

# Vhf-Uhf DIGEST

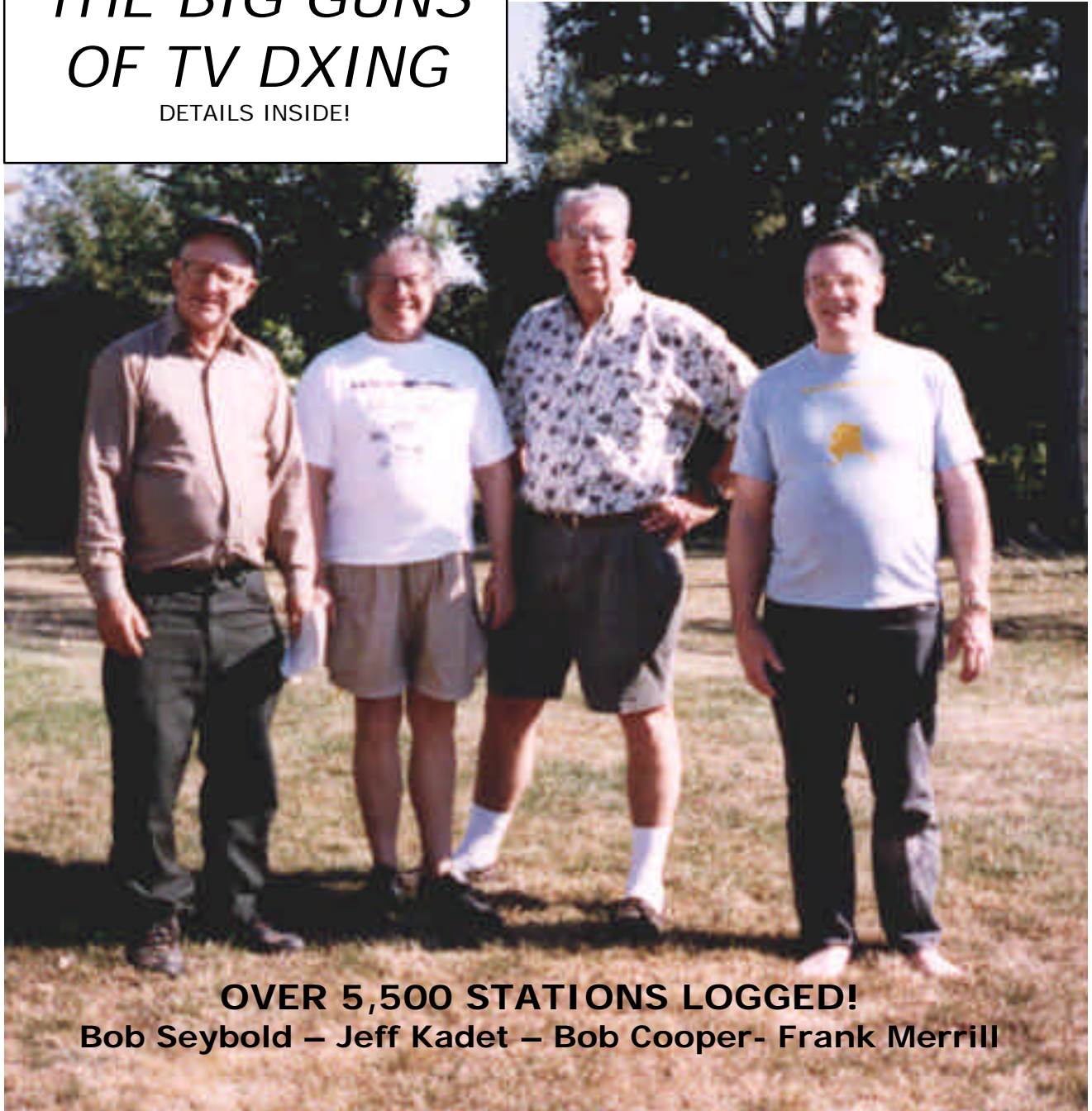
The Official Publication of the Worldwide TV-FM DX Association

NOVEMBER 2003

The Magazine for TV and FM DXers!

## *THE BIG GUNS OF TV DXING*

DETAILS INSIDE!



