

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

ENGINEERING STATEMENT
WICHITA BROADCASTERS
620 KC, 5000 WATTS DA-N
FILE NO. B3-P-4101 - DOCKET NO. 6970

11/27/46

ENGINEERING STATEMENT OF THE FIRM OF A. EARL CULLUM, JR., CONSULTING RADIO ENGINEERS, IN CONNECTION WITH THE APPLICATION OF WICHITA BROADCASTERS, LICENSEE OF RADIO STATION KWFT, WICHITA FALLS, TEXAS, FOR CONSTRUCTION PERMIT, FILE NUMBER B3-P-4101, DOCKET NUMBER 6970. IT IS PROPOSED TO INSTALL AN FM ANTENNA ON ONE ELEMENT OF THE DIRECTIONAL ARRAY PROPOSED BY RADIO STATION KWFT.

* * * * *

I, D. A. PETERSON, AM A RADIO ENGINEER ASSOCIATED WITH THE FIRM OF A. EARL CULLUM, JR., CONSULTING RADIO ENGINEERS, WITH OFFICES LOCATED IN DALLAS, TEXAS. I GRADUATED FROM THE ENGINEERING SCHOOL OF SOUTHERN METHODIST UNIVERSITY IN 1934 WITH A BACHELOR OF SCIENCE DEGREE IN ELECTRICAL ENGINEERING. MY EXPERIENCE INCLUDES ALMOST CONTINUOUS EMPLOYMENT BY BROADCAST STATIONS SINCE 1933. SINCE 1940, I HAVE BEEN ASSOCIATED WITH THE FIRM OF A. EARL CULLUM, JR.

THIS FIRM HAS BEEN EMPLOYED BY WICHITA BROADCASTERS, LICENSEE OF RADIO STATION KWFT, WICHITA FALLS, TEXAS, TO PREPARE THE ENGINEERING MATERIAL IN CONNECTION WITH THE APPLICATION FOR CONSTRUCTION PERMIT, FILE NUMBER B3-P-4101, DOCKET NUMBER 6970. IT IS PROPOSED TO INSTALL AN FM ANTENNA ON ONE ELEMENT OF THE DIRECTIONAL ARRAY PROPOSED BY RADIO STATION KWFT.

PROPOSED OPERATING CONDITIONS

THE PENDING APPLICATION FOR CONSTRUCTION PERMIT FOR RADIO STATION KWFT PROPOSES OPERATION ON THE 620-KILOCYCLE CHANNEL IN THE VICINITY OF WICHITA FALLS, TEXAS, WITH 5000 WATTS OF POWER UNLIMITED TIME USING A DIRECTIONAL ANTENNA DURING NIGHTTIME HOURS.

THE DIRECTIONAL ANTENNA CONSISTS OF FOUR VERTICAL, SELF-

SUPPORTING RADIATORS EACH HAVING AN OVERALL HEIGHT OF 405 FEET ABOVE THE GROUND. NONDIRECTIONAL OPERATION DURING DAYTIME HOURS IS OBTAINED BY USING ONE TOWER OF THE FOUR-ELEMENT ARRAY AND DETUNING THE OTHER TOWERS.

THE PROPOSED INSTALLATION OF AN FM ANTENNA ON THE SOUTHEAST TOWER WILL CAUSE NO CHANGE IN THE OVERALL TOWER HEIGHT OF 405 FEET ABOVE THE GROUND. THE TOP PORTION OF THIS TOWER WILL BE REPLACED BY THE FM ANTENNA. THE CROSS-SECTION OF THE PROPOSED FM ANTENNA IS COMPARABLE TO THAT OF THE TOWER. NO SIGNIFICANT CHANGE WILL BE CAUSED TO THE BASE IMPEDANCE OF THE SOUTHEAST ELEMENT OR TO THE DIRECTIONAL PATTERN OF THE ARRAY BY THE SUBSTITUTION OF THE FM ANTENNA FOR THE TOP PORTION OF THE SOUTHEAST TOWER.

IT WILL BE NOTED THAT THE APPLICATION OF WICHITA BROADCASTERS FOR CONSTRUCTION PERMIT TO ESTABLISH AN FM BROADCAST STATION IN THE VICINITY OF WICHITA FALLS, TEXAS, SPECIFIES AN OVERALL ANTENNA HEIGHT OF 1,364 FEET ABOVE MEAN SEA LEVEL. MY STATEMENT OF FEBRUARY 20, 1946 IN CONNECTION WITH THE APPLICATION OF WICHITA BROADCASTERS FOR CONSTRUCTION PERMIT TO MODIFY EXISTING DIRECTIONAL ANTENNA OF STANDARD BROADCAST STATION KWFT, WICHITA FALLS, TEXAS, SPECIFIED AN OVERALL ANTENNA HEIGHT OF 1,405 FEET ABOVE MEAN SEA LEVEL. THE ELEVATION OF 1,364 FEET SPECIFIED IN THE FM APPLICATION IS CORRECT, BECAUSE IT IS BASED ON MORE ACCURATE INFORMATION CONCERNING THE ELEVATION OF THE SITE. THE HEIGHT OF A STANDARD WARNING BEACON IS INCLUDED IN THE ELEVATION OF 1,364 FEET.

