SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

Midwest Communications, Inc.

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
WTVB	N/A	1590 kHz	Unlimited	1.0 kW	5.0 kW

2. Station location

State	City or Town
Michigan	Coldwater

3. Transmitter location

State	County	City or Town	Street address (or other identification)
Michigan	Branch	Coldwater	182 North Angola Road

4. Main studio location

State	County	City or Town	Street address (or other identification)
Michigan	Branch	Coldwater	182 North Angola Road

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

State	County	City or Town	Street address (or other identification)
Michigan	Branch	Coldwater	182 North Angola Road

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.

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
4.65 amperes	5.13 amperes

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
50.0 ohms	190.0 ohms	+j 0 ohms	+j 237.0 ohms

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 (South)	-124.0	NDA	0.360	NDA	N/A	N/A
2 (Center)	0.0		1.000		N/A	
3 (North)	+128.0		0.600		N/A	

Manufacturer and type of antenna monitor: Potomac Instruments AM-19(204)

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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.
three guyed, uniform, cross-section, steel towers of equal height mounted on base piers and insulators	T1: 56.1 m T2: 56.1 m T3: 56.1 m	T1: 57.3 m T2: 57.3 m T3: 57.3 m	T1: 57.3 m T2: 58.2 m T3: 57.3 m	Exhibit No.

Excitation ☑ Series ☐ Shunt

ASR T1 = 1240874 ASR T3 = 1240876
ASR T2 = 1240875

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			
41 °	54 '	34 "		85 °	00 '	21 "	

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?

No changes to the AM radiating tower or AM array have been implemented other than the addition of the FM translator antenna as authorized under W238CD – Coldwater, MI Construction Permit BMPFT-20111129DNU.

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

This Form 302-AM is being filed to reflect a new daytime antenna resistance measurement and nighttime common point measurement taken after the recent tower modifications associated with, and as a §73.1692(a) condition of licensing for, FM translator W238CD – Coldwater, MI, Construction Permit BMPFT-20111129DNU. In addition to the antenna mounting and subsequent AM antenna retuning and partial proof of performance measurements, general maintenance was performed on the AM sampling and monitoring system at that time as well.

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)
Justin W. Asher	Justin W. Asher
Address (include ZIP Code) P.O. Box 220 385 Airport Drive Coldwater, MI 49036	Date January 13, 2012 Telephone No. (Include Area Code) 1(517)278-7339

☐ Technical Director
☐ Registered Professional Engineer
☐ Chief Operator
☑ Technical Consultant
☐ Other (specify)

ENGINEERING REPORT

PARTIAL PROOF OF PERFORMANCE

on

WTVB(AM) – Coldwater, MI
Facility ID No. 67757

In response to
W238CD - Coldwater, MI
Translator Construction Permit
File No. BMPFT-20111129DNU

January, 2012

MUNN–REESE, INC.
Broadcast Engineering Consultants
Coldwater, MI 49036

Table of Contents

Certification of Engineers

The firm of Munn-Reese, Inc., Broadcast Engineering Consultants, with offices at 385 Airport Drive, Coldwater, Michigan, has been retained for the purpose of preparing the technical data forming this report.

The data utilized in this report is based on field measurements made by the undersigned, or others under the supervision of the undersigned, on the dates and times indicated in the report.

The report has been prepared by properly trained electronics specialists under the direction of the undersigned whose qualifications are a matter of record before the Federal Communications Commission.

I declare under penalty of perjury that the contents of this report are true and accurate to the best of my knowledge and belief.

January 13, 2012

MUNN-REESE, INC.

