 mv/m @ 1km
2225 / 299.7 = 0.75 or 75%

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 Khz., 1kw DA-D / 1kw NDA-N, U

FIGURE5 (Sheet 6 of 8)
BP-20170327AAF
30-Aug-18



Erss = 310.58 mV/m@1km
Theo RMS: 305.6 mV/m@1km
Std RMS: 321.052 mV/m@1km
Q: 10.0 mV/m@1km

MEASURED & STANDARD HORIZONTAL PLANE DAYTIME DA-PATTERN / 1KW

——— Pattern (mV/m @ 1km)
— — Pattern X10

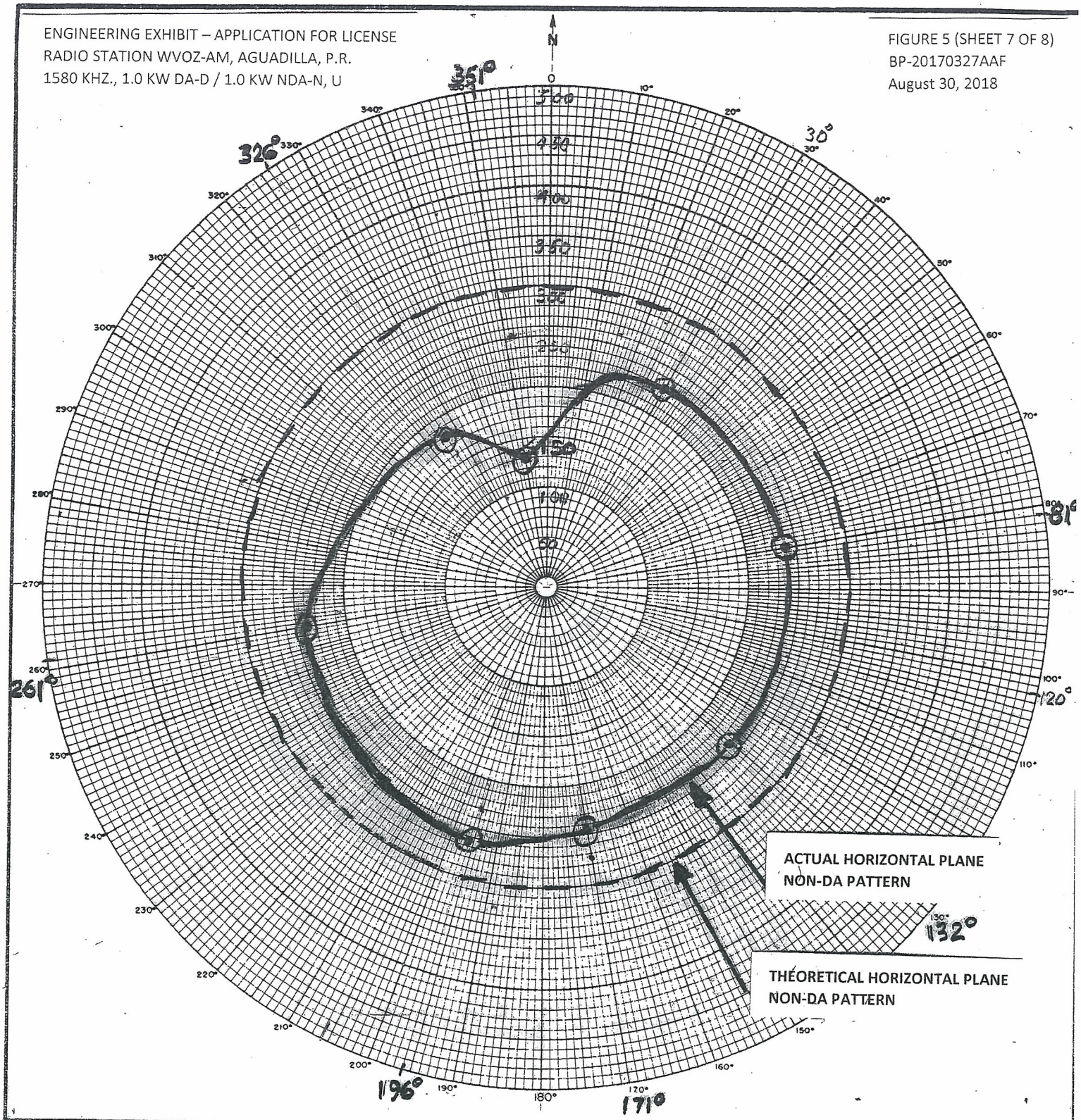
#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	81.0	0	0	0.0	0.0	0.0	0.0
2	0.870	-93.0	75.2	81.0	81.0	0	0	0.0	0.0	0.0	0.0

MEASURED RMS DA: 290 mv/m/km
STANDARD RMS DA: 321 mv/m/km

Call: WVOZ
Freq: 1580 kHz
AGUADILLA, PR, US
Hours: D
Lat: 18-24-09 N
Lng: 067-08-48 W
Power: 1.0 kW
Theo RMS: 305.60 mV/m@1km @ 1.0 kW

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 5 (SHEET 7 OF 8)
BP-20170327AAF
August 30, 2018



Erss = 299.70 mV/m@1km
Theo RMS: 299.7 mV/m@1km

WVOZ-AM 1580 Khz., AGUADILLA, P.R.

——— Pattern (mV/m @ 1km)
– – – Pattern X10

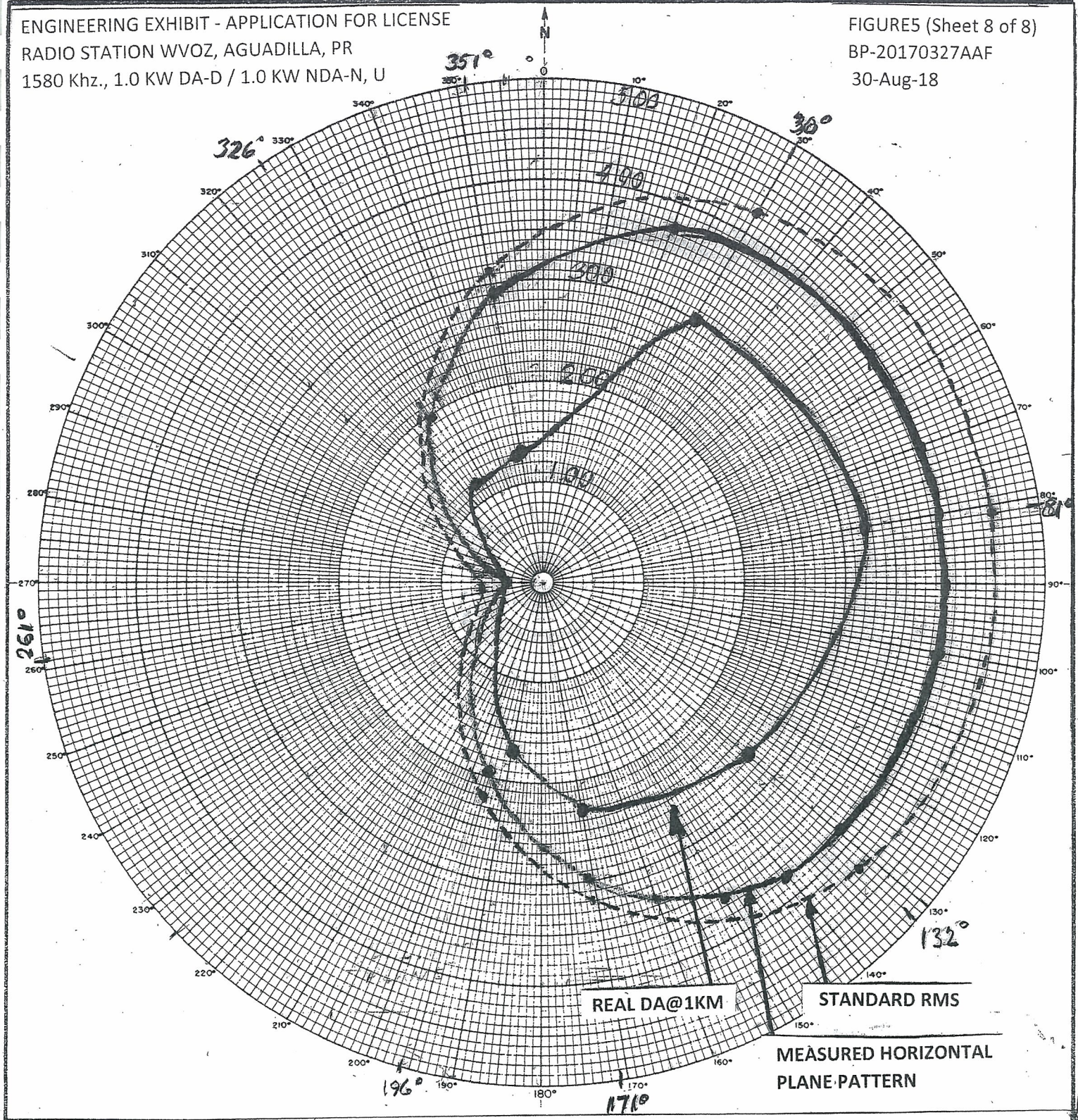
#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swtch	TL Swtch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	81.0	0	0	0.0	0.0	0.0	0.0

Call: WVOZ
Freq: 1580 kHz
AGUADILLA, PR, US
Hours: N
Lat: 18-24-09 N
Lng: 067-08-48 W
Power: 1.0 kW
Theo RMS: 299.70 mV/m@1km

MEASURED AND THEORETICAL HORIZONTAL PLANE NIGHTIME NON-DA PATTERN / 1KW

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ, AGUADILLA, PR
1580 Khz., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE5 (Sheet 8 of 8)
BP-20170327AAF
30-Aug-18



REAL DA (mv/m @ 1km) = (ND MEASURED) x (RATIO DA/NDA)

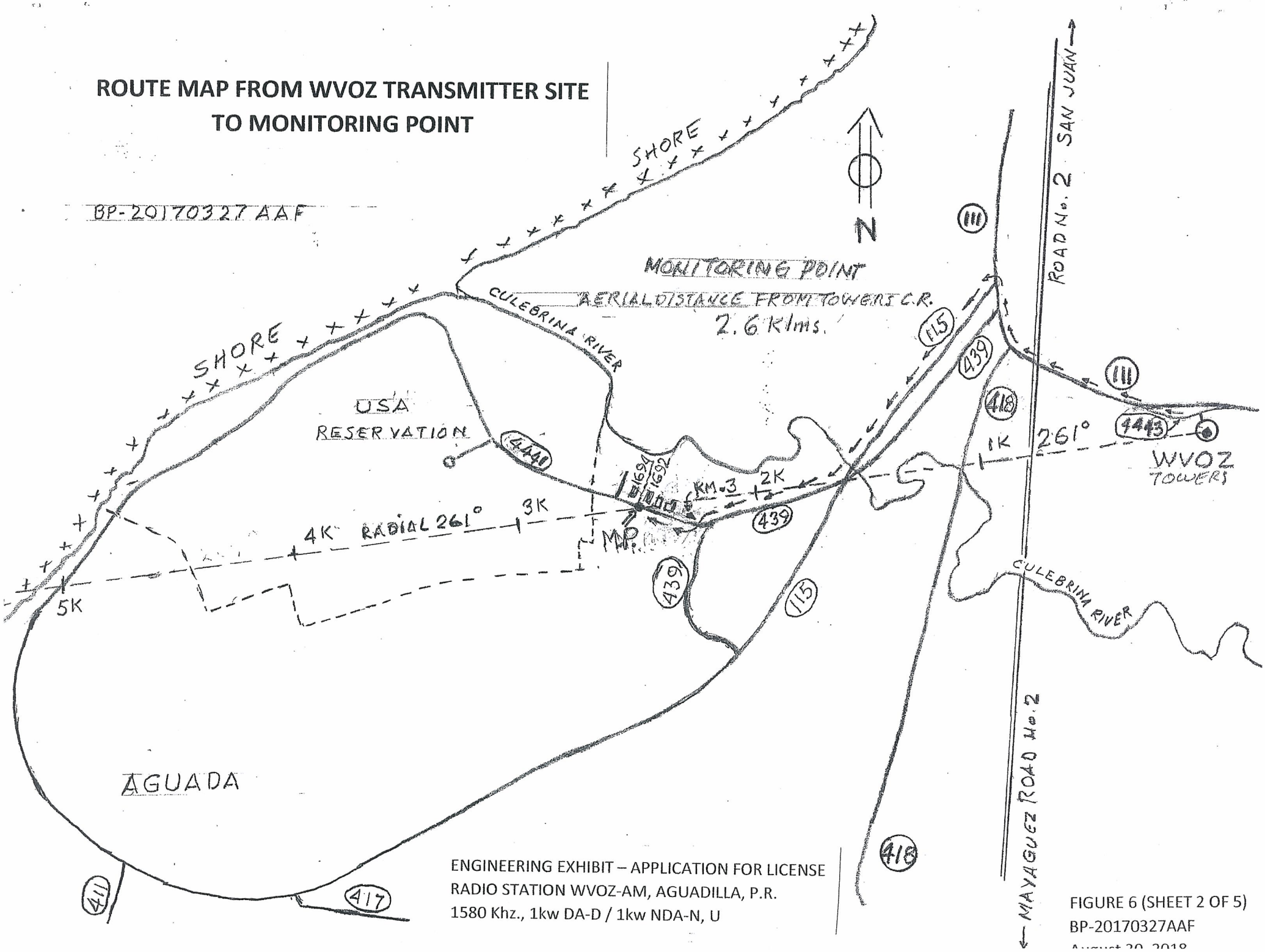
RADIAL	ND MEASURED	RATIO DA/NDA	REAL DA @1KM
30	230	1.284	295.32
81	240	1.3393	321.43
132	240	1.102	264.48
171	245	0.949	232.5
196	265	0.6515	172.65
261	240	0.1109	26.62
326	180	0.649	116.82
351	130	0.9776	127.09

FIGURE 6

DESCRIPTION, MAPS, ROUTING TO MONITOR POINT AND PHOTOGRAPHS OF MONITOR POINT FOR DAYTIME DIRECTIONAL OPERATION

ROUTE MAP FROM WVOZ TRANSMITTER SITE TO MONITORING POINT

BP-20170327AAF



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 Khz., 1kw DA-D / 1kw NDA-N, U

FIGURE 6 (SHEET 2 OF 5)
BP-20170327AAF
August 30, 2018

DAYTIME PATTERN DESCRIPTION OF
MONITORING POINT

RADIAL: 261 DEGREES
DISTANCE: 2.46 kms. from center of radiation of array

a. Leave transmitter site. Take road PR-4443 towards WEST and proceed for 0.6 km.

b. Turn right to access PR-111 and go WEST for 0.7 km.

c. Make a left turn and follow road PR-115 towards Southwest and proceed for about 1.1 km and make a right turn on PR-439 (towards Bo. Tablonal, Aguada).

d. Proceed on PR-439 for approximately 0.65 km and make a right turn on PR-4441.

e. Proceed until km. 0.32 of PR-4441. The MONITOR POINT is crossing the street just in front of the common boundary of the houses at 1692 and 1694. (Photo of W. Blanco-Pi taking MP included in Fig. 6, Sheet 5)

NORMAL READING: 7.8 mv/m

MAXIMUM READING: 15.3 mv/m

FIGURE 6 (SHEET 4 OF 5)
BP-20170327AAF
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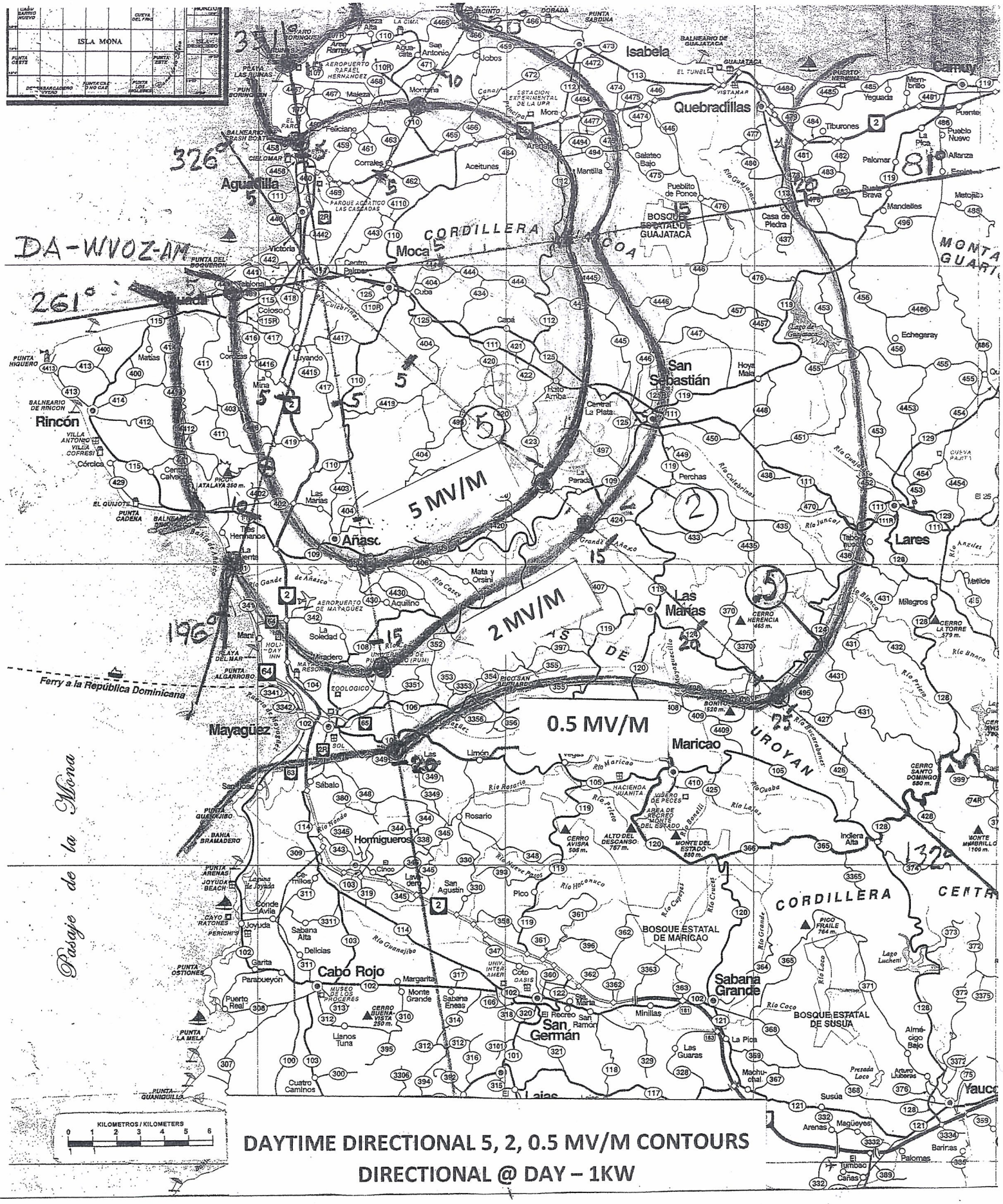
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 Khz., 1kw DA-D / 1kw NDA-N, U

FIGURE 6 (SHEET 5 OF 5)
BP-20170327AAF
August 30, 2018

MONITORING POINT FOR DAYTIME DIRECTIONAL OPERATION SATELLITE PHOTO
(GOOGLE EARTH PRO)
RADIAL 261 DEGREES / DISTANCE; 2.46 KM
PR-4441 KM. 0.32 BETWEEN HOUSES 1694 & 1692 (ACROSS THE STREET)
18 23 49.88 N 67 10 10.47 W