IT IS PROPOSED TO INSTALL THE COAXIAL TRANSMISSION LINE TO

THE FM ANTENNA IN THE MANNER SHOWN IN THE ATTACHED FIGURE. THIS INSTALLATION WILL PLACE A REACTIVE SHUNT ACROSS THE BASE OF THE SOUTHEAST TOWER. THIS REACTANCE WILL BE CAUSED BY A SHORT-CIRCUITED HIGH-IMPEDANCE SECTION OF LINE APPROXIMATELY 83 DEGREES IN LENGTH AND WILL BE OF THE ORDER OF SEVERAL HUNDRED OHMS. THE EFFECT OF THIS SHUNT CAN READILY BE COMPENSATED BY ADJUSTING THE NETWORK AT THE BASE OF THE TOWER.

LIST OF ATTACHED FIGURES

IN CARRYING OUT THE ENGINEERING STUDIES, THE FOLLOWING FIGURE WHICH IS ATTACHED WAS PREPARED UNDER MY DIRECTION:

1. SKETCH OF THE PROPOSED ANTENNA SYSTEM SHOWING INSTALLATION OF THE FM ANTENNA AND FM TRANSMISSION LINE OF THE SOUTHEAST TOWER OF THE PROPOSED KWFT DIRECTIONAL ARRAY.

CONCLUSIONS

FROM THE ABOVE, IT WILL BE SEEN THAT THE PROPOSED INSTALLATION OF AN FM ANTENNA ON THE SOUTHEAST TOWER OF THE PROPOSED KWFT DIRECTIONAL ARRAY WILL CAUSE NO CHANGE IN THE DIRECTIONAL PATTERN AND NO CHANGE IN DAY OR NIGHTTIME SERVICE. THE SLIGHT CHANGE IN BASE IMPEDANCE OF THE SOUTHEAST TOWER WILL BE COMPENSATED BY ADJUSTMENTS IN THE PHASING AND COUPLING NETWORKS.

A. EARL CULLUM, JR.

CONSULTING RADIO ENGINEERS

NOVEMBER 27, 1946

BY 
D. A. PETERSON

STATE OF TEXAS)
)
COUNTY OF DALLAS)

