

# VHF-UHF DIGEST

## Wisconsin State FM Network

February 1970

**WWSA DULUTH**  
89.9 MHz CHANNEL 210  
37.0 KW 655'

**WHWC COLFAX**  
88.3 MHz CHANNEL 202  
50 KW 738'

**WHRM RIB MTN. PARK**  
91.9 MHz CHANNEL 220  
74.8 KW 1120'

**SURING**

**WHMD MARINETTE**  
91.5 MHz CHANNEL 218  
7.2 KW 510'

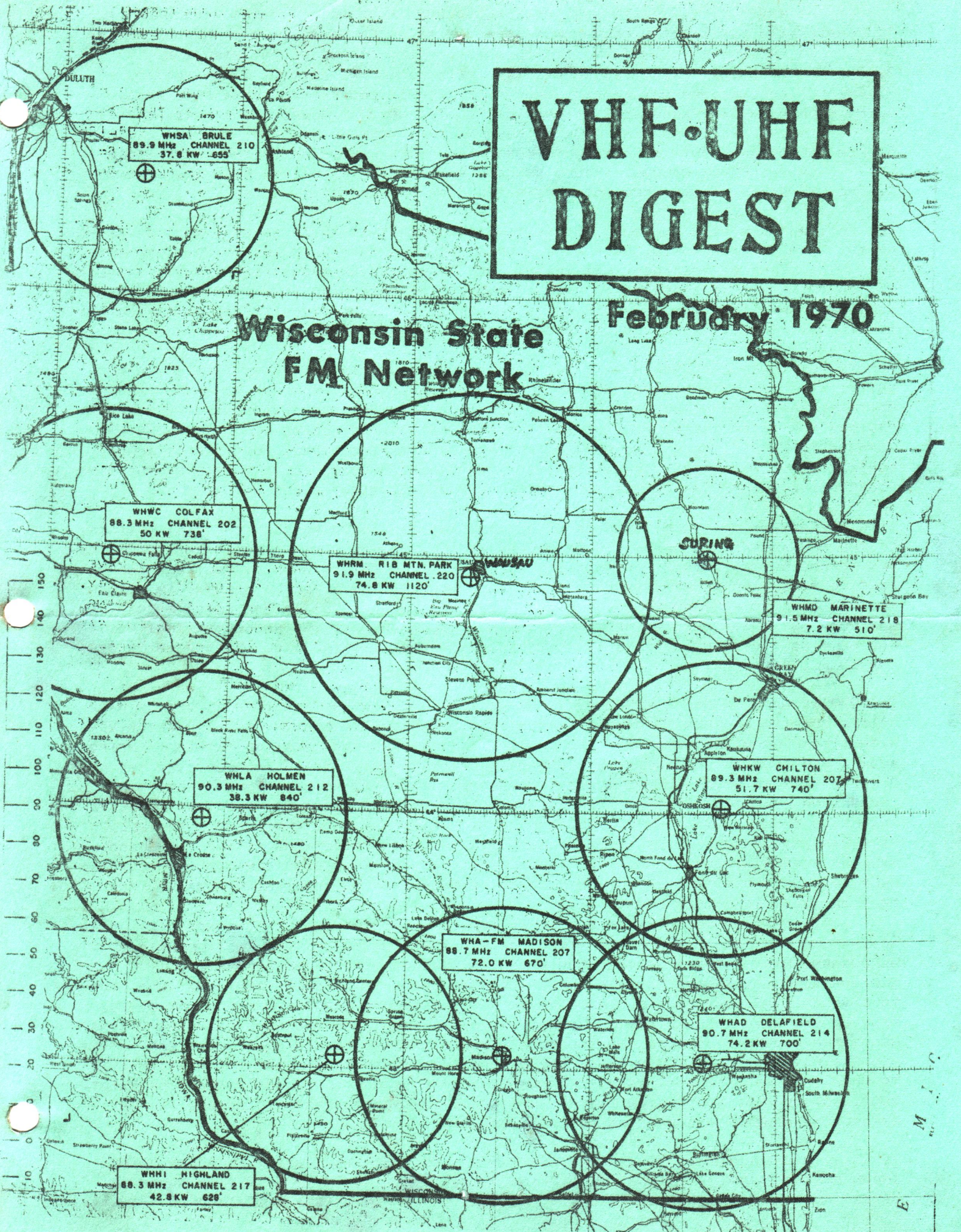
**WHLA HOLMEN**  
90.3 MHz CHANNEL 212  
38.3 KW 840'

**WHKW CHILTON**  
89.3 MHz CHANNEL 207  
51.7 KW 740'

**WHA-FM MADISON**  
88.7 MHz CHANNEL 207  
72.0 KW 670'

**WHAD DELAFIELD**  
90.7 MHz CHANNEL 214  
74.2 KW 700'

**WHHI HIGHLAND**  
88.3 MHz CHANNEL 217  
42.8 KW 628'



AT PRESS TIME, 31 JANUARY, SEVERAL COLUMNS HAVE NOT BEEN RECEIVED:

1. MORRIE SAID THE EASTERN COLUMN WUD BE ALONG IN A FEW DAYS, (ALTHO HE IS IN CALIF AT THE PRESENT TIME) AND IF I'D WAIT FOR IT, IT WUD BE IN THIS ISSUE.
2. THE FM-FCC COLUMN WAS GIVEN UP BY MARK LEWIS SO WE ARE SEEKING A NEW EDITOR.
3. THE CCI COLUMN DOES NOT APPEAR BECUZ THERE WASN'T ENUFF INFO FOR A FULL PAGE.
4. NO WORD FROM GARY ABOUT THE MAILBAG OR FCC-TV; HE JUST MOVED AND I PRESUME THAT IS THE REASON FOR THE LACK OF COLUMNS THIS MONTH.
5. FOR THE SECOND MONTH IN A ROW, NO WORD FROM ROGER WINSOR AS TO THE WHEREABOUTS OF THE FM-DX COLUMN. WOULD SOMEONE RELIABLE CARE TO TAKE OVER THE COLUMN?
6. THE VHF RADIO COLUMN DOES NOT APPEAR FOR LACK OF REPORTS.

ALL EDITORS HAVE BEEN INFORMED AT ONE TIME OR OTHER THAT THEIR COLUMNS SHUD BE AT HQ BY THE 25TH OF EACH MONTH, OR A CARD SHUD BE SENT BY THAT DATE INFORMING HQ THAT A COLUMN WILL NOT BE PREPARED THAT MONTH. WHEN I RECEIVE AN EXCUSE (IN TIME), I PUBLISH IT; SO IF NO EXCUSE APPEARS--OR EVEN IF THE EDITOR DOES HAVE AN EXCUSE--YOU'D POSSIBLY HELP THE SITUATION IF YOU'D WRITE THE EDITOR OF YOUR FAVORITE COLUMN ASKING WHY IT DID NOT APPEAR. MAYBE YOU CAN SUCCEED WHERE I HAVE FAILED.

MORRIE MENTIONED LAST MONTH THAT THE EASTERN TV COLUMN IS TO BE SPLIT INTO TWO EFFECTIVE WITH THE MARCH ISSUE. HE HAS ALREADY ARRANGED FOR THE SPLIT WITH THE TWO NEW EDITORS, ROGER BROWN AND DAVE POMEROY, BUT I DO NOT KNOW THE DIVISION BETWEEN THE 2 REGIONS NOR WHICH EDITOR WILL BE WRITING EACH COLUMN. SO PLEASE ALL EASTERN TV DX REPORTS TO MORRIE FOR HIM TO FORWARD TO THE RESPECTIVE EDITORS. ALSP PLEASE ALLOW FOR A TIME DELAY FOR THE RE-MAILING, SO YOUR REPORT SHUD BE IN TO MORRIE BY THE TIME YOU RECEIVE THIS VUD-- UNLESS YOU RECEIVE THE VUD BY FIRST CLASS MAIL.

WITH THE ADVENT OF THE BIG SUMMER DX SEASON, AND THE ADDED PROBLEM THE PAST 2 MONTHS OF THE NON-APPEARANCE OF THE FM DX COLUMN AT ALL, WE WUD LIKE TO SPLIT THE FM-DX COLUMN BEFORE SUMMER INTO 2 (OR POSSIBLY 3) COLUMNS. AN EDITOR SHUD BE RELIABLE AND BE ABLE TO TYPE, AND BE WILLING TO DEVOTE A FEW HOURS A MONTH TO THE COLUMN. IN RETURN YOU MAY RECEIVE FREE STENCILS OR FIRST CLASS MAILING OF VUDs AT 3RD CLASS PRICES--- NOT MUCH BUT THATS WHAT WE OFFER AT PRESENT. YOU ALSO HAVE THE KNOWLEDGE THAT YOU ARE HELPING YOUR CLUB AND ITS 150+ MEMBERS--NOT JUST SITTING BACK LOAFING WHILE OTHERS DO ALL THE WORK.

IN 1970 WE HOPE TO REACH 200 MEMBERS ALTHO THIS WILL NOT BE EASY. WE'LL REALLY HAVE TO DIG TO FIND ANOTHER 50 MEMBERS BECUZ THIS IS A LIMITED BRANCH OF THE DXING HIBBY. WITH A PUSH FROM ALL MEMBERS WE CAN DO IT, AND BESIDES THE PRESTIGE GAINED IN BEING SUCH A BIG CLUB OF SPECIALISTS, THERE WILL BE OTHER BENEFITS. GRADUALLY OVER THE PAST 2 YEARS THAT WE HAVE HAD THE CURRENT MIMEOGRAPH MACHINE, WE HAVE ENCOUNTERED EVER-INCREASING PROBLEMS. IN 1970 WE HOPE TO BE ABLE TO PURCHASE A NEW ELECTRIC MIMEO TO ENABLE US TO PUT OUT A BETTER VUD, AND DO IT FASTER AND MORE EFFICIENTLY AS WELL. WITH GARY NO LONGER LIVING IN MILWAUKEE, HIS GREAT CONTRIBUTIONS OF TIME AND LABOR WILL BE SORELY MISSED AT HQ. THE ADDED EFFICIENCY OF AN ELECTRIC MIMEO WUD BE A BIG HELP TO DAVE AND I IN THE BIG MONTHLY JOB WE ENCOUNTER IN PUBLISHING YOUR VUD AND THAT OF ABOUT 160 OTHER DXERS.

SO WHAT WE WUD LIKE TO SEE IS AN INFLUX OF NEW MEMBERS IN THE NEXT FEW MONTHS SO THAT WE CAN PAY CASH FOR THE MIMEO, RATHER THAN BUYING ON TIME INSTALLMENTS WITH THE CURRENT HIGH INTEREST RATES. OUR EXPENSES ALREADY WENT UP IN SEPTEMBER, 1969 WHEN ALL OUR SUPPLIES BECAME TAXABLE UNDER THE NEW WISCONSIN 4% SALES TAX; NOW WE'D LIKE TO GIVE THE TREASURY AN ADDED PADDING BEFORE SPENDING A LARGE SUM FOR A NEW MIMEO. MANY OF YOU HAVE INDUCED OTHER DXERS TO JOIN THE CLUB, AND YOU HAVE BEEN THE UNSUNG HEROES WHO HAVEDONE SO MUCH FOR THE CLUB WITHOUT PERHAPS REALIZING IT. BUT MANY OTHER MEMBERS HAVE NOT DONE THEIR PART, AND WE NOW HOPE EVERYONE WILL DO HIS PART IN 1970 TO MAKE THIS WTEDA'S BEST YEAR EVER. WE HAVE DONE VERY WELL IN OUR 2 YEARS OF EXISTENCE, BUT WE HOPE TO DO EVEN BETTER THIS YEAR. WE CANNOT AFFORD TO BE LAX IN OUR EFFORTS AS OTHERS HAVE DONE OR WE'LL GO DOWNHILL.

