

RADIO STATION WIBS  
10 KW DA-1 740 KC  
SANTURCE, PUERTO RICO

MODIFICATION OF DA  
APRIL 28, 1950

STANDARD BROADCAST ENGINEERING DATA	Name of applicant <b>Jose E. del Valle</b>
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1. Purpose of authorization applied for: (Indicate by check mark)  
 (If application is for a new station or for any of the changes numbered B through F, complete all paragraphs of this form; if change G is of a character which will change coverage or increase the overall height of the antenna structure more than 15 feet, answer all paragraphs, otherwise complete only paragraphs 2 and 3 and the appropriate other paragraphs; for changes H through M, complete only paragraph 2 and the appropriate other paragraphs; for change N complete only paragraphs 2 and 13.)

- |   |   |
|---|---|
| A. <input type="checkbox"/> Construct a new station<br>B. <input type="checkbox"/> Change power<br>C. <input type="checkbox"/> Change transmitter location<br>D. <input type="checkbox"/> Change frequency<br>E. <input type="checkbox"/> Approval of site and antenna<br>F. <input type="checkbox"/> Special Service Authorization<br>G. <input checked="" type="checkbox"/> Change in antenna system (including addition of FM and TV antennas) | H. <input type="checkbox"/> Change frequency control equipment<br>I. <input type="checkbox"/> Change tubes in last radio stage<br>J. <input type="checkbox"/> Change system of modulation<br>K. <input type="checkbox"/> Change transmitter<br>L. <input type="checkbox"/> Install auxiliary or alternate main transmitter<br>M. <input type="checkbox"/> Other changes (specify)<br>N. <input type="checkbox"/> Change studio location |
|---|---|

If this application is not for a new station, summarize briefly the nature of the changes proposed.

**Change directive antenna system to conform with conditions of grant of CP**

2. Facilities requested		4. Transmitter	
Frequency <b>740 kc</b>	Power in kilowatts Night <b>10 kw</b> Day <b>10 kw</b>	Make <b>no change</b>	Type No. Rated Power

Hours of operation		(If the above transmitter is composite or a type not having received approval by the F.C.C., attach as Exhibit No. a complete showing of transmitter details in accordance with Sections 12, 13, and 14 of the Standards of Good Engineering Practice for Standard Broadcast Stations. Showing should include schematic diagram and full details of frequency control. If changes are to be made in licensed transmitter include schematic diagram and give full details of change.)		
Unlimited <input checked="" type="checkbox"/>	Sharing with (specify stations)			Other (specify)
Daytime only <input type="checkbox"/>				
Limited <input type="checkbox"/>				

3. Antenna system, including ground or counterpoise		5. Modulation monitor	
Non-Directional Antenna: Day <input type="checkbox"/> Night <input type="checkbox"/>	Directional Antenna: Day only (DA-D) <input type="checkbox"/> Night only (DA-N) <input type="checkbox"/> Same constants and power day and night (DA-1) <input checked="" type="checkbox"/> Different constants or power day and night (DA-2) <input type="checkbox"/>	Make <b>no change</b>	Type No.
6. Frequency monitor		Type No.	
		<b>no change</b>	

7. Attach as Exhibit No. **1** map or maps having reasonable scales clearly showing the following: **no change**

(a) Proposed antenna location

(b) General character of the city or metropolitan district, particularly the retail business, wholesale business, manufacturing, residential, and unpopulated areas (by symbols, cross-hatching, colored crayons, or other means)

(c) Heights of buildings or other structures and terrain elevations in the vicinity of the antenna, indicating the location thereof

(d) Transmitter location and call letters of all radio stations (except amateur) and the location of established commercial and government receiving stations within 2 miles of the proposed transmitter location. Call letters and locations of broadcast stations, including FM and television, within 5 miles must be shown.

(e) Terrain and types of soil

Height in feet of complete radiator above base insulator, or above base if grounded <b>300' &amp; 450'</b>	If antenna is either top loaded or sectionalized describe fully as Exhibit No. <b>1 Engr. aff. series</b>
Describe method of exciting antenna	
If shunt excited give: Length of slant wire feed in feet _____ Height of connection to tower above earth in feet _____ Distance from coupling apparatus to tower in feet _____	
If unconventional feed, describe fully as Exhibit No. _____	

If the antenna system is not fully described above, give further details and dimensions including information on high frequency antennas mounted on the towers, as well as on the associated isolation circuits as Exhibit No. <b>N.A.</b> (See Sections 3 and 5 of the Standards of Good Engineering Practice Concerning Standard Broadcast Stations.)	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 250 and 500 m/m contours 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. <b>ON FILE</b>
Submit as Exhibit No. <b>1</b> a plat of the transmitter site showing boundary lines, and roads, railroads, or other obstructions; and also layout of the ground system or counterpoise. Show number and dimensions of ground radials or if a counterpoise is used, show height and dimensions.	