**OVER 5,500 STATIONS LOGGED!**

**Bob Seybold – Jeff Kadet – Bob Cooper- Frank Merrill**

### **THIS MONTH!**

ATSC-101 PART II, Understanding Digital TV

Gordon Simkin's Exotic DX

**And a Ton of TV and FM DX Loggings!**



TV and FM DXing Was Never So Much Fun!

# THE WORLDWIDE TV-FM DX ASSOCIATION

*Serving the UHF-VHF Enthusiast*

THE VHF-UHF DIGEST IS THE OFFICIAL PUBLICATION OF THE WORLDWIDE TV-FM DX ASSOCIATION DEDICATED TO THE OBSERVATION AND STUDY OF THE PROPAGATION OF LONG DISTANCE TELEVISION AND FM BROADCASTING SIGNALS AT VHF AND UHF. WTFDA IS GOVERNED BY A BOARD OF DIRECTORS: TOM BRYANT, GREG CONIGLIO, BRUCE HALL, DAVE JANOWIAK AND MIKE BUGAJ.



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*ANARC Rep: Jim Thomas, Back Issues: Dave Nieman*

**ELECTRONIC EDITION for NOVEMBER 2003**



Finally! For those of you online with an email address, we now offer a quick, convenient and secure way to join or renew your membership in the WTFDA from our page at:

<http://fmdx.usclargo.com/join.html>

Dues are \$25 if paid to our Paypal account. But of course you can always renew by check or money order for the usual price of just \$24. Either way, it's still a bargain!

## The WTFDA TV STATION GUIDE

It's the most comprehensive listing of North American Television stations in print! Just \$23 US will get you one. Mail your check or money order today. Make it payable to Dave Janowiak and mail it to John Ebeling, 9209 Vincent Avenue S., Bloomington, MN 55431-2157. Get your WTFDA TV Station Guide **now** before it goes out of print!

**\*\*ONLY TWELVE LEFT!\*\***



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Once again, we have a great VUD for your approval. In addition to the great DX columns, Doug Smith continues with his class on digital television and Gordon Simkin tells us more about his '50s and '60 dxing,

Bob Cooper sent us a technical article he published back in 1993 on minimizing CCI. This is part one. TV DXers should be interested in this. Part two will run next month, we hope, followed by another technical article on weak signal detection, also from Mr. Bob.

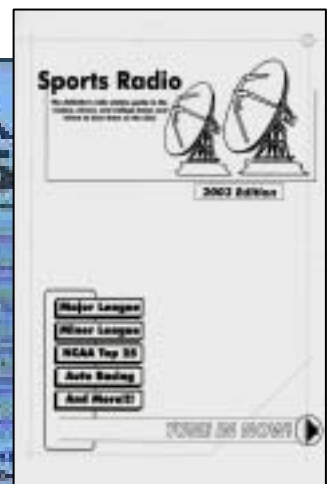
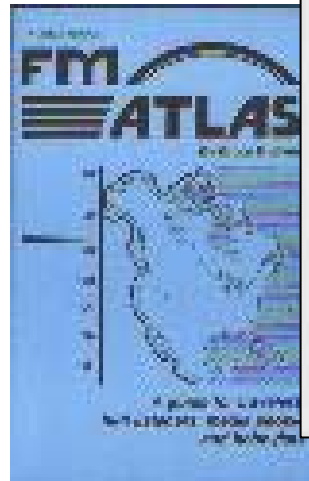
For those of you who may have known veteran AM DXer Andy Rugg of Cornwall, ON, we sadly inform you of his passing on Oct. 9<sup>th</sup> at age 58.

## FM ATLAS #19

Bruce Elving's newest listing of FM Stations is just \$23.00. Send your check or money order to FM Atlas, PO Box 336, Esko, MN 55733-9413 and keep it next to your radio or in the glove box of your car!

## *Sportsradio!*

Jim Thomas tells you who's on what station and when...basketball, football, baseball, hockey, racing...just about everything! Send your check for \$12.00 to WTFDA, PO Box 501, Somersville, CT 06072 (checks payable to Dave Janowiak).





# The Mailbox

P.O. Box 501, Somersville, CT USA 06072  
MIKE BUGAJ MBUGAJ@SNET.NET

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## NOVEMBER 2003

Hello folks. Hope you all had a good October. I think most of us had a very hectic summer, what with lots of E skip and tropo filling our TVs and radios. This time of year gives us a chance to slow down, get our logbooks straightened out and, if we are really energetic, perhaps do some of the chores around the house we should have done in the summer but held off on doing. That is, if we are *really* energetic.