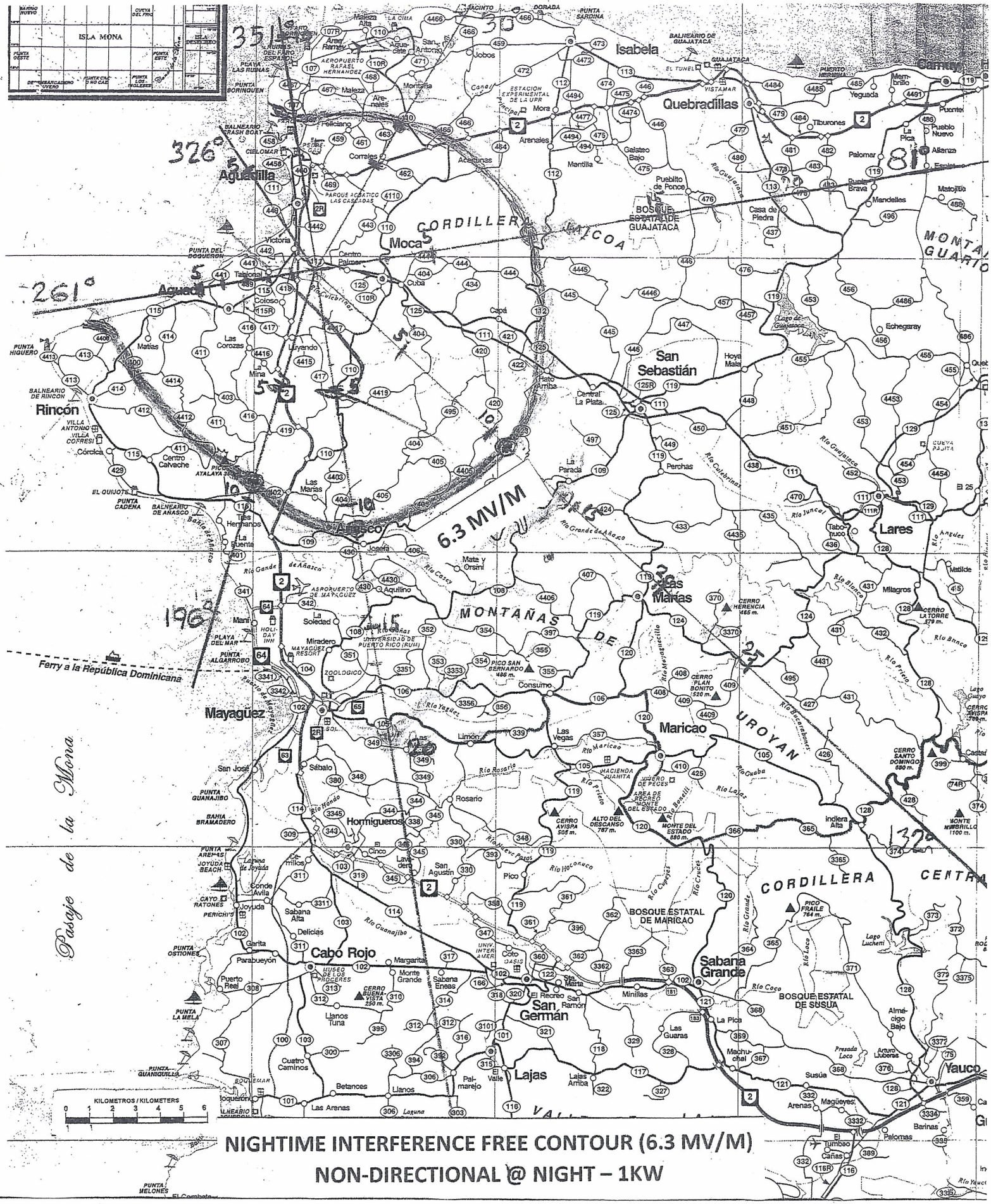
FIGURE 7

MEASURED DAYTIME AND NIGHTIME SERVICE CONTOURS



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 7 (SHEET 3 OF 3)
BP-20170327AAF
August 30, 2018



NIGHTIME INTERFERENCE FREE CONTOUR (6.3 MV/M)
NON-DIRECTIONAL @ NIGHT – 1KW

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 7 (SHEET 2 OF 3)
BP-20170327AAF
August 30, 2018

FIGURE 8

TRANSMITTER OPERATING VALUES (DA-D, ND-N)

DAYTIME RADIATION PATTERN

TRANSMITTER AND ANTENNA OPERATING VALUES

COMMON POINT IMPEDANCE: 50 + j0

COMMON POINT CURRENT: SQRT(1080/(50)) = 4.65 AMPS

BASE CURRENT TOWER#1: 4.25 AMPS

BASE CURRENT TOWER#2: 3.70 AMPS

BASE CURRENT RATIO (T2/T1): 0.87

ANTENNA MONITOR READINGS:

a) BASE CURRENT RATIO T2/T1: 0.87
b) PHASE ANGLE T2/T (T2 LAGS T1): - 93 DEG

COMMON POINT METER FOR DAYTIME DIRECTIONAL:
Delta model TCA-20 EXR s/n: 11315

ANTENNA BASE CURRENT AMMETER TOWER #1:
Delta model TCA-20 EXR s/n: 8499 w/ TCT-1

ANTENNA BASE CURRENT AMMETER TOWER #2:
Delta model TCA-10/20 EXR s/n: 13359 w TCT-4

DELTA TRANSFORMER FOR ANTENNA MONITOR:

a) Tower #1: TCT-3 s/n: 17144 b) Tower #2: TCT-3 s/n: 17132

Transmitter: BE-AM1A

NIGHTIME NON-DIRECTIONAL RADIATION PATTERN TRANSMITTER AND ANTENNA OPERATING VALUES

TOWER #1 BASE IMPEDANCE: 36 + j 41

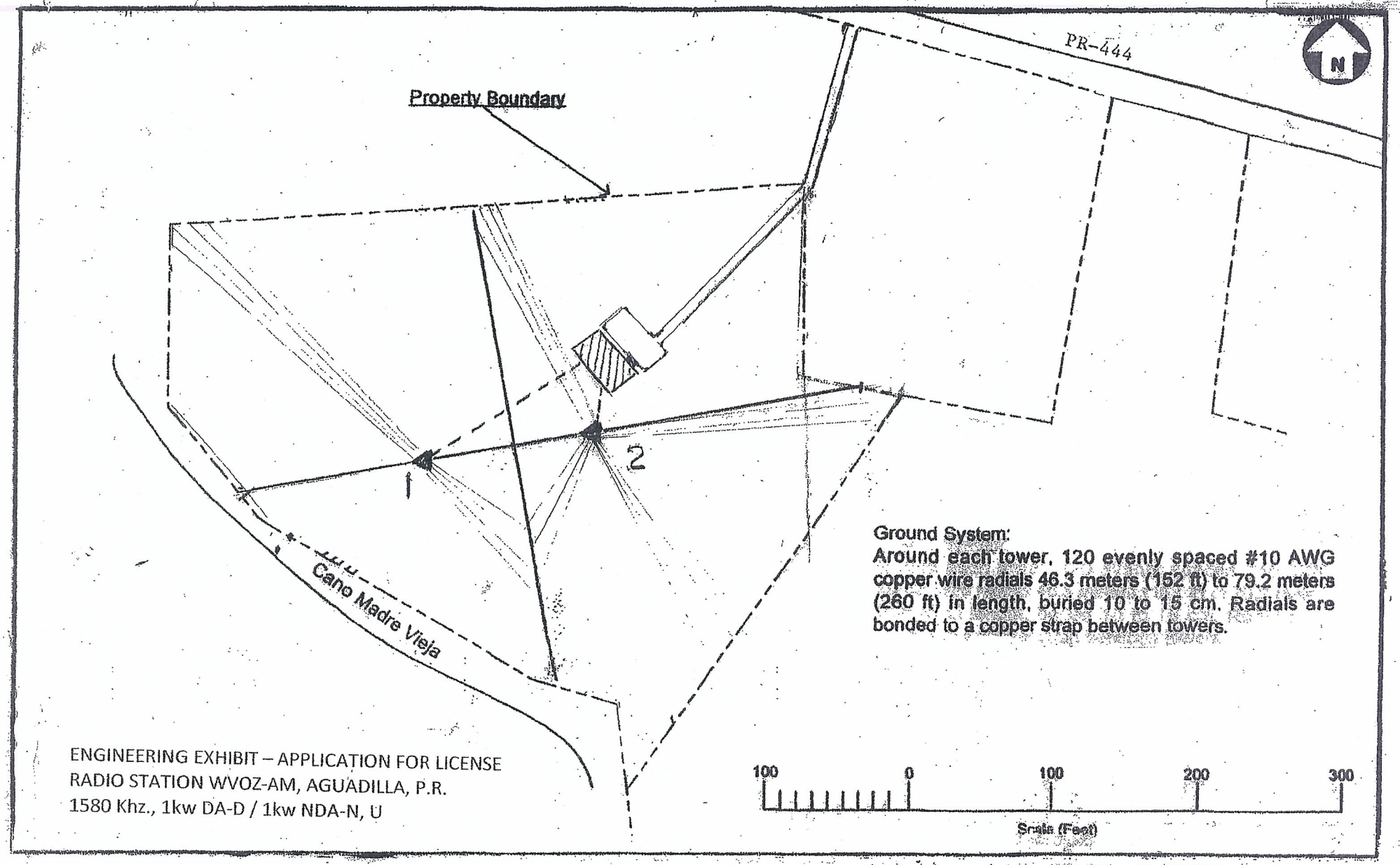
BASE CURRENT TOWER #1: SQRT(1000/36) = 5.27 AMPS

ANTENNA BASE CURRENT AMMETER TOWER #1:
Delta Model TCA-20 EXR s/n: 8499 w/ TCT-1

Transmitter: BE-AM1A

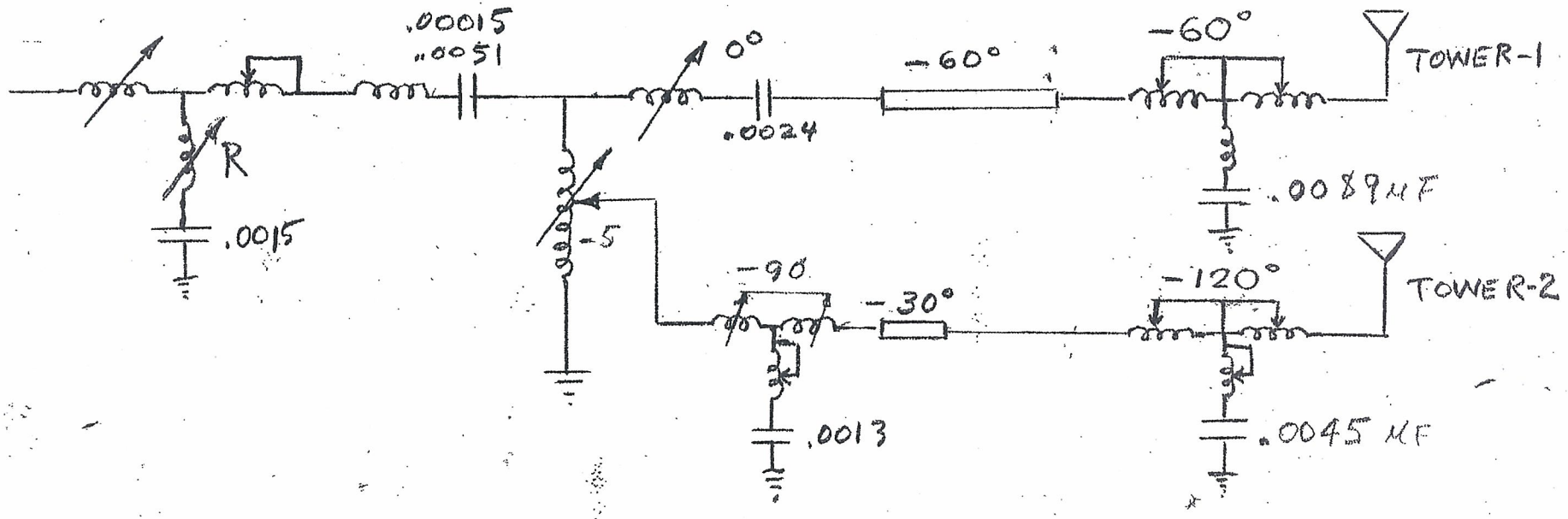
FIGURE 9

SITE SKETCH INCLUDING GROUND SYSTEM AND PHASOR DIAGRAM



WVOZ-AM AGUADILLA, PR
SITE SKETCH INCLUDING GROUND SYSTEM

FIGURE 9 (SHEET 2 OF 3)
BP-20170327AAF
August 30, 2018



0° = -90° - 60° = -120°

-5 -90 - 30° - 120° + 120° = -125°

WVOZ-AM DAYTIME PHASOR DIAGRAM

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 Khz., 1kw DA-D / 1kw NDA-N, U

FIGURE 9 (SHEET 3 OF 3)
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August 30, 2018

FIGURE 10

MANUFACTURER'S NAME OF EACH INSTRUMENT USED, ACCURACY AND LAST CALIBRATION DATE

MANUFACTURER'S NAME OF INSTRUMENT USED

(ACCURACY AND LAST CALIBRATION DATE)

(1) POTOMAC INSTRUMENT SYNTHETIZER AND DETECTOR SD-31 S/N 306 CALIBRATION CHECKED OCT. 4, 2016 by wifredo G. Blanco-Pi
(2) POTOMAC INSTRUMENTS FIELD STRENGTH METER: Type FIM-21 S/N 578 Calibrated by Potomac Instruments, Manufactured May 18, 2011
(3) GENERAL RADIO R.F. BRIDGE: type 1606-A s/n: 1254. Calibration checked Oct 4, 2016 by Wifredo G. Blanco-Pi. Resistance 1 percent + 0.1 ohms, Reactance: 2 percent + 0.1 ohms
(4) Operating Impedance Bridge OIB-1 Delta Electronics, Inc. s/n: 1037 Calibration checked October 6, 2016 by Wifredo G. Blanco-Pi.
(5) Antenna Base RF ammeter 0-10 ampsb TCA-10 EXR; s/n: 11050. Calibration checked by Wifredo G. Blanco-Pi on Oct. 12/2016
(6) POTOMAC INSTRUMENTS FIELD STRENGTH METER TYPE: FIM-41 s/n 803 (Freq. 0.5-5.0 MHz) Calibration checked Oct 20, 2016 against FIM 21 serial 578 calibrated on May 18, 2011. See figure 10 (sheet 3 of 3). W.Blanco-Pi checked the calibation against this reference equipment.

CALIBRATION OF EACH EQUIPMENT USED WAS VERIFIED BY ENG. WIFREDO G. BLANCO-PI AGAINST KNOWN VALUES.

FIGURE 11

COMMON POINT AND ANTENNA BASE IMPEDANCE MEASUREMENTS DATA AND GRAPH

TOWER #1 IMPEDANCE MEASUREMENTS DATA

Zant = 36 + j 41

FREQUENCY (Khz.)	RESISTANCE (Ohms)	REACTANCE (Ohms)
1610		
1605	40	47
1600	39.4	45.8
1595	38.6	44.7
1590	37.8	43.6
1585	37	42.4
1580	36	41
1575	35.4	40.3
1570	34.8	39.2
1565	34	37.9
1560	33	36.8
1555	32.2	36
1550		

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ, AGUADILLA, P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

FIGURE 11 (SHEET 3 OF 5)
BP-20170327AAF
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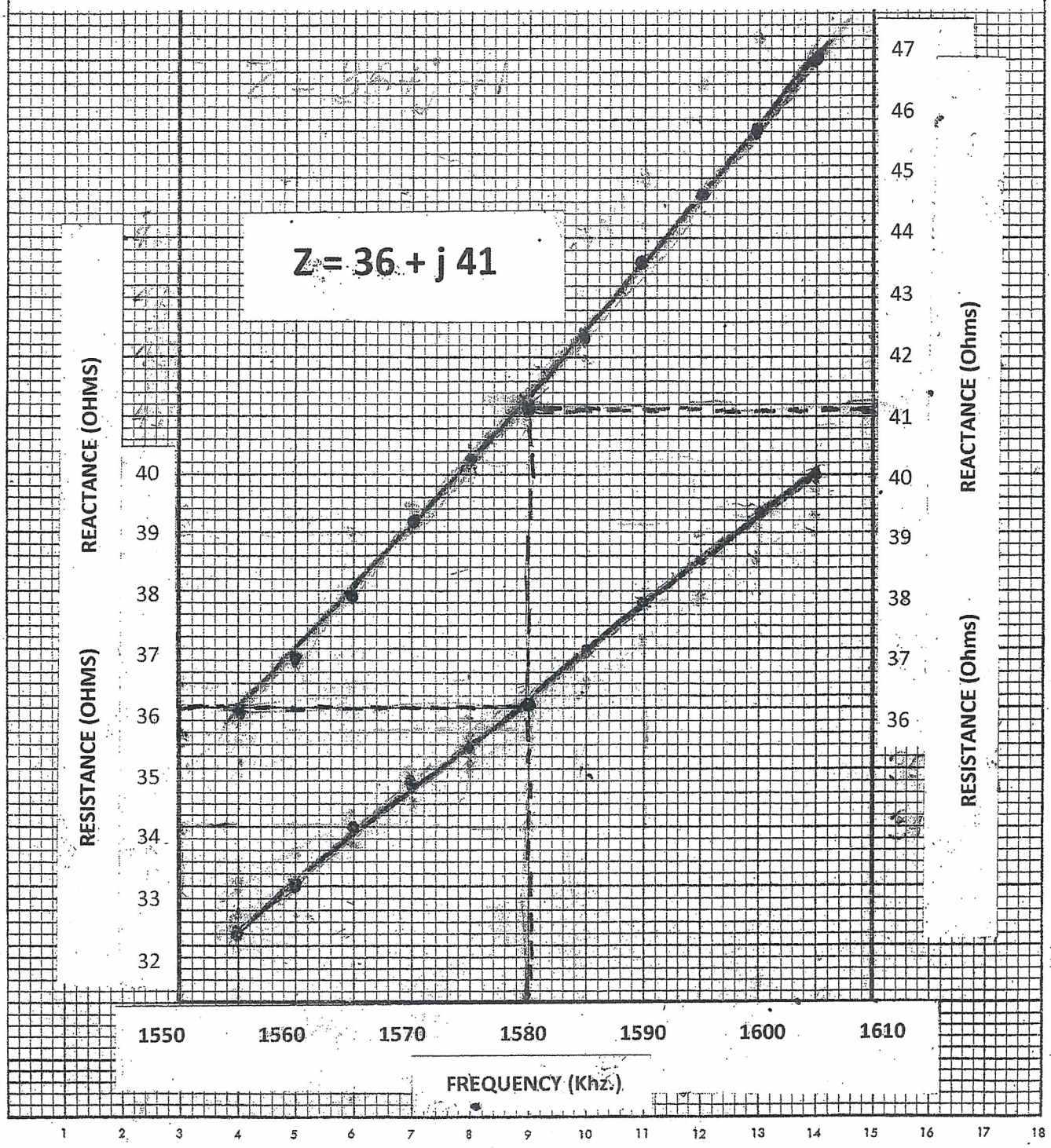
TOWER #1: IMPEDANCE GRAPH



