Broadcast Application | FEDERAL COMMUNICATIONS COMMISSION | Section V-G (Antenna)

ANTENNA AND SITE INFORMATION
(see instruction B
Section I)

Name of applicant: Midwest Radio-Television, Inc.

FOR COMMISSION USE ONLY
File No.

Since this Section is submitted to the Regional Airspace Subcommittee of the Air Coordinating Committee for clearance in connection with obstruction to air navigation, it is necessary that all the data called for be supplied. Previously and separately filed data must not be incorporated by reference.

Legal Counsel: Fly, Shuebruk, Blume and Gaguine

Address: 1612 K Street, N. W., Washington, D. C. 20006

Consulting Engineer: A. Earl Cullum, Jr.

Address: P. O. Box 7004, Dallas, Texas 75209

Class of station: Developmental Broadcast

Facilities requested: 830 kc, 750 kw, DA-N

1. Location of antenna

State	County	City or Town
Minnesota	Anoka	Anoka

Exact antenna location (street address) (If outside city limits, give distance and direction from, and name of nearest town

3237 Coon Rapids Boulevard

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

North latitude	West longitude
45° 10' 48"	93° 21' 00"

Purpose of application (Check appropriate box)

a. New antenna construction [X]
b. Alteration of existing antenna structure [ ]
c. Change in location [ ]

2. Features of surrounding terrain

List any natural formations or existing man-made structures (hills, trees, water tanks, towers, etc.) which, in the opinion of the applicant, would tend to shield the antenna from aircraft and thereby minimize the aeronautical hazard of the antenna.

Existing Structure - WCCO AM tower

Submit as Exhibit No. * a chart on which is plotted the exact location of the antenna site, and also the relative location of the natural formations and/or the existing man-made structures listed above.
The chart used shall be an Instrument Approach Chart (or the landing chart on reverse side thereof), or a Sectional Aeronautical Chart, choice depending upon proximity of the antenna site to landing areas.[1] In general, the Sectional Aeronautical Chart should be used only when the antenna site is more than 10 miles from a landing area or when an Instrument Approach Chart is unobtainable.[1] These charts may be purchased from the U.S. Coast and Geodetic Survey, Washington 25, D.C.

[1]Exception - Where the proposed antenna site is within the boundary of a landing area for which no Instrument Approach Chart is available, submit a self-made, large scale map showing antenna site, runway(s) and existing man-made structures listed above.

3. Designation, distance, and bearing to center line of nearest established airway within 5 miles

V 13 W 0.5 Statute Mile Southeast

4. List all landing areas within 10 miles of antenna site. Give distance and direction to the nearest boundary of each landing area from the antenna site.

	Landing Area	Distance	Direction
(a)	Anoka County	7.2 statute miles	east-southeast
(b)	Crystal	8.0 statute miles	south
(c)			

5. Description of antenna system (If directional, giving spacing and orientation of towers)

Four towers on line bearing N 340° E from existing WCCO tower, spacing 329 feet between adjacent towers

Type

Description of tower(s) Triangular, uniform-cross section, vertical steel towers

Self-supporting | Guyed yes | Tubular (Pole)

Tower (height figures should include obstruction lighting)	#1	#2	#3	#4	#5	#6
Height of radiating elements	640'	640'	640'	640'		
Overall height above ground	655'	655'	655'	655'		
Overall height above mean sea level	1520'	1520'	1520'	1520'		

If a combination of Standard, FM, or TV operation is proposed on the same multi-element array (either existing or proposed) submit as Exhibit No. a horizontal plan for the proposed antenna system, giving heights of the elements above ground and showing their orientation and spacing in feet. Clearly indicate if any towers are existing.

Submit as Exhibit No. * a vertical plan sketch for the proposed total structure (including supporting building if any) giving heights above ground in feet for all significant features. Clearly indicate existing portions, noting painting and lighting.