THIS EVENING OF 31 JANUARY AND 1 FEBRUARY THERE IS A JOINT TELETHON BEING SHOWN ON THE "LUCK" STATIONS, WLUC-6 AND WLUC-11 FROM 10 PM TO 6 PM. THE MARCH OF DÍMES TELERAMA OFFERS AN OPPORTUNITY FOR SOME DX IF CONDITIONS ARE RIGHT IN THE AREA.

# STATISTICS

Glenn Hauser, Editor FJB  
 Box 1466  
 APC San Francisco 96288 1970

## CHANNEL 5 TROPO TVDA RECORDS

Call	Location	Miles	Daer, Location	Comments
WKRG	Mobile AL	360	Don Ruland, Holly Hill FL	
KPHO	Phoenix AZ	300	Glenn Hauser, Langmuir Lab NM	
KPSA	Fort Smith AR	285	B. J. Bingham, Festus MO	
KTLA	Los Angeles CA	200	Robert Cooper, Fresno CA	
KPIX	San Francisco CA	310	Charles Wood, Ashland OR	
KCSJ	Pueblo CO	390	Glenn Hauser, Enid OK	now KOAA
WTTG	Washington DC	290	John Cody, Middletown CT	
		tie	Jim Pizzi, Rochester NY	
WFTV	Palm Beach FL	665	Ed Bourgeois, Norco LA	
WAGA	Atlanta GA	435	Ed Bourgeois, Norco LA	
WISN	Chicago IL	425	Robert Seybold, Duhkirk NY	was: WNBQ
WOI	Ames IA	445	Glenn Hauser, Enid OK	
KALB	Alexandria LA	690	Don Ruland, Holly Hill FL	
WABI	Bangor ME	285	Ron Boyd, Truro NS	
WHDH	Boston MA	530	Carlton Howington, Uniontown OH	
WEMM	Bay City MI	305	Jim Pizzi, Rochester NY	
KSTP	Saint Paul MN	640	Glenn Hauser, Enid OK	
KCMO	Kansas City MO	670	Ed Bourgeois, Norco LA	
KSD	Saint Louis MO	495	Carlton Howington, Uniontown OH	
KHAS	Hastings NB	355	Glenn Hauser, Oklahoma City OK	
KMME	Albuquerque NM	95	Glenn Hauser, Langmuir Lab NM	
WNLW	New York NY	300	Robert Seybold, Dunkirk NY	
WPTZ	Plattsburgh NY	430	Steve Weinstein, Pittsburgh PA	
WROC	Rochester NY	1015	Bedford Brown, Hot Springs AR	now ch 8
WSYR	Syracuse NY	45	Robert Cooper, Ithaca NY	now ch 3
WHEW	Syracuse NY	210	Frank Wheeler, Erie PA	was ch 8
WRAL	Raleigh NC	600	Jeff Kadet, Needham MA	
KFYR	Bismarck ND	250	Morris Sorensen, Weyburn Sask	
WLWT	Cincinnati OH	620	Ray Foster, Monroe LA	
WEWS	Cleveland OH	400	Bill Eckberg, Walnut IL	
KOCO	Enid OK	575	Bill Eckberg, Walnut IL	
KOBI	Medford OR	420	Kenn Cooper, Fresno CA	
WCSC	Charleston SC	505	Carlton Howington, Homestead FL	
KORN	Mitchell SD	450	Bill Eckberg, Walnut IL	
WMCT	Memphis TN	450	Glenn Hauser, Enid OK	now WMC
WLAC	Nashville TN	610	Glenn Hauser, Enid OK	
WCYB	Bristol TN	325	Robert Berg, Norfolk VA	
WBAP	Fort Worth TX	440	Clarence Rareshide, New Orleans LA	
KENS	San Antonio TX	1120	Carlton Howington, Homestead FL	
KRGV	Weslaco TX	1080	Carlton Howington, Homestead FL	
KSL	Salt Lake City UT	200	Gordon Simkin, Idaho Falls ID	
KING	Seattle WA	365	Eddie Albright, Medford OR	
WJPB	Weston WV	280	Richard Nieman, Buffalo NY	was ch 35; now WDTV
WFRV	Green Bay WI	495	Steve Weinstein, Pittsburgh PA	
KFBC	Cheyenne WY	95	Glenn Hauser, Denver CO	
CKE	Brandon Man	135	Fred McCormack, Des Lacs ND	
"CBWCT3"	Fort Frances Ont	365	Fred McCormack, Des Lacs ND	
CHOV	Pembroke Ont	185	Jim Pizzi, Rochester NY	
KSO	Sudbury Ont	340	David Egan, Valleyfield PQ	
CKBI	Prince Albert Sask	190	Jim Dillon, Regina Sask	
CJFB	Swift Current Sask	140	Jim Dillon, Regina Sask	
CMHQ	Santa Clara Cuba	220	Carlton Howington, Homestead FL	
KEJ	Ciudad Juarez Chih	165	Glenn Hauser, Langmuir Lab NM	
WORA	Mayaguez PR	140	Robert Cooper, Frederiksted VI	

TV RANK

Rank	Stations	States	Provinces	Countries	Who & Where
1	465	49+DC	8	5	Robert Seybold, Dunkirk/Fredonia NY
---	418	43+DC	6	5	Glenn Hauser, OK, NM, WI, MO, CO
---	353	42+DC	6	4	Glenn Hauser, Enid & Oklahoma City OK
2	346	42+DC	6	4	Glenn Hauser, Enid OK
3	225	32+DC	9	3	Frank Wheeler, Erie PA
4	215	41+DC	5	10	Robert Cooper, Fresno CA
---	124	---	---	---	Pat Dyer, San Antonio & Austin TX
---	117	32	4	3	Glenn Hauser, Oklahoma City OK
---	117	31	5	4	Glenn Hauser, Albuquerque & Langmuir NM
5	115	26	3	5	Fred Nordquist, White Sands MR NM
---	107	30	5	4	Glenn Hauser, Albuquerque NM
6	108	32	1	5	Pat Dyer, San Antonio TX (sry out order)
---	97	24+DC	4	4	Fred Nordquist, Tulsa OK
---	89	29	2	5	Pat Dyer, Austin TX
---	63	24	1	3	Fred Nordquist, El Paso TX
---	57	18	2	2	Fred Nordquist, Rochester NY
7	47	11	0	3	Bill Heusmann, Des Moines IA
---	44	15	2	3	Glenn Hauser, Denver CO

I'll abolish the requirement that totals must be correct to last day of month--if more of you report. Only 5 new reports came this month, and without more than this, there's not much point continuing with rank listings. Please make your rank report on a separate sheet or card from other material. Tnx.

ADDITIONS AND REVISIONS

2	XEPM	Ciudad Juarez Chih	T	165	Glenn Hauser, Langmuir Lab NM	new
2	XEFE	Nuevo Laredo Tams	T	145	Pat Dyer, San Antonio TX	new
3	WJMN	Escanaba MI	T	245	Roger Brown, East Lansing MI	Draeb 90
	XEFB	Monterrey NL	T	280	Pat Dyer, San Antonio TX	new
10	KTTS	Springfield MO		815	Robert Seybold, Dunkirk NY	Draeb 580
	KMED	Medford OR		15	Michael B Northam, Ashland OR	new
	KOAP	Portland OR		50	Michael B Northam, Salem OR	new
15	WHED	Hanover NH		365	Robert Seybold, Dunkirk NY	new
	WBRA	Roanoke VA		360	Robert Seybold, Dunkirk NY	Vogt 185
16	WUSI	Olney IL		525	Robert Seybold, Dunkirk NY	Draeb 390
22	WVUT	Vincennes IN		245	Gary Olson, Barrington IL	new
	WKPI	Pikesville KY		385	Robert Seybold, Dunkirk NY	new
33	WMUL	Huntington WV		115	Dave Pomeroy, Lexington KY	new
34	KFIZ	Fond du Lac WI		365	Roger Gravelle, Saint Thomas Ont	Luoma 280
50	WCAE	Saint John IN		415	Robert Seybold, Dunkirk NY	Draeb 200
71	WCTB	Bridgeport CT		325	Robert Seybold, Dunkirk NY	new
75	K75CB	Russell KS		240	Robert Cooper, Oklahoma City OK	new
	K75AF	Ely NV		0	Bill Heusmann, mobile	KUTV-2
	K75CD	Lovelock NV		5	Bill Heusmann, mobile	KOFL-4
78	K78CJ	Lovelock NV		5	Bill Heusmann, mobile	KTVN-2
79	W79AE	Detroit MI		200	Robert Seybold, Dunkirk NY	Brown 70
	K79AU	Delta UT		5	Bill Heusmann, Delta UT	KUED-7
80	K80BI	Winnemucca NV		10	Bill Heusmann, mobile	KTVB-7?
83	W83AB	Detroit MI		200	Robert Seybold, Dunkirk NY	Brown 70
	K83AF	Delta UT		5	Bill Heusmann, Delta UT	KSL-5

Special congrats to DXers Seybold and Cooper on their long-haul UHF translator catches!

A look ahead. After lowband tropo is concluded next month, we'll run an updated ch 2 skip listing--there've been about 30 corrections since the first run, and some additions. If you think you may have a ch 2 record, send it in now...but except for the newer stations, it'll almost have to be 1500+ mi. After that, MS records...and hopefully FM!

the

# RHOMBIC

RODERICK LUOMA  
ENGINEER, WJBK-TV  
DETROIT, MICHIGAN

EVERY DXER AT SOMETIME OR OTHER IN HIS CAREER HAS PROBABLY WONDERED WHAT A RHOMBIC ANTENNA COULD DO FOR HIS CAREER, RECEPTION OF THOSE PRECIOUS MICROVOLTS. UNFORTUNATELY THE SPACE REQUIRED FOR SUCH A PROJECT RULES OUT THIS RECEPTOR FOR MOST DXERS, INCLUDING MYSELF IN MY METROPOLITAN LOCATION. HOWEVER WHEN I GOT MARRIED A FEW YEARS AGO THE IDEAL SITUATION AROSE DUE TO THE FACT THAT MY WIFE'S PARENTS LIVE ON A FORTY ACRE FARM IN NORTH CENTRAL MINNESOTA. THE TERRAIN IS QUITE FLAT AND THE AREA IS RELATIVELY FREE OF STRONG VHF LOCAL STATIONS, (KNOWN TO THE DXER AS PARADISE). YET THERE ARE MANY DISTANT STATIONS JUST WAITING TO BE DRAWN INTO A THIRSTY RF AMPLIFIER. SO I HAVE ALL THE EXCUSES I NEED; NOW ALL I HAVE TO DO IS CONVINCING MY IN-LAWS THAT THEY NEED A RHOMBIC. WELL, THIS ISN'T TOO DIFFICULT A JOB BECAUSE THEY RECEIVE WITH REGULARITY ONLY ONE NETWORK SOURCE, THAT BEING NBC FROM KOMT-7 ALEXANDRIA AND ITS SATELLITE KNMT-12 WALKER. MINNEAPOLIS, ST. PAUL, DULUTH, AND FARGO ARE RECEIVED BUT WITH CHARACTERISTIC  $\phi$  FADING IN THE DEEP FRINGE AREA IN WHICH THEY LIVE.