Well, Mister Typo struck again, and the recipient of the typo was none other than our guest columnist, Gordon Simkin. I know Gordon will be delighted to know that his last name does not contain the letter "P". I must have been thinking of Bart Simpson at the time. If I do it again, smack me with one of those pumpkins, will ya?

## MEMBERS AND MORE

This month let's take a look at who renewed their membership for another year. For your information I list everything that arrives in the mail up to about the 15<sup>th</sup> of the month. If it comes in after the 15<sup>th</sup>, chances are very good it will appear the following month. Here goes: **Bill Smith**(Douglas, MA), **Randall Trapp**(Dodge Center, MN), **Roosevelt Crawford**(Junction City, KS), **Joe Fela**(S. Plainfield, NJ), **Robert Delaney**(Mt. Vernon, IL), **Wayne Benkinney**(Burton, MI), **Paul Kinnaly**(Dedham, MA), **Mike Friedel**(Pasasena, TX), **Daniel Bartek**(Wahoo, NE), **Steve Branch**(Champaign, IL), **Keith Short**(Columbus, OH) and **Kurt Nelson**(Langhorne, PA). Also renewals were received via Paypal from **Cliff Rames** (Miami, FL), **Glen Boche** (S. St. Paul, MN) and **Steve Solomon** (Yarmouthport, MA). Thanks everyone for staying another year!

Well, is this a vote of confidence in the WTFDA, or what? I'm talking about the renewal by **Dan Bartek**. Dan sent enough money to keep him in the club until 2015! This got me thinking as to where I'll be in 2015. Probably in the WTFDA rest home for retired DXers, for all

I know.

**John Vervoort** sent a letter a while ago that asked "When was the last date a DXer reported a channel 8 logging via Es? Which station was it and at what DX location?" This looks like a question Alex Trebec would ask on *Jeopardy*. Seriously though, if anyone knows, mail me or email me and I'll give him the answer here because I myself have no clue.

**Jésus Perez** (Havana) sent us two packets of color photos of ID slides of his local Havana channels. They look great. This creates a problem for me because I can't decide whether to use them for VUD covers or use them inside the VUD. I wish I had more problems like this.

Speaking of VUD covers, if you have any photos (35mm or digital) of anything interesting dx-wise and you'd like to see them published in the VUD, send them to me. They might even make the cover like **Greg Barker's** antennas did in September, **John Zondlo** did last month and **Bob Seybold** and the gang did this month. If you send it, I will print it.

## AND THE SURVEY SAYS...

We asked the folks on the WTFDA list what their biggest surprise of the 2003 DX year was. Here are their replies: "No question about it...534 mile tropo from WOI-TV (5), Ames, IA. It's one I NEVER thought I'd log! The reception occurred during a very rare down time for local WTVF." -**Tom Bryant** TN

That's easy -- the amount of Es. So far, I've added over 150 new logs on FM via Es. I've never added anything like that number in one season, regardless of propagation mode. -**Russ Edmunds** NJ

All that overnite E-skip activity! Never thought I would make most of my Es loggings in the wee hours of the morning. I counted something like 45 consecutive nights with (at the very least) some weak skip activity on ch. 2. This was really neat as most locals and semi would go off the air as skip was rolling in. Would have been impossible to make as many loggings during the day. -**Charles Gauthier** QC

My biggest surprise came the other night, though I didn't know it at the time. About 12:30 A.M. Tuesday morning I noticed

WCCU channel 27 in Urbana was off and I was getting a FOX station carrying Jerry Springer with an ID of WLOV. Well, I thought it must be somewhere in the region and I'd look it up when I got the chance. I just got around to it a few minutes ago- WLOV is located in West Point, MS, 463 miles from Rantoul, IL. There's no way I ever expected to log that one! -**Curtis Sadowski IL**

#1. WOMC -104.3 Detroit by Aurora AND Tropo for the first time in the same Summer !!! 525 mi. #2. Yesterday, working at home, tuner on, not recording I hear a perfectly timed 2 second MS burst "Country KCY with RJ Kelly"..... It doesn't get any better than that ! 104.3 - WKCY - 385 mile MS - Harrisonburg, VA, prev heard by tropo. -**Bill Nollman CT**