By _____
Wayne S. Reese, President

By _____
Edmond R. Trombley, Project Engineer

By _____
Justin W. Asher, Project Engineer

385 Airport Drive, PO Box 220
Coldwater, Michigan 49036

Telephone: 517-278-7339

Discussion

The firm of Munn-Reese, Inc., was retained to prepare this report detailing a Partial Proof of Performance on AM Radio Station WTVB(AM) – Coldwater, MI (Facility ID No. 67757), License No. BZ-19970924KC, as required by Special Condition/Restriction (3) on W238CD – Coldwater, MI (Facility ID No. 156715) Construction Permit File No. BMPFT-20111129DNU. The W238CD Construction Permit authorizes colocation of the FM Translator onto the center tower of the three (3) tower WTVB(AM) array, and operation W238CD as a Fill-In Translator rebroadcasting WTVB(AM).

WTVB(AM) – Coldwater, MI currently operates on 1590 kHz with 5.0 kW of daytime non-directional power and 1.0 kW of nighttime directional power employing a three (3) tower array. W238CD is authorized to operate with 0.250 kW (H&V) of non-directional power at 362 meters AMSL (54 meters AGL). As stated before the W238CD antenna will be mounted on the center tower of the WTVB(AM) three (3) tower array while rebroadcasting WTVB(AM) as an AM Fill-In Translator.

Nighttime directional field strength measurements were conducted by Mr. Edmond R. Trombley, an engineer in the employ of Munn-Reese, Inc. Mr. Trombley made his measurements using Potomac Instruments Field Intensity Meter, Model #FIM-21, Serial Number 1307. This meter was last calibrated March 21, 2011.

Measurements were taken on the four (4) nighttime monitor point radials, meeting the requirements of 47 C.F.R. §73.154 of the FCC Rules. Directional field strength measurements were taken on the dates and at the times indicated in the respective Tabulations of Field Strength Measurements, shown as ***Exhibit(s) 1.1–1.2.*** The tabulation sheets show the distance from the transmitter site to each point in units of kilometers and miles. The locations and point numbers for the 2012 nighttime directional measurements were derived from topographical maps used in the most recent full proof of performance as submitted in 1962. Handheld GPS equipment was also utilized in the measurement project. Isolated and minor distance errors were noted on a few select points between the 1962 proof tabulations and 1962 proof mapping. In instances where distance discrepancies were noted, conscientious effort was taken to best replicate the exact 1962 proof located as based on proof field mapping and field file notes. Suspected discrepancies have been noted as such in the supplied tabulations. .

The 1962 directional measurements were taken directly from the original 1962 proof as well, however, Antenna Monitor values and Monitor Point limits were taken from the most recent WTVB(AM) BZ-19970924KC Direct Measurement of Power license filing.

Exhibit(s) 2.1 provides a summary of the field intensity measurements made on the nighttime directional operation as well as tabulations of the current Monitor Point values and limits. The Monitor Point field values remain within the allowable parameters.

A vertical plan of the W238CD Translator mounting on the WTVB(AM) Array has been included as ***Exhibit 3.1***. The W238CD broadcasting element consists of a two (2) bay Shively 6812B-2 antenna. The feedline crosses the AM base pier and insulator via a Kintronics™ FMC 1.5 AM isocoupler. A revised diagram of phasing and antenna coupling equipment including the W238CD mounting has been included as ***Exhibit 4.1***.

As stated before, partial proof measurements were made after the translator antenna installation with general maintenance performed on the AM sampling and monitoring system at that time as well. A slight retuning of the AM phasor was required, however the resulting operating parameters remain wholly within the nighttime standard (augmented) pattern as presently authorized. The WTVB(AM) operation also remains within tolerances of the WTVB(AM) Form 302-AM Direct Measurement of Power as concurrently submitted with this partial proof of performance. In light of the measurements taken and uniform results obtained, the recent FM Translator constructions for BMPFT-20111129DNU is believed to have had a negligible effect on the WTVB(AM) nighttime operation.