SO BECAUSE I WORK FOR A CBS STATION AND ANOTHER NETWORK SOURCE IS DESIRABLE ANYHOW, THAT IS THE NETWORK THAT I THOUGHT WOULD BE APPROPRIATE. NOW THE SELECTION IS NARROWED DOWN TO KXJB-4 FARGO, WCCO-4 MINNEAPOLIS, AND KDAL-3 DULUTH. KDAL IS THE LEAST LIKELY CHOICE AT 146 MILES. FARGO IS THE CLOSEST AT 112 MILES, BUT I CHOSE WCCO AT 142 MILES BECAUSE I FELT THEY WOULD PROVIDE BETTER LOCAL PROGRAMMING, AND MORE TV AND FM STATIONS ARE AVAILABLE IN THAT DIRECTION.

SOME HOURS WERE SPENT DOING RESEARCH ON RHOMBICS. THE PUBLIC LIBRARY PROVIDED SOME INFORMATION, BUT MOST INFORMATION WAS READ IN THE ARRL AMATEUR RADIO HANDBOOK AND Terman's RADIO ENGINEERING. THE MOTIVATING FORCE, THOUGH, THAT LED ME TO BEGIN THIS PROJECT WAS THE SERIES OF ARTICLES IN JULY, AUGUST AND SEPTEMBER, 1960 ISSUES OF DXING HORIZONS WHICH DESCRIBED A RHOMBIC INSTALLATION AT MARATHON, ONTARIO ON THE NORTH SHORE OF LAKE SUPERIOR. I FIGURED THAT IF REASONABLY GOOD RESULTS CAN BE HAD OF WBAY-2 AT 300+ MILES, 142 MILE RECEPTION HERE SHOULD BE PRETTY GOOD.

THE NAME RHOMBIC COMES FROM THE WORD RHOMBUS WHICH MEANS DIAMOND-SHAPED, THE CONFIGURATION OF THE ANTENNA AS VIEWED FROM THE TOP. AFTER CHECKING THEORETICAL GAIN CHARTS AND PRACTICAL CONSIDERATIONS, I DECIDED THAT 6 WAVELENGTHS ON A LEG WOULD BE MY CHOICE. HOWEVER, IN VIEW OF THE FACT THAT KXJB-4 IS NEARLY OPPOSITE IN DIRECTION FROM WCCO, MAXIMUM FRONT-TO-BACK RATIO IS DESIRED---AND TO ACHIEVE THIS WITH A RHOMBIC THE LEG LENGTH SHOULD BE AN ODD MULTIPLE OF  $\frac{1}{4}$  WAVELENGTHS; SO I CHOSE  $5\frac{3}{4}$  WAVELENGTHS WITH CHANNEL 4 VIDEO AT 67 MHz AS THE DESIGN CENTER. USING THE FORMULAS IN ARRL HANDBOOK, THE LEG LENGTH CAME TO 84.5 FEET. THE WIDTH OR SHORT DIAGONAL CAME TO 63.2 FT AND THE OVERALL LENGTH OR LONG DIAGONAL CAME TO 156.6 FT. THE LEAD-IN CONNECTION IS MADE WHERE THE TWO LONG SIDES COME TOGETHER. IF THE OPPOSITE END OF THE LEAD CONNECTION POINT IS LEFT OPEN, THE ANTENNA IS NARROWBAND WORKING WELL ONLY AT THE DESIGNED FREQUENCY, AND WORKS EQUALLY WELL IN FORWARD AND BACK DIRECTION. SO TO ACHIEVE A BROADBAND AND UNIDIRECTIONAL CHARACTERISTIC, THE FRONT END MUST TERMINATE IN AN 800 OHM RESISTANCE WHICH IS THE APPROXIMATE CHARACTERISTIC IMPEDANCE OF THE RHOMBIC ANTENNA. BECAUSE OF THIS 800 OHMS Z, ONE CAN'T EMPLOY CONVENTIONAL 300 OHM LINE AND EXPECT GOOD RESULTS. A LOGICAL CHOICE FOR THIS PROBLEM WOULD BE A MATCHING TRANSFORMER FOR 800/300 OHMS BUT I'VE NEVER SEEN ONE AND DON'T HAVE THE EQUIPMENT TO BUILD ONE EITHER. ANOTHER METHOD WOULD BE TO USE A QUARTER WAVE MATCHING STUB BUT THIS  $\psi$  IDEA WAS DISCARDED BECAUSE SUCH A DEVICE IS FREQUENCY SELECTIVE AND THIS WOULD DEFEAT THE BROADBAND CHARACTERISTIC WE DESIRED IN THIS INSTALLATION. ANOTHER MORE PRACTICAL INEXPENSIVE ALTERNATIVE IS THE TAPERED TRANSMISSION LINE. IT IS CONSTRUCTED SO THAT THE ANTENNA'S 800 OHMS Z IS CONNECTED TO THE 300 OHM LINE BY 2-20 AWG WIRES GRADUALLY TAPERED FROM A DISTANCE OF 7 INCHES TO  $\frac{7}{16}$  INCH BETWEEN THEM.  $\phi$  POLYSTYRENE RODS ARE USED TO MAINTAIN THE CORRECT TAPER. IF THIS TAPER IS DONE SLOWLY IN TERMS OF WAVELENGTH, THE POWER TRANSFER IS VERY EFFICIENT. IN THIS INSTALLATION THE TAPER IS ACCOMPLISHED OVER A DISTANCE OF 25 FT--OR JUST SHY OF 2 WAVELENGTHS ON CHAN. 4. EXPERIMENTED WITH BOTH THE THEORETICAL LOGARITHMIC TAPER AND THE PRACTICAL LINEAR TAPER AS DESCRIBED BY Terman, AND FOUND THE LINEAR DEFINITELY SUPERIOR IN PERFORMANCE.

A SIX WAVELENGTH RHOMBIC IS A VERY DIRECTIONAL ANTENNA WITH THE MAIN LOBE BEING ABOUT 6 DEGREES WIDE AT THE 3 DB HALF-POWER POINTS  $\psi$ , WITH MANY MINOR LOBES ALSO EXISTING. ORIENTATION IS QUITE CRITICAL AND MUST BE DETERMINED USING A SURVEYOR'S INSTRUMENT. FORTUNATELY I WAS ABLE TO BORROW A SURVEYOR'S TRANSIT AND A REASONABLY ACCURATE COMPASS.

WITH MY BROTHER-IN-LAW'S HELP I LAID OUT THE PROPER DIRECTION OF THE LONG AXIS OF THE ANTENNA. I WROTE TO THE MINNESOTA DEPT OF HIGHWAYS TO FIND OUT THE MAGNETIC DECLINATION IN THE AREA, (THE DEGREE OF VARIANCE BETWEEN TRUE NORTH AND MAGNETIC NORTH). WITH THIS INFORMATION I WAS ABLE TO PLOT ON A HIGHWAY DEPT MAP THE PROPER ORIENTATION OF THE ANTENNA. ONE PROBLEM REMAINED; WCCO HAD APPLIED FOR A NEW TRANSMITTER LOCATION 3 DEGREES NORTH OF ITS OLD ONE. SO DUE TO THE LACK OF HIGH ACCURACY IN LAYING OUT THE ANTENNA AND THE NEW TOWER LOCATION, I DECIDED TO CONSTRUCT THE ANTENNA WITH A PROVISION TO ORIENTATE IT, ( A RHOMBIC ON A ROTOR?) FOUR 25 FT TELEPHONE POLES ARE USED TO SUPPORT THE ANTENNA; EACH HAS BOLTED TO ITS TOP A DOUBLE 2X4 EXTENSION PUTTING THE TOTAL HEIGHT AT 35 FT. WITH FOUR FEET UNDER THE GROUND, THE ANTENNA HEIGHT IS ACTUALLY ABOUT 30 FT. THE FRONT POLE HAS ATTACHED TO IT A 12 FT CROSSARM AT THE TOP WITH A PULLEY SYSTEM TO ALLOW A HORIZONTAL SWING OF ABOUT 10 FT, OR 4 DEGREES. A TRACTOR-MOUNTED POST-HOLE DIGGER WAS FOUND TO BE VERY USEFUL TO SUPPLEMENT A MANUAL DIGGER. ERECTION OF THE POLES PROVED TO BE THE MOST TREACHEROUS OPERATION, BUT THANKS TO A COUPLE UNCLES, MY FATHER-IN-LAW AND A TRACTOR-MOUNTED HYDRAULIC MANURE SCOOP, WE GOT THE POLES UP IN ONE PIECE, (ALTHOUGH THE HEAVY FRONT POLE WAS IN DOUBT AT ONE POINT).

THE ANTENNA ITSELF IS CONSTRUCTED OF #14 COPPERWELD WIRE WHICH I FOUND TO BE MORE THAN ADEQUATE; IN FACT ANY LARGER WIRE WOULD BE ALMOST IMPOSSIBLE TO WORK WITH. E.F. JOHNSON #104 INSULATORS WERE USED AS WELL AS SOME CUSTOM-MADE FIBERGLAS BLOCKS MADE BY MY BROTHER FOR USE AT THE ANTENNA LEAD-IN AND TERMINATING POINTS. ANTENNA SOLDERING AND ASSEMBLY WERE DONE NEAR THE HOUSE AND CARRIED TO THE LOCATION, RAISED INTO POSITION WITH ROPE AND PULLEY. SEARS RAYON-CORE PLASTIC CLOTHESLINE WAS USED TO SUPPORT THE ANTENNA FROM THE POLES; IT CLAIMS A 500 LB CAPABILITY, AND AFTER 18 MONTHS IT IS STILL IN GOOD CONDITION.

I CHOSE 300 OHM OPEN-LINE LEAD-IN BECAUSE OF ITS LOW-LOSS CHARACTERISTIC AND RELATIVELY LOW COST. EVEN THOUGH THE CONDUCTORS ARE #18 COPPERWELD, I DISCOVERED FROM SEVERAL LINE BREAKS THAT CONSIDERABLE SUPPORT IS NECESSARY. A LIGHTER WEIGHT SEARS CLOTHESLINE WAS STRUNG PARALLEL TO THE LEAD PATH WITH SUSPENDED SNAP-TYPE STAND-OFFS (POLYETHYLENE) HOLDING ONTO THE SPACERS OF THE OPEN-WIRE LINE. REGULAR OPEN-WIRE S/OFFS WERE FOUND UNSATISFACTORY BECAUSE THE WIRE HAD A TENDENCY TO BREAK WHERE THE SCREW PRESSED AGAINST IT; THE CONTINUOUS FLEXING CAUSED BY THE WIND CAUSED THIS PROBLEM.

A WINEGARD AP-83 PREAMP WAS INSTALLED AT THE HEAD-END NEAR THE BASE OF THE TAPERED MATCHING LINE, WITH LIGHTNING ARRESTORS ON EITHER SIDE OF THE PREAMP. (THIS ANTENNA IN AN OPEN FIELD IS A GREAT TARGET FOR LIGHTNING.) ANOTHER ARRESTOR WAS USED AT THE POINT WHERE THE LEAD ENTERS THE HOUSE; THIS APPARENTLY WASN'T GOOD ENOUGH BECAUSE THE TRANSISTOR HAS BLOWN TWICE DUE TO STATIC ELECTRICITY; (I SOLVED THE PROBLEM BY REMOVING THE PREAMP. \*850 MILES IS A LONG WAY TO GO FOR A SERVICE CALL!!)