Is the proposed antenna system designed so that obstruction lights may be installed and maintained at the uppermost point(s)? Yes [X] No [ ]

6. Is the proposed site the same or immediately adjoining the transmitter-antenna site of other stations authorized by the Commission or specified in another application pending before the Commission? Yes [ ] No [X]

If the answer is "Yes", give

Call letters | File numbers

Date February 18, 1964

Signature of Engineer preparing data

* See attached Figures 2, 3, and 10

FCC Form 309 — Section III

ENGINEERING DATA

Name of applicant: Midwest Radio-Television, Inc.

1. Purpose of authorization applied for: (Indicate by check mark)

☐ Construct a new station ☒ Modify an Existing Authorization (specify)*

2. Facilities requested

Frequency	Power 1/	Necessary bandwidth (kc)	Type of emission 2/
830 kc	750 kw	10 kc	A3

1/ For amplitude modulation television (A5), give maximum antenna input power during synchronizing pulses. If particulars are not fully described above, such as aural and visual carrier frequencies and power for television and type of emission, etc., supply this information as Exhibit No. Developmental stations using amplitude modulation or frequency modulation, give unmodulated antenna input power. For other types of emission, give a full description of method of determining power as Exhibit No. Describe in Exhibit No. * means which will be used for determining and maintaining power output of the transmitter to the values specified.

2/ See Part 2 of the Commission's Rules and Regulations.

3. Proposed transmitter location

State	County	City
Minnesota	Anoka	Anoka

Number and street (or other indication of location): 3237 Coon Rapids Boulevard

Geographic coordinates (to be determined to nearest second) of the proposed antenna structure

North latitude	West longitude
45° 10' 48"	93° 21' 00"

4. Attach as Exhibit No. * a map(s) (topographic where obtainable, such as U. S. Geological Survey quadrangles) for the area within 15 miles of the proposed transmitter location and show drawn thereon the following data:
1. Proposed transmitter location—accurately plotted;
2. Transmitter location and call letters of all known radio stations (except amateur) and the location of known commercial and government receiving stations within 2 miles of the proposed transmitter location.

5. Transmitting apparatus to be installed

Manufacturer: Continental Electronics

Type number	Rated unmodulated carrier power output
322 B	750 kw

(If the above transmitter(s) is/are composite or of a type for which data have not been filed with the F.C.C., attach as Exhibit No. * a complete technical description of the transmitter(s) and auxiliary equipment with functional (block) diagrams indicating tube complements and the operating constants of the last radio stage. Include also auxiliary radio frequency equipment such as multiplexing networks, sideband filters, etc. If experimental program is likely to make major changes necessary, indicate the tentative arrangement contemplated indicating those portions which are subject to change.

6. Transmission line proposed to supply power to the antenna from the transmitter

Make	Type No.	Description
to be determined	--	Coaxial

Size (nominal inside transverse dimension) in inches	Length in feet	Rated efficiency in percent for this length
(1) 9"	520	*
(2) 9"	849	*
(3) 3"	1178	*
(4) 3"	1507	*

7. (a) Antenna structure:

Is the proposed construction in the immediate vicinity or does it serve to modify the construction of any standard broadcast station, FM broadcast station, television broadcast station, or other class of radio station? If "Yes", attach as Exhibit No. * complete engineering data thereon. Yes ☒ No ☐

Submit as Exhibit No. * a vertical plan sketch for the proposed total structure (including supporting building if any) giving heights above ground in feet for all significant features.

Over-all height in feet above ground. (Do not include the height of any obstruction lighting which may be required.)	Over-all height in feet above mean sea level. (Do not include the height of any obstruction lighting which may be required.)
652	1517

(b) Antenna data

Make	Type No. or description
*	*

No. of sections	Antenna power gain
*	*

(c) During course of experimentation, will antenna system be changed? If "Yes", briefly describe the changes or modifications contemplated. Yes ☐ No ☒

(d) Is directional antenna proposed? If "Yes", attach as Exhibit No. * complete engineering data thereon. Yes ☒ No ☐

8. Frequency or percentage of modulation measurement

(a) Method of measuring or monitoring station frequency.