Exhibit 1.1
Tabulation of Nighttime Radial(s) 96.0°T & 115.0°T

Call:	WTVB		Frequency (kHz):			1590		Power (kW):		1.0 kW	
				Bearing (°T):		96.0					
Point	1962 Day Proof Directional			2012 Day Directional			Distance	Distance	Direct		Log
#	mV/m	Time	Date	mV/m	Time	Date	km	mi	Ratio		Ratio
18	*8.77*	---	*1962*	*9.50*	*1655*	*01/11/12*	*2.11*	*1.31*	*1.0832*	*MP*	*0.0800*
19	3.43	---	1962	3.60	1659	01/11/12	3.73	*2.32*	1.0496		0.0484
20	2.73	---	1962	2.85	1704	01/11/12	4.97	*3.09*	1.0440		0.0430
21	1.82	---	1962	1.90	1709	01/11/12	6.19	*3.85*	1.0440		0.0430
22	1.10	---	1962	1.15	1713	01/11/12	7.58	*4.71*	1.0455		0.0445
23	1.12	---	1962	1.17	1727	01/11/12	9.09	*5.65*	1.0446		0.0437
24	0.60	---	1962	0.59	1732	01/11/12	10.26	*6.38*	0.9833		-0.0168
25	0.32	---	1962	0.28	1738	01/11/12	11.91	*7.40*	0.8750		-0.1335
26	0.44	---	1962	0.31	1744	01/11/12	12.71	*7.90*	0.7045		-0.3502
						Arithmetic Ratio:			0.9860		
						Log Ratio:			0.9782		

Call:	WTVB		Frequency (kHz):			1590		Power (kW):		1.0 kW	
				Bearing (°T):		115.0					
Point	1962 Day Proof Directional			2012 Day Directional			Distance	Distance	Direct		Log
#	mV/m	Time	Date	mV/m	Time	Date	km	mi	Ratio		Ratio
19	*1.14*	---	*1962*	*2.60*	*1545*	*01/11/12*	*2.84*	*1.76*	*2.2807*	*MP*	*0.8245*
21	1.14	---	1962	0.52	1551	01/11/12	4.13	*2.57*	0.4561		-0.7850
22	0.54	---	1962	0.25	1554	01/11/12	4.86	*3.02*	0.4630		-0.7701
23	0.45	---	1962	0.19	1558	01/11/12	5.74	*3.57*	0.4200		-0.8675
24	0.24	---	1962	0.20	1613	01/11/12	6.85	*4.26*	0.8333		-0.1823
25	0.114	---	1962	0.10	1625	01/11/12	8.61	*5.35*	0.8772		-0.1310
26	0.19	---	1962	0.11	1630	01/11/12	10.46	*6.50*	0.5789		-0.5465
27	0.19	---	1962	0.10	1633	01/11/12	11.26	*7.00*	0.5263		-0.6419
28	0.14	---	1962	0.09	1640	01/11/12	14.24	*8.85*	0.6429		-0.4418
						Arithmetic Ratio:			0.7865		
						Log Ratio:			0.6747		

Exhibit 1.2
Tabulation of Nighttime Radial(s) 163.0°T & 222.0°T

Call:	WTVB		Frequency (kHz):			1590		Power (kW):		1.0 kW	
				Bearing (°T):		163.0					
Point	1962 Day Proof Directional			2012 Day Directional			Distance	Distance	Direct		Log
#	mV/m	Time	Date	mV/m	Time	Date	km	mi	Ratio		Ratio
19	14.80	---	1962	13.75	1410	01/11/12	2.99	1.86	0.9291		-0.0736
20	*9.10*	---	*1962*	*8.50*	*1413*	*01/11/12*	*4.66*	2.90	*0.9341*	*MP*	*-0.0682*
21	7.06	---	1962	6.70	1417	01/11/12	5.95*	3.70*	0.9490		-0.0523
22	4.68	---	1962	4.20	1420	01/11/12	9.01*	5.60*	0.8974		-0.1082
23	3.42	---	1962	3.20	1424	01/11/12	9.49*	5.90*	0.9357		-0.0665
26	1.93	---	1962	1.80	1510	01/11/12	13.20	8.20	0.9326		-0.0697
27	1.09	---	1962	1.00	1513	01/11/12	15.77	9.80	0.9174		-0.0862
28	0.91	---	1962	0.81	1517	01/11/12	17.70	11.00	0.8901		-0.1164
29	0.88	---	1962	0.80	1525	01/11/12	18.99	11.80	0.9091		-0.0953
						Arithmetic Ratio:			0.9216		
* Denotes suspected distance error in 1962 Proof Tabulations						Log Ratio:			0.9214		