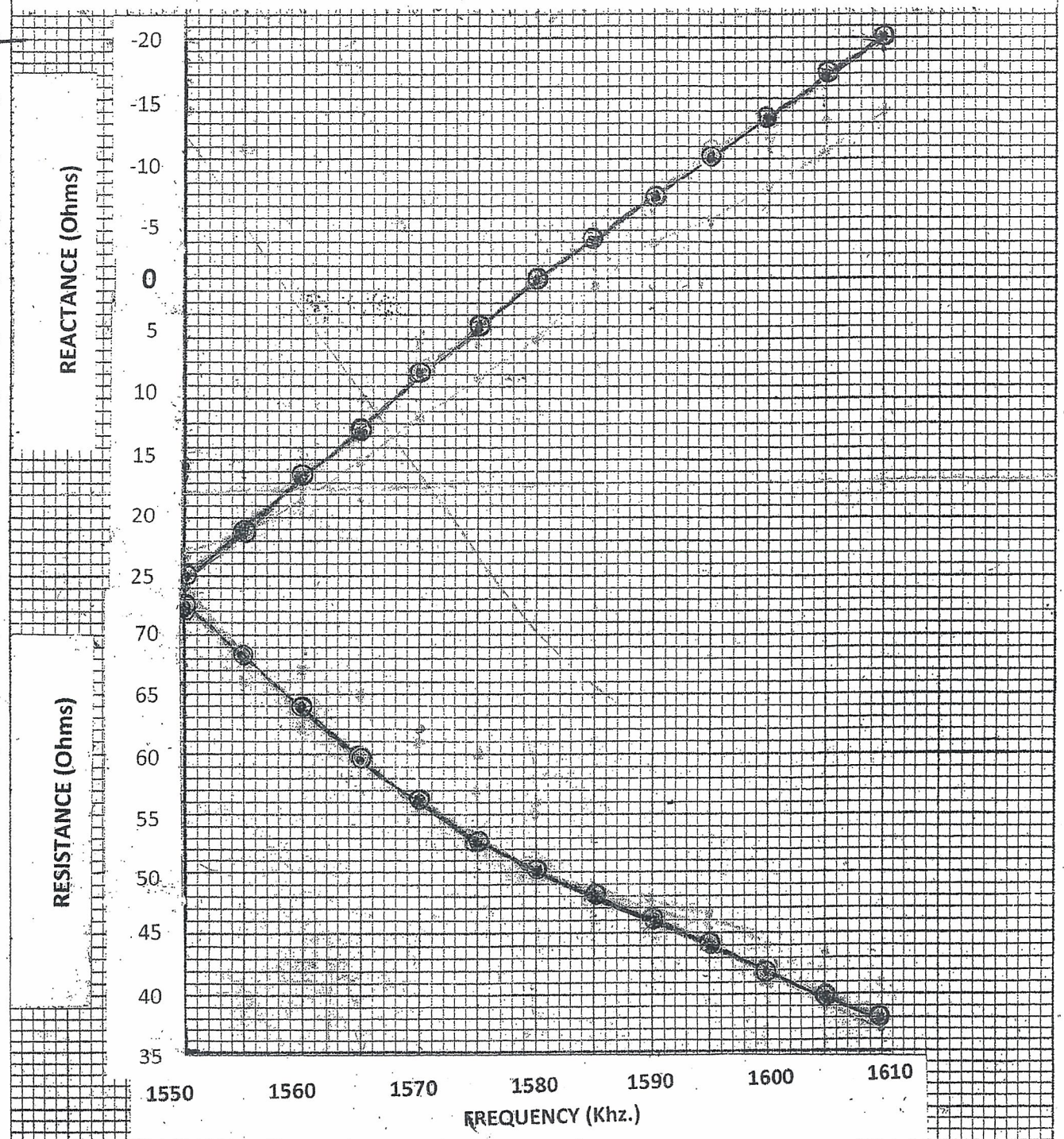
COMMON POINT (DA-D) IMPEDANCE DATA MEASUREMENTS

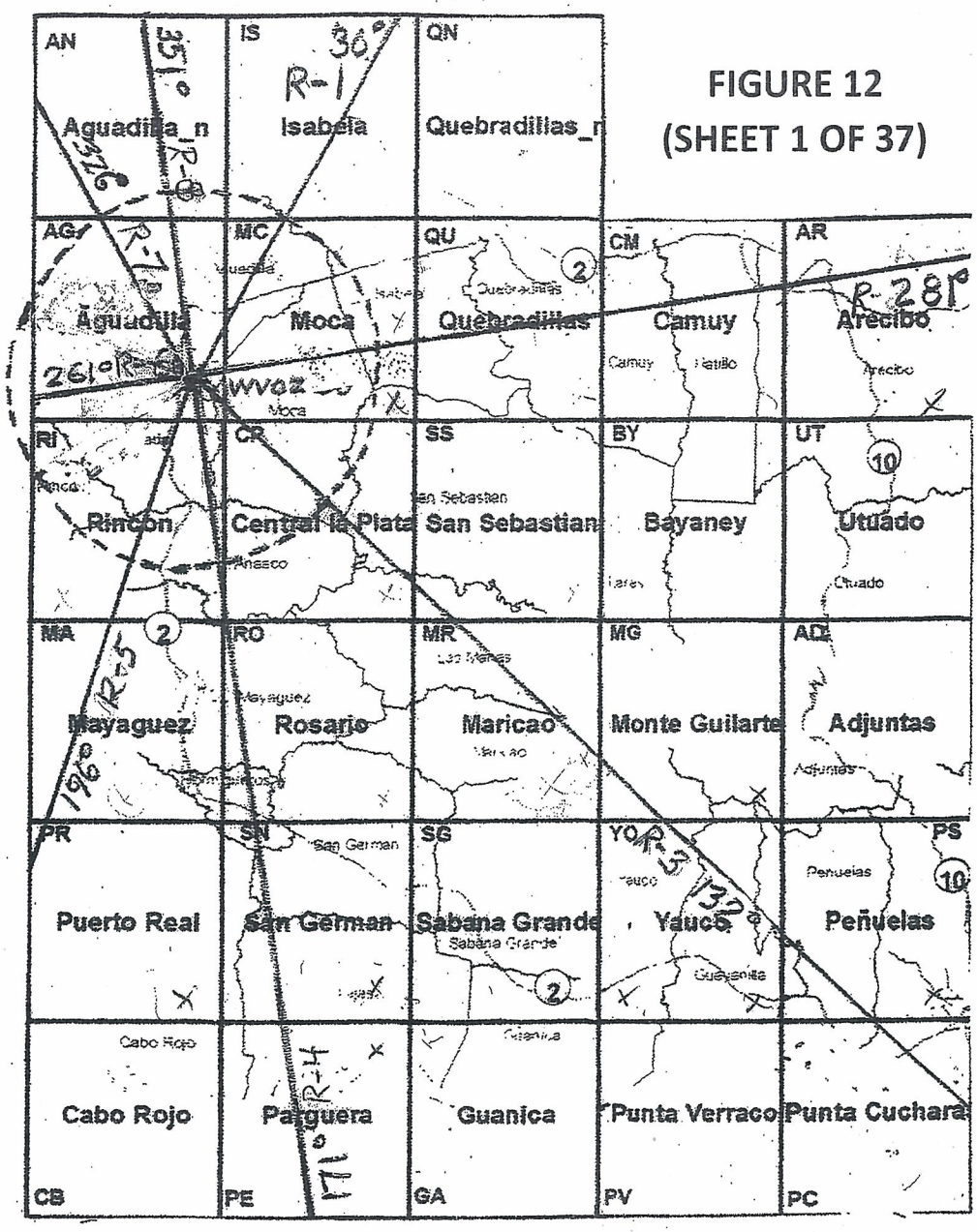
FREQUENCY (khZ.)	RESISTANCE (Ohms)	REACTANCE (Ohms)
1550	74	-25
1555	68	-21
1560	64	-16.5
1565	59.5	-12.5
1570	56	-8
1575	52.5	-4
1580	50	0
1585	48	3
1590	46	7
1595	44	10
1600	42	13.5
1605	40	17.5
1610	38	20

ENGINEERING EXHIBIT - APPLICATION FOR LICENSE
RADIO STATION WVOZ, AGUADILLA P.R.
1580 KHZ., 1.0 KW DA-D / 1.0 KW NDA-N, U

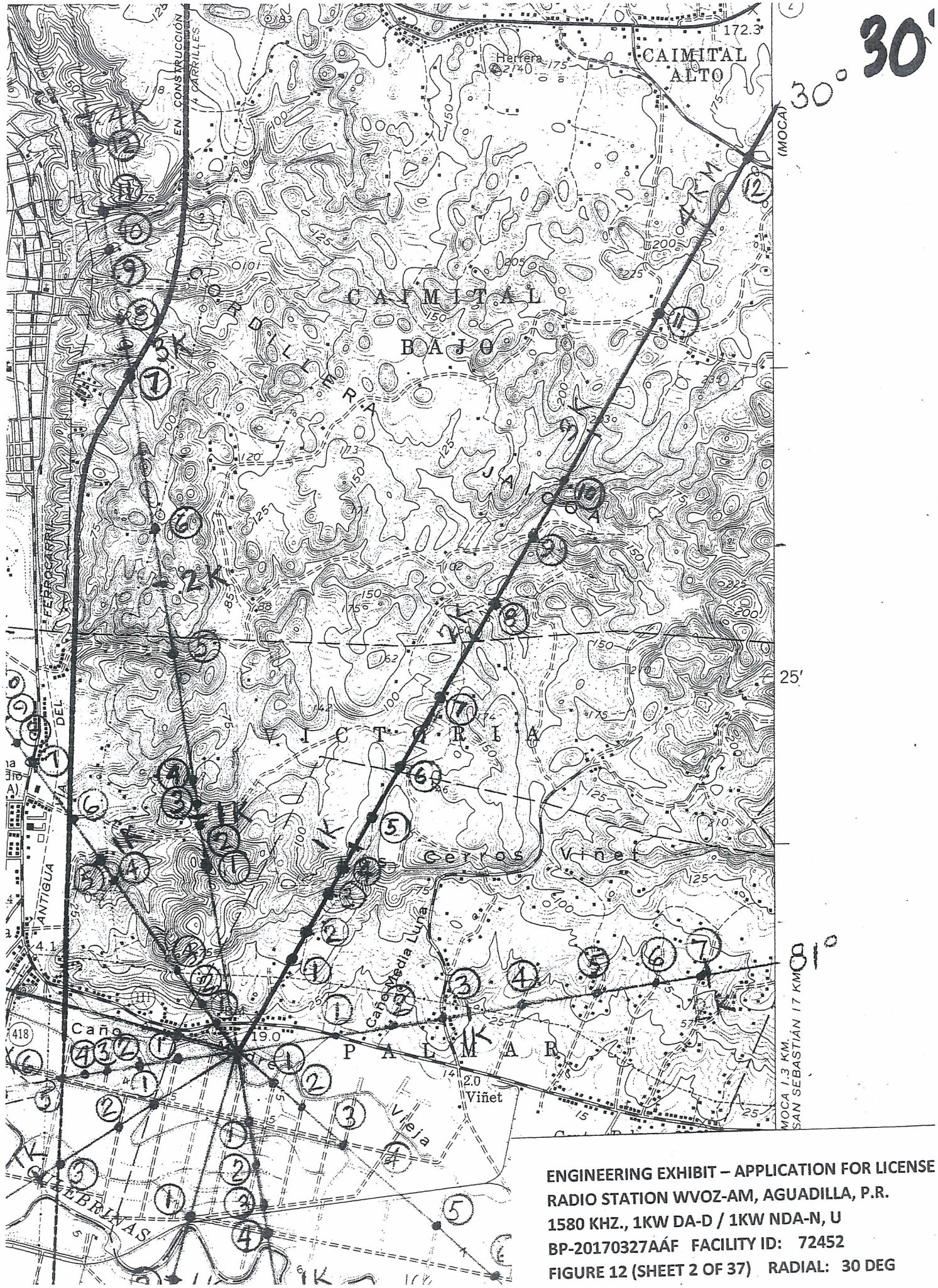
FIGURE 11 (SHEET 5 OF 5)
BP-20170327AAF
August 30, 2018