Use existing frequency monitor

(b) Method of measuring or monitoring station modulation.

Use existing modulation monitor

*See attached engineering statement

GENERAL

WCCO Radio should be granted a permit to conduct research and development projects with 750kw at 830 kc because of the benefits which would be provided to:

1. National government and especially military and security forces
2. State and local governments within the WCCO service area
3. The Federal Communications Commission
4. The broadcasting industry, including manufacturers and broadcasters
5. The public generally, and especially some segments of the public living within the region of Minnesota, North Dakota, South Dakota, Iowa, Wisconsin, Montana and Upper Michigan who are inadequately served at 50w.

To bring these benefits, WCCO Radio proposes to undertake several research and development projects if granted 750 kw license. The proposed projects are described in detail in following pages under specific headings. They will include work on such subjects as radio receiver design and transmission engineering, new techniques for prompt forecasting and reporting of sudden weather changes, provision for national discussion and forum programs, expanded news and public affairs coverage, increased and special services for farmers and ranchers, experiments in new types of religious programs, studies in the psychology of audio communications, methods for providing more choice of programs for listeners and more capacity for long-line wires facilities in the region and studies in public reaction to changes in program methods.

To carry out the projects proposed, WCCO Radio is prepared to provide the finances, facilities and manpower to research organizations, government agencies, and educational institutions within the service for cooperative research and development. It also is prepared to increase its staff and their budgets to support fully the proposed schedule of new activities.

SECTION I. ENGINEERING -- "Blanket Effect and Design of Radio Receivers and Transmitters

PROBLEM: Around every transmitter is an area where its signal overpowers other signals. As the commonly used radio receivers have deteriorated in ability to discriminate among signals, this "blanket effect" of a transmitter has become more noticeable and listeners have fewer choices of program. This problem continues to increase as suburban population surrounds many transmitter sites that originally were in open spaces. It is desirable to reduce "blanket effect" to provide better reception and more program choice to the public.

RESEARCH: WCCO Radio proposes to enlist the cooperation of radio receiver design engineers to explore the means of combatting "blanket" interference. This study would be included in our plans for cooperative research with radio set manufacturers and the several Universities in the WCCO Radio service area. It is proposed that at 750kw, WCCO would attack the problem from both the practical and theoretical angles of transmission and reception.

BENEFITS FROM PROJECT: The public generally could benefit from additional program choices and from the improved reception of any program that is desired. Broadcasting industry equipment and transmission agencies would gain new information for set design and the FCC would obtain reliable data on which to establish rules on manufacturing and on interference and protection.

SECTION I. ENGINEERING -- Nuclear Effects on Low Frequency Transmissions

PROBLEM: Air Force planners believe that in case of nuclear attack, low frequency global communications would be less vulnerable to nuclear caused phenomena than other parts of the electromagnetic spectrum. Radio blackout and change of ionosphere height are two of the effects which disrupt military communications.

RESEARCH: A program aimed at determining the effectiveness of long distance, low frequency communications in the presence of nuclear activity is underway, directed by the Electronic Systems Division of the Air Force. WCCO Radio proposed to contribute its facilities for joint research as the study is extended to include the AM broadcast band. Renewed interest in the subject is indicated by tests conducted recently in the Antarctica by Robert A. Helliwell, professor of engineering at Stanford. This work could lead to a breakthrough in understanding and combating absorbtion of the lower frequencies in the ionosphere.

BENEFITS: All military communications systems could benefit. So could specialty fields of propagation study, Civilian Defense systems, FCC and the broadcasting industry. Final benefits would go to the public generally from the government decisions on feasibility of using the AM broadcast band for both military and civilian communications.