IN RAINY WEATHER LINE LOSS INCREASES A COUPLE DB AND CAN BE SEEN ON THE TV SCREEN, BUT OTHERWISE LOSS IS ABOUT 1.4 DB IN THE 450 FT RUN OF LEAD-IN TO THE TV SET.

NOW TO THE HEART OF THE SUBJECT: HOW DOES THIS RHOMBIC COMPARE WITH THE PREVIOUSLY INSTALLED WINEGARD SP-55X? COMPARISONS ARE MADE WITHOUT PRE-AMPS ON EITHER ANTENNA. I THINK RESULTS ARE GOOD. A JERROLD SIGNAL STRENGTH METER INDICATES THE RHOMBIC GAIN SLIGHTLY MORE THAN 6 DB ON CHANNEL 4, OR DOUBLE THE VOLTAGE DELIVERED BY THE WINEGARD. ON KTCA-2 THE GAIN IS ALSO 6 DB, AND ON KSTP-5 SLIGHTLY LOWER AT 4.7 DB. THE TEST SET-UP ENABLES AN IMMEDIATE SWITCH FROM ONE ANTENNA TO THE OTHER.

65 SINCE FEW OF US HAVE A SIGNAL STRENGTH METER THIS DOESN'T MEAN AN AWFUL LOT. WHAT YOU WANT TO KNOW IS WHAT IS THE DIFFERENCE ON THE SCREEN? MY NOTES SAY THAT THE 6 DB INCREASE ON 2 AND 4 IS QUITE EVIDENT WITH APPRECIABLE DECREASE IN SNOW OR NOISE. ON 5 THE SIGNAL INCREASE IS QUITE EVIDENT BUT NOT AS DRAMATIC AS ON 2 AND 4. WHEN THE VIDEO DROPS TO UNREADABLE ON THE WINEGARD, LARGER PHOTO DETAIL IS STILL READILY APPARENT WITH THE RHOMBIC. I HAVE PHOTOS ILLUSTRATING THE DIFFERENCES BUT SUCH FINE DETAILS IN THE NOISE LEVEL WOULD NOT REPRODUCE WELL IN THE VUD. ALSO NOTICED WAS THE REDUCED EFFECT OF MS CO-CHANNEL INTERFERENCE, PROBABLY DUE TO THE SHARPER LOBE OF THE RHOMBIC. ACTUAL SIGNAL STRENGTHS VARIED FROM 0 TO 220 MICROVOLTS DURING MY OBSERVATION PERIODS. WCCO-4 WAS VERY GOOD TO EXCELLENT FOR ABOUT 60% OF THE TIME, FAIR 30%, POOR 10%. DEEP FADES WOULD OCCUR OCCASIONALLY BUT ONLY LAST ABOUT 5 SECONDS. WHAT ACTUALLY APPEARED TO BE HAPPENING WAS MULTIPATH RECEPTION, CANCELLING EACH OTHER WHEN 180 DEGREES OUT OF PHASE. THIS SEEMED TO BE CONFIRMED BY THE FREQUENT GHOSTING THAT OCCURRED. MOST OF THE POOR RECEPTION WAS DUE TO CCI FROM KXJB-4. THIS SUMMER I PLAN TO EXPERIMENT FURTHER WITH THE 800 OHM TERMINATION AS CHANGING THIS IS SUPPOSE TO STEER THE BACK LOBE, AND PERHAPS I CAN ACHIEVE A BETTER REJECTION OF FARGO BY VARYING THE TERMINATION RESISTANCE.

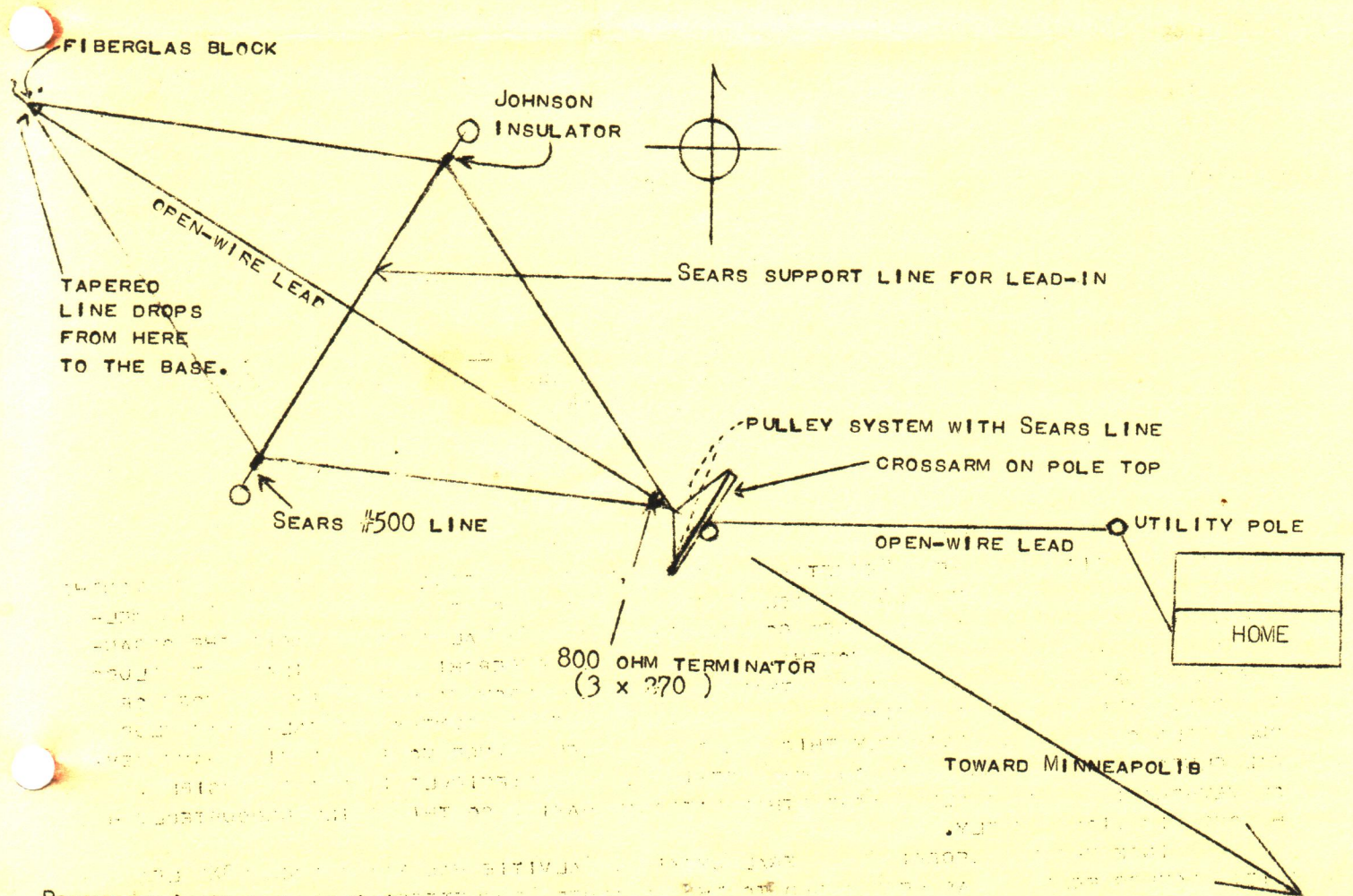
FM RADIO SIGNALS APPEAR TO BE INTERCEPTED QUIT WELL, TOO. THE RECEIVER USED IS A TELEX PHONOLA WHICH PROBABLY NOT THE BEST IN SENSITIVITY, BUT IT DELIVERED GOOD STEREO FOR 95% OF THE TIME FROM RELATIVELY LOW-POWERED SHORT-TOWERED STATIONS IN THE TWIN CITIES.

THUS THE RHOMBIC HAS ILLUSTRATED ITS BROADBAND PERFORMANCE OVER THE RANGE OF 54-108 MHz. BUT WHAT OF THE HIGH BAND CHANNELS 7-13? WELL HERE IT DOESN'T CUT THE MUS=TARD. PERFORMANCE IS BAD WITH ABOUT 6-8 DB LESS GAIN ON 9 THAN WITH THE WINEGARD. THIS IS PROBABLY DUE TO WHAT TERMAN SAYS; THAT AT FREQUENCIES MUCH ABOVE THE DESIGNED CENTER FREQUENCY, THE MAIN LOBE SPLITS INTO TWO LOBES. HE ALSO SAYS THAT AT FREQUENCIES LOWER THAN THE DESIGNED CENTER, THE MAIN LOBE BROADENS UNTIL THE FREQUENCY IS 40-50% OPTIMUM. HENCE GOOD GAIN SHOULD BE ACHIEVED DOWN TO ABOUT 30 MHz.

BECAUSE OF THE POOR SHOW ON THE HIGH-BAND, I DECIDED TO USE THIS RHOMBIC ONLY FOR THE LOW AND FM BANDS. THROUGH THE USE OF A HIGH-LOW ANTENNA COUPLER,, THE WINEGARD IS USED ON THE HIGH-BAND CHANNELS. A WINEGARD CA-FMB COUPLER IS USED TO TAP OFF THE FM SIGNALS TO FEED THE FM RADIO, WHILE THE REMAINDER OF THE RHOMBIC SIGNAL FEEDS THE 1958 RCA MONOCHROME RECEIVER.

NOW YOU MAY SAY THAT THIS SAME SIGNAL INCREASE ON CHANNEL 4 COULD HAVE BEEN ACHIEVED WITH A PAIR OF 8 OR 10 ELEMENT YAGIS, AND THIS IS PROBABLY TRUE, ALTHOUGH FADING EFFECTS MAY BE MORE SEVERE WITH YAGIS DUE TO THE SMALLER CAPTURE AREA. HOWEVER, WHAT HAS BEEN ACHIEVED IS NOT ONLY STACKED YAGI RECEPTION ON 4 BUT ALSO COMPARABLE INCREASED STRENGTH ON OTHER CHANNELS AND FM FREQUENCIES AS WELL. IN SUMMATION, HIGH GAIN BROADBAND PERFORMANCE HAS BEEN ACHIEVED AT LOWER COST THAN A COMPARABLE SET OF STACKED YAGIS. AND BESIDES, MOST ANYONE CAN PUT UP A FEW YAGIS BUT WHO HAS THE OPPORTUNITY TO ENGAGE IN SUCH A CHALLENGING PROJECT AS THIS IN HIS LIFETIME.

73,  
Rod Luoma.



RODERICK A. LUOMA, 15437 ASBURY PARK, DETROIT, MICHIGAN 48227

# VHF-UHF DIGEST

PLEASE INFORM HQ PROMPTLY OF CHANGE OF ADDRESS.  
THIRD CLASS IS NOT FORWARDABLE, AND A 30¢ FEE  
IS CHARGED FOR REMAILING IF NOT NOTIFIED

IS THE OFFICIAL MONTHLY PUBLICATION OF THE  
WORLDWIDE TV-FM DX ASSOCIATION. PUBLISHED  
THE LAST WEEK OF EVERY MONTH AT WTFDA HQ.  
MAKE CHECKS PAYABLE TO THE CLUB, SEND TO:  
P. O. Box 5001, MILWAUKEE, WI. 53204, USA.