9. Attach as Exhibit No. **1** map or maps (same map or maps supplied for Paragraph 7 may be used) having reasonable scales showing the following: (NOTE: See Standards of Good Engineering Practice Concerning Standard Broadcast Stations and where involved, metropolitan districts according to the latest Census of the Commerce Department shall be outlined on the maps.)

(a) The 500, 250, 25, 5 and 2 m/m contours, both existing and as proposed by the application for both day and night operation. (NOTE: The 2 m/m nighttime contour need not be supplied if service is not rendered thereto.);

## 9. (Continued)

- (b) The normally protected contours of the station both existing and as proposed by the application for both day and night operation. When the application includes 1 kilowatt nighttime operation on a regional channel both the 2.5 and 4.0 mv/m contours should be supplied;
- (c) The interference-free contours of the station both existing and as proposed by the application, for both day and night operation (including nighttime computed RSS for a Class IV station) if the station would be limited inside its normally protected contours by any other station or stations;
- (d) The present normally protected and interference-free contours for both day and night operation of each station to which objectionable interference will be caused (without regard to this interference from the station as proposed by the application);
- (e) The resulting interference-free contours of the stations in (d) above, considering the interference from the operation of the station as proposed by the application.

10. Attach as Exhibit No. **1** a statement describing in detail the methods employed in determining the contours required in Paragraph 9 above (including conductivities, basis therefor and how used, effective fields and how obtained, interference fields, and other pertinent data).

## 11. Areas and populations

(NOTE: See the Standards of Good Engineering Practice Concerning Standard Broadcast Stations. All towns and cities having populations in excess of those given in Table II of Section I of the Standards of Good Engineering Practice are not to be included in the tabulation of populations within the service contours. The 1940 or later Census Minor Civil Division maps are to be used in making population counts, subtracting any towns or cities not receiving adequate service, and where contours cut a minor division assuming a uniform distribution of population within the division, to determine the population included in the contours unless a more accurate count is made.) Attach as Exhibit No. **1** tables of the areas and populations within the contours included in Paragraph 9 above. When applicable, include that area and population within the metropolitan district encompassed by the 2 mv/m daytime and interference-free nighttime contours.)

12. Attach as Exhibit No. **1** a statement giving the basis for the above areas and populations.

## 13. Proposed location of main studio

State	County
<b>Puerto Rico</b>	

City or town	Street and number
<b>Santurce</b>	

## 14. Proposed transmitter location

State	County	City
<b>Puerto Rico</b>		<b>Bayamon</b>

Number and street (or other indication of location)
<b>Route 24 &amp; Bayamon Municipal Limits</b>

I certify that I am the Technical Director, Chief Engineer or Consulting Engineer for the applicant of the radio station for which this application is submitted and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief. (This signature may be omitted provided the engineer's original signed report of the data from which the information contained herein has been obtained is attached hereto.)

  
 J. E. L. L. L. or Consulting Engineer

Date April 25, 1950

Affidavit of W. E. Plummer Concerning  
the Application of Jose E. del Valle at  
Santurce, Puerto Rico to Make Changes  
in the Directive Antenna System of  
Radio Station WIBS

The affiant, W. E. Plummer, is a consulting radio engineer with offices in Washington, D. C. and is a member of the firm of Glenn D. Gillett & Associates. This firm has been retained by Senor Jose E. del Valle to design a directive antenna to reduce the radiation toward Havana, Cuba to 260 mv/m as well as to afford the necessary protection to existing stations for use by Radio Station WIBS with 10 kw DA-1 on 740 kc at its new site.

A new site and directive antenna for use by WIBS was proposed by application File No. BP 7390, engineering affidavit dated October 7, 1949 to comply with the U. S. Navy's request that WIBS move its station. This application was granted subject to reducing the radiation in the direction of CMCD Havana to 260 mv/m. This reduction has been accomplished by a minor change in the parameters of the antenna system and by rotating the axis of the towers 5° counterclockwise.

The resultant radiation pattern and other pertinent information are attached. No other changes are proposed.

April 28, 1950

  
W. E. Plummer

DISTRICT OF COLUMBIA ) SS.