881

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

D. A. Peterson

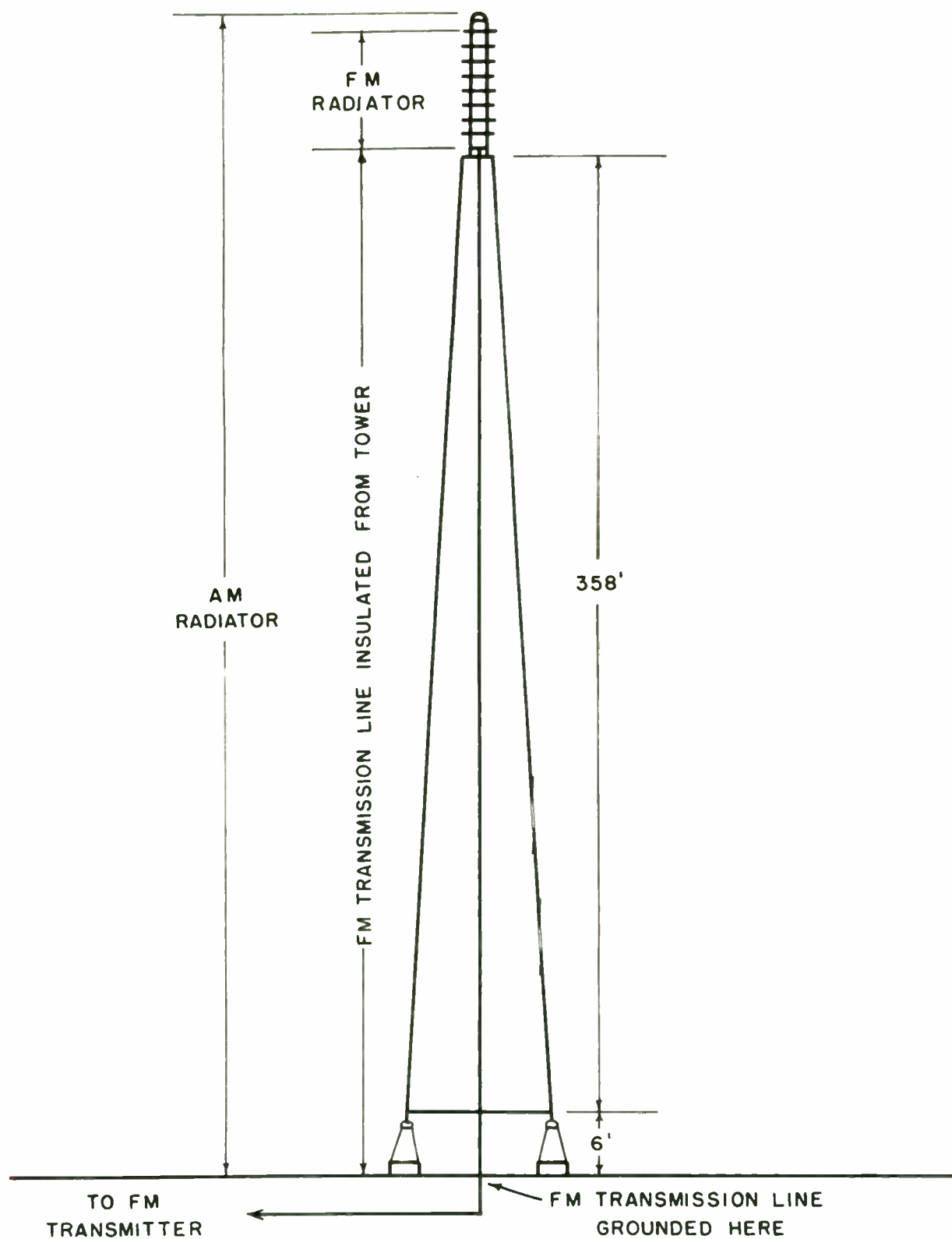
D. A. PETERSON

SUBSCRIBED AND SWORN TO BEFORE ME THIS 27TH DAY OF NOVEMBER, 1946.

E. L. Jackson

NOTARY PUBLIC IN AND FOR
DALLAS COUNTY, TEXAS

MY COMMISSION EXPIRES JUNE 1, 1947



A. EARL CULLUM, JR.
CONSULTING RADIO ENGINEERS
DALLAS 461124

RADIO STATION KWFT
620 KC 5000 WATTS DA
FIGURE 1

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

REGULAR BROADCAST STATION CONSTRUCTION PERMIT

Modified as of February 10, 1948

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made thereunder, and further subject to the conditions set forth in this permit, authority is hereby granted to K.W.F.T., INC.

to construct a radio transmitting station located and described as follows:

1. Location of transmitter: State Texas County Wichita
City or town Near Wichita Falls Street and number Resettlement Road
Approx. 2½ miles WNW at

N. Latitude: Degrees 33, minutes 55, seconds 07.42

W. Longitude: Degrees 98, minutes 32, seconds 37.21

2. Location of main studio: State Texas County Wichita
City or town Wichita Falls Street and number 800 Eighth Street

3. Description of transmitting apparatus:

R.C.A. MFG. CO., Type 5DX Broadcasting Transmitter.
Direct Crystal Control. Last radio stage: one
5-kilowatt vacuum tube for high level modulation
(Federal 892-R). Maximum rated carrier power out-
put 5 kilowatts.

Directional Antenna Specifications and Painting and
Lighting requirements in accordance with specifications
attached to Modification of Construction Permit BMP-3424
dated December 16, 1947.

Power to be determined by the direct method (Sec. 3.51).

4. The frequency, operating power, and hours of operation will be as follows:

(a) Frequency 620 kilocycles. *Employing directional antenna night.

(b) Power (1) Night ... 5 kilowatts *....

(2) Day 5 kilowatts **....

(c) Hours of operation Unlimited time.

****Average hours of local sunrise and sunset:**

Feb. 7:15 am to 6:15 pm; Mar. 6:45 am to 6:45 pm; Apr. 6:00 am to 7:00 pm;
May 5:30 am to 7:30 pm; June 5:15 am to 7:45 pm; July 5:30 am to 7:45 pm;
Aug. 6:00 am to 7:15 pm; Sep. 6:15 am to 6:45 pm; Oct. 6:45 am to 6:00 pm;
Nov. 7:00 am to 5:30 pm; Dec. 7:30 am to 5:30 pm; Jan. 7:45 am to 5:45 pm;
Central Standard Time.