REGULAR EDITION:

\$4.50--ONE YR.  
\$8.50--TWO YR.  
(IN US FUNDS:  
USA, CANADA,  
AND MEXICO.)  
NOTE: FOR FIRST  
CLASS, ADD \$2/YR.

OVERSEAS EDITION:

\$3.50 PER YEAR OR  
EQUIVALENT IN  
OTHER CURRENCIES;  
(FIVE MONTH TRIAL:  
ONLY \$1.50, BUT  
GIVEN ONLY ONCE.)  
SPECIAL ARRANGEMENTS  
ON REQUEST IF YOU  
WISH TO REMIT IN  
OTHER ITEMS OF VAL-  
UE RATHER THAN CASH,  
FOR THOSE IN SOCIA-  
LIST COUNTRIES.)

REGULAR EDITION:

SENT OUTSIDE AR-  
OVE COUNTRIES:  
\$5 PER YEAR.  
SAMPLES---30¢.

ANARC headquarters Gray Scrimgeour- 227 Hanna Road Toronto 350 Ontario  
NEWSLETTER PUBLISHER Richard E. wood, Dept. of European Languages,  
Univ. of Hawaii, Honolulu, Hawaii, 96822  
ADVISORS- Donald Jensen, William Eddings, Thomas R. Sundstrom,  
F. Dombrowski, Gunnar Carlsson, Serge Neumann, Glenn Hauser  
AMERICAN REPS\* DSWCI- Alan H. Roth

PROJECTS, DX Museum, MOY Gerry Dexter  
DX Census Phil Sullivan  
FRC Roger Camire Box 86 Hudson NH 03051  
BCB Jerry Starr, Radio Station WHOT Youngstown OH 44505  
OSLs Ed Pyatt  
Merits awards

In a nut shell 1969 has been a quiet year, No new formal proposals  
Only voting were on the convention site and consitution change s of  
1968, All committees are doing fine work.

ANARC

EDXC

WITH THE ELECTION OF A NEW SECRETARY GENERAL FOR THE EUROPEAN DX COUNCIL A FEW MONTHS  
AGO, THE PUBLISHING OF THE EDXC NEWSLETTER HAS ALSO MOVED TO THE NEW EDXC HQ IN HEL-  
SINKI, FINLAND. ADOPTION OF A NEW CONSTITUTION FOR EDXC ALSO HAS CHANGED THE ORGAN-  
IZATION DRASTICALLY IN RECENT MONTHS. PREVIOUSLY, MEMBERSHIP WAS AVAILABLE TO CLUBS  
ONLY ON AN OFFICIAL COUNTRY BASIS; THAT IS, ONE CLUB FROM EACH COUNTRY WAS MORE OR  
LESS DESIGNATED AS THE OFFICIAL REPRESENTATIVE FOR THAT COUNTRY AND ONLY THAT CLUB  
COULD BELONG TO EDXC. OBVIOUSLY THIS CREATED PROBLEMS SINCE MOST COUNTRIES HAVE SEV-  
ERAL CLUBS AND DECIDING WHICH ONE WAS "OFFICIAL" WAS DIFFICULT IF NOT IMPOSSIBLE.  
NOW MEMBERSHIP IS ON A CLUB RATHER THAN NATIONAL BASIS, SO THIS I WILL UNDOUBTEDLY HELP  
THE ORGANIZATION GREATLY.

SINCE THE NEW SECRETARY GENERAL JYRKI K. TALVITIE HAS TAKEN OVER EDXC LEADER-  
SHIP, ANOTHER FEATURE HAS BEEN ADDED TO THE EXPANDED NEWSLETTER: A DX BULLETIN ISSUED  
AS A PUBLIC SERVICE TO EDXC SUBSCRIBERS BY THE DX CLUBS OF FINLAND.



# TECH NOTES

BCB'S TFCCK NOTES  
February 1970

Page One

## COMPARISON - 1968 V.S. 1969 SPCRADIC E SEASONS

In the July 1969 Bulletin we presented some numbers that indicated just what type (ie. quality) Es-season we had in the summer of 1968. Utilizing club member reports filed with the Bulletin columns, information as to the type of (FM) Es openings observed was compiled various ways to develop a sum total picture of the summer 1968 Es season.

A similar study has been completed for the 1969 summer Es season. Once again, FM E skip reports have been utilized, on the theory that when E skip brings in DX as high in frequency as the American FM band (88 to 108 MHz), the E cloud (reflecting surface) is unusually (extra) dense. By tabulating Es in the FM band, we have a handy method of tabulating year to year performance of the Es season. Although no complete study has been made, between the 1968 and 1969 low band TV DX Es season, a 'quick' check for both years indicates that percentages and figures (on a comparative year to year basis) for FM are equally accurate for low band TV as well.

### IN GENERAL

The two Es seasons were indeed quite dis-similar. The 1969 season got under way later, peaked later and provided fewer openings, shorter openings and smaller (by geographic area covered) openings than 1968. The year to year differences in Es openings is seldom as marked as between 1968 and 1969. The peak of the current (11 year) solar (sun spot) cycle occurred early in 1969, and the performance of the 1969 summer Es season would seem to suggest that they theory that when solar activity is high, Es activity drops, is (or at least was in this case) quite valid. A second hypothesis, that Es activity is greater than normal in the years immediately following a solar cycle peak (ie. such as 1970 and 1971) will have to await verification after the completion of the two coming summers.

### Total Days FM Es Open

Month	1968	1969
April	3	0
May	8	3
June	9	6
July	14	12
August	2	4

Based upon reports appearing in WWTVM DXA Bulletin for both years.

### Total Minutes Open (\*)

1968	1969	Month
74	0	April
389	319	May
2030	462	June
850	1062	July
113	81	August
<u>3456</u>	<u>1924</u>	Totals

### Average Opening Length Per DX'er

1968	1969
24.66	0 (minutes)
32.42	53.16
74.23	46.20
47.22	48.30
56.50	16.20

Times (EST) - Extremes Band Open

Peak Opening Times (EST)

1968	1969	Month	1968	1969
1230-2130	None	...April.....	1230-1530 (66%)	None
1030-2315	1035-2058	...May.....	1630-2115 (60%)	1600-2058 (50%)
1115-2115	1230-2329	...June.....	1630-2000 (62%)	1932-2329 (80%)
0900-2245	0925-2320	...July.....	1230-1600 (35%)	1600-1900 (45%)
1015-2245	1600-2310	...August...	1600-2100 (35%)	1900-2320 (36%)
			None	1600-1800 (66%)

Dates Open

Month	1968	1969
April	19,22,30	None
May	3,15,24,25,26,28,30,31	24,25,27
June	5,7,8,20,21,22,24,29,30	14,17,18,20,21,28
July	2,4,5,8,9,11,15,17,23,26,27,28,29,31	1,3,4,8,10,12,21,24,25,26,27,29
August	4,11	1,2,4,7

Summation Comparisons

During the period April 1 through August 31, 1969 brought only 70% as many dates with FM F skip as did 1968.

The total minutes open comparison found the 1969 total only 55% of the 1968 total.

The mid-season (ie. the half way point for the summer E season - one half of all Es dates fall evenly before and after this date) for 1968 was June 24th. For 1969 the mid point was between July 4 and 8.

By counting the total minutes open, the mid-season point (ie. one half of all FM Es open time falls before this date, and one half after this date) was June 20th for 1968 while it was July 10th for 1969.

There were 36 open dates in 1968, but only 25 open dates in 1969.

There were 3,456 open FM Es minutes in 1968, but only 1,924 in 1969.

Using only the months of May, June, July and August (since there were no reported April 1969 FM Es openings), and averaging the average minutes open (ie. length of average opening), we find the average opening in 1968 lasted 58.89 minutes for all DX'ers, but only 41.09 minutes in 1969.

So, regardless of how we measure 1968 and 1969, number of openings, average length of opening, or whatever, we find 1968 was variously from 60 to 90 percent better than 1969.

What will 1970 bring? There is every indication that it will have to be better than 1969 was!

\* - Total of all reported openings reported in the Bulletin.

# MORE M.S. DX

SPECIAL MINI-FEATURE

MORE ABOUT METEOR SCATTER (SKIP)

Recent features in the bulletin, through this past fall (1969) have discussed some of the things we know, or believe, about meteor scatter skip of TV and FM band signals.

This is a continuation of that material.

During the year there are 62 dates when random early morning (0500 to 0700) meteor activity is supposed to be high enough to provide well above average MS reception of low band TV and FM band signals. (High band MS is still new enough, and it requires equipment complex enough, that we still are not able to make any general statements about it.)

The October 1969 bulletin carried a table of random MS counts for each date of the early. What follows is a boil-down of that chart, listing only the dates when conditions are above average. There are 62 dates involved, 2 of which are for very high 50 plus counts (ie. 50 bursts per hour or more), 6 of which have 40 plus burst counts, 28 of which have 30 plus counts. All 62 listed have counts over 24 per hour.

Date	AVERAGE MS MORNINGS											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		24						37				
2	33							32				
3	30											30
4								32				
5							26					
6												
7												36
8								35				
9	25						32	33				
10								42				29
11					25			66	34			25
12	26				26			39				83
13								32				44
14			26				35	29				30
15											25	
16							24		28			
17								26				
18												
19											24	
20						31		24		25		
21									25	41	31	
22							33	32	25	25	28	
23						40		24		25		27
24							36					
25							31					
26							34					
27							24	24	27	28		28
28							28					
29												
30					28		29					25
31							30					

To use this chart, simply find the date of the month in the far left hand column, and the month in the top horizontal line. Only those dates with counts of 24 bursts per hour or more are shown. The number appearing where the date and month intersect is the actual burst count per hour (between 0500 and 0700 local standard time) for that date.

By using this chart, a DX'er can quickly plan ahead, seeing that (for example) there are four above average dates to DX in January, none (!) in April, but 15 in August. These are for the early morning 'test pattern' periods of 0600 to 0700 local standard time (make adjustments for daylight time in the summer) ONLY. Check the feature appearing in the January bulletin, dealing with special annual meteor showers that peak at times of day other than the 0500-0700 period for times other than shown here, and dates other than shown here.

### Choosing FM MS Station Targets

When I set out to boost my FM logged totals to 40 states by the end of a complete year of DXing from Oklahoma City, I did not reckon with some of the problems that every FM MS DX'er must come to grips with sooner or later.

Choosing opportune dates and times to listen for a given station in a given state is a cinch. Simply pick a random morning or shower period which provides above average MS burst counts along the directional path between my Oklahoma City location and the station I want to log; set up 'on channel', turn on the tape recorder and listen.

What I didn't consider was the type of bursts I would be receiving, or, the QRM (interference from other stations on the channel) via the same MS mechanism. It should be obvious that you wouldn't pick a station in Delaware, for example, that is on a channel occupied by a local or semi-local ground wave station. You simply are not going to get MS bursts that override the local type signals. By the same token, if you have a choice, you will pick an FM frequency which has class 'C' (high power) stations on it, and hopefully, you will pick a target station that has plenty of power and a good tall antenna.

So choosing a station boils down to this: (after you have chosen the time and date)

(1) With reference material, make a list of all of the stations in the state that you need, eliminating first off any stations that are on frequencies (or on adjacent frequencies) to any local or semi local stations. (If you are going to go after your target station before the local station(s) sign on, this should be considered also since this before-sign on factor may allow you to leave-in some target area stations which you would otherwise have to eliminate.