Easy answer for me: Logging WVNS-59 Lewisburg, WV (843 miles) at noon on a Sunday! That whole opening was just amazing. Having 20 and 22 open for DTVs given the Omaha xmtr problems was particularly fortunate (not for KETV and WOWT of course). -**Matt Sittel NE**

Five things in 2003: 1. Colorado on TV and FM 2. Huge nights of TV and FM tropo to Michigan 3. More than 200 new FMs (over 1000 now), and more than 30 TV (over 200 now) 4. Receipt of two actual station-produced QSL cards, one was KRVN and I can't remember the other. 5. Blackout DX night. -**Jim Renfrew NY**

The big surprise for me this year was the excellent tropo opening to the Winnipeg area of Manitoba on a Sunday morning this month from northern Minnesota. -**John Ebeling MN**

It ain't over till it's over, but so far, biggest surprises of 2003: 1) New FM states via Tropo at Burnt River ON DX site: NC (June) and IA (August). DXed there since 1977 so two new states in one season via tropo was pleasing. 2) The blackout of Aug 14. Netted more than 20 new FM in Toronto, from far away as Philly and southern NJ, some good catches on locals I've never had completely off. 3) E Skip was slow in June but a few really big openings including one that lasted for hours with 108 MHz+ MUF to Manitoba and the US Prairies, plus Montana. Had MB on FM four times, a record here. 4) Es in Toronto ... netted New Brunswick for my first maritime province DXing within the city limits. 5) WI was a new Es state for TV at Burnt River. Again after more than 25 years DXing there, I was happy (and it was a channel 6! - Superior WI) -**Saul Chernos ON**

My best was catching CBC TV three times. I had never seen CBC before from stations west of me. The all-time best was a long reception, almost two hours of CBS SRC

from Regina, SK. Absolutely amazing. Great fun this summer! -**Karl Zuk N2KZ** near NYC

Well, my biggest surprise of this years DX season was not so much the major improvement of last years washout during the beginning but how bad it ended! Up until mid July or, most of the Es after that point didn't amount to much that I noticed. It was similar to last years only this years started out much better than last year. I was also surprised how I was getting nothing and suddenly on Sept 1 got some weak skip coming in. It's pretty rare for me to get skip anytime in September. -**Aaron Mitterling IN**

Close tie between hearing Ottawa on a boom box or hearing Detroit on 2 separate tropo openings. -**Dan Oetting-New Castle, DE**

That tropo to Michigan. -**Adam Rivers**

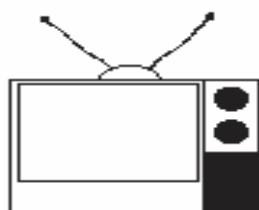
My big surprise was Spanish on Ch.5!! Yahoo!! I still have no idea what the heck it was but it's never happened before or since at my house. -**Guy Falsetti, NY**

Two surprises this year: 1. The sheer number of Montana openings, and several nice, multi-hour Pacific Northwest openings to Phoenix, often linked with aurora. 2. Something I should get, but normally don't; San Antonio FM. You'd think it would happen more often, but as often as I get the nearby channel 2, it only moves to channel 4 maybe 20 percent of the time, if that, and from 1994 through 2002, I hadn't confirmed reception of any San Antonio FM stations. (there has to be some reason for this!) Finally, in July, (don't remember date offhand, think it was the 4th), KTFM-102.7 and their 92.9 stayed in for quite a while. out-lasting the other Texas and Mexico stations on the band. -**Rick Lewis AZ**

I would say hearing WRFX 99.7, WLNK 107.9, and WSSL 100.5 just a few weeks ago, also getting that 92.5 French station from the Maritimes on July 4. -**Bob Smolarek NJ**

Biggest surprises of year: (1) Receiving new log KCNC-2 Great Bend KS via short-hop Es, at about 500 miles, so late in the Es season, on September 1st. (2) Receiving four new Es logs from new state Puebla in a seven day period. Then seeing one of the \*unofficial\* stations, XHHLO-5 Tehuacan, for a second time only four days later. -**Dan Oglethorpe LA**