W. E. Plummer, being first duly sworn on his oath, deposes and says that he is the above named affiant

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

W. E. Plummer

W. E. Plummer

Subscribed and sworn to before me this 28<sup>th</sup>  
day of April, 1950.

Patricia P. Linton

Notary Public

My commission expires April 14, 1951

**RADIO STATION WIBS  
10 KW      DA-1      740 KC  
SANTURCE, PUERTO RICO**

**LIST OF APPENDICES  
APRIL 28, 1950**

1. Description of antenna system
2. Tower location and ground system
3. Horizontal radiation pattern
4. Vertical radiation patterns
5. Map showing location of site and pertinent contours
6. Map showing location of pertinent contours
7. Basis for location of contours
8. Population and area data
9. Basis for area and population
10. Horizontal radiation pattern data
11. Vertical radiation patterns data
12. Interference data, Form 97307 B

RADIO STATION WIBS  
 10 KW DA-1 740 KC  
 SANTURCE, PUERTO RICO

DESCRIPTION OF ANTENNA SYSTEM

A. Number of Elements:

Day - N = 3

Night - N = 3

B. Type of Each Element:

Guyed, insulated, constant cross-section towers

C. Loading:

Tower No. 1 - top loaded by guys to 180°

Tower No. 2 and 3 - none

D. Height of Vertical Lead Above Insulators:

Tower No. 1 = 450' loaded to 180°

Tower No. 2 = 300' or 86°

Tower No. 3 = 300' or 86°

E. Height Overall: (above ground level)

Tower No. 1 = 455'

Tower No. 2 = 305'

Tower No. 3 = 305'

F. Height Overall Above Mean Sea Level:

Site = 30'

Tower No. 1 = 485'

Tower No. 2 = 335'

Tower No. 3 = 335'

G. Orientation of Array (referred to Tower No. 1):

Tower No. 1 =  $\beta_1$  = reference

Tower No. 2 =  $\beta_2$  = 350

Tower No. 3 =  $\beta_3$  = 200

H. Phasing of Elements:

Tower No. 1: Zero or reference time phase

Tower No. 2:  $\psi_2$  = 76° (lead)

**H. Phasing of Elements: (continued)**Tower No. 3:  $\psi_3 = -130$  (lag)**I. Spacing of Elements:**

$$s_2 = 120^\circ 443'' \quad s_3 = 120^\circ 443'$$

$$\phi_{23} = 310^\circ$$

**J. Ground System:**

120 radials 330 feet long, equally spaced about each tower and buried approximately six inches. A 64 foot expanded copper mesh ground screen will be used under the center tower and a 48 foot expanded copper mesh ground screen will be used under each of the end towers.

**K. Element Fields:**Day  $E_1 = 1.0$   $E_2 = 0.5$   $E_3 = 0.35$ Night  $E_1 = 1.0$   $E_2 = 0.5$   $E_3 = 0.35$ **L. Computed RMS Field:**