COMMON POINT (DA-D) IMPEDANCE DATA MEASUREMENT GRAPH

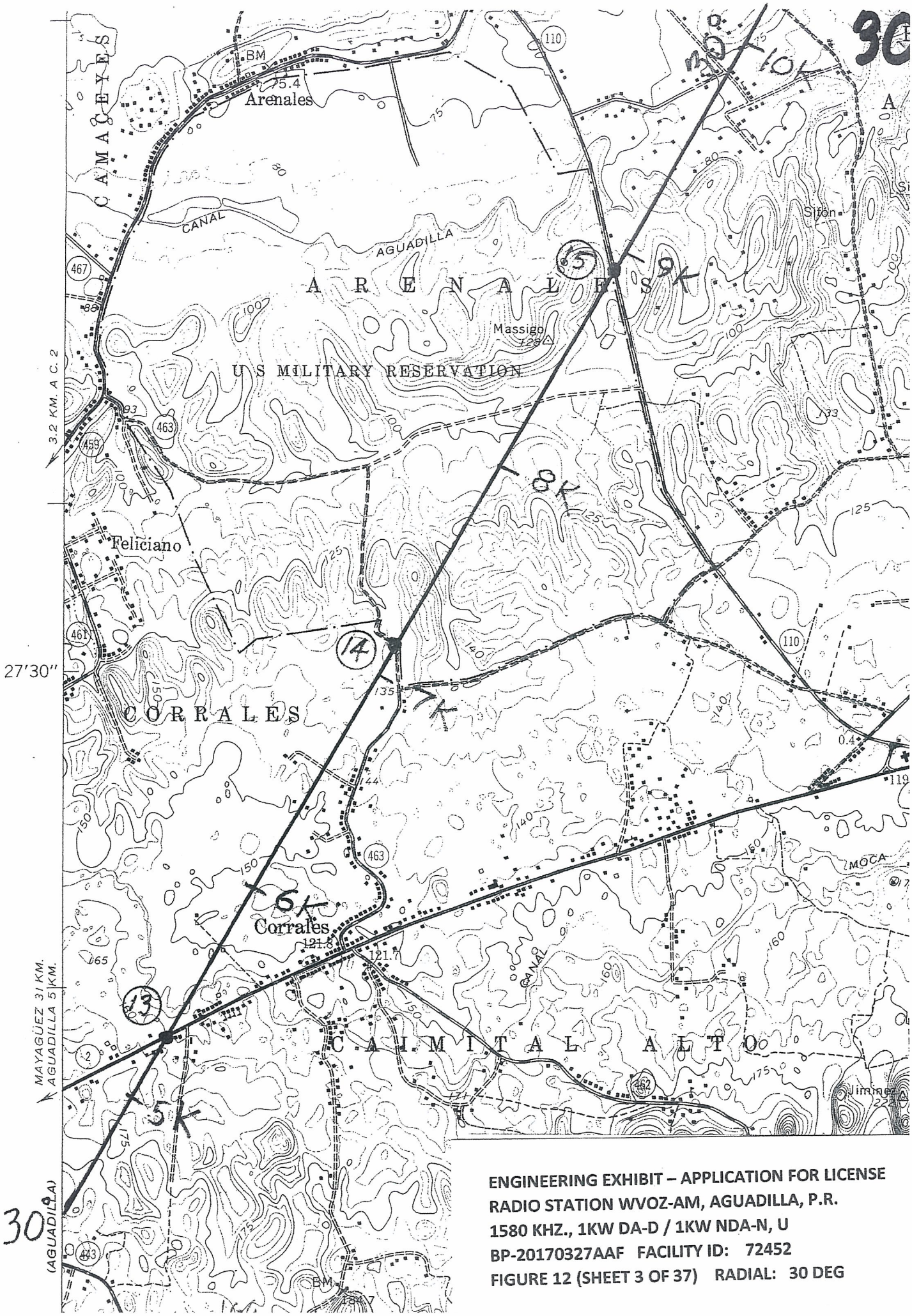




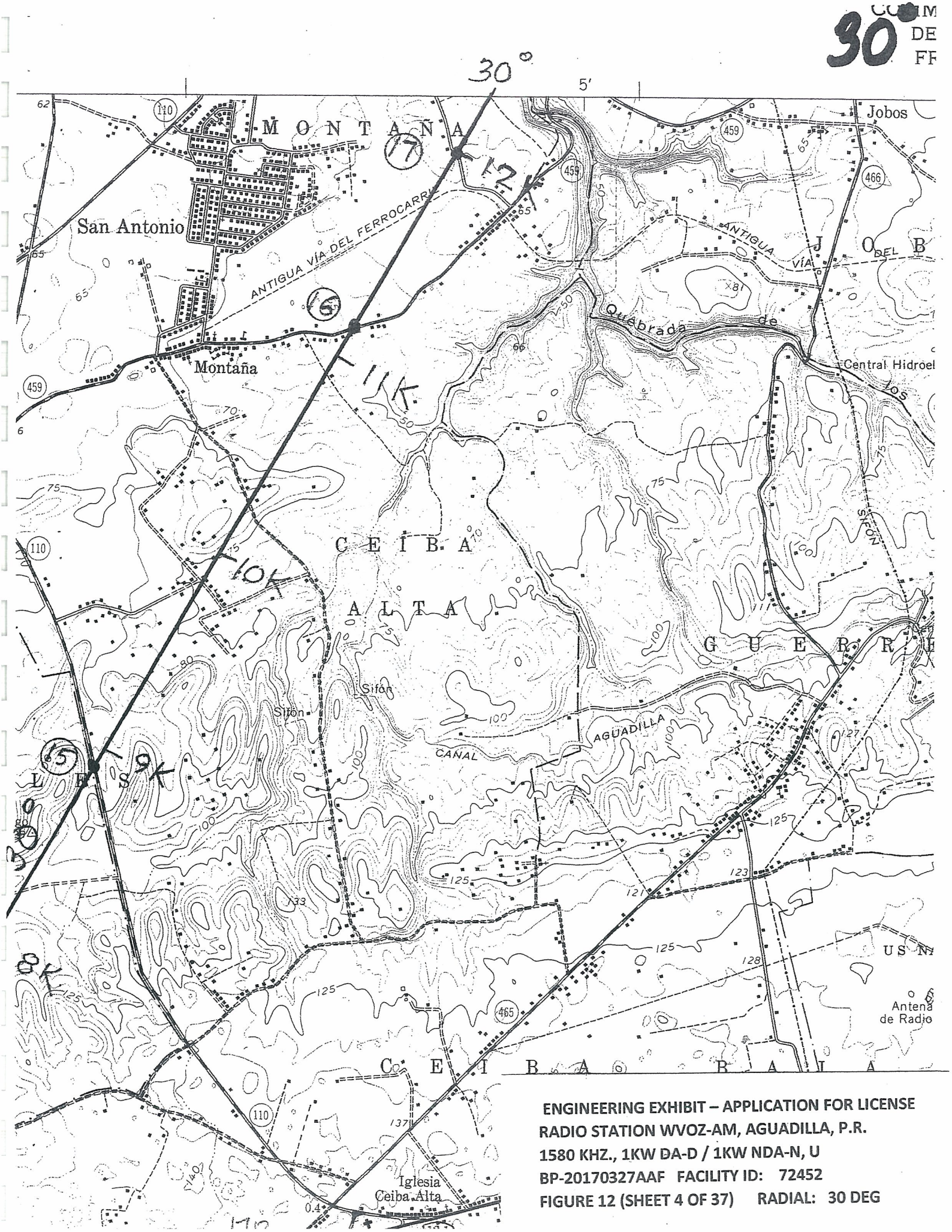
SERIES OF MAPS SHOWING THE RADIALS THAT WERE MEASURED



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 2 OF 37) RADIAL: 30 DEG

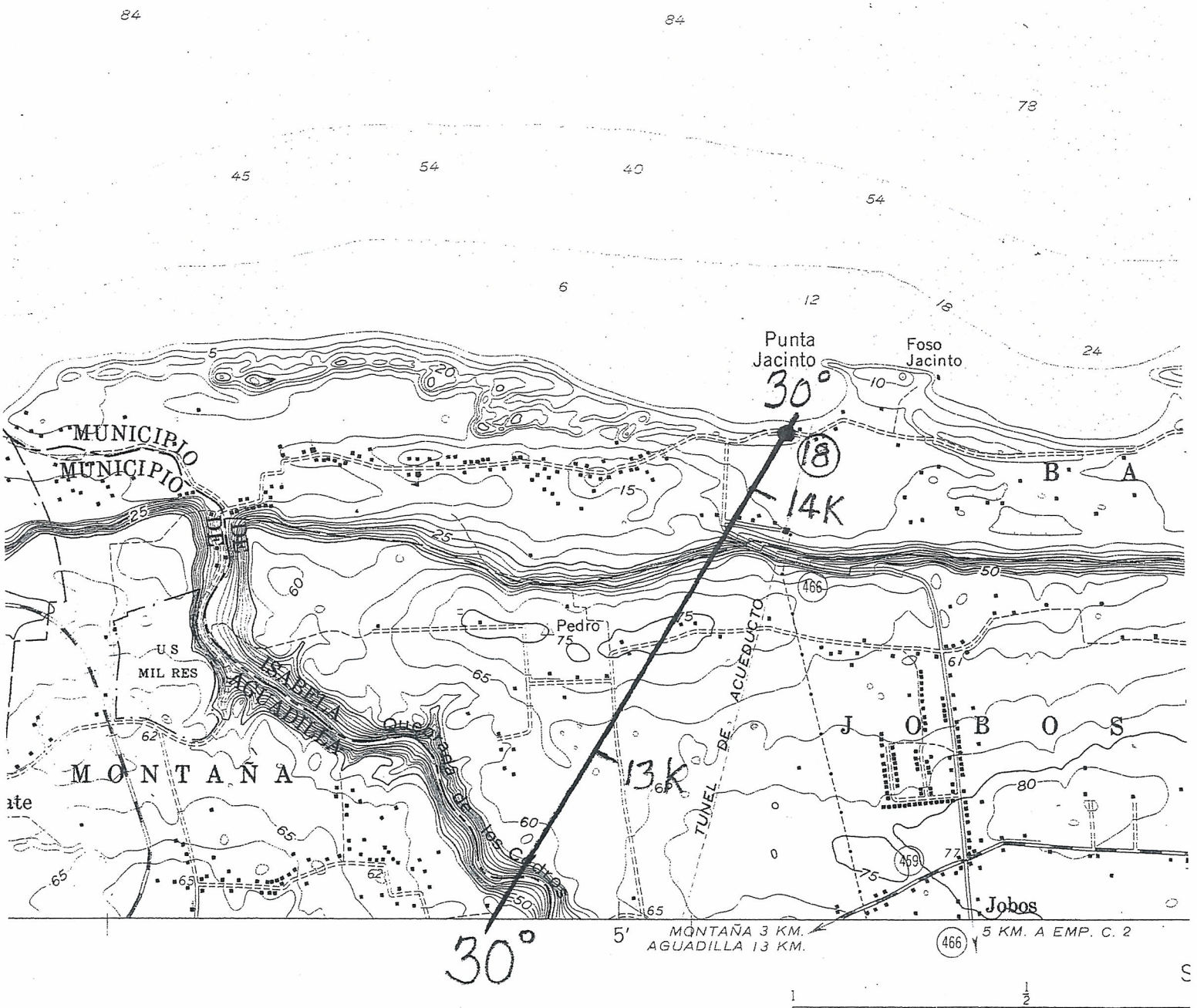


ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 3 OF 37) RADIAL: 30 DEG



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 4 OF 37) RADIAL: 30 DEG

30°



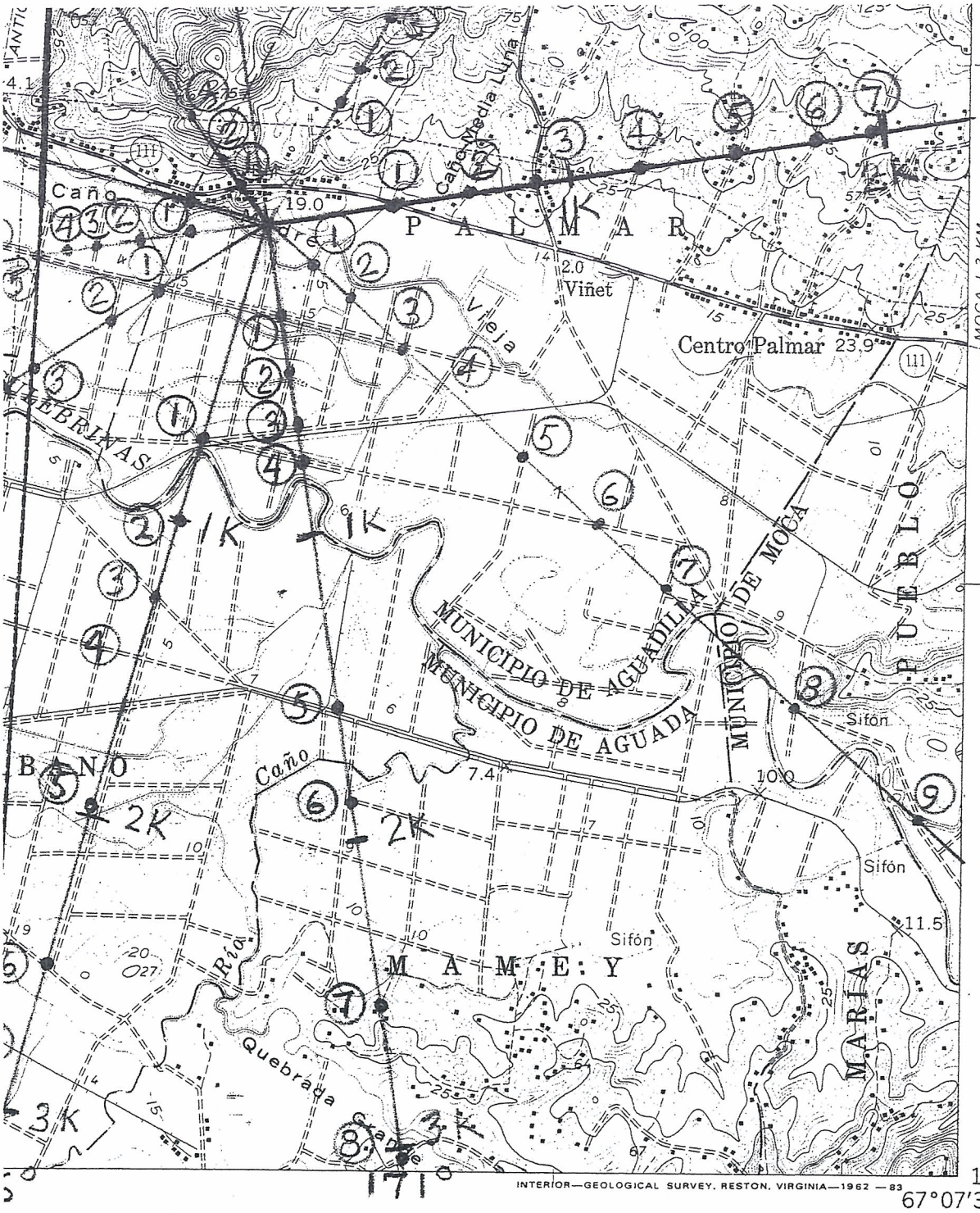
1 ½
1000 0 1000 2000
1 .5

CONTOUR
DATUM

6½°
MAGNETIC NORTH
TRUE NORTH
APPROXIMATE MEAN
DECLINATION, 1960

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 5 OF 37) RADIAL: 30 DEG

81°



(CENTRAL LA PLATA)

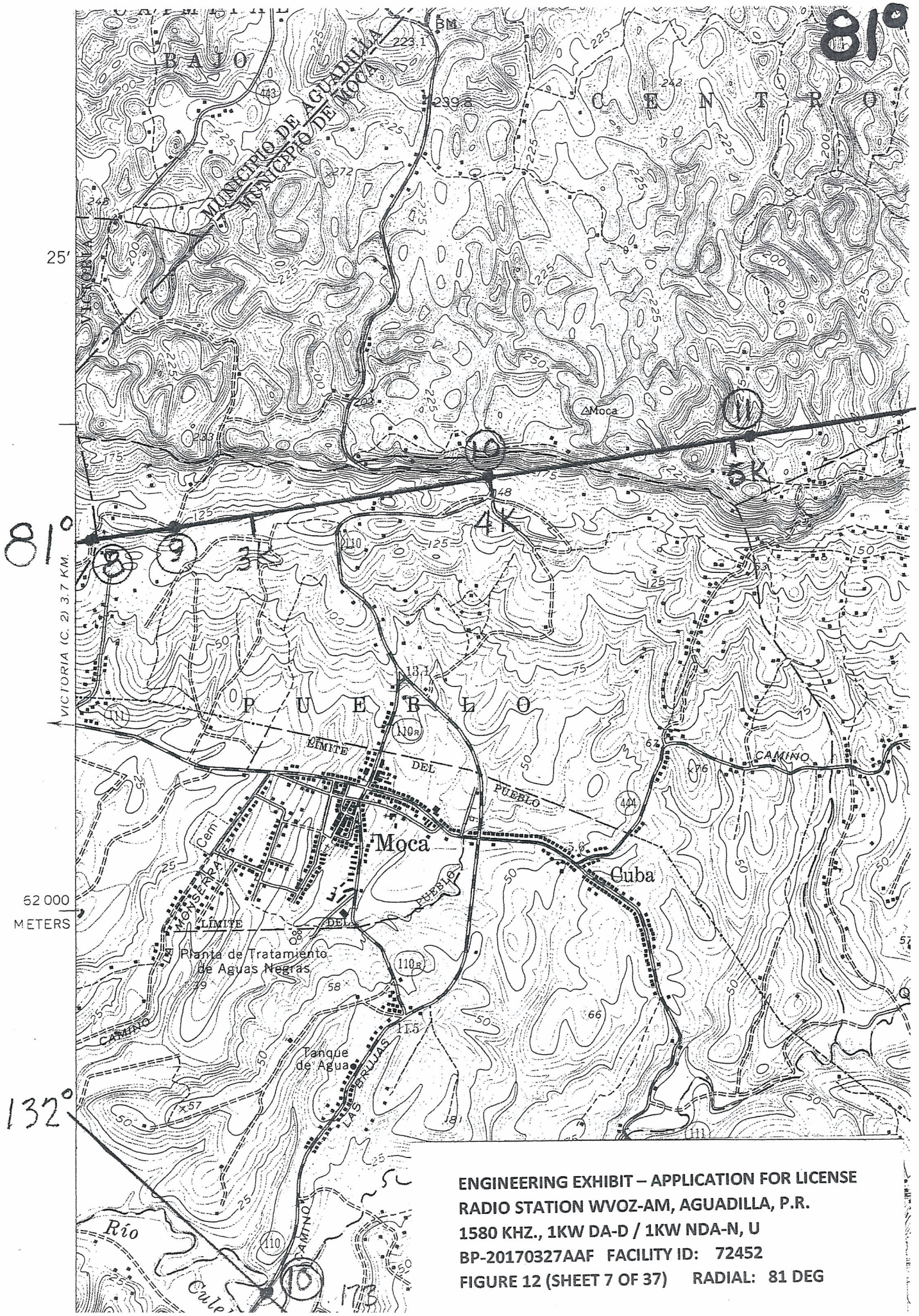
ROAD CLASSIFICATION

Heavy-duty ..... Light-duty .....

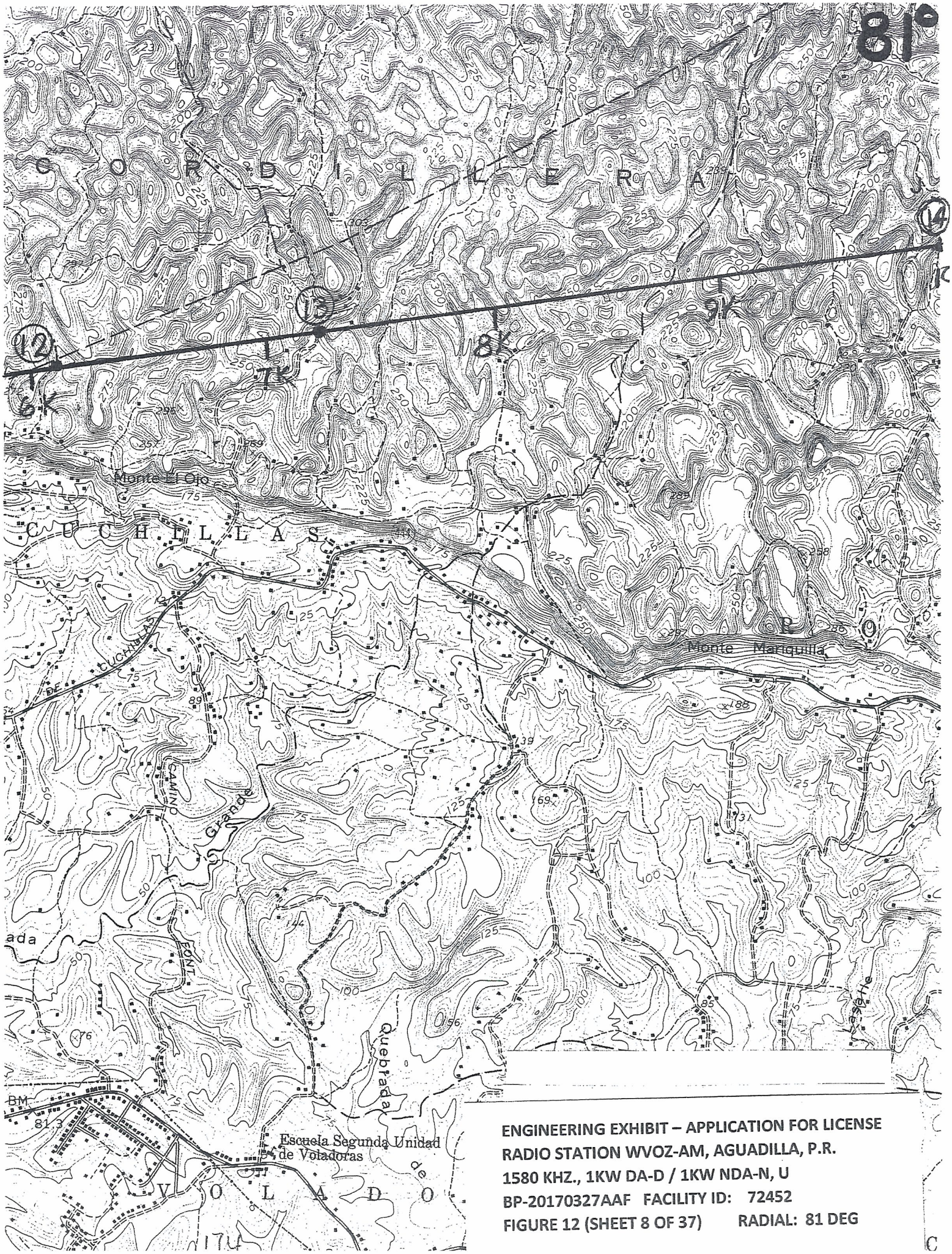
Medium-duty ..... Unimproved dirt .....

Insular Route

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 6 OF 37) RADIAL: 81 DEG



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 7 OF 37) RADIAL: 81 DEG

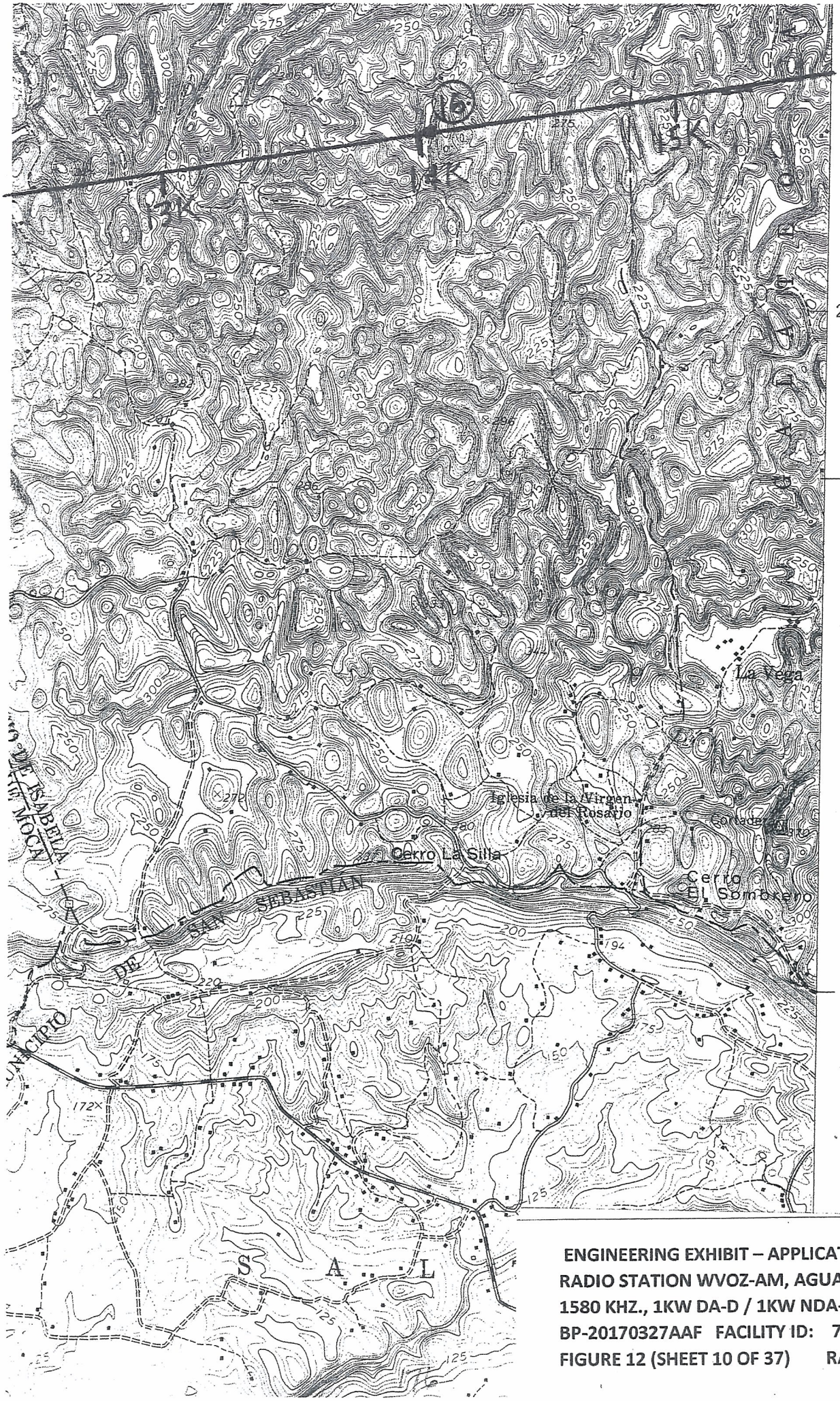


ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 8 OF 37) RADIAL: 81 DEG

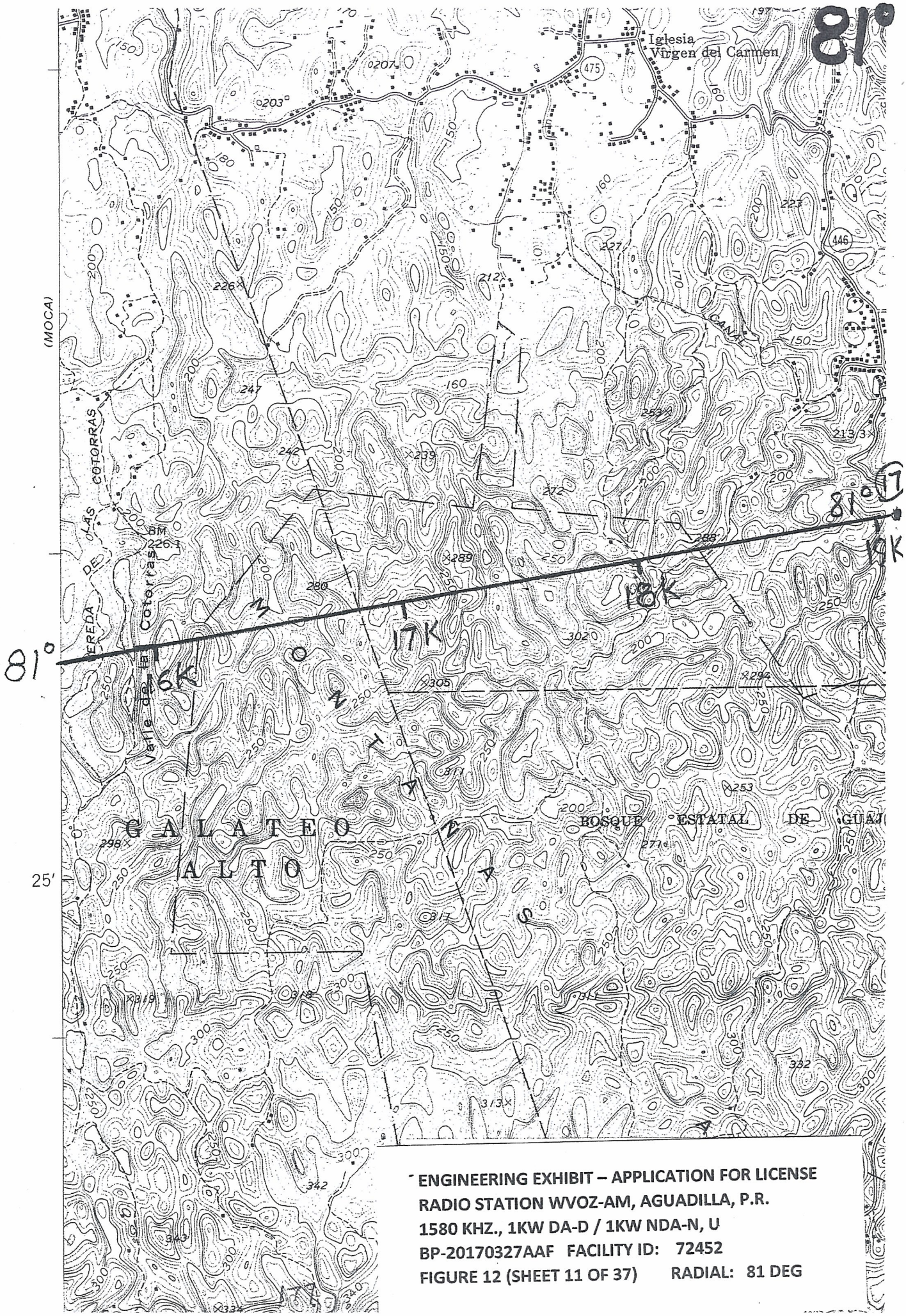
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 8 OF 37) RADIAL: 81 DEG