Getting to listen to my old local WOLX-94.9 for a couple of \*DAYS\* in August via tropo. (I'd have rather it was WORT-89.9 but beggars can't be choosers) Listening to announcements for an art festival in Olin Park brought back pleasant memories, and left me rather homesick. The whole Milwaukee/Chicago tropo opening was big fun. I'll probably long remember shouting "^\&\*\%& Des Moines??!!" at the top of my lungs late one night after IDing KGGO on the same frequency. -**Doug Smith TN**



# TV NEWS

Doug Smith W9WI  
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## November 2003

### Abbreviations:

#	License to cover (for changes or new station)	PC	Power (and/or tower height) change on the air
AF	Applied For (a new station)	PG	Power change granted
aux	Auxiliary (backup) transmitter	PR	Power change requested
CC	Call Change	QC	Channel ("frequency" ) change on the air
CL	City-of-license change	QG	Channel change granted
DE	Station deleted	QR	Channel change requested
FC	Programming ("format") change	RA	Returned to the air
FTP	Failure to Prosecute (an application)	ROA	Request of applicant
GA	Granted Amendment (to table of channel allotments)	SI	Off the air ( )
NO	Not on the air	STA	Special Temporary Authorization
NS	New station granted permit	XC	Transmitter site change on the air
NW	New station on the air	XG	Transmitter site change granted
PA	Proposed Amendment (to table of channel allotments)	XR	Transmitter site change requested

### News:



#### Canada: British Columbia:

Vancouver 33 CIVT-DT AF, 900w/740m

#### Ontario:

Hamilton 15 CKXT-DT-1 AF, 8.3kw/193m

Hamilton 21 CITS-DT AF, 10kw/338m

Peterborough 12 CHEX-TV PG<185kw, move XR

Toronto 20 CBLT-DT AF, 38kw/491m

Toronto 24 CBLFT-DT AF, 2.5kw/491m

Toronto 40 CFTO-DT AF, 17.4kw/459m

Toronto 52 CKXT-TV PG<27kw

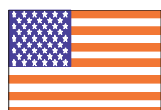
Toronto 66 CKXT-DT AF, 3kw/458m

Toronto 69 CJMT-TV QR from ch. 44; 500kw

#### Quebec:

Montreal 42 CFJP-DT AF 7kw/302m

Quebec 9 new NS 38w community st.



#### USA: Alabama:

Berry 51 WSFG-LP QR from ch. 63, 19.4kw

Berry 58 WSSF-LP QR from ch. 58, 19.4kw

Birmingham 50 WBRC-DT STA 795w/319m

Huntsville 24 WHIQ-DT STA 396kw/340m

Huntsville 46 W67CO QR from ch. 67, 20kw

Mobile 41 WEIQ-DT NW 199kw/185m

Montgomery 27 WAIQ-DT PG<176m

Montgomery 51 WNCF-DT STA 5.9kw/246m, 32-22-04/86-15-42

#### Alaska:

Anchorage 22 KYES-DT STA 20w/-44m, 61-06-06/149-44-40

Anchorage 41 K41DP PR>34.5kw, 61-20-10/149-30-48

Anchorage 45 K22FV PR>35.5kw, 61-20-10/149-30-48

Fairbanks 26 KTVF-DT NW 12kw/-11m

Juneau 21 K21GH PG<19.9kw

#### Arizona:

Camp Verde 49 K49HP QG from K09MD, 80w; already on NS 950w, 34-14-58/109-35-11

Concho 12 K12PR QC from K26DH; 1.44kw FC; sold to Univision, to be Telefutara?