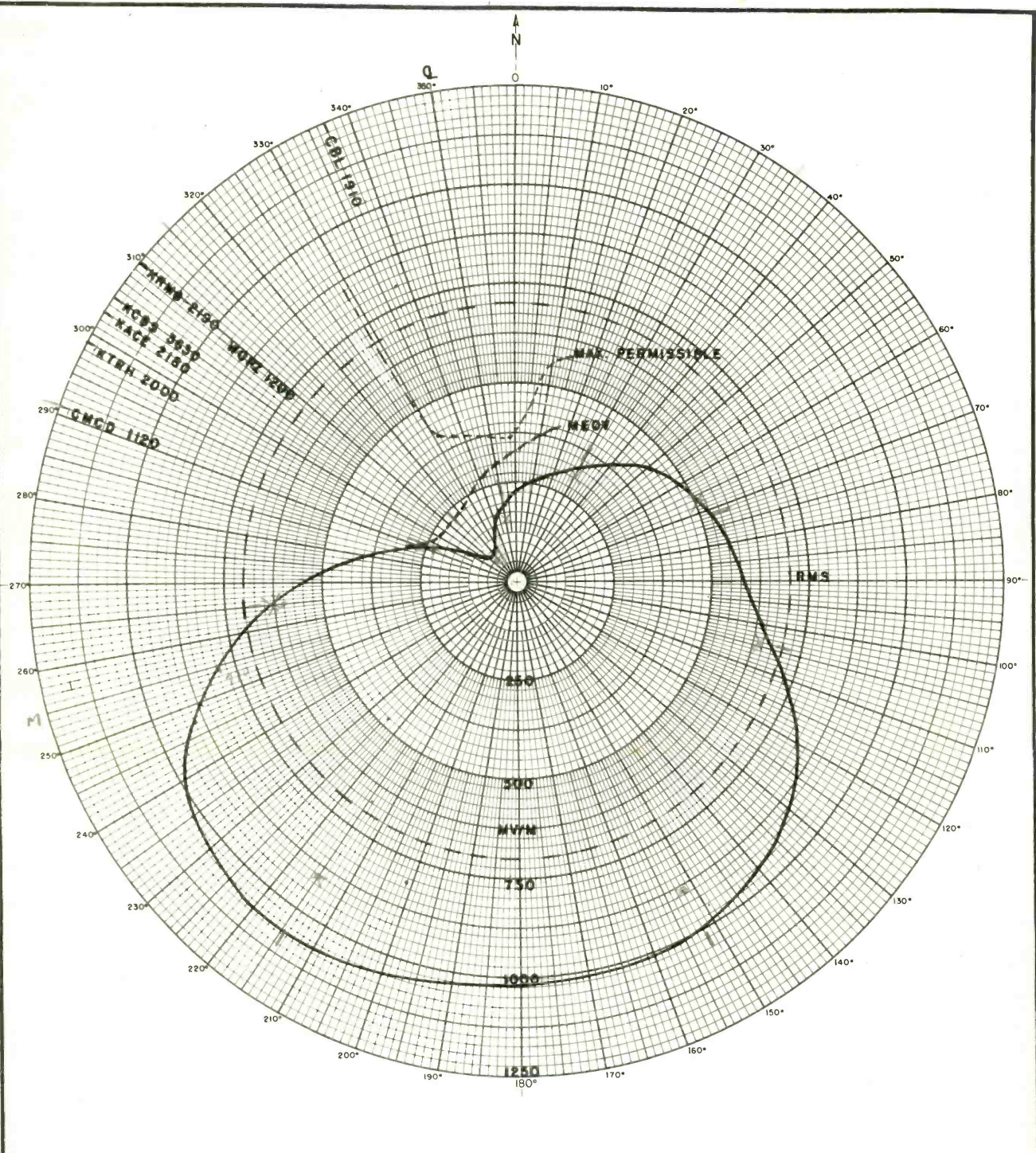
700 mv/m for 10 kw

221 mv/m for 1 kw

**M. Location of Site:**North Latitude  $18^\circ 25' 25''$ West Longitude  $66^\circ 8' 22''$

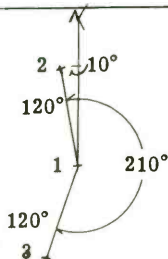






**ANTENNA PARAMETERS**

Glenn D. Gillett And Associates  
 Consulting Radio Engineers  
 National Press Building  
 Washington, D.C.



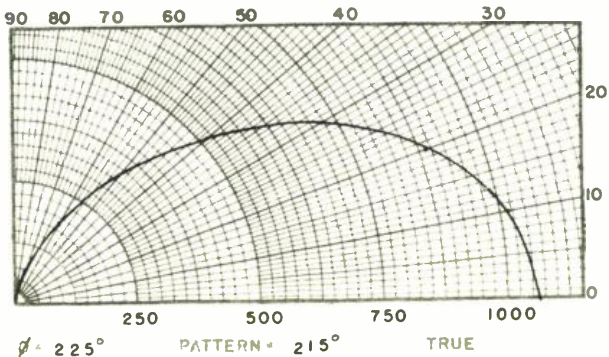
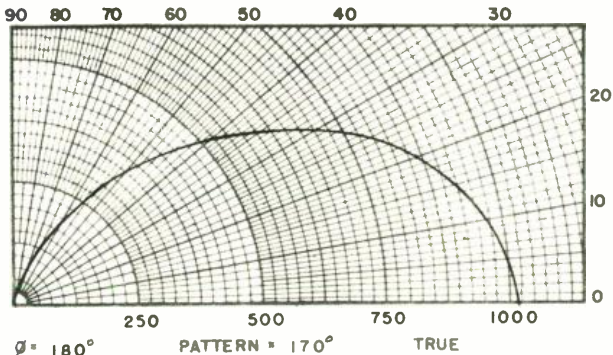
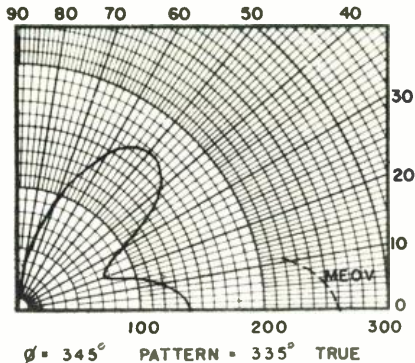
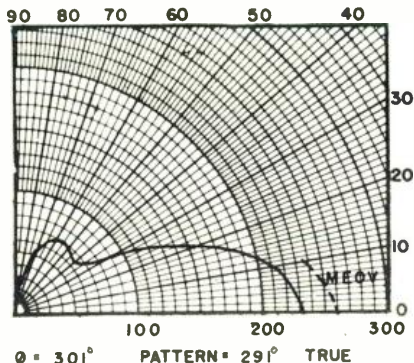
Tower No.	Electrical Height G'	True Tower Orientation G'	Spacing S'	Phasing V'	Horizontal Field mv/m E	Field Ratio F	Elev. Angle G'	Elevation RMS Field mv/m E <sub>G</sub>
0							0	
1	180	0	0	0	1.0		10	
2	86	350	120	76	.5			
3	86	200	120	-130	.35		30	
4							40	
5							50	
6							60	
7							70	
8							80	
9								