5. Date of required commencement of construction..... March 8, 1947.....

6. Date of required completion of construction..... May 7, 1948.....

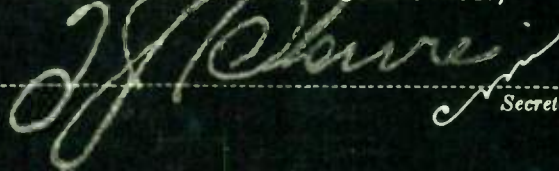
7. (a) Upon the completion of construction in exact accord with this permit, and provided the Commission and the Inspector of Radio are notified two days in advance, the permittee is authorized—
(1) To conduct equipment tests between 1 a.m. and 6 a.m., local standard time, for a period not to exceed 10 days, on the frequency and with the power herein specified.
- (b) Upon the completion of equipment tests, and provided an application for radio broadcasting station license has been filed with the Commission, showing the transmitter to be in satisfactory operating condition; and provided further, that the Commission and Inspector of Radio are notified two days in advance, the permittee is authorized—
(1) To conduct broadcast program tests for a period not to exceed 30 days, on the frequency, with the power, and during the hours of operation herein specified.
- (c) The authority herein contained to conduct tests shall not be construed as a radio broadcasting station license, but only to make tests incident and necessary to proper construction of the station, and the Commission reserves the right to cancel or modify such authority.

8. This permit shall be automatically forfeited if the station is not ready for operation within the time specified or within such further time as the Commission may allow, unless completion of the station is prevented by causes not under permittee's control.

Dated this 10th day of February , 193 48

[SEAL]

By direction of the FEDERAL COMMUNICATIONS COMMISSION,


Secretary

During equipment tests a check of the calibration of the frequency monitor and station frequency must be made with an external standard and supplied to the Commission before program tests will be authorized.

It is an essential part of the test of all broadcast transmitting equipment to determine that the operating frequency is within the prescribed limits of the assigned frequency and that the frequency monitor is calibrated to within five parts per million of the assigned frequency (3 cycles at 550 kilocycles, 5 cycles at 1000 kilocycles, or 7.5 cycles at 1500 kilocycles).

To determine this, a check of the frequency should be made during the equipment test period with an external standard of known accuracy, such as the commercial frequency monitor services offered by several firms. The operating frequency of the transmitter should be adjusted to show zero deviation on the monitor and then the check made with the standard. If this reveals that the frequency is more than five parts per million from the assigned frequency, adjustments should be made and further check obtained until several readings indicate that the proper accuracy has been obtained and maintained.

The data on the check should be supplied to the Commission on the enclosed FCC Form No. 302 and must be approved by the Commission before program tests will be authorized. With reference to the conducting of equipment and program tests your attention is invited to Sections 1.315 and 1.316.

File No. B3-P-4101

Call letters K W F T

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

REGULAR BROADCAST STATION CONSTRUCTION PERMIT

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made thereunder, and further subject to the conditions set forth in this permit, authority is hereby granted to WICHITA BROADCASTERS, A Partnership, JOE B. CARRIGAN, MRS. JOE B. CARRIGAN, P. K. SMITH, TRUSTEE, P. K. SMITH, MRS. CLAUDE M. SIMPSON, JR.

to construct a radio transmitting station located and described as follows:

1. Location of transmitter: State Texas County Wichita
City or town Near Wichita Falls Street and number Approx. 2 1/2 mi. WNW at Resettlement Road
N. Latitude: Degrees 33, minutes 55, seconds 07.42
W. Longitude: Degrees 98, minutes 32, seconds 37.21
2. Location of main studio: State Texas County Wichita
City or town Wichita Falls Street and number 800 Eighth St.

3. Description of transmitting apparatus:

R.C.A. MFG. CO., Type 5DX Broadcasting Transmitter. Direct Crystal Control. Last radio stage: one 5 kilowatt vacuum tube for high level modulation (Federal 892-R). Maximum rated carrier power output 5 kilowatts.

Towers to be painted and lighted in accordance with the attached specifications.

Power to be determined by the direct method (Sec. 3.51). The enclosed copies of FCC Form 306 should be submitted simultaneously with FCC Form 302.

4. The frequency, operating power, and hours of operation will be as follows:

*Employing directional antenna night.

(a) Frequency620..... kilocycles.

Specifications for directional antenna

(b) Power (1) Night5 kilowatt...(**) attached.

(2) Day5 kilowatt...(**)

(c) Hours of operation: Unlimited time.