(2) On those target area stations still in the running, check a listing that shows what other stations within 500 miles of your target area station are also operating on that same FM channel. If there are a dozen or so stations in that area, chances are the average MS burst will bring in reception of several of these

same channel stations at the same time. Notice in particular stations within 250 miles of the station you are after - they will be the most trouble. Rank all possible stations by the number of equivalent or greater power stations within 500 and 250 miles of your target station. One or two of the target area stations should stand out above the other possibles at this point.

- (3) Find out all that you can about the target area station's operating hours and programming. A station that programs country and western music, for example, when no other stations within 500 miles of it on the same channel do, is a better bet than a station that plays MOR (middle of the road) music, which 5 other stations also do on the same channel in the same area. In short, try to go with a station that has a distinctive programming format - it will help it stand out from the co-channel interference that you get on most MS bursts.
- (4) If possible, avoid stations that are essentially background music stations. They identify seldom, and what you need and want are stations that talk alot (as opposed to playing music alot).
- (5) If your target area state or stations are just to the EAST of a time zone boundary, and many of the co-channel stations are west of it in the next further west time zone area, try to arrange your DXing time for the early morning period in that hour when your target area station is on the air, but stations to the west of it in the next time zone are not on yet. (This overlooks the AN - all night\* situation.) You can of course reverse this for the sign off period late in the day, around mid-night target area time.
- (6) Remember the monday morning maintenance period. A good share of all night stations (AN) do go off Monday AM's for regular maintenance. If your target area station does not, this may make logging it less difficult because other interfering stations in the region may be off. It is possible to log a relatively low power AN-7 (all night seven days per week) station on a frequency loaded with AN-6 (all night six days) stations on Monday mornings, IF the MS conditions happen to be above average on that Monday AM you pick to listen.
- (7) Listen for key identification phrases on bursts. Weather reports for certain specific areas and local advertisements are very good indicators of what it is you are getting. I personally must have the actual call letter identification on tape before I will count a new state, which can be frustrating. I sat on 93.7 through the first two days of the Geminids Shower in December trying to pull in either KMCT or WDAY on that frequency in North Dakota with a definite call identification. I had dozens of snatches of "Weather for North Dakota will be ..." and "Shop at XXX in Fargo or Moorehead...", and I finally had to go to 93.3 to log KSJM in Jamestown, N.D. - which took exactly 10 minutes on the channel. I'd spent nearly ten hours on 93.7 in frustration but it took only ten minutes on 93.3!

Good DX - 73, Bob Cooper, Jr.

# EUROPEAN SCENE

ROGER BUNNEY  
TRELAWNE, CUPERNHAM LANE  
ROMSEY, HANTS, SO5 8JH  
ENGLAND

THE SUNSPOT COUNT FOR DECEMBER, 1969 WAS AS FOLLOWS:

1ST= 91	9TH = 44	17TH = 98	25TH = 149
2ND 107	10 37	18 85	26 131
3RD 93	11 27	19 76	27 136
4TH 90	12 51	20 90	28 139
5TH 78	13 74	21 112	29 152
6TH 66	14 94	22 125	30 152
7TH 46	15 83	23 113	31 116
8TH 39	16 86	24 127	AVERAGE: 93.8

THE PERIOD OF MID-DECEMBER TO MID-JANUARY UNDER REVIEW THIS MONTH HAS BEEN VERY QUIET IN EUROPE; LITTLE IF ANYTHING OF NOTE HAS OCCURRED. THE HIGH SUNSPOT COUNT AROUND CHRISTMAS PRODUCED SOME PAGING STATION ACTIVITY HOWEVER. ON THE 25TH, THE FOLLOWING WERE HEARD: KGC223-PHILADELPHIA, KG400-SCRANTON, K1Y508-ORLANDO, KK1445-HOUSTON, AND WWA335-SAN JUAN, (PUERTO RICO), THE SECOND TIME THAT I'VE HEARD THIS ONE. ON 26 DEC., THE MUF REACHED 36MHZ INTO THE USSR WITH SEVERAL FORWARD SCATTER STATIONS, ETC. ALSO WITHIN RANGE WERE A NUMBER OF RADIO MOSCOW TRANSMISSIONS; THESE CAN BE EITHER VHF RADIO, LONGS OR SHORTWAVE HARMONICS.

THE QUADRANTIDS METEOR SHOWER BROUGHT IN CONSIDERABLE BAND 1 (LOW BAND) DX ON 3 JANUARY. DURING THE AFTERNOON THESE BURSTS BECAME QUITE PROLONGED, UP TO A MINUTE EACH. UNFORTUNATELY, DUE TO MANY STATIONS HAVING SPORTS PROGRAMS, THERE WAS SOME DIFFICULTY IDENTIFYING STATIONS, EXCEPT CZECH 01 AND HUNGARIAN 01 SEEN WITH TESTCARDS.

CAROLINE TV: AN UNCONFIRMED REPORT STATES THAT THIS PROJECT HAD A TEST RUN JUST BEFORE CHRISTMAS. THE PLANE FLEW OVER THE EAST COAST OF ENGLAND, AND RADIATED A FILM & TEST TRANSMISSIONS. SIGNALS AT GOOD STRENGTH WERE SEEN AS FAR WEST AS THE ISLE OF MAN IN THE IRISH SEA. IT IS PRESUMED THAT THE AREA TO BE COVERED WITH REGULAR SERVICE WILL REACH AS FAR SOUTH AS LONDON AND AS FAR WEST AS THE INDUSTRIAL MIDLANDS (LIVERPOOL/MANCHESTER) WHILE THE PLANE FLIES OUTSIDE THE 12 MILE LIMIT ABOUT 20 MILES NORTH OF CROMER IN EAST ANGLIA.

NEWS HAS COME TO HAND ABOUT SUCCESSFUL TE AND F2 DX. MR. DAVID BUTLER NOW RESIDING IN WEST GERMANY, HAD SOME RESULTS WITH EUROPEAN TV STATIONS DURING THE FALL/WINTER, 1968 PERIOD WHILE HE WAS IN SOUTHERN RHODESIA. GOOD SOUND AND PICTURE WERE RECEIVED FROM TVE-SPAIN ON E2, AND RAI-ITALY ON 1A. WHILE IN LUDERITZ, SOUTHWEST AFRICA HE SAW THE SAME 2 STATIONS. THE MADRID STATION ON E2 WAS SEEN WHILE ABOARD SHIP IN CAPETOWN HARBOUR, ON RARE OCCASIONS ALSO. THIS IS THE FURTHEST SOUTH THIS STATION HAS EVER BEEN RECEIVED, BEATING THE OLD RECORD OF JOHANNESBURG. MADRID TO CAPETOWN IS ABOUT 5300 MILES, POSSIBLY THE GREATEST DISTANCE ACHIEVED IN THIS SUNSPOT CYCLE???

THE NEW 1970 WORLD RADIO-TV HANDBOOK LISTS A NEW BAND 1 STATION IN GREECE BUT UNFORTUNATELY ONLY 100 WATTS. THE PROJECTED BAND 1 NETWORK IN TURKEY, INCLUDING SEVERAL HIGH POWERED STATIONS, HAS NOT YET COME TO FRUITION; BUT IN TIME IT WILL BECOME A NEW DX COUNTRY FOR SOME OF US.

THE DECEMBER PRACTICAL TV MAGAZINE REPORTS THAT PARTS OF TV RECEIVERS ARE BEING IMPORTED INTO SOUTH AFRICA, ANTICIPATING THE START OF A NEW TV SERVICE. HOWEVER, GOVERNMENT AUTHORITIES STILL INSIST THAT THERE IS NO POSSIBILITY OF THE START OF A TV SERVICE IN THE NEAR FUTURE, AND THEY GIVE NO FURTHER INFORMATION. (HQ NOTE: THE STORY HERE IS THAT THE SA GOVT FELT TV WAS A BAD INFLUENCE OR SOMETHING, BUT WHEN THE REST OF THE WORLD WATCHED THE FIRST MEN WALKING ON THE SURFACE OF THE MOON, SOUTH AFRICANS WERE NOTICIBLY LEFT OUT AND BEGAN CLAMORING FOR TV.)

THAT SEEMS TO BE ALL THE NEWS ITEMS AT PRESENT, SO MAY I PASS ON FOR THE NEW YEAR AND THE NEW DECADE, BEST WISHES, GOOD LUCK AND GOOD DX.

*Roger*  
P.S. CHARLIE RAFAREL OF PTV HAS BEEN VERY ILL. ON A RECENT VISIT TO HIM, I OBTAINED SOME DX TAPES FROM HIM, AND WITH SOME AUSTRALIAN DX TAPES OF KOREAN FM STATIONS AND KHON-TV I'VE BEEN PROMISED, I'LL HAVE A TAPE FOR THE 1970 WTFDA CONVENTION. 73.

# WESTERN TV DX

Dennis Park Smith  
321 Santa Barbara St.  
Santa Barbara, California  
93101 U.S.A.

February 1970

Deadlines: 12th of each month

12 & 13 December were active dates for most of our reporters; MS was seen by some and Es by others. Strong Es was also noted in Texas on 22 December, with one report showing DX on 16, 22, 23, & 29. The strong Es noted around the continent on 22-23 Dec. was unusual for a winter opening because of early-morning occurrence and sufficiently high MUF for skip on FM. One report going into 1970 shows Es on 5, 6, and 7 January.

Randy Miltier, 1760 Whitwood Lane #3, Campbell, California 95008 (15 Nov-19 Dec)(EST)

Finally got a little activity on the TV screen. Geminids shower produced some MS on 12/12 from 1010 until around 1035 when I had to go to work. Three separate ch. 2 stations were bursting in during this time; the only ID caught was at 1031 when a big 2 was seen with the calls located in the bottom portion. I think this was KREM-TV in Spokane, Wash. as a portion of the ID was heard: "...channel 2 Spo...." Checking the log, Spokane seems to be the only possibility. Beautiful 2-3 burst was bringing these three (?) stations in. Noting how good the bursts were, I decided to get up super early the next morning and set up the camera and get ready for all kinds of MS, which I did, but the ol' MS just wasn't there. A couple of things were noted, though; at 0800 (12/13) a local news program was seen with very brief bursts on ch. 3. Color bars were seen on ch. 2 at 0810, again very brief video. At 0819 on ch. 3, a test pattern (wedge type I believe) was seen with a quick snowy picture. At 0903 the Jetsons were viewed on ch. 2, also on a couple of quick bursts. Many quick bursts were heard on this a.m.; very few pictures were seen.

I hope to add a couple of Swans to the antenna farm here, hopefully next month. I'll replace the Winegard SC-83 with Swan ch. 2-6 & 7-13 antennas. Added to these will be a Channel Master 6-ft dish for UHF and a Finco FM-5 for FM, all on rotors, natch. Now that I have the antennas all worked out, all I have to do is figure out what the best lead-in is. I've read several articles on the subject but am more confused than convinced.....anyone have any suggestions for lead-in wire for VHF & UHF? Anyway, I hope to have a very effective set-up soon. Will report on the Swans later and let y'all know how they work; from what I've heard they're one of the best.

My last verie was received from KOTA-3, not bad considering I never reported to them! What happened was that my original report for KDUH-4 was never answered so I sent a follow-up to KOTA, the parent station, asking for verification of KDUH; well.. you take it from there. Good DX.