**WBS**  
**SANTURCE, PUERTO RICO**  
 10 KW DA-1 740 KC  
**PROPOSED**  
**HORIZONTAL RADIATION PATTERN**

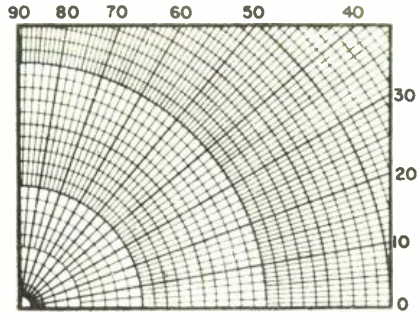
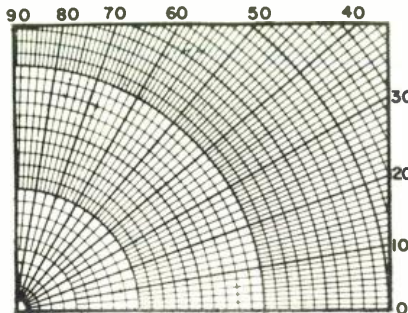
Latitude 18° 25' 25"  
 Longitude 66° 08' 22"

Supercedes 491005  
 Pattern No. 500425

# VERTICAL RADIATION PATTERNS

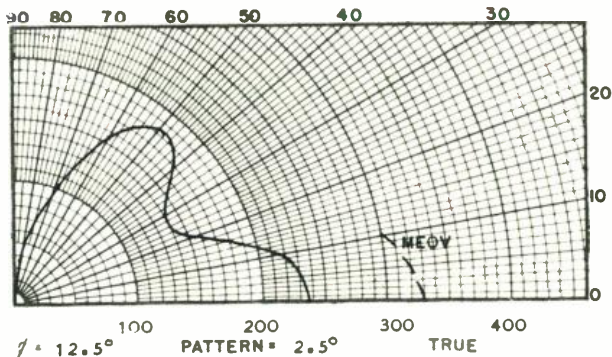
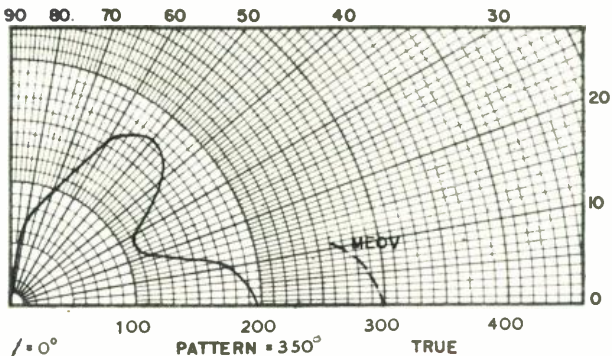


# VERTICAL RADIATION PATTERNS



0° PATTERN = TRUE

0° PATTERN = TRUE





UNITED STATES  
 BAYAMON QUADRANGLE DEPARTMENT OF THE INTERIOR  
 GEOLOGICAL SURVEY  
 7 1/2-MINUTE SERIES

1:62,500 METERS

T I C O

0 C E

75 MVM



Borders and municipality boundaries by the Puerto Rico Planning, Zoning, and Zoning Board

TRUE NORTH  
 MAGNETIC NORTH  
 QUAYNARD I.S.R.M.  
 L.A. MUDA I.S.M.C. NO. 17 8.9 P.M.