** Average hour local sunrise: Jan. 7:45 am; Feb. 7:15 am; Mar. 6:45 am; Apr. 6:00 am; May 5:30 am; June 5:15 am; July 5:30 am; Aug. 6:00 am; Sept 6:15 am; Oct. 6:45 am; Nov. 7:00 am; Dec. 7:30 am; Central Standard Time.

** Average hour local sunset: Jan. 5:45 pm; Feb. 6:15 pm; Mar. 6:45 pm; Apr. 7:00 pm; May 7:30 pm; June 7:45 pm; July 7:45 pm; Aug. 7:15 pm; Sept. 6:45 pm; Oct. 6:00 pm; Nov. 5:30 pm; Dec. 5:30 pm; Central Standard Time.

5. Date of required commencement of construction..... By March 8, 1947

6. Date of required completion of construction..... September 8, 1947

7. (a) Upon the completion of construction in exact accord with this permit, and provided the Commission and the Inspector of Radio are notified two days in advance, the permittee is authorized—

(1) To conduct equipment tests between 1 a.m. and 6 a.m., local standard time, for a period not to exceed 10 days, on the frequency and with the power herein specified.

(b) Upon the completion of equipment tests, and provided an application for radio broadcasting station license has been filed with the Commission, showing the transmitter to be in satisfactory operating condition; and provided further, that the Commission and Inspector of Radio are notified two days in advance, the permittee is authorized—

(1) To conduct broadcast program tests for a period not to exceed 30 days, on the frequency, with the power, and during the hours of operation herein specified.

(c) The authority herein contained to conduct tests shall not be construed as a radio broadcasting station license, but only to make tests incident and necessary to proper construction of the station, and the Commission reserves the right to cancel or modify such authority.

8. This permit shall be automatically forfeited if the station is not ready for operation within the time specified or within such further time as the Commission may allow, unless completion of the station is prevented by causes not under permittee's control.

Dated this day of January, 1947

[SEAL]

By direction of the FEDERAL COMMUNICATIONS COMMISSION,

J. J. Moore
Secretary

DESCRIPTION OF DIRECTIONAL ANTENNA

Four self supported, square, tapered, series fed, vertical radiators. Towers arranged in form of a parallelogram; long sides of which are spaced 992.5' (225°) on a line bearing 135° true north; short sides of which are spaced 264.5' (60°) on a line bearing 95° true north.

Height above insulators: 400'

Overall height: 405'

~~Orientation~~~~Spacing~~

Phasing:	<u>North West</u> <u>Tower (1)</u>	<u>North East</u> <u>Tower (2)</u>	<u>South West</u> <u>Tower (3)</u>	<u>South East</u> <u>Tower (4)</u>
	-59.5°	78°	-137.5°	0°

Field ratio: 0.52 0.8 0.65 1.0

Ground system: 120 - 400', plus 120 - 60', buried copper radials, equally spaced about each tower.

The inverse distance field intensity at a distance of one mile from the antenna of ~~KWFT~~ in the directions ~~specified~~ shall not exceed the following values:

39°	-	94 mv/m
88°	-	340 mv/m
150°	-	100 mv/m
183°	-	263 mv/m
272°	-	127 mv/m
310°	-	740 mv/m
347°	-	585 mv/m

A monitoring point in each of the above directions in which a field intensity is specified shall be designated with complete detail including a description of the point, directions for proceeding thereto and the field intensity measured at the point after final adjustment of the antenna system, and when operating in exact accordance with the terms of this authorization and the Rules and Regulations and Standards of Good Engineering Practice Governing Standard Broadcast Stations. The points shall be in the clear so as to permit the taking of unobstructed field intensity measurements and shall be located not less than one mile nor more than four miles from the antenna in the direction specified.

No operation shall occur during the regular broadcast day until data has been submitted showing that operation is in accordance with the above specifications and that the field intensity pattern is in substantial agreement with the theoretical pattern specified in the application.

To insure maintenance of radiated field within the ~~tolerance~~ permitted herein, a properly designed phase monitor shall be installed in the transmitter room as a means of continuously and correctly indicating the amplitude and phase of currents in the several elements of the directional antenna system.



During equipment tests a check of the calibration of the frequency monitor and station frequency must be made with an external standard and supplied to the Commission before program tests will be authorized.

It is an essential part of the test of all broadcast transmitting equipment to determine that the operating frequency is within the prescribed limits of the assigned frequency and that the frequency monitor is calibrated to within five parts per million of the assigned frequency (3 cycles at 550 kilocycles, 5 cycles at 1000 kilocycles, or 7.5 cycles at 1500 kilocycles).