(Yes, Randy, KOTA-3 answers reports for KDUH; form letter lists KOTA-3, KDUH-4, & KHSD-11, with blank for proper call to be filled in. But even then, I got one with all three calls scrawled in the space. Can some of you help Randy on lead-in? dps)

Fred McCormack, Des Lacs, North Dakota 58733

(December) (Times CST)

I had only one morning of TV DX in December. Very good meteor skip was noted on the 12th. The following were logged:

0459 WBBM-2 Chicago, Illinois	0609 KOCO-5 Oklahoma City, Oklahoma
0524 WKZO-3 Kalamazoo, Michigan	0650 KTVO 3 Kirksville, Missouri
0535 WLWD 2 Dayton, Ohio	0657 WISC-3 Madison, Wisconsin

The only new one was WKZO. However, KOCO was the first meteor I have identified on ch. 5, and there were many unidentified bursts, so I believe it was the best MS morning I have observed. 73 and good DX.

(Good to see that the Geminids shower was fine for you, too, Fred. dps)

Pat Dyer, 327 Solar Drive, San Antonio, Texas 78227

(December) (Times CST)

Receiver: 1968 RCA color model GJ721W

(New stations underlined)

Antenna: Wards 11-element (high-low VHF), about 15 feet up, fix aimed at south.

3 Tr 1620 XEFE-2 Nuevo Laredo, Tamp, Mexico	(4) (Tr) 0006 KIII- 3 Corpus Christi TX
4 Tr 0000 KRIS-6 Corpus Christi, Texas	0029 XEFE- 2 Nuevo Laredo, Tamp.
0004 KCEN-6 Temple TX	0035 KGBT- 4 Harlingen TX
0005 KRGV-5 Weslaco TX	<u>12</u> Es 1400 TGBOL-3 Guatemala City, Guatemala

14 Tr 2337 XEFE- 2 Nuevo Laredo, Tamp.  
15 Tr 0000 KRIS- 6 Corpus Christi TX  
 2359 KGNS- 8 Laredo TX  
16 Tr 0005 KZTV 10 Corpus Christi TX  
 0006 KRGV- 5 Weslaco TX  
 0008 KRIS- 6 Corpus Christi TX  
 2225 KOSA- 7 Odessa TX

18 Tr 1822 XEFE-2 Nuevo Laredo, Tamp.  
19 Tr 1825 XEFE-2 Nuevo Laredo, Tamp.  
20 Tr 1829 XEFB-3 Monterrey, Nuevo Leon  
22 Es 1801 WFMY-2 Greensboro, No. Carolina  
23 Tr 0028 KGBT-4 Harlingen TX  
25 Tr 0119 KGBT-4 Harlingen TX

Finally some Es came around our way. As far as 50-MHz went it was a record month for me. The 22nd appeared to be the best for the TV. WFMY-TV was very stable with color and little CCI. A 50-MHz station in North Carolina, about 100 miles from WFMY, told me that they were experiencing heavy CCI from an NBC station. I tried several times for TV ID's but the CCI level was too high later.

XEFE-TV on tropo is almost a nuisance with its audio being very effective in covering the weak Es audio at times. I should get some sort of rotor for the TV antenna.

The Dec 12 Guatemala opening lasted nearly 2 hours. Since 50-MHz activity is nil down there I have no other way of detecting Es besides the TV.

With the perk-up in December, I hope that the coming season is a great improvement over this past slim one. 73.

(Good Guatemala catch, Pat. And it appears that the 22-Dec opening was quite intense from your description of the stability and strength of the signals. dps)

Robert Grace, Box 309, Franklin, Texas 77856 (1969) (Times CST (CDT Apr thru Oct))

<u>Mar 29</u> (Tr) 1100 <u>KSWS- 8</u> Roswell, New Mexico	<u>Jul 2</u> (Es) 1930 <u>KNXT 2</u> Los Angeles CA
<u>31</u> (Tr) 2400 <u>KOSA- 7</u> Odessa, Texas	1930 <u>KNBC 4</u> Los Angeles CA
<u>Apr 30</u> (Tr) 2100 <u>KSWO- 7</u> Lawton OK	<u>5</u> (Es) 1930 <u>CKCK-2</u> Regina, Sask, Canada
<u>May 13</u> (Es) 2400 <u>KEY-T 3</u> Santa Barbara, Calif.	<u>22</u> (Es) 2100 <u>KNXT 2</u> Los Angeles CA
<u>May 19-20-21</u> (Tr) all day	<u>24</u> (Es) 1930 <u>KUTV 2</u> Salt Lake City UT
<u>KMID- 2</u> Midland TX	1930 <u>KCPX-4</u> Salt Lake City UT
<u>KWAB- 4</u> Big Spring TX	1930 <u>KSL- 5</u> Salt Lake City UT
<u>KOSA- 7</u> Odessa TX	<u>26</u> (Es) 2000 <u>KNXT 2</u> Los Angeles CA
<u>KMOM 9</u> Monohans TX	<u>Oct 4</u> (Tr?) 0100 <u>XET- 6</u> Monterrey, N.L., Mexico
<u>KBIM-10</u> Roswell NM	<u>Nov 22</u> (Tr?) 0010 <u>XET- 6</u> Monterrey, Nuevo Leon
<u>KCBD-11</u> Lubbock TX	(Tr) 0800 <u>WAFB-9</u> Baton Rouge, La.
<u>KLBK-13</u> Lubbock TX	<u>Dec 16</u> (Es) 1730 <u>KTWO-2</u> Casper, Wyoming
<u>24</u> (Es) 1130 <u>XHI- 2</u> Ciudad Obregon, Son.	<u>22</u> (Es) 1730 <u>WFMY-2</u> Greensboro, N.C.
2200 <u>KORK- 3</u> Las Vegas, Nevada	1800 <u>WUND-2</u> Columbia NC
2200 <u>KHBV 5</u> Henderson NV	2000 <u>WUSN-2</u> Charleston, S.C.
<u>29</u> (Es) 0800 <u>WESH- 2</u> Orlando, Florida	1800 <u>WBTB 3</u> Charlotte NC
0800 <u>WJXT 4</u> Jacksonville FL	1800 <u>WUNC-4</u> Chapel Hill NC
<u>Jun 15</u> (Es) 1530 <u>KUTV 2</u> Salt Lake City, Utah	1815 <u>WRAL-5</u> Raleigh NC
<u>19</u> (Es) 2300 <u>KNXT 2</u> Los Angeles CA	1800 <u>WAFB-9</u> Baton Rouge LA
<u>21</u> (Tr) 2330 <u>KWTV 9</u> Oklahoma City, Okla.	<u>23</u> (Es) 0900 <u>WLW-D 2</u> Dayton, Ohio
2400 <u>KAKE-10</u> Wichita, Kansas	<u>29</u> (Es) 1930 <u>KUTV 2</u> Salt Lake City UT

New loggings are underlined. Most points in Texas and Louisiana were not included because they are not far enough away to be considered actual DX.

Total number of stations logged since Jan. 1968 is now 89, as of Jan. 1, 1970.

(Very good, Robert; your report is most acceptable. I assumed that your loggings were either tropo or Es so marked accordingly, though wasn't entirely sure about XET.)

Dave Pomeroy, Lot 279, Lake Quivira, Kansas City, Kansas 66106 (during holidays, Dec)

No DX while in K.C. for holidays, but one new station for K.C. area log:

Dec. 20: KCIT-50 Kansas City, Missouri, 15 mi. Best of DX.

(Glad to hear of your DX observing while in "Western DX" territory, Dave. dps)

Bob Cooper, Jr., 6221 Norman Road, Oklahoma City, Oklahoma 73122 (8 Nov- 7 Jan) (CST

Nov 10 tropo KETV 7 Omaha fair copy 0050, 405 miles.

Dec 1 MS WLW-D 2 Dayton 0424, test pattern, 785 miles.

Dec 7 MS WTRF-7 Wheeling, test pattern, 965 mi. Best high-band burst ever seen, lasting full four seconds snowfree. Could have been photographed easily if I hadn't had the camera on my lap loading film!



Dec 12-13 Geminids shower a disappointment. Burst count very good in the 2000-2300 evening period but poor in the early morning periods. Most bursts short, however; few would classify as super bursts. Evening period useless for serious TV MS work since I have local QRM on all channels here. Peak was evening of the 12th with some good bursts (well spread apart) 0600 to 0700 Dec 13 on high band. Regulars easily logged on low band that period (WMT-2, WBBM-2, WBAY-2, etc.).

Dec 13 Es weak on ch 2-3 from SW; Mexican, from 1955 to 2020; no identifications.

Dec 15 tropo 1900, KHNE-29 Hastings, Neb, 340 mi. 1927, new KCIT-50 Kansas City with good signal through 2230; 297 mi, new on air. It carried NBC movie which apparently regular NBC outlet in KC chose not to carry, so even though it is independent station, you may see some net programming on KCIT-50.

Dec 16 tropo KHNE-29 Hastings still good copy with early AM programming.

Jan 3-5 Quadrantids meteor shower. Showed definite peak on Jan 3rd (not 4th as is usual) between 0900 and 1400. Bursts 1100-1400 on 3rd heavier than August Perseids from north and NE. CBWFT 3 Winnipeg (1025 mi) logged on test pattern more than 40 times between 1215 and 1359.

Jan 5 Es 1920 tune-in. WUSN-2 Charleston and WEDU 3 Tampa logged on and off with heavy fading through 2055. Signals poor at best.

Jan 6 Es low-band opening when I got home, 1815. 1815-1829, logged and recorded heavily QRM'ed signal of Televisión Nacional, Santa María, Colombia (double-hop E). I frequently saw this station while in Virgin Islands 1968; it was instantly recognized. I believe this is the first time this country has been seen in States proper. Heavy QRM probably from ch. 2 in Maracaibo, Venezuela as antenna heading suggested.

1825-2000+: XHY-3 Merida, Yucatan with snowfree signal (first hop of Es to Colombia). 1915, caught XEW-2 ID in QRM; 1920, XHCV-3 Coatzacoalcos crept over XHY during XHTV net news and local ID at 1930; 1958 to after 2000, XHFM-2 Vera Cruz with first class signal and local political advertising; 2030, XEW-2 back in with Mexican (home-grown) version of Laugh-In (resembling that and Hee-Haw, maybe? dps).

Lots of bits and pieces of other SS stations during this opening, including some 50-cycle 625-line transmissions on both 2 & 3. Sure wish so many Mexican stations hadn't come on the air in recent years along the Mexican Gulf Coast. Years ago only XEW and XEZ messed up 2 & 3 and you could really dig for further-south stuff in an opening like this. Now you dig down and you keep finding new Mexican stations!

Jan 7 Es low band opened with Spanish to south at 1850 on ch 3. Programming after 1900 was cartoons but no ID; 1926 ch 3 turned into end of 'Dream of Jeannie' and XHY-TV Merida, Yucatan again. News at 1930, locally done, with interview. Signals gone by 1940. No signs of any ch 2 at all during opening.

(Lots of interesting information here as usual, Bob. Your digging for Colombia through the Mexican stations really paid off. dps)

Dennis Smith—your editor was home in Wasco, California 4-6 January but no TV-FM DX was noted in the bit of observing we did there. Here in Santa Barbara, southern California coastal tropo has been fair to good on occasion but nil much of the time with rain now taking over for the winter season.

In case anyone has noticed or cared one way or the other, our columns' reports lately have included a hyphen with call letters if call officially has the "-TV" suffix, and no hyphen if no suffix. U.S. stations generally use the suffix if associated with an AM or FM station of the same call, though there are exceptions. Except for CBC-owned stations, all Canadian TV stations have the suffix.