Topography by J. L. Watkins and H. G. Warner  
 Surveyed in 1939-1940  
 Landmark buildings only are shown and occupation within the city of San Juan

Colonia Santa Rosa  
 Topographic data on U.S. maps from S.T. Thomas  
 2,000 meter spot based on Puerto Rico rectangular coordinate system

BAYAMÓN, P. R.  
 Edition of 1947  
 418225-418225/2/3

Scale: 1:62,500 METERS  
 1:62,500 METERS  
 1:62,500 METERS  
 1:62,500 METERS

These data have been substituted using each scale, but of course, a larger scale is better.

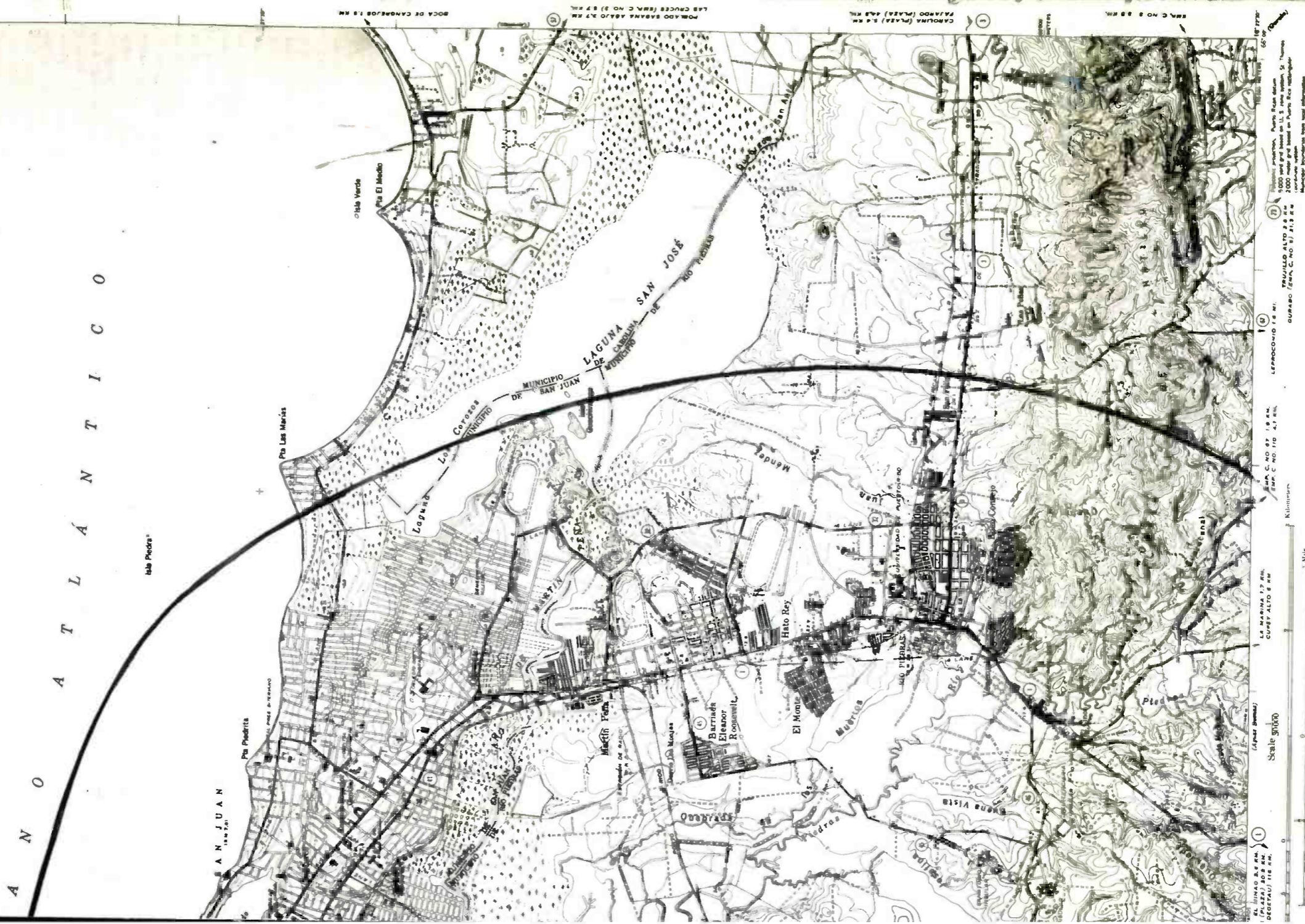
Scale: 1:62,500 METERS

WIBS

SANTURCE, PUERTO RICO  
TO KW DA-1 740 KC

LOCATION PROPOSED SITE  
AND PERTINENT CONTOURS

GLENN D. GILLETT & ASSOCIATES  
CONSULTING RADIO ENGINEERS  
WASHINGTON 4, D. C.