To determine this, a check of the frequency should be made during the equipment test period with an external standard of known accuracy, such as the commercial frequency monitor services offered by several firms. The operating frequency of the transmitter should be adjusted to show zero deviation on the monitor and then the check made with the standard. If this reveals that the frequency is more than five parts per million from the assigned frequency, adjustments should be made and further check obtained until several readings indicate that the proper accuracy has been obtained and maintained.

The data on the check should be supplied to the Commission on the enclosed FCC Form No. 302 and must be approved by the Commission before program tests will be authorized. With reference to the conducting of equipment and program tests your attention is invited to Sections 1.315 and 1.316.

Date 1-8-47
FILE No. B3-P-4101
CALL LETTERS* K W F T

OBSTRUCTION MARKING ANTENNA TOWER(S) OR SUPPORTING STRUCTURE(S)

Red temporary warning lights (not less than two 100-watt standard obstruction lights) shall be displayed on top of this construction from sunset to sunrise when 150 feet in overall height and continue to be displayed during further construction. Moreover, the permanent obstruction lights shall be installed and placed in operation immediately (but in no event later than 10 days) after completion of construction to the height authorized by the Commission.

~~The~~ ^{Each} tower shall be painted throughout its height with alternate bands of international orange and white, terminating with international orange bands at both top and bottom. The width of the international orange bands shall be from 30 to 40 feet. The white bands shall be approximately one-half the width of the international orange bands.

~~The~~ ^{Each} tower shall be cleaned or repainted as often as necessary to maintain good visibility.

For night marking there shall be installed at the top of ~~the~~ ^{each} tower a 300-mm electric code beacon of the double Fresnel-lens type, or equal, equipped with two 500-watt lamps (PS-40 clear, Code-Beacon type) and aviation red-color shades. Both lamps shall burn simultaneously. The code beacon shall be equipped with a flashing mechanism producing not more than 40 flashes per minute with a luminous period of 1 second and a period of darkness of $\frac{1}{2}$ second, but not less than 20 flashes per minute with a luminous period of 2 seconds and period of darkness of 1 second.

On levels at approximately two-thirds and one-third of the over-all height of ~~the~~ ^{each} tower, there shall be installed at least two 100-watt lamps (A-21 clear, Traffic-Signal type) enclosed in aviation red Fresnel or prismatic (heat resisting preferred) obstruction light globes. Each light shall be mounted so as to insure unobstructed visibility of at least one light at each level from aircraft at any angle of approach.

All lighting shall be exhibited from sunset to sunrise.

At least 25 percent spare lamps of each type in use shall be provided for immediate replacement purposes.

It is to be expressly understood that the issuance of the foregoing specifications is in no way to be considered as precluding additional or modified marking or lighting as may hereafter be required under the provisions of Section 303(q) of the Communications Act of 1934, as amended.

*THIS SPECIFICATION IS A PART OF AND SHALL BE ATTACHED TO THE CURRENT INSTRUMENT OF AUTHORIZATION.



File No. BMP-3424

Call letters ... K K F T

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

REGULAR BROADCAST STATION CONSTRUCTION PERMIT

Modified as of December 16, 1947

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made thereunder, and further subject to the conditions set forth in this permit, authority is hereby granted to WICHITA BROADCASTERS, A Partnership, JOE B. CARRIGAN, MRS. JOE B. CARRIGAN, P.K. SMITH, TRUSTEE, P.K. SMITH, MRS. CLAUDE M. SIMPSON, JR.

to construct a radio transmitting station located and described as follows:

1. Location of transmitter: State Texas County Wichita
City or town Near Wichita Falls Street and number Approx. 2½ miles WNW at Resettlement Road
N. Latitude: Degrees 33, minutes 55, seconds 07.42
W. Longitude: Degrees 98, minutes 32, seconds 37.21
2. Location of main studio: State Texas County Wichita
City or town Wichita Falls Street and number 800 Eighth Street

3. Description of transmitting apparatus:

RCA MFG. CO., Type 5DX Broadcasting Transmitter.
Direct Crystal Control. Last radio stage: one
5-kilowatt vacuum tube for high level modulation
(Federal 892-R). Maximum rated carrier power
output 5 kilowatts.

Towers to be painted and lighted in accordance
with the attached specifications.

Power to be determined by the direct method (Sec. 3.51).