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 9 OF 37) RADIAL: 81 DEG

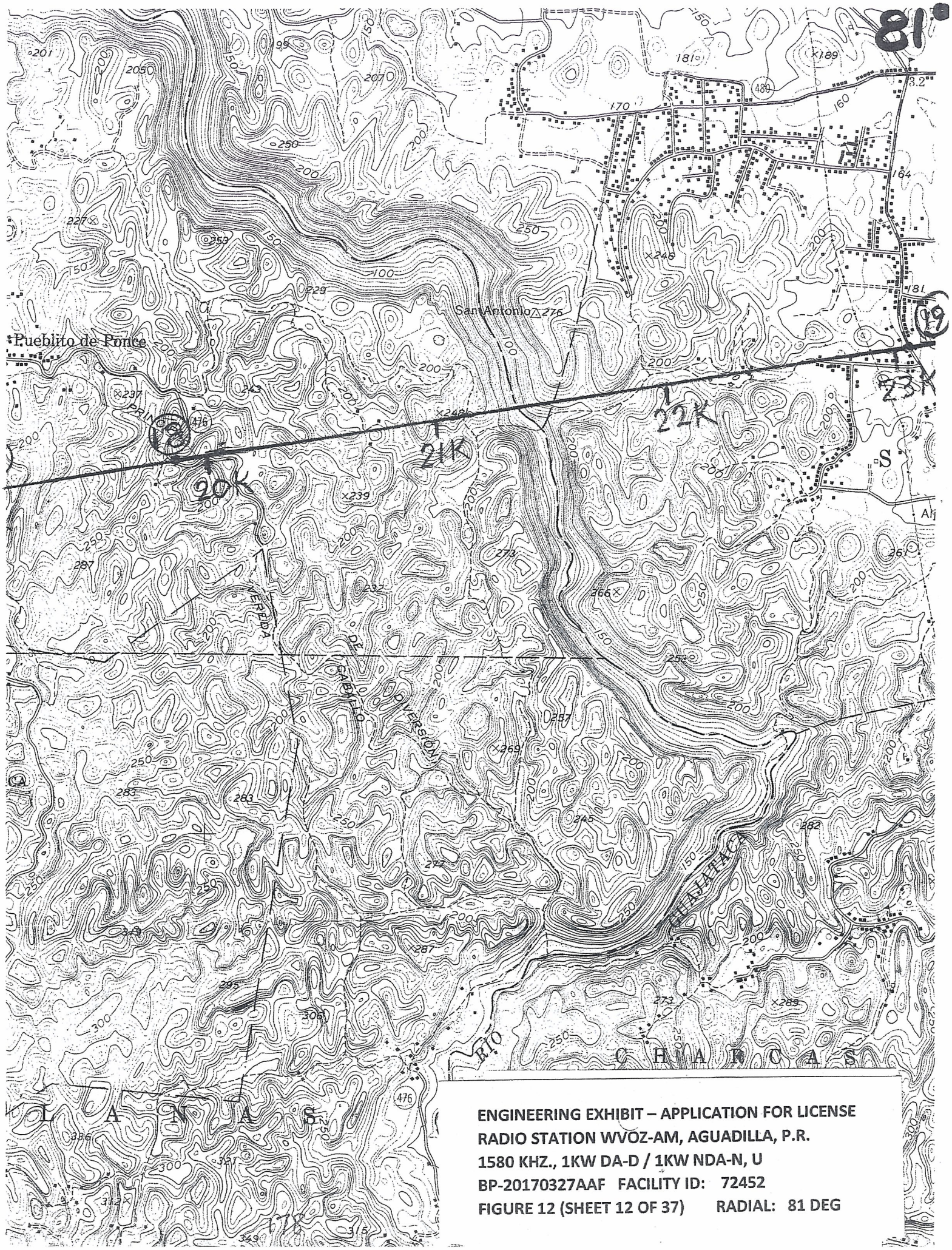
81°



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 10 OF 37) RADIAL: 81 DEG

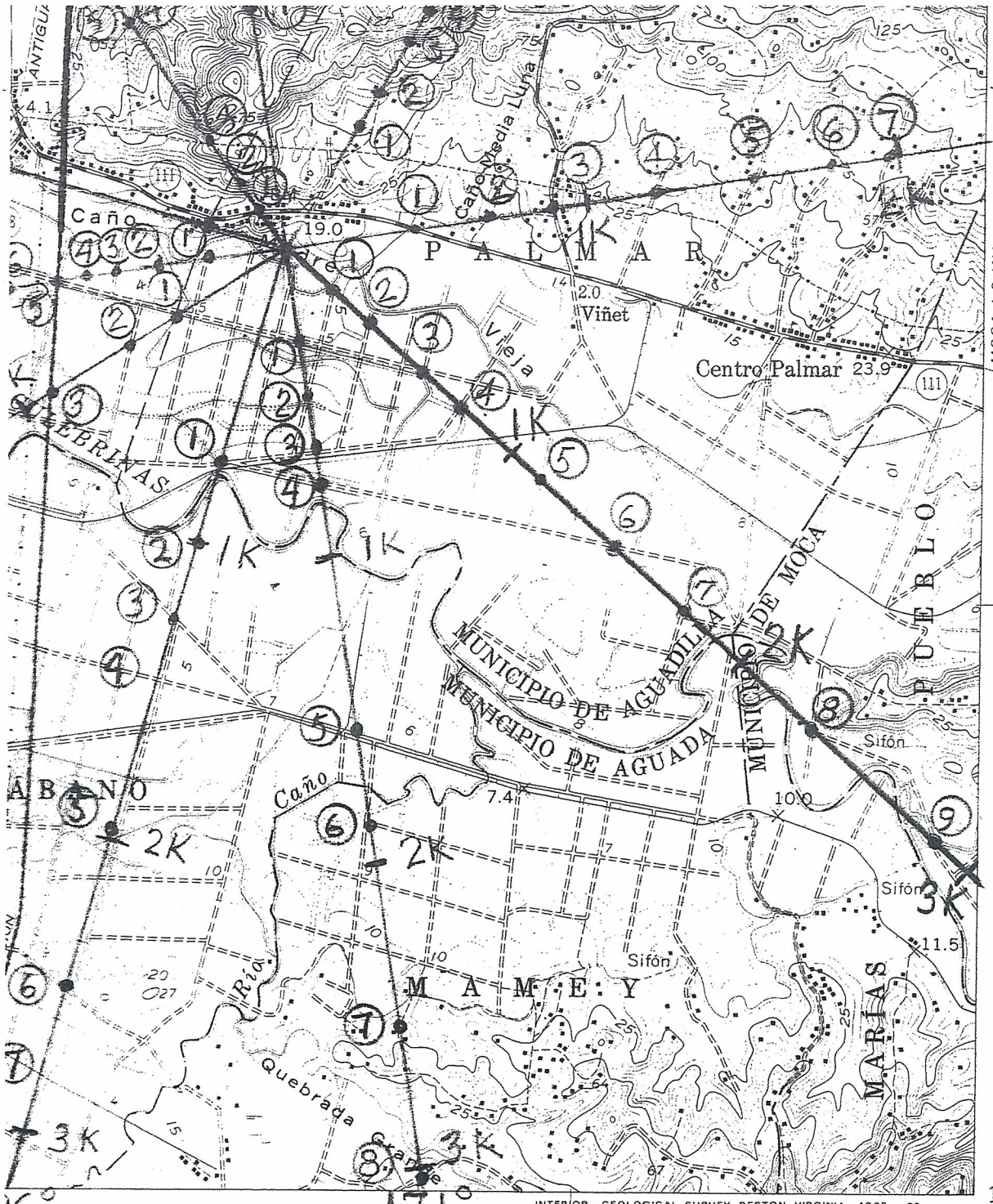


ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 11 OF 37) RADIAL: 81 DEG



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 12 OF 37) RADIAL: 81 DEG

132



18°22'30"
67°07'30"

(CENTRAL LA PLATA)

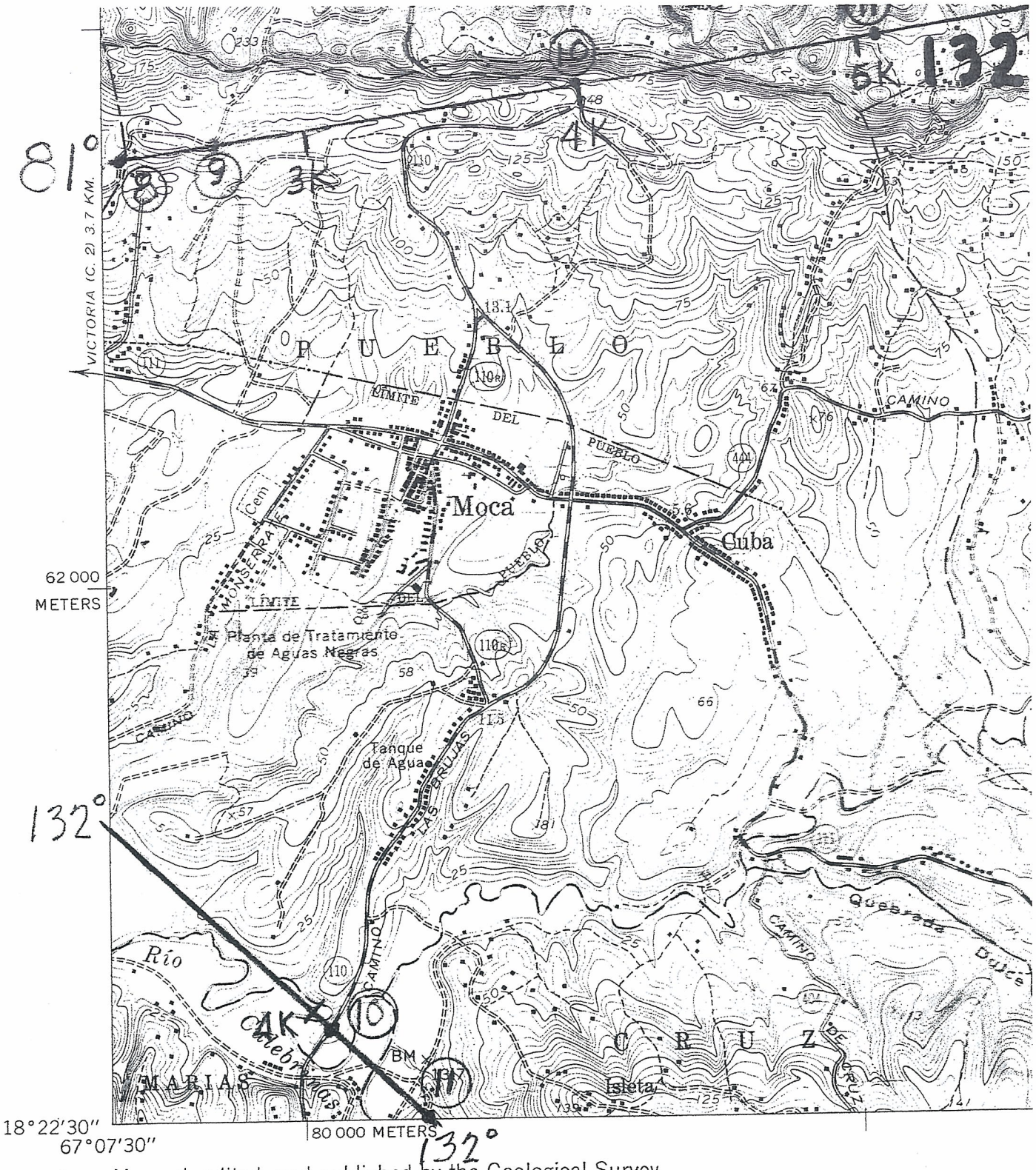
ROAD CLASSIFICATION

Heavy-duty ..... Light-duty .....

Medium-duty ..... Unimproved dirt .....

Insular Route

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 13 OF 37) RADIAL: 132 DEG



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Topography by planetable surveys 1922 and 1937. Revised 1964

Polyconic projection. Puerto Rican datum, 1940 adjustment
2000-meter grid based on Puerto Rico coordinate system

Barrio and municipality boundaries by th
Planning Board

Kilometric reference distances shown in

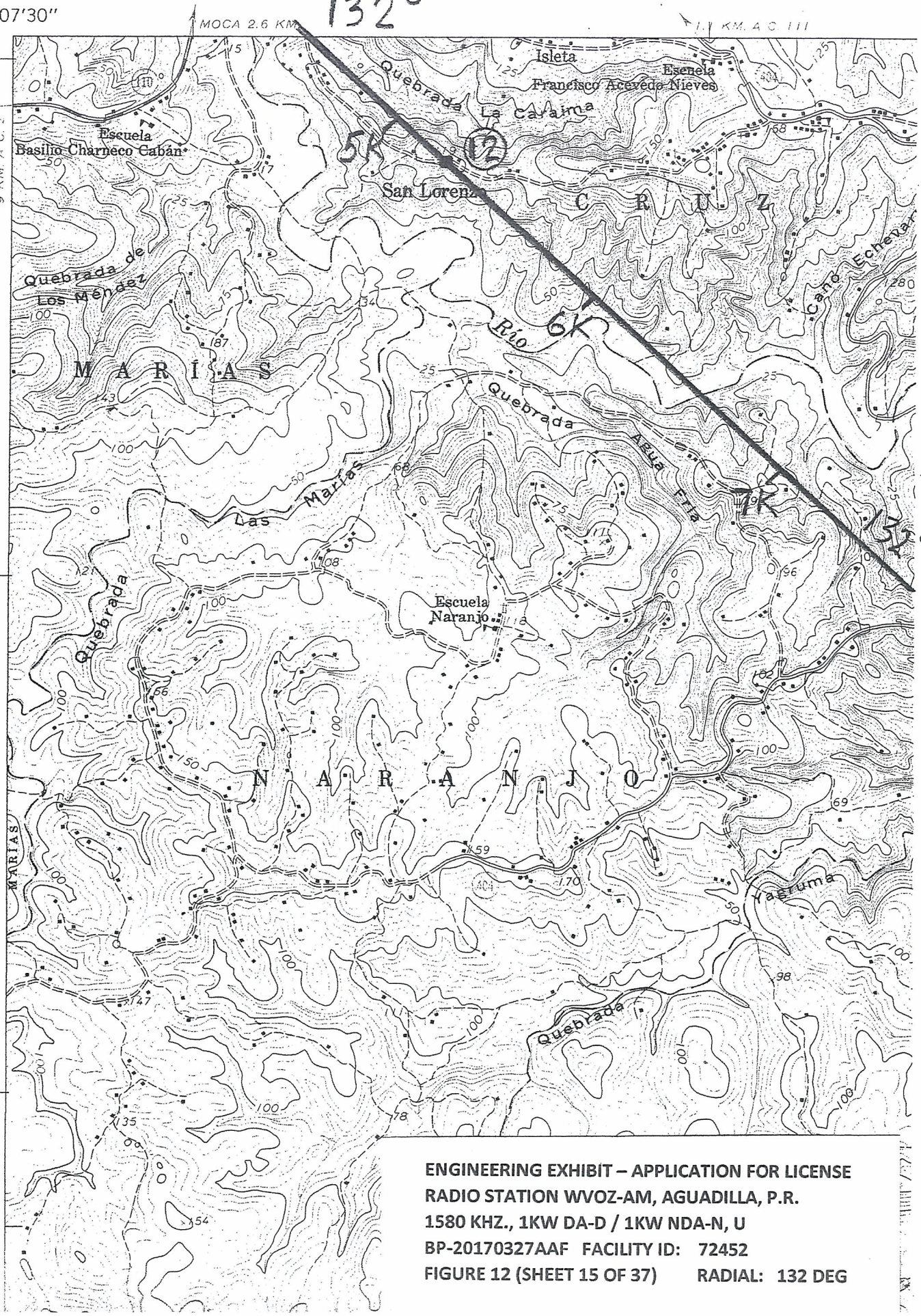
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 14 OF 37) RADIAL: 132 DEG

(AGUADILLA)

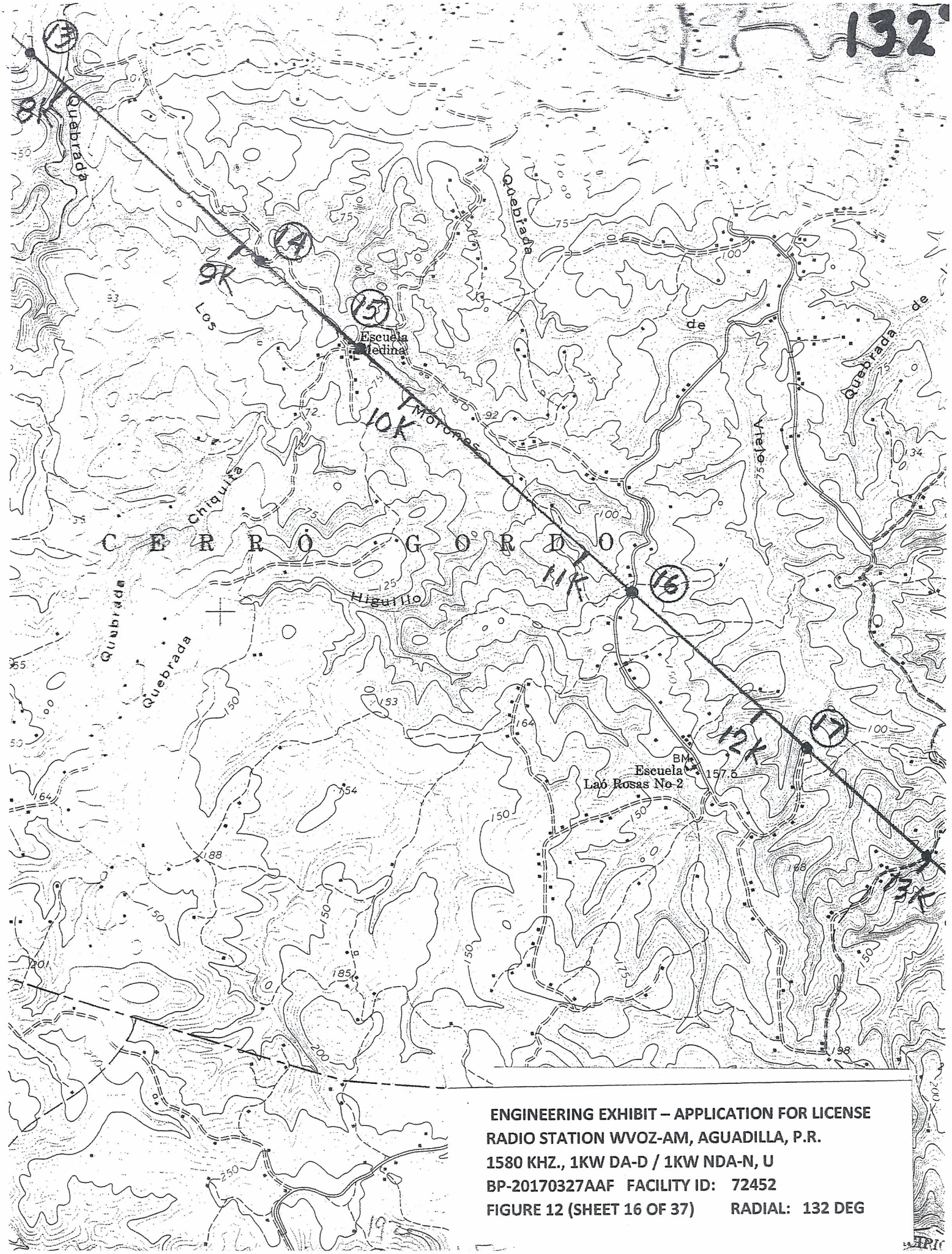
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

132°

67°07'30"
18°22'30"