Flagstaff 48 K48GI CC from KPSW-LP

Green Valley 46 KXGR QR from ch. 19 STA 680kw/319m

Phoenix 41 KPDF-CA CC from KQBN-LP

Phoenix 44 KPHE-LP QR from ch. 19 STA

Sierra Vista 44 KWBA-DT 680kw/319m

Tucson 14 KUDF-LP CC from KQBN-LP

Tucson	19 KTTU-DT	STA 1.5kw/1123m, 32-24-56/ 110-42-50	Coalinga	40 K42DT	123-08-41 (Daystar) QR from ch. 42 dismissed; PR>150kw, 36-22-08/ 120-38-34 on ch. 42
Tucson	23 KVOA-DT	STA 100kw/1123m			
Tucson	25 KMSB-DT	PR<480kw/1123 m			
Tucson	32 KOLD-DT	NW 108kw/1123m	Concord	63 KTNC-DT	STA 23.9kw/879m, 37-52-54/ 121-55-05
Tucson	42 KHRR-DT	STA 12.7kw/598m			
Williams	43 K25DP	QC from ch. 25, 1.62kw	Concord	63 KTNC-DT	STA 24.1kw/942m, 37-52-54/ 121-55-05
Williams	53 K60ED	QC from ch. 60, 1kw, 35-12-01/ 112-12-15	Cotati	23 KRCB-DT	STA 4.7kw/629m, 38-20-54/ 122-34-27
<b>Arkansas:</b>					
Arkadelphia	9 KETG	PG<320m	Crescent City	44 K44GX	NS 4kw, 41-49-50/ 123-52-36
Batesville	40 K40DS	PR>138.5kw			
Bentonville	32 K45EI	QR from ch. 45 dismissed	Eureka	39 K52FK	QR from ch. 52 dismissed ROA
El Dorado	30 KETZ	CC for NS	Forest Falls	29 K29FX	NS 50w, 34-03-46/ 116-53-34
El Dorado	40 K40EF	PR>150kw			
El Dorado	43 KEJB	NW 5000kw/530m, 33-04-41/ 92-13-41; UPN	Fresno	16 KSEE-DT	NW 326kw/601m, 37-04-19/ 119-25-49
Fayetteville	9 KAFT-DT	QR from ch. 45, 19kw/501m; already granted	Fresno Hanford	3 K03HK 14 KHMM-CA	QC from K05KM QC from ch. 16, 2kw, 37-04-10/ 119-24-40
Fayetteville	13 KAFT	PG<501m			
Jonesboro	19 KTEJ	PG<310m			
Jonesboro	42 K54ER	QR from ch. 54, 14.8kw	Litchfield	46 K46HL	NS 272w, 40-07-01/ 120-19-06
Little Rock	12 KTHV-DT	STA 27.5kw/519m			
Little Rock	46 KLRA-LP	QR from ch. 58, 40kw	Los Angeles	11 KTTV	AF 156kw/921m, 34-13-27/ 118-03-35 (aux)
Mtn. Home	7 K07XL	NS 100w, 36-20-56/ 92-23-57	Los Angeles	13 KCOP-TV	AF 161kw/904m, 34-13-27/ 118-03-45 (aux, already on); PR>161kw/906 m, 34-13-29/ 118-03-48 for main transmitter, already on
Pine Bluff	24 KVTN-DT	STA 10kw/98m, 34-31-55/ 92-02-41			
Rogers	50 KFAA-DT	PG>267m, 36-24-48/93-57- 17			
Winslow	31 KBBL-CA	QR from ch. 9, 50kw, 36-08-50/ 94-11-13; CC from K09XE	Los Angeles	66 KCOP-DT	PR>890m, 34-13-29/ 118-03-48
<b>California:</b>					
Bakersfield	27 KBFX-LP	QG from ch. 58, 10kw	Merced	5 KNSO-DT	STA 7.21kw/562m, 37-04-19/ 119-25-49
Bakersfield	33 KBAK-DT	STA 39.6kw/1128m	Ontario	46 KFTR	PG 2291kw/956m
Bakersfield	36 KBFK-LP	PR>150kw	Oxnard	24 KADY-DT	STA 5kw/541m
Big Bear Lake	6 K06MU	PC>1kw, 34-14-24/ 116-54-47	Palm Springs	10 K10OU	NS 3kw, 33-55-20/ 116-37-01
Chico	17 K27HD	QR from ch. 27, 60kw, 39-57-49/ 121-42-38; QR to ch. 38 dismissed	Rancho Palos Verdes	51 KXLA-DT	STA 3.5kw/882m 34-13-36/ 118-03-56
Clarks Crossing	48 K48IH	NS 500w, 38-42-38/	Red Bluff	27 KUCO-LP	PG>67kw; already on