Call:	WTVB		Frequency (kHz):			1590		Power (kW):		1.0 kW	
				Bearing (°T):		222.0					
Point	1962 Day Proof Directional			2012 Day Directional			Distance	Distance	Direct		Log
#	mV/m	Time	Date	mV/m	Time	Date	km	mi	Ratio		Ratio
19	*4.20*	---	*1962*	*1.60*	*1306*	*01/11/12*	*3.83*	*2.38*	*0.3810*	*MP*	*-0.9651*
20	1.45	---	1962	1.00	1310	01/11/12	5.39	*3.35*	0.6897		-0.3716
21	1.07	---	1962	0.41	1313	01/11/12	6.03	*3.75*	0.3832		-0.9593
22	0.95	---	1962	0.36	1317	01/11/12	7.64	*4.75*	0.3789		-0.9704
23	0.66	---	1962	0.34	1322	01/11/12	9.09	*5.65*	0.5152		-0.6633
24	0.49	---	1962	0.28	1328	01/11/12	10.46	*6.50*	0.5714		-0.5596
25	0.42	---	1962	0.16	1332	01/11/12	10.94	*6.80*	0.3810		-0.9651
26	0.22	---	1962	0.11	1337	01/11/12	12.63	*7.85*	0.5000		-0.6931
27	0.114	---	1962	0.105	1342	01/11/12	14.96	*9.30*	0.9211		-0.0822
						Arithmetic Ratio:			0.5246		
						Log Ratio:			0.5005		

Exhibit 2.1
Tabulation of Nighttime Ratios

Nighttime Operation:

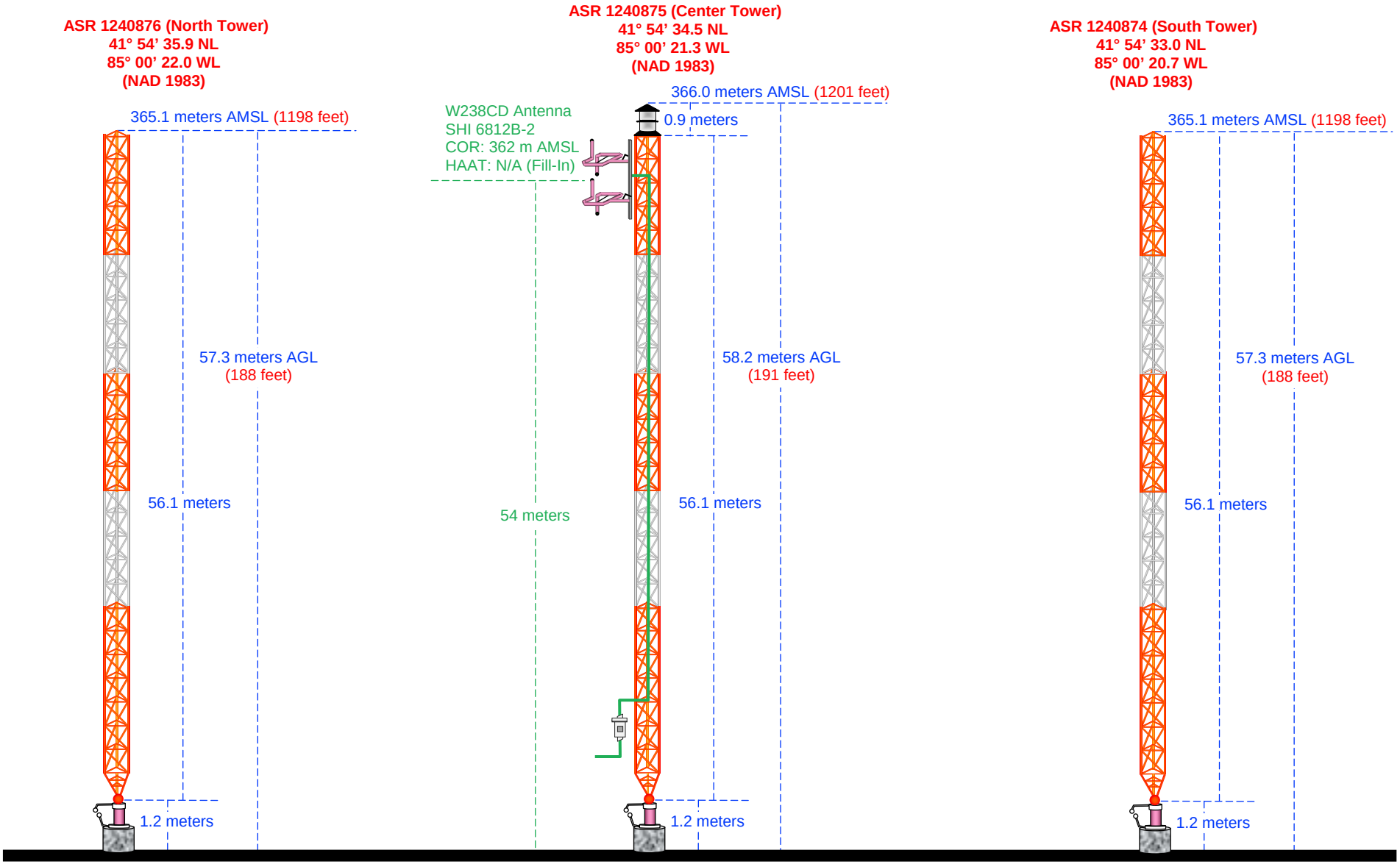
Tabulation of Partial Proof Measurements				
Azimuth (° True)	1962 Full Proof DA (mV/m/km)	62 DA/12 DA (Log Ratio)	2012 Partial Proof DA (mV/m/km)	Augmented Pattern (mV/m/km)
96.0°T	20.92	0.9782	20.46	24.14
115.0°T	8.53	0.6747	5.76	24.14
163.0°T	80.47	0.9214	74.15	82.08
222.0°T	24.14	0.5005	12.08	24.14

Tabulation of Monitor Point Values			
Radial	1962 Proof MP Values (mV/m)	2012 Partial MP Value (mV/m)	Licensed MP Limits (mV/m)
96.0°T	8.77	9.50	14.00
115.0°T	1.14	2.60	4.40
163.0°T	9.10	8.50	11.30
222.0°T	4.20	1.60	4.80

Tabulation of Antenna Monitor Values		
	Licensed Values	2012 Partial Values
Transmitter Power	1,000 watts	1,000 watts
Common Point	4.65 amperes	4.65 amperes
Antenna Monitor	Current	Current
Tower #1	0.365	0.360
Tower #2	1.000	1.000
Tower #3	0.500	0.600
Antenna Phase	Degrees	Degrees
Tower #1	-128.0°	-124.0°
Tower #2	0.0°	000.0°
Tower #3	+128.0°	+128.0°

Exhibit 3.1
Vertical Plan of Antenna System

The site is located at 182 North Angola Road, the city of Coldwater, Branch County, Michigan.	Site Location (NAD 27) NL: 41° 54' 34" WL: 85° 00' 21" (41-54-34.5 NL; 85-00-21.3 WL NAD 1983)	**MUNN-REESE, INC.** Broadcast Engineering Consultants COLDWATER, MI 49036