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 15 OF 37) RADIAL: 132 DEG



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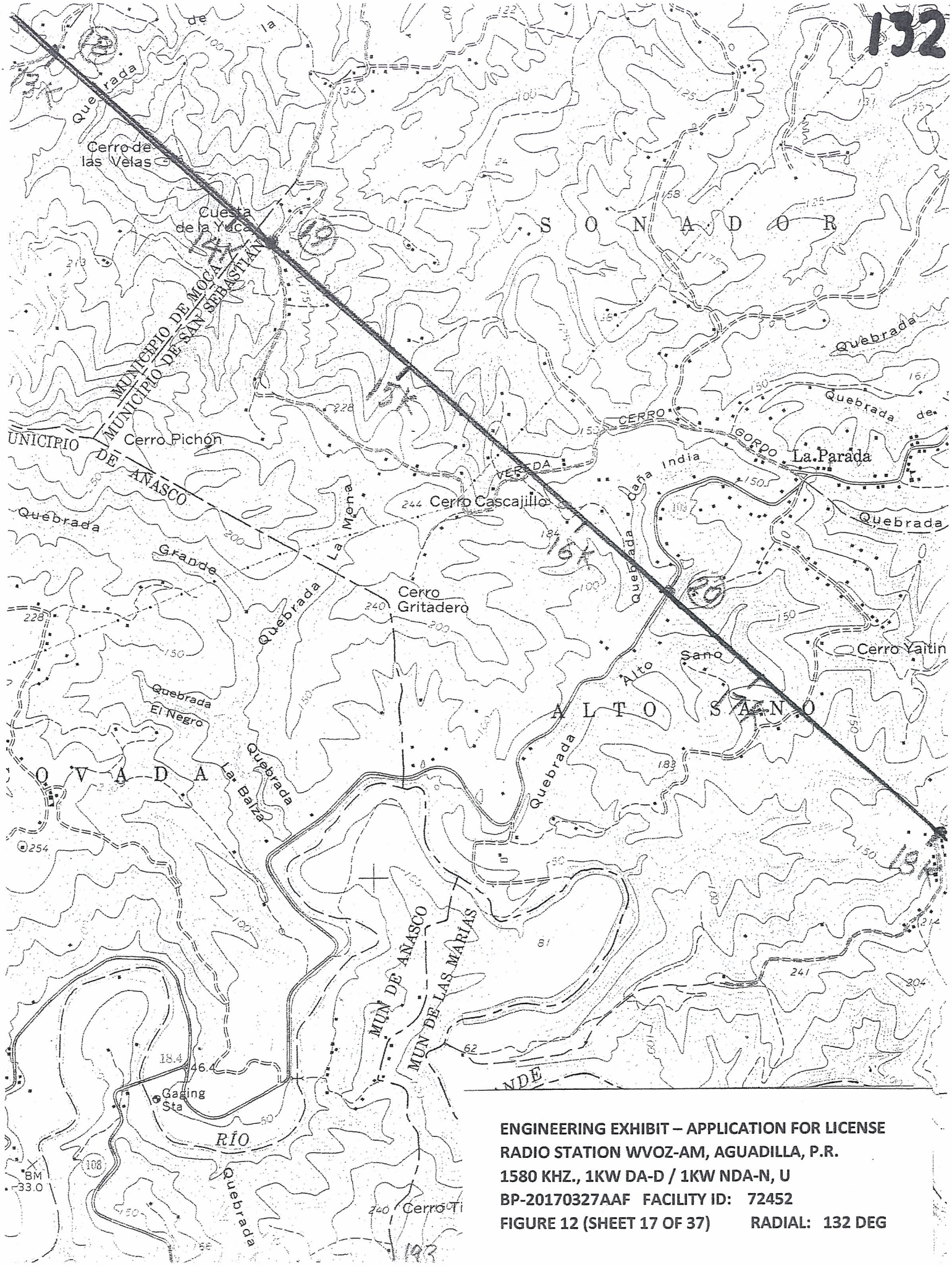
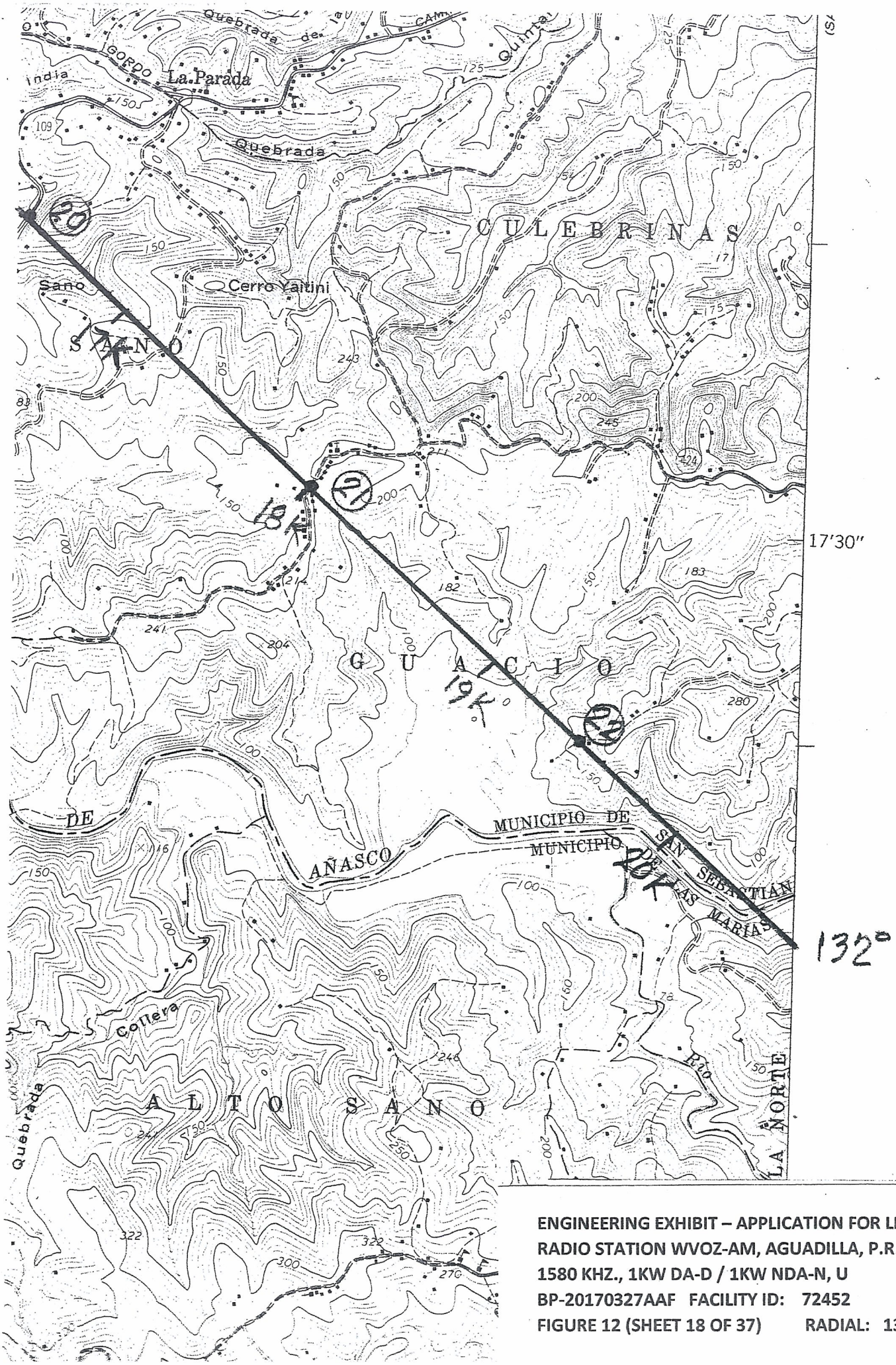
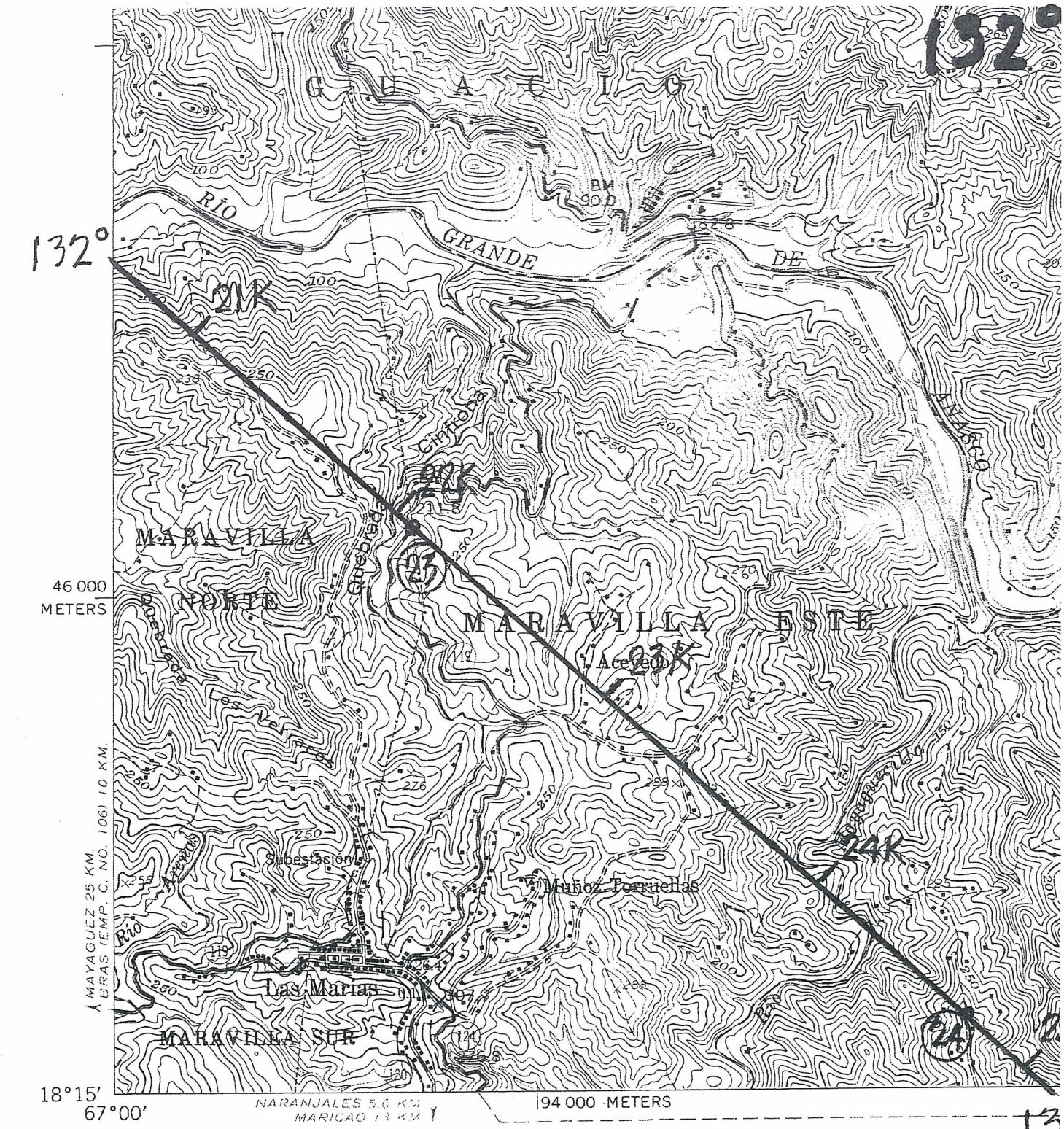
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 16 OF 37) RADIAL: 132 DEG



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 17 OF 37) RADIAL: 132 DEG



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 18 OF 37) RADIAL: 132 DEG



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2000-meter grid based on Puerto Rico coordinate system

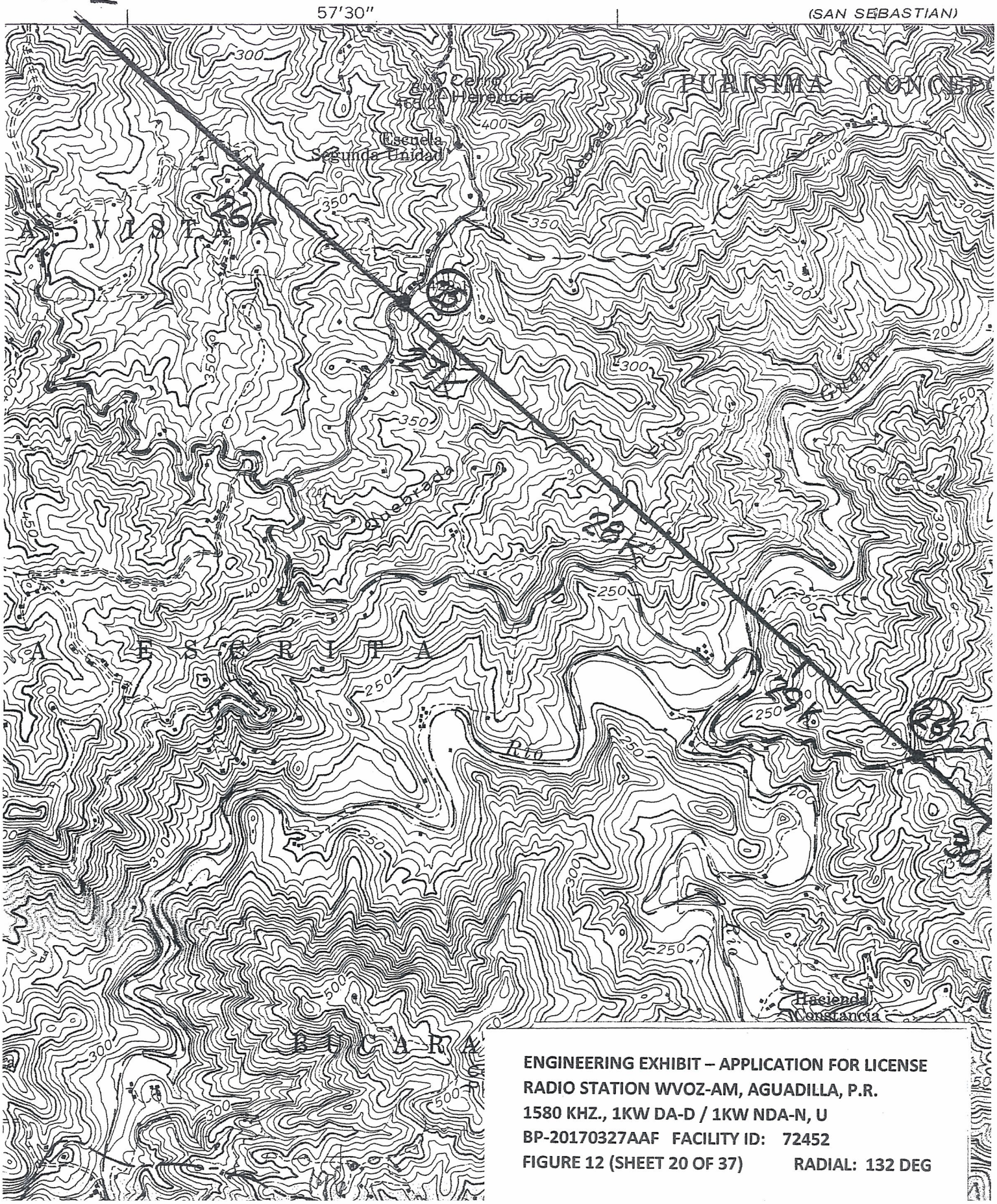
Barrio and municipality boundaries by the Puerl
Planning Board

Kilometric reference distances shown in red

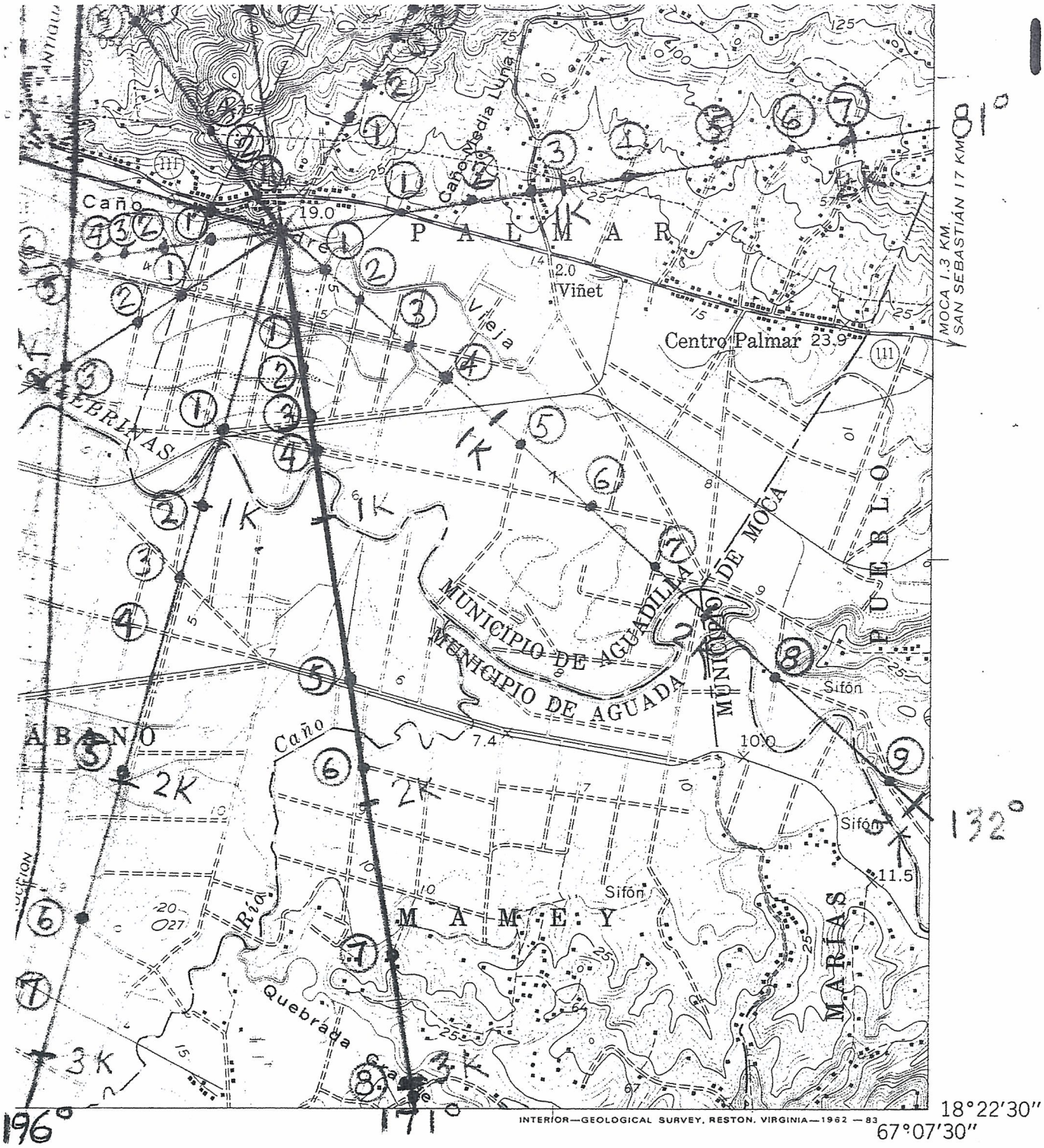
ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 19 OF 37) RADIAL: 132 DEG

COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF PUBLIC
FRANCISCO LIZARDI, SECRETARY