WCCO
WCCO SW = 1/4
WHAS GW
WCCO SW = 1/4
WBAP-WFAA GW
WBAP-WFAA
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
NEVADA
UTAH
COLORADO
KANSAS
ARIZONA
NEW MEXICO
OKLAHOMA
MINNESOTA
WISCONSIN
IOWA
INDIANA
MISSOURI
ARKANSAS
MISSISSIPPI
ALABAMA
GEORGIA


WCCO
WCCO SW = 1/4
WHAS GW
WCCO SW = 1/4
WBAP-WFAA GW
WBAP-WFAA
WCCO 0.5MV/M 50% TIME
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
MINNESOTA
IOWA
MISSOURI
ARKANSAS
WISCONSIN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
SOUTH CAROLINA
NORTH CAROLINA
PENNSYLVANIA
NEW YORK
MAINE
NEW BRUNSWICK
ONTARIO
QUEBEC
MANITOBA
ATLANTIC OCEAN

PREPARED BY

THE FIRM OF A. EARL CULLUM, JR.

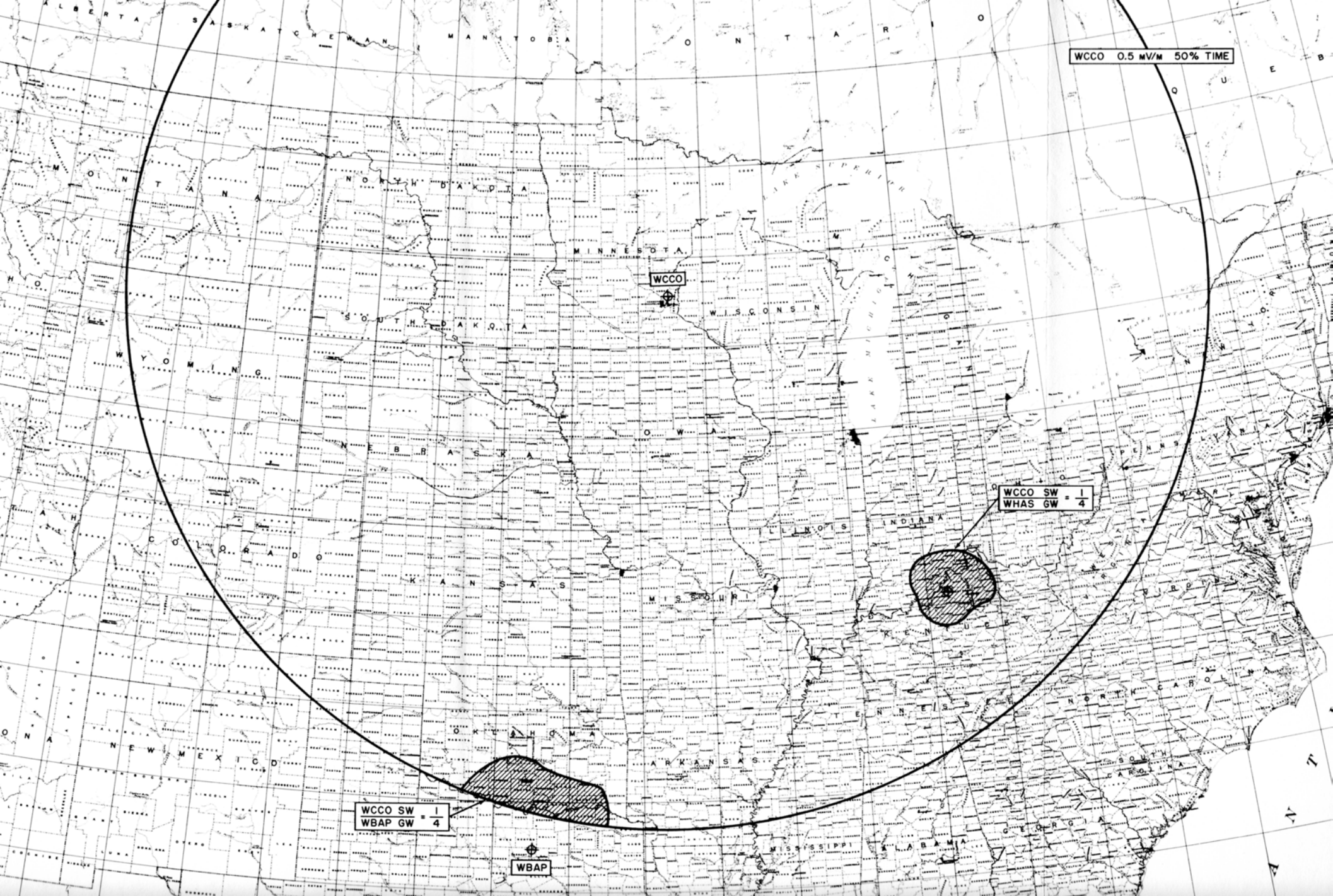
CONSULTING ENGINEERS

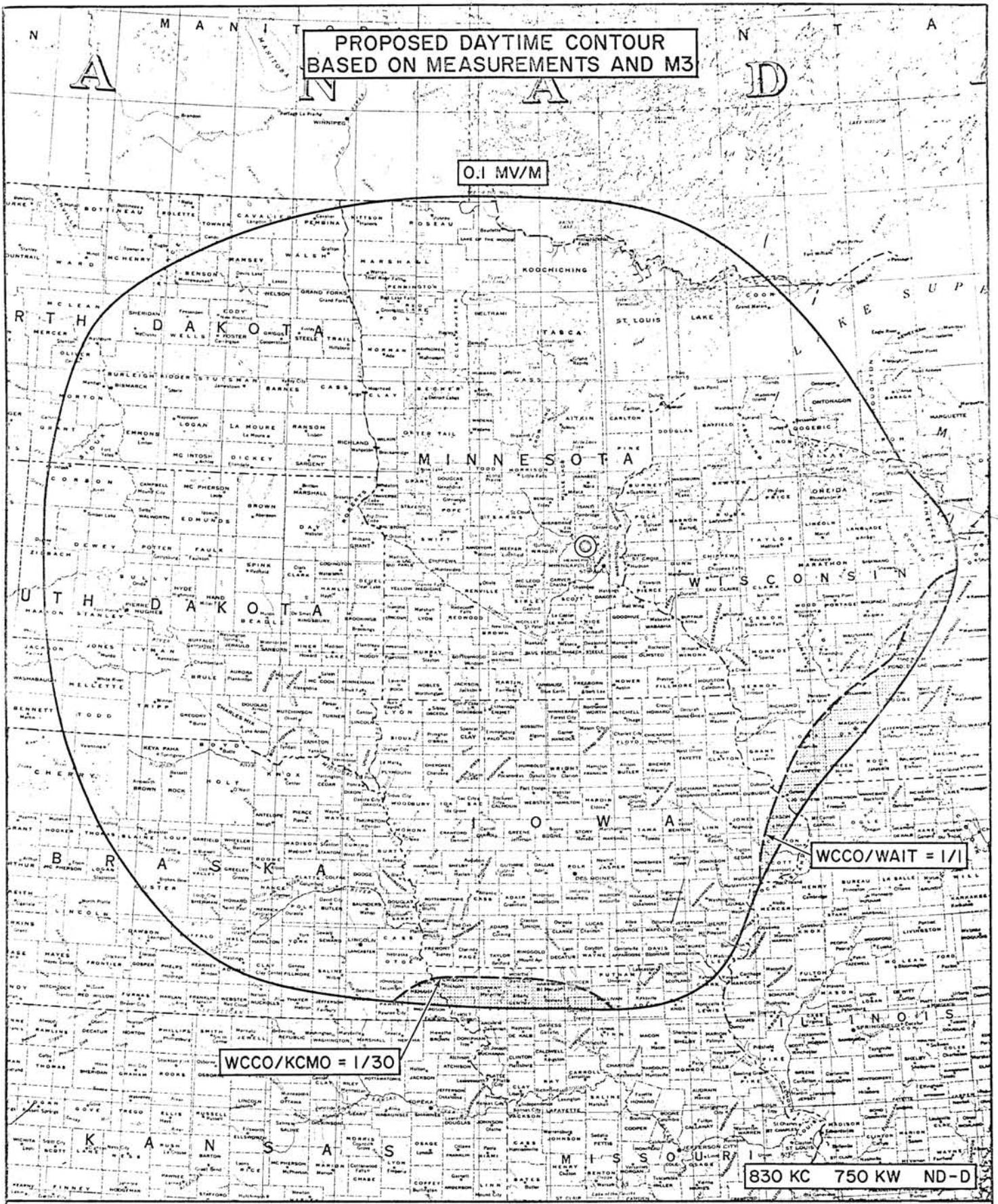
RADIO STATION WCCO

MINNEAPOLIS, MINNESOTA

640115.2

FIGURE 8C


WCCO 0.5 MV/M 50% TIME
WCCO
WCCO SW = 1/4
WHAS GW = 4
WCCO SW = 1/4
WBAP GW = 4
WBAP
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
QUEBEC
MONTANA
NORTH DAKOTA
MINNESOTA
WISCONSIN
MICHIGAN
WYOMING
SOUTH DAKOTA