Scale 5000'



Contour Interval 5 meters  
Datum is mean sea level

SAN JUAN, P. R.  
Edition of 1947  
118275-16000/75

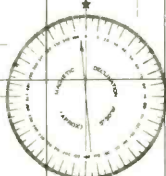
A T L A N T I C O C E A N

C A R I B B E A N S E A

**WIBS**  
 SANTURCE, PUERTO RICO  
 10 KW DA-1 740 KC  
 LOCATION OF CONTOURS  
 GLENN D. GILLET & ASSOCIATES  
 CONSULTING RADIO ENGINEERS  
 WASHINGTON 4, D.C.

**WIBS**

25 MWIM  
 15 MWIM  
 10 MWIM  
 7.5 MWIM  
 5 MWIM  
 4.1 MWIM  
 2.5 MWIM  
 2 MWIM



- LEGEND**
- Primary Roads Surfaced
  - Secondary Roads Surfaced
  - Tertiary Roads Unsurfaced
  - Trails
  - Road Numbers
  - Kilometer Markers
  - Road Mileage
  - Cities over 50,000
  - City Sliver Seats
  - Towns
  - Villages
  - Sugar Controls
  - Municipal Boundaries
  - Navigation Markers
- Note: Accumulated mileage between stops shown in red. Sectional mileage between towns and road junctions shown in blue.

Scale 1:300,000

TEN THOUSAND YARD WORLD POLYCONIC GRID, BAND Vn, ZONE J  
 THE LAST THREE DIGITS OF THE GRID NUMBERS ARE OMITTED

ROAD MAP  
**ISLAND OF PUERTO RICO**  
 N1748-W6529/48x148

Basic control from Department of Interior Ins Govt  
 Island of Puerto Rico  
 Corrections & detail from PR Aerial Survey quads,  
 USGS field sheets & military reconnaissance reports  
 Compiled & printed by Office of the Department  
 Engineer, P.R.D., San Juan. Edition of 1941



RADIO STATION WIBS  
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SANTURCE, PUERTO RICO

BASIS FOR LOCATION OF CONTOURS

The location of the pertinent contours was determined from Appendix 1, Graph 7 of the Standards of Good Engineering Practice using the conductivities determined by the WIBS Proof of Performance at its present site (on file with the Federal Communications Commission) and the antenna radiation Appendix 3 of this exhibit. The conductivity was found to vary from  $20 \times 10^{-14}$  along the coast to  $3 \times 10^{-14}$  across the mountains. The FCC Figure 3 does not include Puerto Rico.

The effective antenna fields in various directions were computed in accordance with standard practice.

Interference fields were computed in accordance with the Standards of Good Engineering Practice (Appendix 12, Exhibit 1).

**RADIO STATION WIBS**  
**10 KW      DA-1      740 KC**  
**SANTURCE, PUERTO RICO**

**AREAS AND POPULATION**

Paragraph 11, Section V-A, FCC Form 301

(a) Number of persons residing within the following contours:

	<u>500 mv/m</u>	<u>250 mv/m</u>	<u>25 mv/m</u>	<u>5 mv/m</u>	<u>2 mv/m</u>
<u>Existing</u>					
Night	1520	6500	552,500	1,248,000	1,629,300
Day	1520	6500	552,500	1,248,000	1,629,300
<u>Proposed</u>					
Night	859	20,196	410,200	1,058,000	1,490,000
Day	859	20,196	410,200	1,058,000	1,490,000

(b) Area and population within the normally protected contours:

	<u>Contours (mv/m)</u>	<u>Area (sq. mi.)</u>	<u>Persons</u>
<u>Existing</u>			
Night	2.5	2800	1,557,300
Day	0.5	3355	1,787,700
<u>Proposed</u>			
Night	2.5	2410	1,338,000
Day	0.5	3355	1,787,700

(c) Area and population within the interference-free contours:

	<u>Contours (mv/m)</u>	<u>Area (sq. mi.)</u>	<u>Persons</u>
<u>Existing</u>			
Night	4.1	2060	1,210,000
Day	0.5	3355	1,787,700
<u>Proposed</u>			
Night	4.1	1968	1,180,000
Day	0.5	3355	1,787,700