132°



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 20 OF 37) RADIAL: 132 DEG



INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1962 — 83

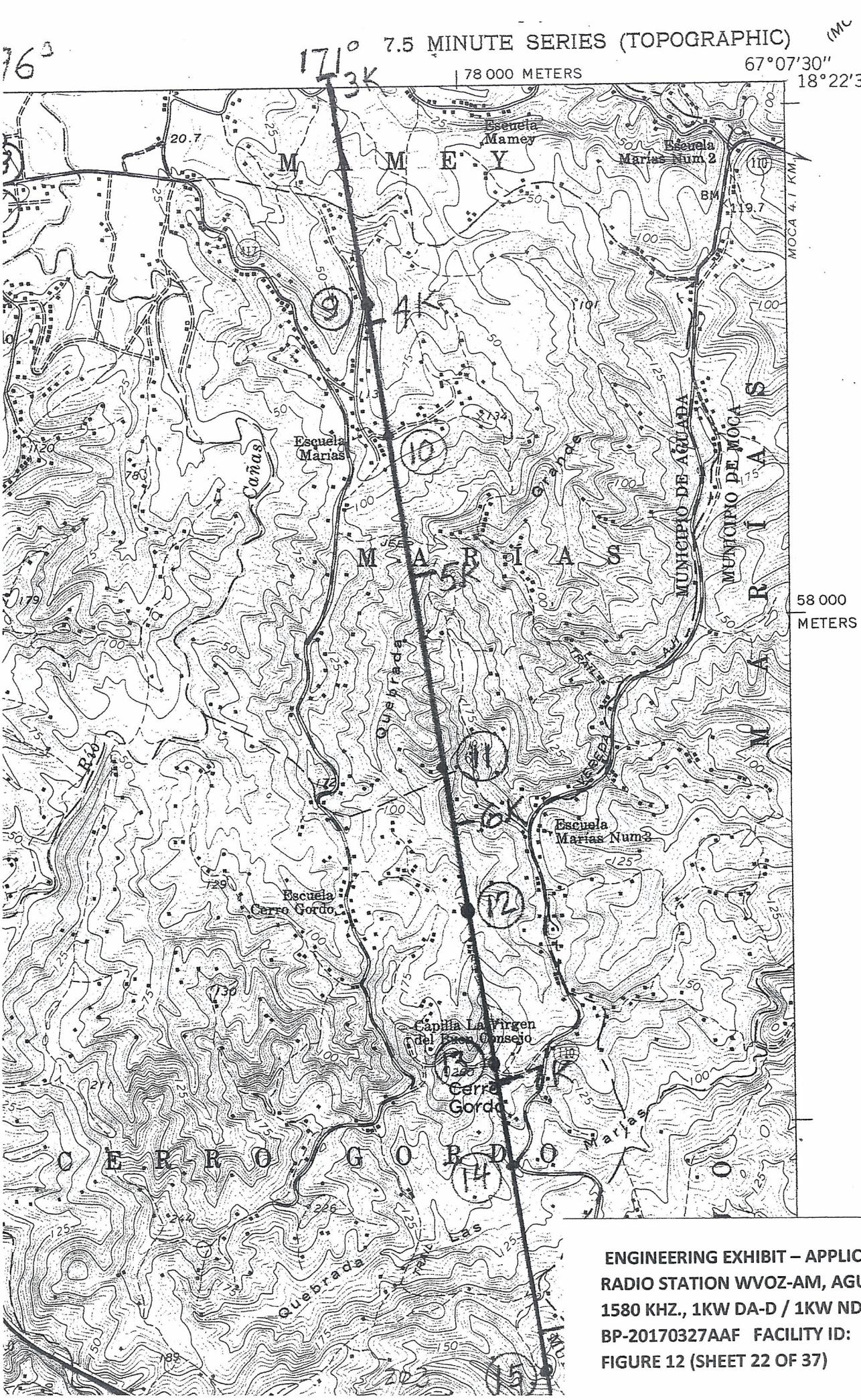
ROAD CLASSIFICATION

Heavy-duty — Light-duty

Medium-duty — Unimproved dirt

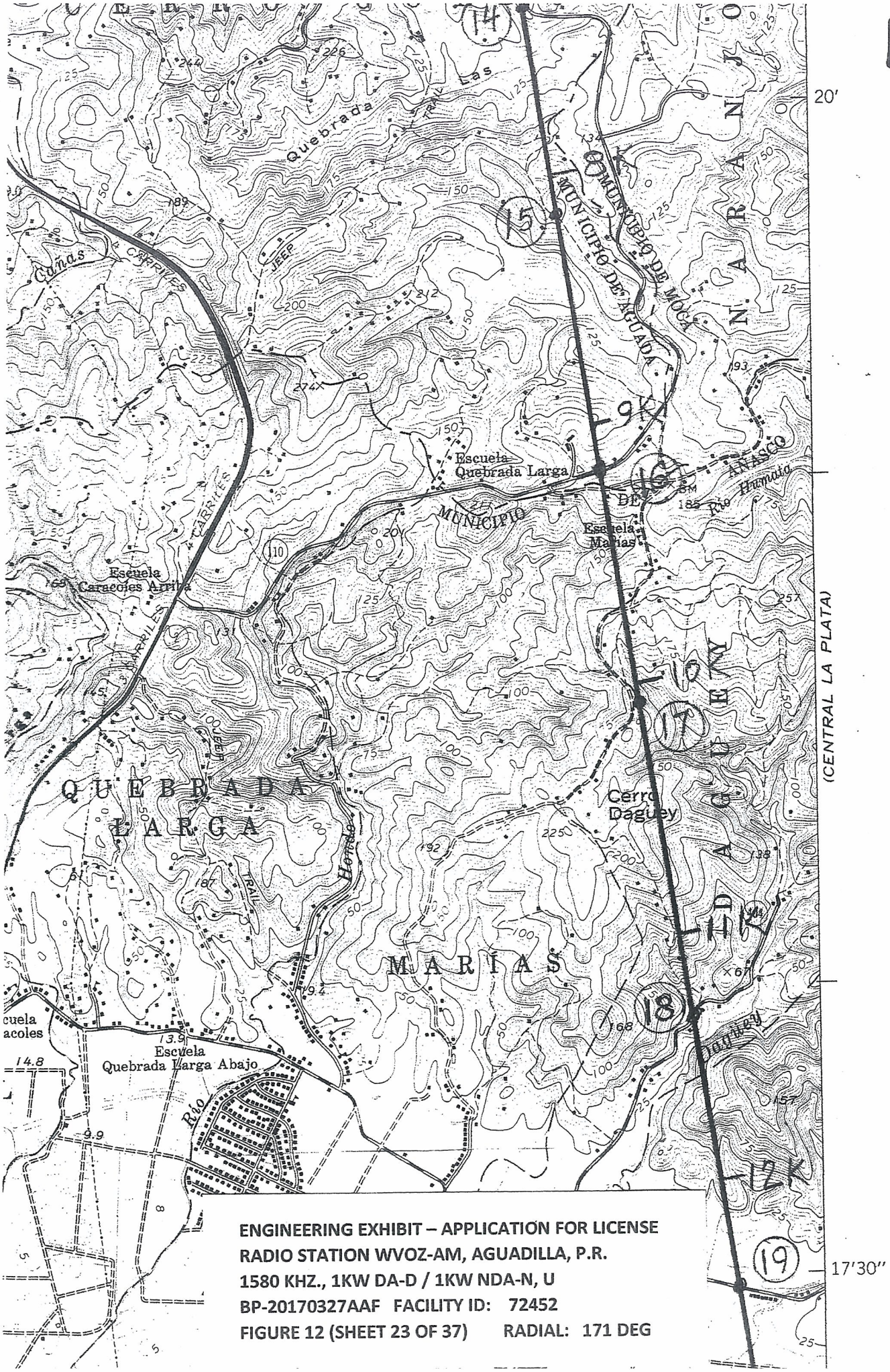
Insular Route

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 21 OF 37) RADIAL: 171 DEG

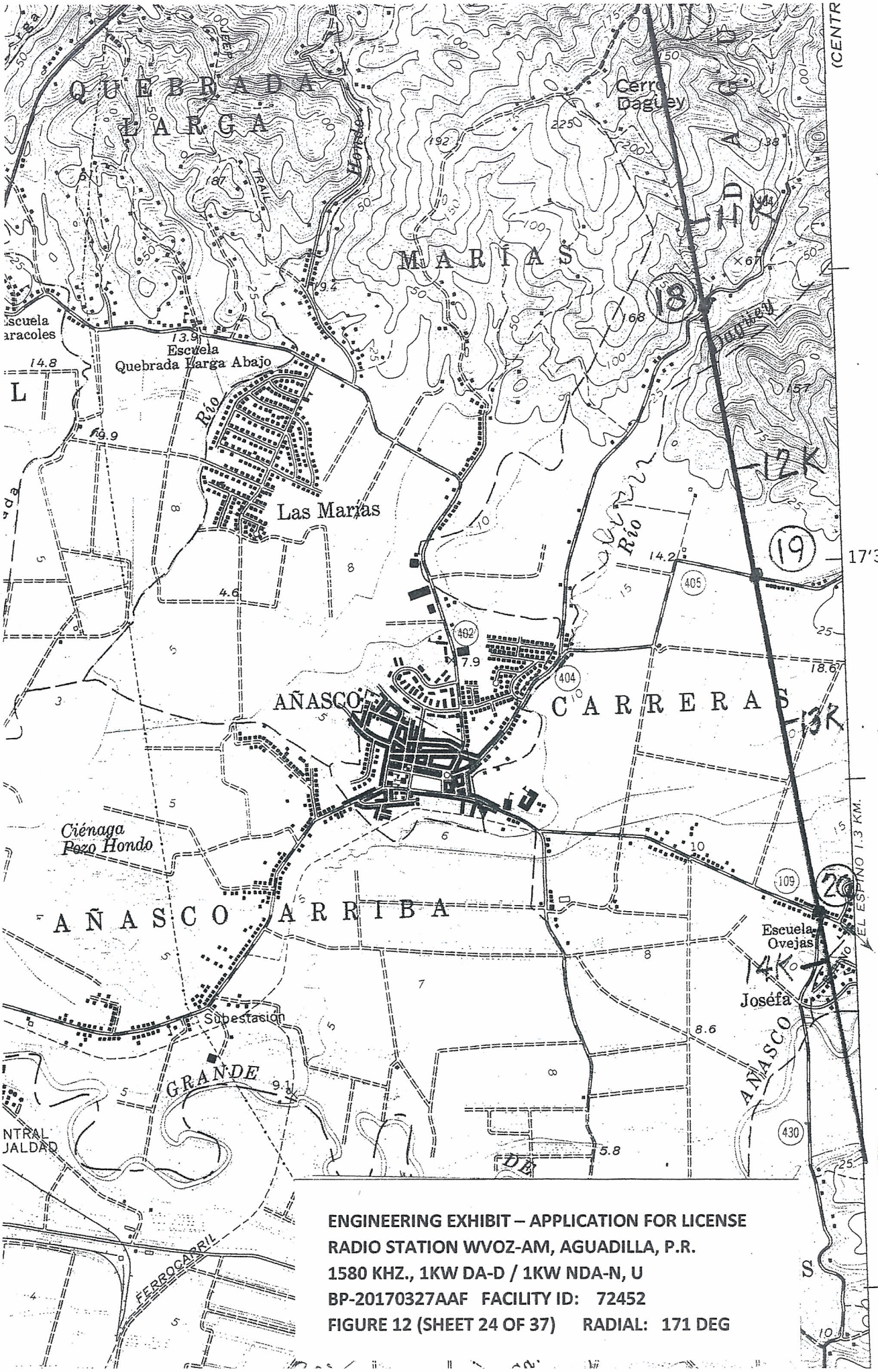


ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 22 OF 37) RADIAL: 171 DEG

171°



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 23 OF 37) RADIAL: 171 DEG



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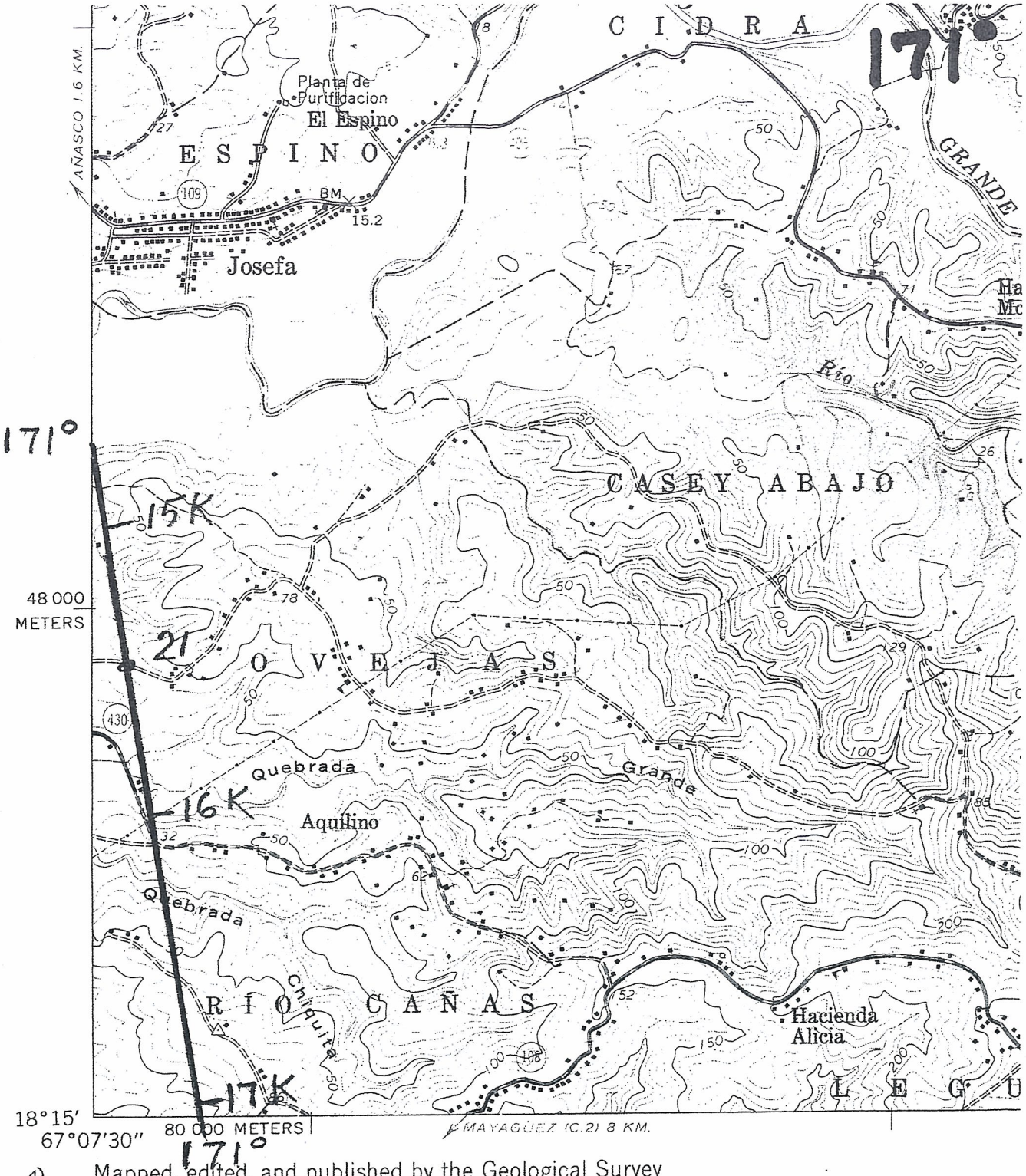
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 24 OF 37) RADIAL: 171 DEG



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2000-meter grid based on Puerto Rico coordinate system

Barrio and municipality boundaries by the Puerto Rico Planning Board

Kilometric reference distances shown

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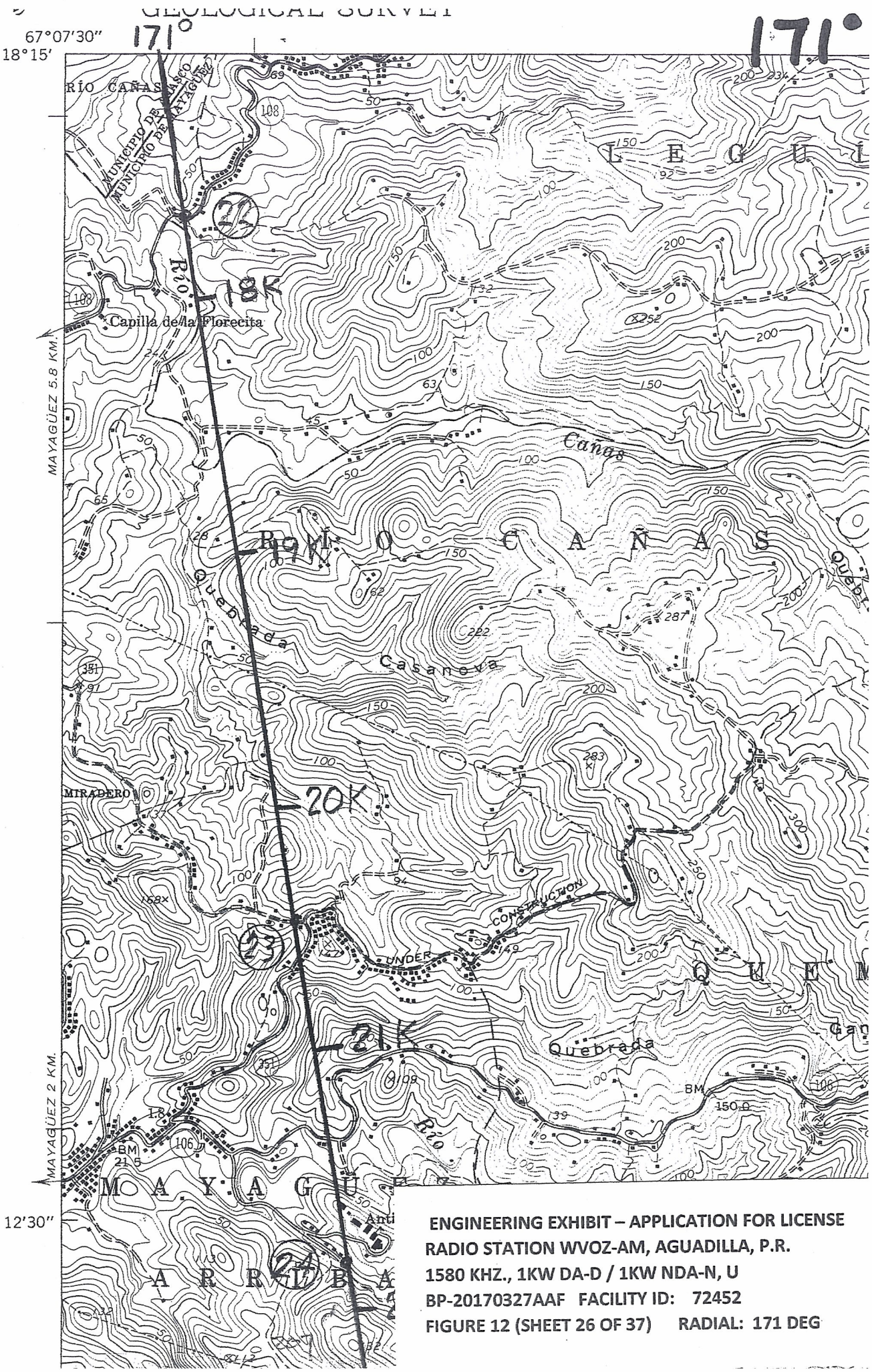
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 25 OF 37) RADIAL: 171 DEG