IOWA
NEBRASKA
COLORADO
KANSAS
MISSOURI
ILLINOIS
INDIANA
OHIO
KENTUCKY
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
ARKANSAS
OKLAHOMA
NEW MEXICO
ARIZONA
TEXAS
LOUISIANA
FLORIDA



PREPARED BY	RADIO STATION WCCO
THE FIRM OF A. EARL CULLUM, JR.	MINNEAPOLIS, MINNESOTA
CONSULTING ENGINEERS	640115.2 FIGURE 7D

FORM BC-121
Aug. 1955

APPLICATION RECORD - BROADCASTING

#15(AM)

Call Letters WCCO

Name MIDWEST RADIO-TELEVISION, INC.
MINNEAPOLIS, MINN.

File No.	Dated	Application for	Action Nature	Action Date
BR-659 Rec'd & Filed	12-16-58 1-2-59	Renewal of license.(Main). Fly, Shuebruk, Blume & Saguine, Attys.	GRANTED	3-11-59
BR-659 Rec'd & Filed	12-10-59 1-7-59	Renewal of license.(Auxiliary). Fly, Shuebruk, Blume & Saguine, Attys.	GRANTED	3-11-59
BRC-1562 Rec'd Filed	10-29-59 11-4-59 11-4-59	Modification of license to operate MAIN transmitter by Remote Control from 625 Second Avenue South, Minneapolis, Minnesota	GRANTED	12-9-59