(d) Area and population within the normally protected and interference-free contours of other stations to which objectionable interference may be caused by operation as proposed:

	<u>Contours (mv/m)</u>	<u>Area (sq. mi.)</u>	<u>Persons</u>
Night	not applicable		
Day	not applicable		

WIBS

Page 2

(e) Area and population within the resulting interference-free contours of the stations in (d):

	<u>Contours (mv/m)</u>	<u>Area (sq. mi.)</u>	<u>Persons</u>
Night	not applicable		
Day	not applicable		

Population of city of San Juan	169,247
Population of San Juan Senatorial District	397,730

**RADIO STATION WIBS  
10 KW DA-1 740 KC  
SANTURCE, PUERTO RICO**

**BASIS FOR AREA AND POPULATION  
Required by Paragraph 12, Section V-A, FCC Form 301**

The area of each contour was obtained by means of a planimeter.

The population within each contour except the blanket contours was determined by drawing the contour on a U.S. 1940 Census Minor Civil Division map and enumerating the divisions included. Where a contour cut a minor civil division the population was assumed to be distributed uniformly unless a town was shown in which case the remainder of the population was assumed to be distributed evenly. All towns or cities having a population in excess of the values given in Table II of Section I of the Standards of Good Engineering Practice were excluded.

The population within the 500 and 250 mv/m contours was determined by plotting the contours on a large scale county map, counting houses within these contours and multiplying by 3.7.

RADIO STATION WIBS  
10 KW DA-1 740 KC  
SANTURCE, PUERTO RICO

HORIZONTAL RADIATION DATA

E MV/M			E MV/M		
<u>Ø PATTERN</u>	<u>Ø TRUE</u>	<u>NIGHT &amp; DAY</u>	<u>Ø PATTERN</u>	<u>Ø TRUE</u>	<u>NIGHT &amp; DAY</u>
0	350	196	190	180	1022
10	0	231	200	190	1026
20	10	259	210	200	1059
30	20	287	220	210	1064
40	30	329	230	220	1064
50	40	385	240	230	1036
60	50	448	250	240	980
70	60	490	260	250	868
80	70	525	270	260	721
90	80	553	280	270	553
100	90	581	290	280	392
110	100	644	300	290	252
120	110	728	310	300	147
130	120	826	320	310	98
140	130	903	330	320	91
150	140	959	340	330	119
160	150	994	350	340	161
170	160	1008			
180	170	1015			

RADIO STATION WIBS  
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SANTURCE, PUERTO RICO

VERTICAL PLANE RADIATION DATA

ELEVATION ANGLE $\theta$	Station	C. L.				CMCD	CBL
	$\theta$ True	350	2.5	170	215	291	335
	$\theta$ Pattern	0	12.5	180	225	301	345
0		196	238	1015	1060	231	140
10		175	217	973	1022	210	119
20		119	154	868	896	154	77
30		112	140	707	721	91	98
40		154	168	525	518	64	154
50		175	182	350	336	69	168
60		154	154	196	182	69	147
70		98	98	84	70	52	91
80		63	35	0	0	18	36

	KACE 5 kw	KCBS 5 kw	KRMG 10 kw	KTRH 50 kw	WIBS 10 kw	WORZ 1 kw	CBL	CMCD
1 Miles	2180	3630	2190	2000		1200	1910	1120
2 Horizontal Angle	111.8	90	114	107.2		123.5	--	1045
3 Vertical Angle	0	0	0	0		2	0	2
4 Radiation on Gnd.	350	320	610	300		272	1768	765
5 Radiation at VL	350	320	610	300		272	1768	765
6 20 x E	.084	.084	.104	.104		.375	.118	.485
7 Limit	<.5	<.5	.51	<.5		1.04	2.09	3.56

- 1 Miles
- 2 Horizontal Angle
- 3 Vertical Angle
- 4 Radiation on Gnd.
- 5 Radiation at VL
- 6 20 x E
- 7 Limit

### REMARKS

RSS interference with WIBS = 4.15 mv/m

Frequency 740 kc  
 Power 10 kw  
 Time of Operation U  
 DA (1)  
 Non-DA Antenna  
 MV/M/KW Day  
 MV/M/KW Night  
 (Theac. P.P. ED. Estim.)

CALL WIBS  
 Location Sautter P.R.

File No.  
 Date Amended  
 EXIST. or PEND.

GLENN D. GILLET & ASSOCIATES  
 NATIONAL PRESS BUILDING  
 WASHINGTON 4, D. C.

500425