I would like to urge more of you to include mileages (distances from receiver to transmitter) with your reports of DX, either by themselves or with the VAFI information described in the January VUD. They help to give an idea of the intensity of a skip opening or the extent of a tropo session, adding to the interest of a report. As most of us use the scale of a map rather than mathematics, these distances can be regarded as approximate at best. It helps to try several maps for comparison, as errors are possible on some maps because of type of projection or scale inaccuracy.

# S.C.A. ⊕ sub-carriers

RICHARD CLARK (KRP3532)  
 4110 BAYVIEW DRIVE  
 FORT LAUDERDALE,  
 FLORIDA 33308

JOHN EBELING, 9209 VINCENT AVE., S. BLOOMINGTON, MINN. 55431

I HAVE BUILT A NUMBER OF SCA ADAPTORS OVER THE PAST 9 OR 10 YEARS. I'M CURRENTLY USING AN ALL-TRANSISTORIZED UNIT BUILT FROM AN ARTICLE IN THE OCTOBER, 1968 ISSUE OF AUDIO MAGAZINE. THIS WORKS ABOUT AS WELL AS MY OLDER UNIT WHICH I USED FOR 6 YEARS.

AREA STATIONS USING SCA AND WHAT THEY TRANSMIT ON SCA:

104.5 MHz	WEAU	MUZAK	EAU CLAIRE, WI	100.7 MHz	WBIZ	MUTUAL NETW.	EAU CLAIRE
104.1	KRSI	MX w/	SOME COMMERCIALS				
103.5	KYSM	MUZAK	MANKATO, MN				
99.5	WLCL	MUZAK	ST. PAUL, MN				
95.7	KLIZ	MUZAK	BRAINERD, MN				
95.5	WSAU	MUZAK	WAUSAU, WI				
93.7	WAYL	MUSIC	MINNEAPOLIS, MN				
91.1	KSJN	##	MINNEAPOLIS				
90.1	KSJR	##	COLLEGEVILLE				

ALL WISCONSIN STATE FM NETWORK (EDUCA.) TRANSMIT SCA SPECIAL INSTRUCTIONAL MATERIAL TO MEDICAL DOCTORS FOR CONTINUING EDUCATION. A COMPLETE LIST OF STATIONS IS FEATURED ON THIS MONTH'S COVER.

(NOTE: THE TOWER OF WHAD IS CURRENTLY FOR SALE BUT I HAVE NO FURTHER INFO AT THIS TIME---HQ NOTE.)

(## THESE LAST 2 AS A SERVICE TO THE BLIND READ BOOKS AND PAPERS, 1900-0000 DAILY.)

RICHARD CLARK, EDITOR:

67 kHz	KDKA	92.9 MHz	PITTSBURGH, PA	BASEBALL GAMES
"	WKJF	93.7	"	BACKGROUND MUSIC
"	WWSW	94.5	"	" "
"	WJAC	95.5	JOHNSTOWN, PA	" "
"	WKWK	97.3	WHEELING, WA	DITTO WITH MUZAK
"	WNUF	100.7	PITTSBURGH, PA	TELETYPE?? (THEY CLAIM THEY HAVE NO SCA).
"	WAMO	105.9	"	BACKGRD MUSIC WITH FOODLAND COMMERCIALS.
65 kHz	WNOB	107.9	CLEVELAND, OH	BACKGROUND MUSIC
	WZAK	93.1	" "	" "
	WBUF	92.9	BUFFALO, NY	" "
	WDBN	94.9	MEDINA, OH	" "
	WCLV	95.5	CLEVELAND, OH	CATHOLIC EDUCATION AND CULTURE
	CHFI	98.1	TORONTO, ONT.	BACKGROUND MUSIC
	WSCM	105.1	SALEM, OH	" "
	WVNO	106.1	MANSFIELD, OH	" "
	WFBM	94.7	INDIANAPOLIS, IN	" "
	KFMU	94.9	KANSAS CITY, MO	" "
	KMYR	95.5	DENVER, CO	" "
	KDEN	99.5	" "	" "
	KSL	100.3	SALT LAKE CITY	" "
	KHOF	99.5	LOS ANGELES, CA	" "
	KFOX	100.3	" "	" "
	KHJ	101.1	" "	" "
	KOST	103.5	" "	" "
	KBIG	104.3	" "	" "
	KWST	105.9	" "	" "
	KBBI	107.5	" "	" "
	KTAR	98.7	PHOENIX, AZ	" "
	KPAK	94.7	EL PASO, TX	" "
	KRLD	92.9	DALLAS, TX	" "
	WBAP	96.3	FORT WORTH, TX	" "
	KCLE	94.9	CLEBURNE, TX	" "

, WITH MUZAK.

SPANISH: PHONE CALLS AND TALK PROGRAM. BACKGROUND MUSIC.

Late HQ notes:

THE TV STATION LISTS ARE SOLD OUT.....  
 COMING: A NEW UPDATED MEMBERSHIP LIST.....

# PROPAGATION WAND

\*\*\*\*\*

\*THE PROPAGATION WAND\*\*\*\*\* General DX Forecast 2/1/70 to 3/15/70

\*\*\*\*\*

(This column continues as an experiment to determine whether TV/FM DX'ers find the information presented sufficiently useful to continue.)

## SKIP

No seasoned DX'er would ever mark any six week period off as no good for E<sub>s</sub>. There have been, in years past, some most interesting and very intense E<sub>s</sub> openings in this six week period. However, they are unlikely. At best. IF they do occur, watch the 3 PM to 7 PM period. If you are located south of the Mason/Dixon line, your chances are much better than if you live further north. If you do get an opening, check around the same time for the next day or two for a repeat opening.

## AURORAL SKIP

Now that we are on the 'down' side of the current 11 year sun spot cycle, we can look for increased aurora. Mid February to late April is a favorite time for Aurora, and if there is aurora, there may well be Auroral-E<sub>s</sub> along east-west paths that skirt the U.S./Canadian border between the period 7 PM and 12 midnight local time. Auroral-E<sub>s</sub> is much like regular E<sub>s</sub>, except: it often covers longer distances (out to 2,000 miles or more); reception is often smeary (video) and garbled (audio); fading is erratic, at best. Don't overlook possible Alaskan reception on channel 2 after 11 PM EST if you live in the northern USA or southern Canada.

If you are an FM DX'er and live well north in the USA, regular Aurora backscatter (not Auroral - E<sub>s</sub>) can bring in reception from stations east and west of you, by pointing your antenna north or NE. Reception will be very garbled but well worth the effort. Distances will go from as close to 100 miles out to 1,000 miles. Remember - for Aurora backscatter on FM, point north or NE, NOT (as a rule) at the station you are hearing!

## TROPO (Ground Wave)

Traditionally, a nothing season except along the Gulf Coast. DX'ers near the Gulf should watch for large warm fronts moving north out of the Gulf, which often produce tropo in the up-to 1100 mile range between Florida and Texas. Don't overlook loggings via tropo from Mexico Gulf stations on low or high band from Yucatan, Vera Cruz, etc. TV watchers in these areas of Mexico ALWAYS log U.S. stations on tropo every spring for days on end ... there is no reason why it should not reciprocate for you.

## METEOR ACTIVITY

Also a down period for meteors. The minor (rated) Aurigids Shower runs February 5 to 10 peaking for NW to SE paths 1400/1730 and SW/NE paths 2130/0130 LST. The Bootids Shower (also rated minor) runs March 10-12 peaking for N/S paths 2330/0030, and, 0530/0630; for NW/SE paths 0330/0530, and, SW/NE paths 0030/0230.

The next MAJOR shower is the Lyrids in April (19-23rd).

Random meteor dates with above average early morning counts are February 1st (count of 24) and then nothing until March 14th (count of 26). Don't feel bad ... April has NO above average mornings!!

Conducted by  
David T. Janowiak

TECHNI/CORNER  
February

3661 South 46 Street  
Greenfield, Wisconsin 53220

Last month, I suggested the use of a dipole mounted vertically for E'skip reception. To explain: A dipole, mounted in the horizontal plane, has a sort of figure eight pattern if viewed from the top of the antenna. That is, it receives equally well over about a 100° area broadside to the dipole either in front or in back. Off the ends of the dipole is the null; that is, signal pickup maybe 10 times less than off the front. But now mount the dipole for vertical polarization (VP). The dipole, for VP signals, becomes omnidirectional (receives equally in all directions) just like an AM car whip antenna. A local HP traps signal from any direction sees just the thin aluminum or T-line dipole area, but a VP skipper from any direction sees the half-wave dipole. So this is certainly the simplest, since no rotor is required. True, you can't favor one skipper over another, but this usually isn't a problem.

But now add a director or reflector to our VP dipole to form what has been called an in-line antenna. The dipole still receives signals from all directions, but the 3 or 4 DB gain of the added element is realized only in one direction. Adding more elements, while increasing the gain, sharpens the directivity in one direction, but the dipole still sees signals from all directions.

Often, a VP antenna with several elements can do more harm than good. For example, LB locals WTMJ-4 and WITI-6 are, basically, north. A multielement log periodic mounted for VP works beautifully on ch. 5 when aimed south since the HP locals "see" only a one inch area wide off the back of the antenna. Channels 4 and 6, which normally dominate ch. 5 without trapping, disappear, and the ch. 5 Chicago, at 90 miles, of course, disappears almost completely. Almost all ch. 5 single hop skippers to SE and S were received last summer during a single E'skip opening. Simultaneously, Ferdie (4 miles away) had only offset and local skip on ch. 5. However, when the multielement VP antenna is rotated to E or W, local ch. 4 and 6 skip increases greatly on ch. 5 due to "side pickup" since the boom and V elements serve as a good target for the locals. In fact, local signal strength increases to about that of a dipole because of the mass of vertical elements and boom that the local signals "see". The trap effect was, obviously, nil!

Similarly, skip over semi-locals WISC-3 (west) and WKZO-3 (east) isn't improved much at all on ch. 3 when traps is good because of considerable "side pickup" of WTMJ-4 when aimed E or W or because of side pickup of WKZO and WISC when aimed south. Of course, traps for ch. 4 eliminate the WTMJ-4 problem, but a VP dipole eliminates all these problems (side pickup, strong locals) without much reduction of skip signal.

For European friends who must cope with VP signals, the HP antenna will work as well, of course. Remember, however, that a HP dipole is bidirectional so (1) a single HP dipole will work fine for skip in two directions, but would have to be rotated 90° for the other two or (2) two dipoles could be mounted 90° apart to form an omnidirectional antenna.

For FMers, the advantage of a VP FM antenna is greater yet, but for different reasons. Some FM stations transmit both HP and VP signals, others HP only. A VP FM antenna opens so much more DXing capabilities that it is unquestionably the best single inexpensive investment, whether combining V and H, using a VP antenna as a trap, or using it for capturing repolarized signals. However, more and more new stations are transmitting HP and VP, and many existing stations are going to VP also, so hurry, the honeymoon will be over soon as far as using a VP antenna as a trap of local HP only signals.



WORLDWIDE IV-FM DX ASSN.  
SERVING VHF-UHF DX ENTHUSIASTS  
P. O. BOX 5001 HARBOR STA  
MILWAUKEE, WI. 53204, U.S.A.



**THIRD CLASS**  
RETURN REQUESTED

Al Kopee  
RD #1  
Hamrod, NY  
14842