Redding	28 K28ID	NS 10kw, 40-36-40/ 122-22-51	Vallejo Ventura	40 NEW-DT 49 KJLA-DT	AF dismissed STA 238kw/899m, 34-13-37/ 118-03-56
Redding	42 K42GE	NS 50w, 40-39-14/ 122-31-15	Victorville	39 K33BT	QC from ch. 33, 1.5kw
Redding	44 K44GY	NS 10kw, 40-39-14/ 122-31-15	<u>Colorado:</u>		
Redding	46 K46HI	NS 3kw, 40-39-16/ 122-31-13	Boulder	15 KTFD-DT	STA 3.9kw/- 41m, 39-57-37/ 105-12-46
Sacramento	29 KSPX	PR>5010kw/522 38-15-54/ 121-29-24	Colorado Sprs.	10 KKTV-DT	NW 20.1k2/725m
Sacramento	31 KMAX-TV	PC>560m	Colorado Sprs.	22 KXRM-DT	NW 51kw/641m
Sacramento	43 NEW-DT	AF 1000kw, 38-26-55/ 121-09-45	Colorado Sprs.	24 KRDO-DT	STA 1.58kw/661m
Sacramento	43 NEW-DT	AF 1000kw, 38-34-26/ 120-43-32	Cortez	30 K30HJ	QG from K57EX, 37-21- 01/ 108-08-01
Sacramento	43 NEW-DT	(religious) AF 100kw, 38-37-49/ 120-51-20	Denver	2 KWGN-TV	NW, 50kw/232m, 39-43-58/ 105-14-07 (aux)
Sacramento	43 NEW-DT	AF 100kw, 38-37-49/ 120-51-20	Denver	27 KCIN-LP	CC from K27GF
Sacramento	43 NEW-DT	AF 100kw, 38-37-49/ 120-51-20	Denver	66 K66FB	PC>47.3kw
Sacramento	43 NEW-DT	AF 100kw, 38-37-49/ 120-51-20	Durango	15 KREZ-DT	NW 46kw/90m
Sacramento	43 NEW-DT	(KVIE-6) AF 300kw, 38-37-49/ 120-51-20	Fort Collins	44 K44GZ	NS 50kw, 40-54-18/ 105-17-43
Sacramento	43 NEW-DT	AF 50kw, 38-14-50/ 121-30-03	Grand Junction	11 KKCO	(Daystar) PC>446m
Sacramento	43 NEW-DT	(KFTL-64) AF 600kw, 38-37-49/ 120-51-20	Grand Junction	12 KKCO-DT	NW 5.3kw/452m
Sacramento	43 NEW-DT	(WHME-46) STA 360kw/566m	Grand Junction	14 K14LS	NS 40kw, 39-03-23/ 108-31-48
San Buena Ventura	40 K40HF	NS 250w, 40-22-23/ 122-08-18	Montrose	19 K19CE	PR>1.3kw, 38-20-21/ 107-38-22
San Diego	41 KZDF-LP	QR from ch. 33, 15kw	Montrose	36 K07IU	QR from ch. 7, 1.3kw, 38-20-21/ 107-38-22
San Diego	63 K63EN	PR>800w, 32-43-55/ 117-09-38	Woody Creek	50 NEW-LP	AF dismissed ROA
San Jose	11 KNTV	PR>316kw/392 m, 37-41-07/ 122-26-01	<u>Connecticut:</u>		
San Jose	12 KNTV-DT	PR>103kw/377 m, 37-41-07/ 122-26-01	Hartford	16 WMLD-LP	QR from ch. 5 dismissed ROA
San Jose	49 KSTS-DT	PC>257kw/688 m	<u>Delaware:</u>		
San Jose	54 KTEH	PC>662m	Wilmington	31 WPPX	QR dismissed
Santa Maria	19 KCOY-DT	NW 130kw/579m	<u>District of Columbia:</u>		
Santa Rosa	54 KFTY-DT	NW 30kw/928m	Washington	23 WKRP-LP	PC<2.2kw, 38-56-09/ 77-04-26
Stockton	62 KFTL-DT	NW 300kw/928m, 37-52-54/ 121-55-05	Washington	50 WBDC-TV	PC>4178kw/253 m
			<u>Florida:</u>		
			Bradenton	42 WXPX	QR from ch. 66 dismissed
			DeFuniak Springs	24 WWEO-CA	CC from W24AM
			Fort Myers	15 WBBH-DT	NW 1000kw/453m,