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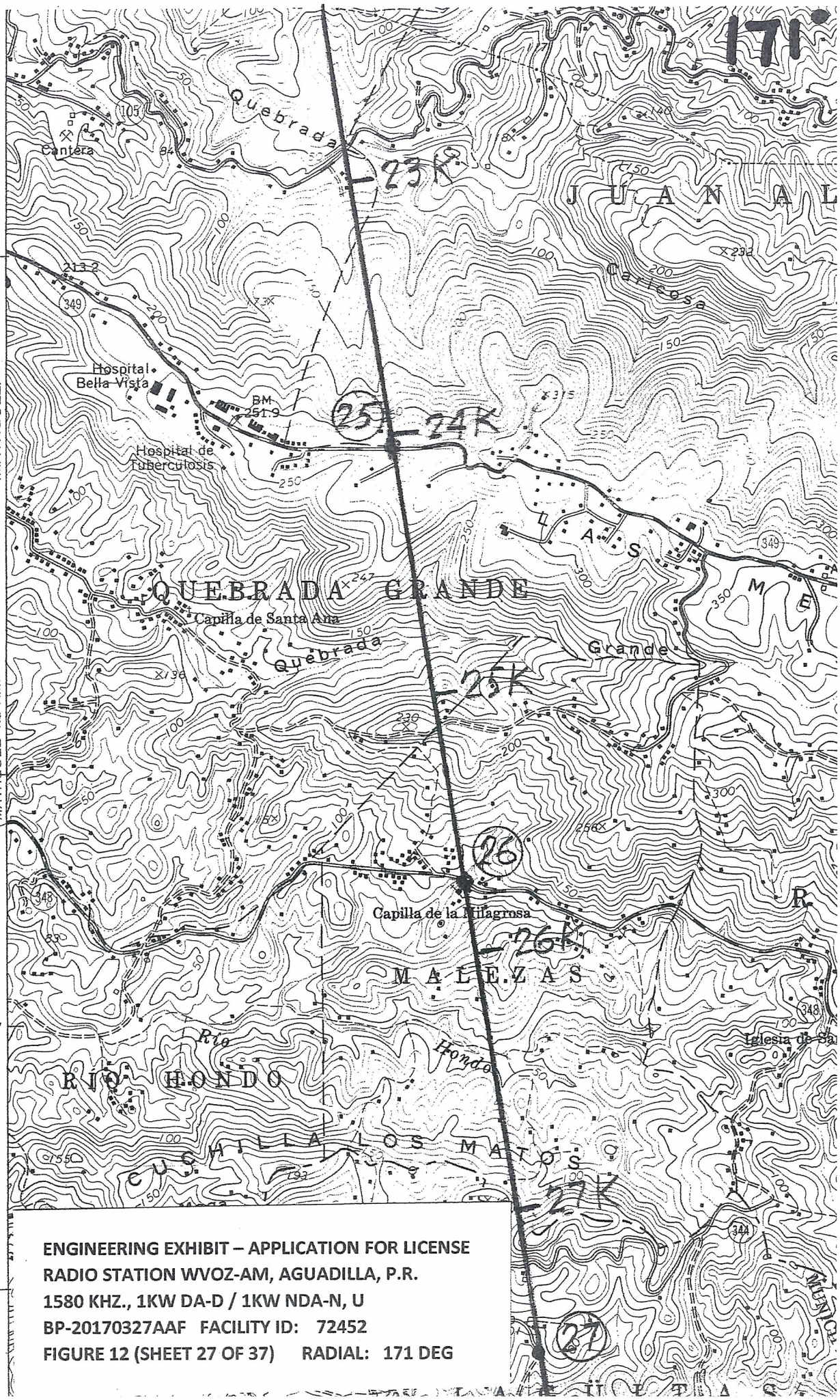
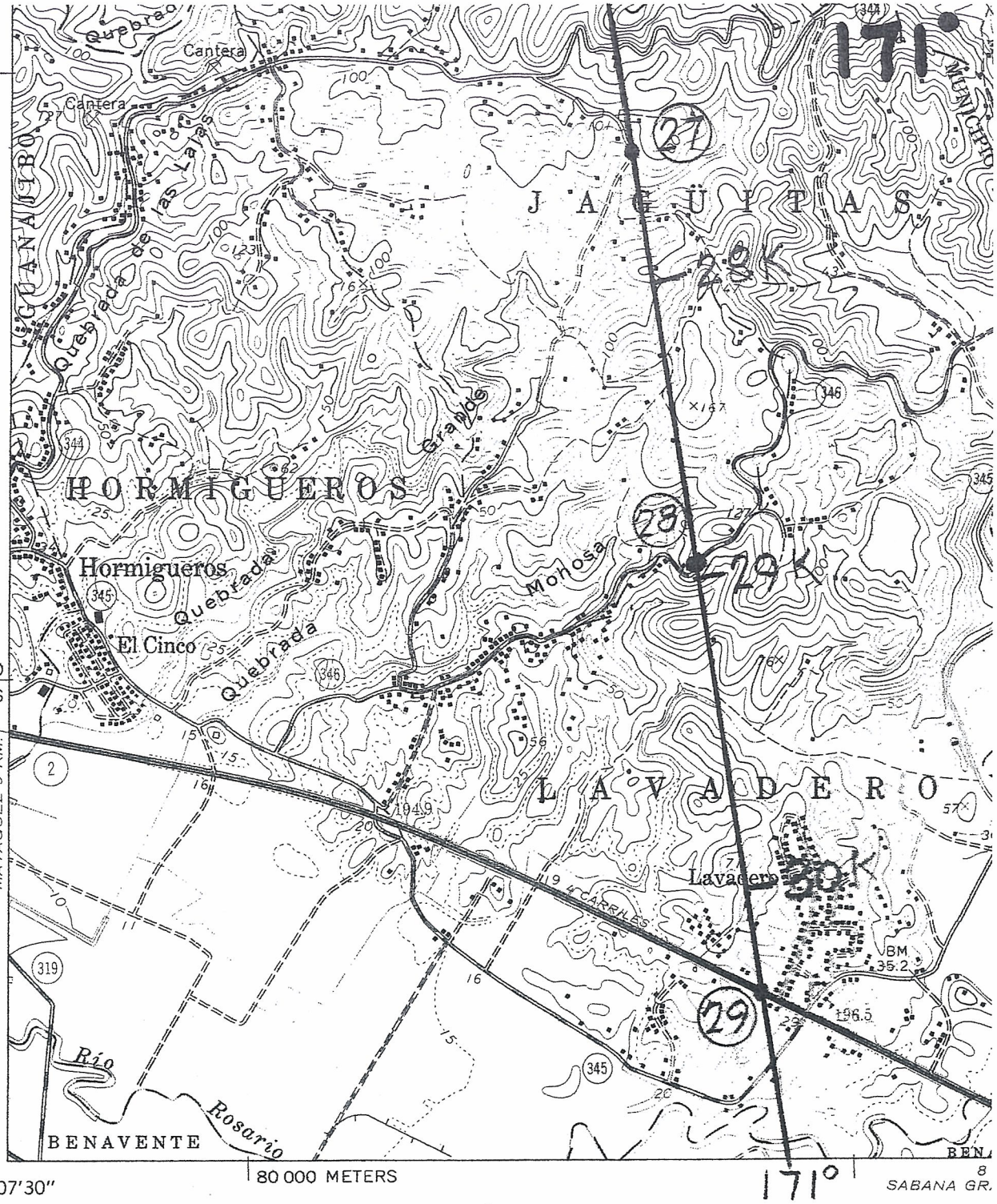
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 26 OF 37) RADIAL: 171 DEG



ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 27 OF 37) RADIAL: 171 DEG



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RADIO STATION WVOZ-AM, AGUADILLA, P.R.
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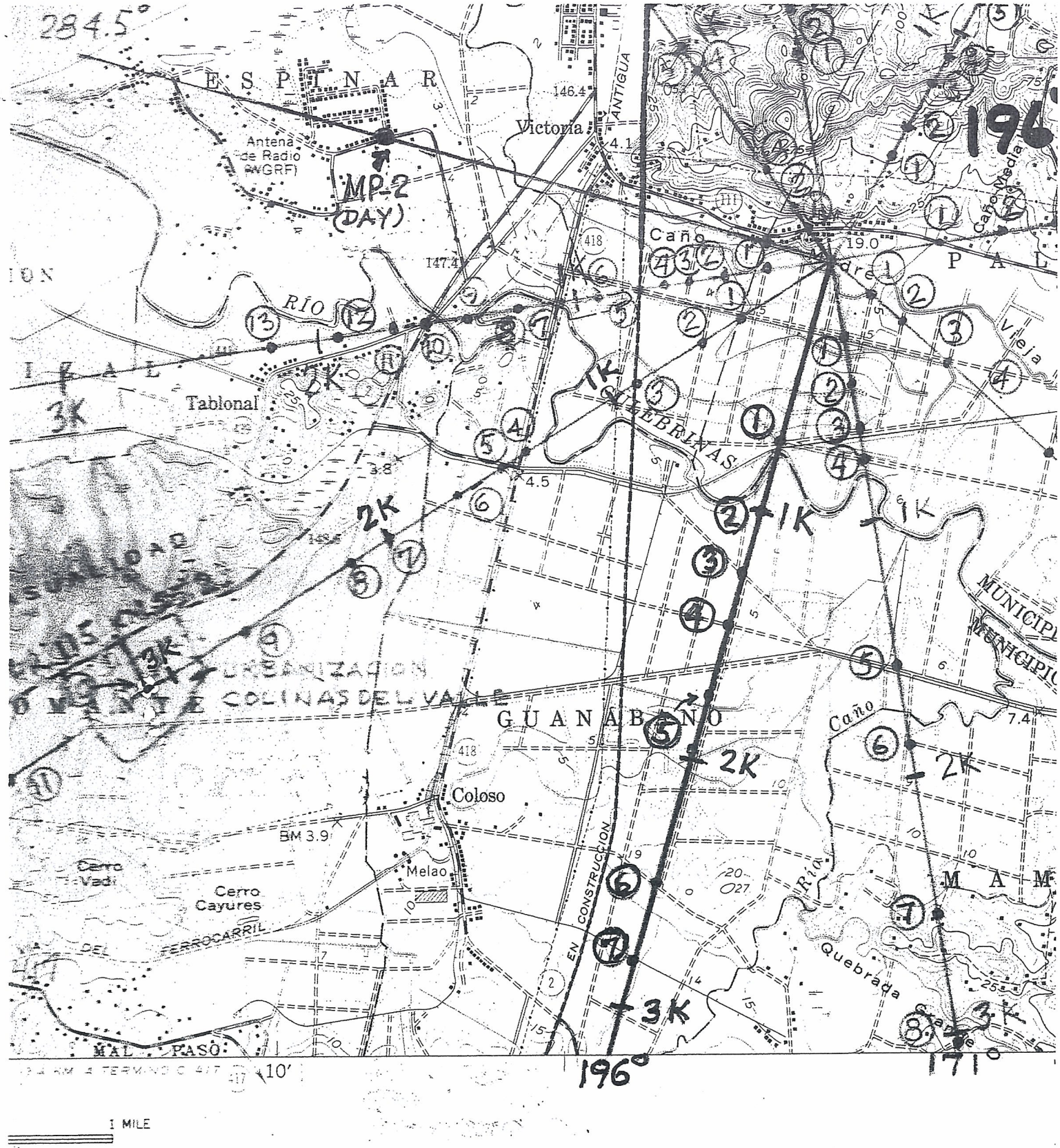
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 28 OF 37) RADIAL: 171 DEG



1 MILE

Heavy-duty.....

Medium-duty.....

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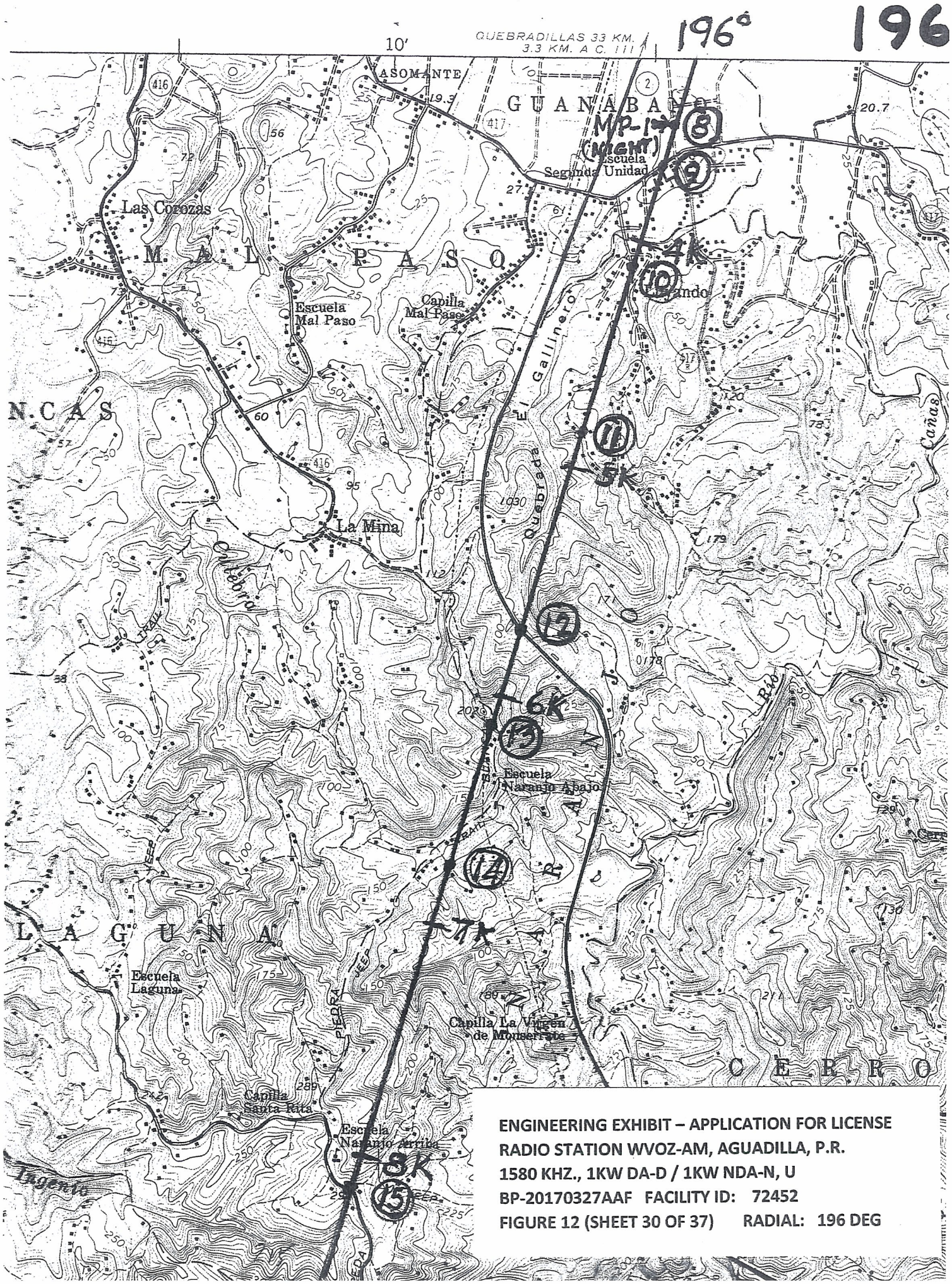
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 29 OF 37) RADIAL: 196 DEG

N, VIRGINIA 22092
P. R. 00910



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RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 30 OF 37) RADIAL: 196 DEG

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RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 31 OF 37) RADIAL: 196 DEG

(MAYAGÜEZ)

E 1:20000

0 — 1 MILE

3000 4000 5000 6000 7000 FEET

0 — 1 KILOMETER

NTERVAL 5 METERS
PRESENT 1-METER CONTOURS
S MEAN SEA LEVEL
S IN FEET—DATUM IS MEAN LOW WATER
HE APPROXIMATE LINE OF MEAN HIGH WATER
DE IS APPROXIMATELY 0.2 METERS

NATIONAL MAP ACCURACY STANDARDS
VER, COLORADO 80225, OR RESTON, VIRGINIA 22092
N AND PUBLIC WORKS, SAN JUAN, P. R. 00910
MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

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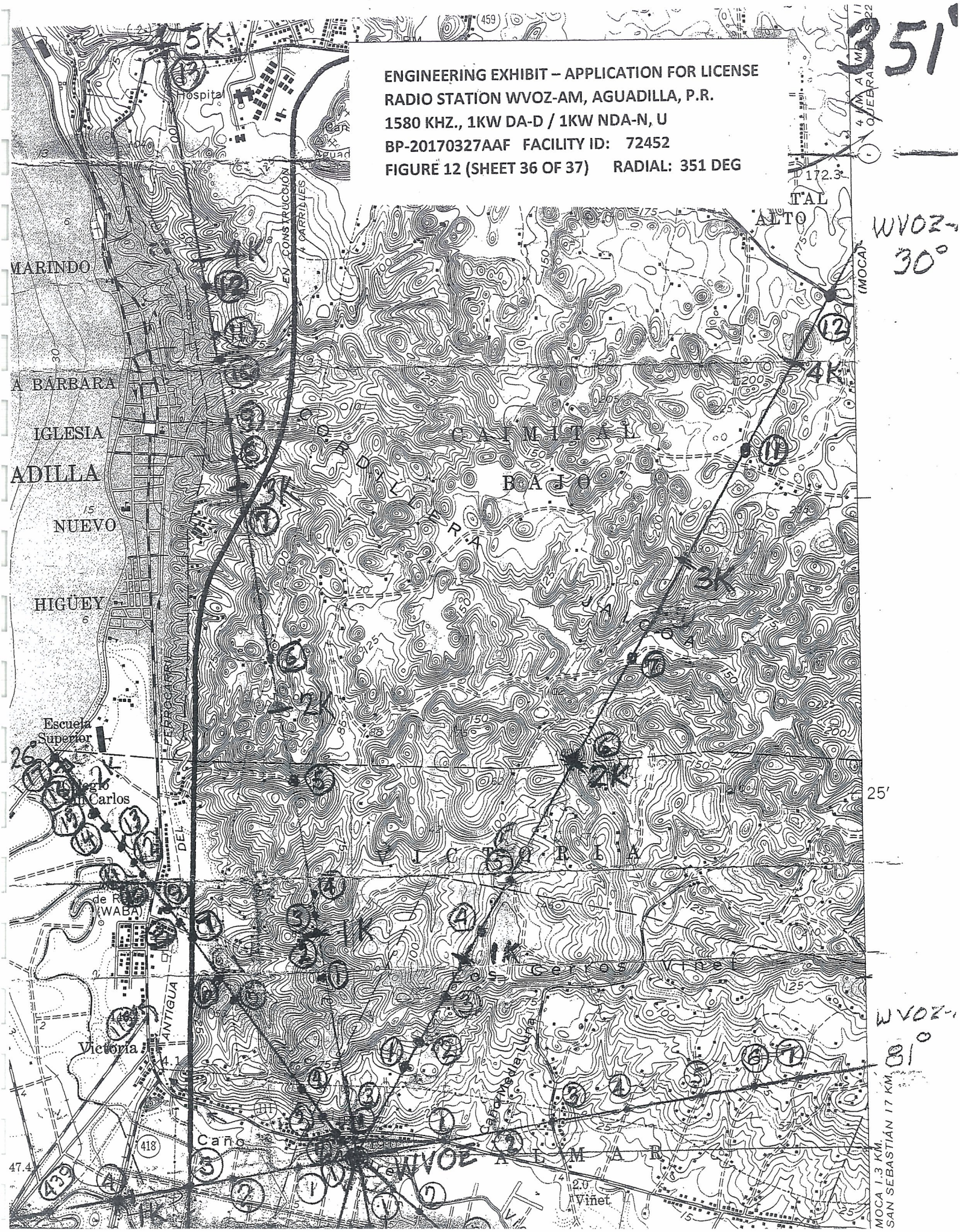
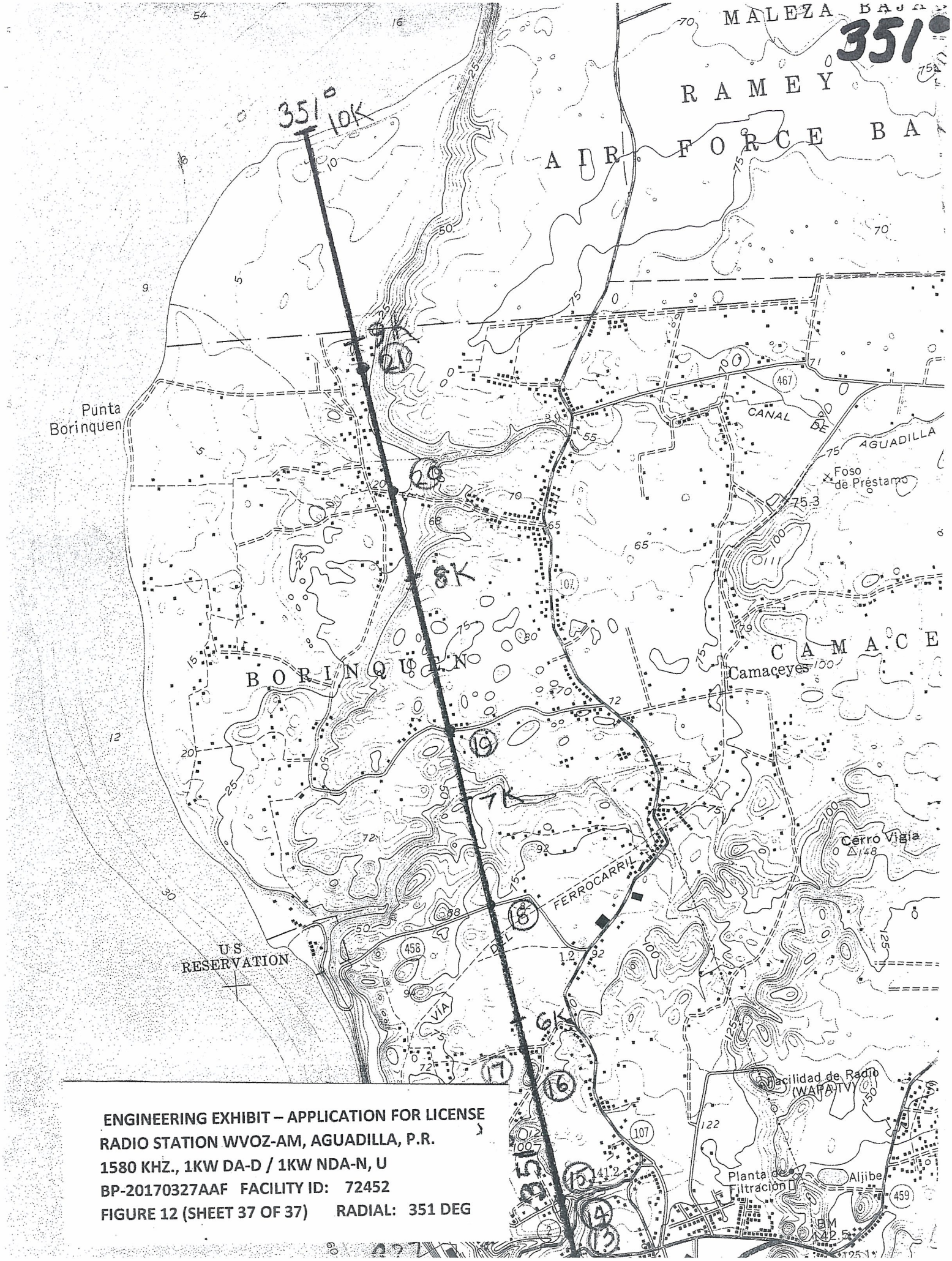
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 32 OF 37) RADIAL: 196 DEG

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 33 OF 37) RADIAL: 261 DEG

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 35 OF 37) RADIAL: 326 DEG

ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 36 OF 37) RADIAL: 351 DEG





ENGINEERING EXHIBIT – APPLICATION FOR LICENSE
RADIO STATION WVOZ-AM, AGUADILLA, P.R.
1580 KHZ., 1KW DA-D / 1KW NDA-N, U
BP-20170327AAF FACILITY ID: 72452
FIGURE 12 (SHEET 37 OF 37) RADIAL: 351 DEG