Ground Elevation = 307.8 m AMSL
(1010 feet)
Drawing is not to Scale

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(1010 feet)
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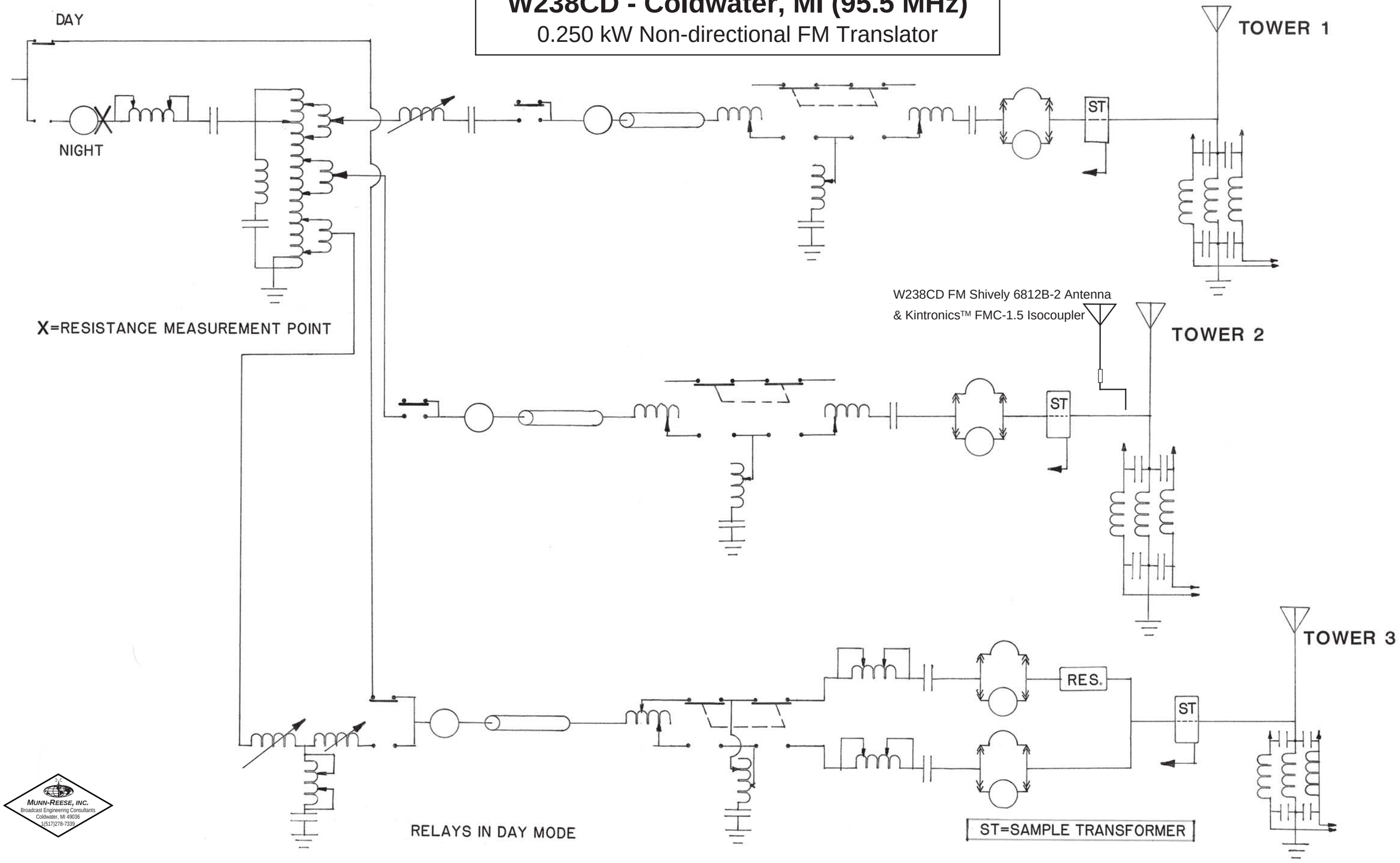
WTVB(AM) - Coldwater, MI (1590 kHz)

Daytime 5.0 kW NDA & Nighttime 1.0 kW DA

W238CD - Coldwater, MI (95.5 MHz)

0.250 kW Non-directional FM Translator



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