BRC-1563 Rec'd Filed	10-29-59 11-4-59 11-4-59	Modification of license to operate AUXILIARY transmitter by Remote Control from 625 Second Avenue, Minneapolis, Minnesota Fly, Shuebruk, Blume & Saguine, Attys. (Colby)	GRANTED	12-9-59
BR-659 R.&F.	12-28-61 1-2-62	RENEWAL OF LICENSE (Main & Auxiliary) Atty Fly, Shuebruk, Blume and Saguine	GRANTED	5-11-62

F.C.C. WASHINGTON, D. C.

830kc

FORM BC-121 15A
Aug. 1955

APPLICATION RECORD - BROADCASTING

Call Letters WCCO

Name MIDWEST RADIO-TELEVISION, INC.
Minneapolis, Minn.

File No.	Dated	Application for	Action Nature	Action Date
BP Rec'd $50-241664	12-29-65	Developmental B/C Station application filed 6-19-64 requesting operation on 830kc, 750kw, Unl. AMENDED 12-29-65 to chge from Developemental B/C to Standard B/C (PETITION FILED REQUESTING WAIVER OF SECTIONS 73.25(a), 73.21(a)(1), 73.41, 73.182(a)(1), and any other relevant Sections of the Rules haveing to do with a maximum power of 50kw, in order that the application be accepted for filing and considered on its merits	Petition denied and AMEND. RETURNED 7-12-67. by Memo. Opinion & Order.	

F.C.C. - WASHINGTON, D. C.