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UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

REGULAR BROADCAST STATION CONSTRUCTION PERMIT

Modified as of December 3, 1947

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made thereunder, and further subject to the conditions set forth in this permit, authority is hereby granted to WICHITA BROADCASTERS, A Partnership, JOE B. CARRIGAN, MRS. JOE B. CARRIGAN, P. K. SMITH, TRUSTEE, P. K. SMITH, MRS. CLAUDE M. SIMPSON, JR. to construct a radio transmitting station located and described as follows:

1. Location of transmitter: State Texas County Wichita
Approx. 2½ miles WNW at
City or town Near Wichita Falls Street and number Resettlement Road

N. Latitude: Degrees 33, minutes 55, seconds 07.42

W. Longitude: Degrees 98, minutes 32, seconds 37.21

2. Location of main studio: State Texas County Wichita
City or town Wichita Falls Street and number 800 Eighth Street

3. Description of transmitting apparatus:

RCA MFG. CO., Type 5DX Broadcasting Transmitter.
Direct Crystal Control. Last radio stage: one
5-kilowatt vacuum tube for high level modulation
(Federal 892-R). Maximum rated carrier power
output 5 kilowatts.

Towers to be painted and lighted in accordance with
the attached specifications.

Power to be determined by the direct method (Sec. 3.51).

4. The frequency, operating power, and hours of operation will be as follows:

(a) Frequency 520 kilocycles.

*Employing directional antenna
night.

(b) Power (1) Night 5 kilowatts *

Specifications for directional
antenna attached.

(2) Day 5 kilowatts **

(c) Hours of operation : Unlimited time.

**Average hour of local sunrise and sunset:

Dec. 7:30 am to 5:30 pm; Jan. 7:45 am to 5:45 pm; Feb. 7:15 am to 6:15 pm;
Mar. 6:45 am to 6:45 pm; Apr. 6:00 am to 7:00 pm; May 5:30 am to 7:30 pm;
June 5:15 am to 7:45 pm; July 5:30 am to 7:45 pm; Aug. 6:00 am to 7:15 pm;
Sep. 6:15 am to 6:45 pm; Oct. 6:45 am to 6:00 pm; Nov. 7:00 am to 5:30 pm;
Central Standard Time.

5. Date of required commencement of construction March 8, 1947

6. Date of required completion of construction January 7, 1948

7. (a) Upon the completion of construction in exact accord with this permit, and provided the Commission and the Inspector of Radio are notified two days in advance, the permittee is authorized—

(1) To conduct equipment tests between 1 a.m. and 6 a.m., local standard time, for a period not to exceed 10 days, on the frequency and with the power herein specified.

(b) Upon the completion of equipment tests, and provided an application for radio broadcasting station license has been filed with the Commission, showing the transmitter to be in satisfactory operating condition; and provided further, that the Commission and Inspector of Radio are notified two days in advance, the permittee is authorized—

(1) To conduct broadcast program tests for a period not to exceed 30 days, on the frequency, with the power, and during the hours of operation herein specified.

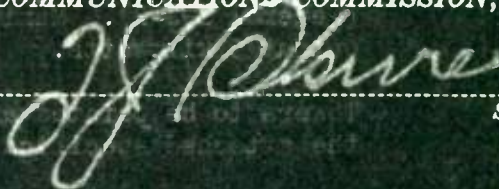
(c) The authority herein contained to conduct tests shall not be construed as a radio broadcasting station license, but only to make tests incident and necessary to proper construction of the station, and the Commission reserves the right to cancel or modify such authority.

8. This permit shall be automatically forfeited if the station is not ready for operation within the time specified or within such further time as the Commission may allow, unless completion of the station is prevented by causes not under permittee's control.

Dated this 3rd day of December, 193 47

[SEAL]

By direction of the FEDERAL COMMUNICATIONS COMMISSION,



Secretary

nht

During equipment tests a check of the calibration of the frequency monitor and station frequency must be made with an external standard and supplied to the Commission before program tests will be authorized.

It is an essential part of the test of all broadcast transmitting equipment to determine that the operating frequency is within the prescribed limits of the assigned frequency and that the frequency monitor is calibrated to within five parts per million of the assigned frequency (3 cycles at 550 kilocycles, 5 cycles at 1000 kilocycles, or 7.5 cycles at 1500 kilocycles).

To determine this, a check of the frequency should be made during the equipment test period with an external standard of known accuracy, such as the commercial frequency monitor services offered by several firms. The operating frequency of the transmitter should be adjusted to show zero deviation on the monitor and then the check made with the standard. If this reveals that the frequency is more than five parts per million from the assigned frequency, adjustments should be made and further check obtained until several readings indicate that the proper accuracy has been obtained and maintained.

The data on the check should be supplied to the Commission on the enclosed FCC Form No. 302 and must be approved by the Commission before program tests will be authorized. With reference to the conducting of equipment and program tests your attention is invited to Sections 1.315 and 1.316.



DESCRIPTION OF DIRECTIONAL ANTENNA

No. and type of elements: Four, uniform cross-section, self supported tapered, series fed, vertical radiators. Towers arranged in form of parallelogram. FM antenna mounted on top of S.E. tower.

Height above insulators: 404.3' for S.E. tower; 363.3' for others.

Overall height: 409.3' for S.E. tower; 368.3' for others.

Orientation: Long sides on a line bearing 155° true; short sides on a line bearing 95° true.

Spacing: Long sides are spaced 992.5' (225°); short sides are spaced 264.5' (60°).

	<u>N.W.Tower</u>	<u>N.E.Tower</u>	<u>S.W.Tower</u>	<u>S.E.Tower</u>
Phasing:	-59.5 $^{\circ}$	78.0 $^{\circ}$	-137.5 $^{\circ}$	0.0 $^{\circ}$

Field ratio: 0.52 0.80 0.65 1.00

Ground System: 120 - 400', plus 120 - 60', buried copper radials equally spaced about each tower.

The inverse distance field intensity at a distance of one mile from the antenna of K W F T in the directions ~~of the antenna~~ specified shall not exceed the following values:

39 $^{\circ}$	-	95 mv/m
88 $^{\circ}$	-	330 mv/m
150 $^{\circ}$	-	100 mv/m
183 $^{\circ}$	-	263 mv/m
272 $^{\circ}$	-	127 mv/m
310 $^{\circ}$	-	740 mv/m
347 $^{\circ}$	-	585 mv/m

A monitoring point in each of the above directions in which a field intensity is specified shall be designated with complete detail including a description of the point, directions for proceeding thereto and the field intensity measured at the point after final adjustment of the antenna system, and when operating in exact accordance with the terms of this authorization and the Rules and Regulations and Standards of Good Engineering Practice Governing Standard Broadcast Stations. The points shall be in the clear so as to permit the taking of unobstructed field intensity measurements and shall be located not less than one mile nor more than four miles from the antenna in the direction specified.

No operation shall occur during the regular broadcast day until data has been submitted showing that operation is in accordance with the above specifications and that the field intensity pattern is in substantial agreement with the theoretical pattern specified in the application.

To insure maintenance of radiated field within the tolerance required herein, a properly designed phase monitor shall be installed in the transmitter room as a means of continuously and correctly indicating the amplitude and phase of currents in the several elements of the directional antenna system.

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OBSTRUCTION MARKING ANTENNA TOWER(S) OR SUPPORTING STRUCTURE(S)

Red temporary warning lights (not less than two 100-watt standard obstruction lights) shall be displayed on top of this construction from sunset to sunrise when 150 feet in overall height and continue to be displayed during further construction. Moreover, the permanent obstruction lights shall be installed and placed in operation immediately (but in no event later than 10 days) after completion of construction to the height authorized by the Commission.

Each

~~The~~ tower shall be painted throughout its height with alternate bands of international orange and white, terminating with international orange bands at both top and bottom. The width of the international orange bands shall be from 30 to 40 feet. The white bands shall be approximately one-half the width of the international orange bands.

Each

~~The~~ tower shall be cleaned or repainted as often as necessary to maintain good visibility.

each

For night marking there shall be installed at the top of ~~the~~ tower a 300-m m electric code beacon of the double Fresnel-lens type, or equal, equipped with two 500-watt lamps (PS-40 clear, Code-Beacon type) and aviation red-color shades. Both lamps shall burn simultaneously. The code beacon shall be equipped with a flashing mechanism producing not more than 40 flashes per minute with a luminous period of 1 second and a period of darkness of $1\frac{1}{2}$ second, but not less than 20 flashes per minute with a luminous period of 2 seconds and period of darkness of 1 second.

each

On levels at approximately two-thirds and one-third of the over-all height of ~~the~~ tower, there shall be installed at least two 100-watt lamps (A-21 clear, Traffic-Signal type) enclosed in aviation red Fresnel or prismatic (heat resisting preferred) obstruction light globes. Each light shall be mounted so as to insure unobstructed visibility of at least one light at each level from aircraft at any angle of approach.

All lighting shall be exhibited from sunset to sunrise.

At least 25 percent spare lamps of each type in use shall be provided for immediate replacement purposes.

It is to be expressly understood that the issuance of the foregoing specifications is in no way to be considered as precluding additional or modified marking or lighting as may hereafter be required under the provisions of Section 303(q) of the Communications Act of 1934, as amended.

*THIS SPECIFICATION IS A PART OF AND SHALL BE ATTACHED TO THE CURRENT INSTRUMENT OF AUTHORIZATION.

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