		26-49-21/ 81-45-54	<b>Augusta</b>	<b>30 WAGT-DT</b>	<b>NW</b> 400kw/483m, 33-24-20/ 81-50-01
<b>Gainesville</b>	<b>33 WBXG-CA</b>	QC from ch. 31, 23.6kw			
<b>Gainesville</b>	<b>36 WUFT-DT</b>	<b>PR&gt;1000kw/263</b> <b>m, already</b> <b>granted</b>	<b>Augusta</b>	<b>42 WJBF-DT</b>	<b>PG&lt;507m,</b> 33-24-20/ 81-50-01; STA
<b>Jacksonville</b>	<b>30 WAWS</b>	<b>PC&gt;4000kw/307</b> <b>m,</b> <b>30-16-51/ 81-34-12</b>	<b>Cordele</b>	<b>51 WSST-DT</b>	<b>PG&gt;200kw; STA</b> 14.04kw/341m 7.177kw/109m
<b>Key West</b>	<b>8 WVIB</b>	<b>CC from WDLP-</b> <b>TV</b>	<b>Dalton</b>	<b>16 WELF-DT</b>	<b>STA</b> 5.4kw/401m
<b>Key West</b>	<b>22 WDLP-TV</b>	<b>CC from WGEN-</b> <b>TV; FC to</b> <b>Spanish indep.</b>	<b>Douglas</b>	<b>5 W05CN</b>	<b>NS 3kw,</b> 31-34-00/ 82-58-15
<b>Key West</b>	<b>27 W27CR</b>	<b>QC from</b> <b>W52BB, 4kw,</b> <b>24-33-07/ 81-47-53</b>	<b>Macon</b>	<b>45 WGNM-DT</b>	<b>AF</b> 1000kw/223m, 32-45-51/83-33- 32; already granted
<b>Lakeland</b>	<b>31 WLWA-LP</b>	<b>QG from ch. 14,</b> <b>8.42kw,</b> <b>8.42kw,</b> <b>28-05-05/ 81-49-14</b>	<b>Pearson</b>	<b>36 W36CS</b>	<b>XR 31-17-20/82-</b> <b>50-34; CL from</b> <b>Ambrose</b>
<b>Lake Worth</b>	<b>36 WPXP-DT</b>	<b>NW</b> 1000kw/385m, 26-35-20/ 80-12-44	<b>Tifton</b>	<b>13 W13DB</b>	<b>QG from</b> W12DA, 3kw, 31-28-11/ 83-14-11; PR for same changes on ch. 13 dismissed
<b>Miami</b>	<b>30 WGEN-LP</b>	QG from ch. 57, 47.7kw			
<b>Miami</b>	<b>31 WTVJ-DT</b>	<b>NW</b> 1000kw/311m, 25-58-07/ 80-13-20	<b>Hawaii:</b>		
<b>Miami</b>	<b>55 WGEN-LP</b>	FC to Spanish indep.	<b>Honolulu</b>	<b>19 KIKU-DT</b>	<b>NW</b> 60.7kw/606m
<b>Naples</b>	<b>41 WZVN-DT</b>	<b>NW</b> 1000kw/454m, 26-49-21/ 81-45-54	<b>Honolulu</b>	<b>22 KHON-DT</b>	<b>STA</b> 4.56kw/33m, 21-17-46/ 157-50-36
<b>New Smyrna Beach</b>	<b>33 WCEU-DT</b>	<b>STA</b> 308kw/491m, 28- 36-35/ 81-03-35	<b>Kailua-Kona</b>	<b>47 K47IN</b>	<b>NS 150kw,</b> 19-42-56/ 155-55-00
<b>Panama City</b>	<b>9 WPGX-DT</b>	<b>STA 1.3kw/95m,</b> <b>30-23-42/ 85-32-02</b>	<b>Idaho:</b>		
<b>Panama City</b>	<b>30 W30CF</b>	<b>NS 40kw,</b> <b>30-11-42/ 85-37-51</b>	<b>Coolin</b>	<b>39 K39GO</b>	<b>QG from K08JH,</b> <b>1.13kw;</b> <b>QR to ch. 9,</b> <b>240w</b>
<b>Pompano Beach</b>	<b>21 WDLP-CA</b>	FC to Spanish indep.	<b>Hollister</b>	<b>30 K30HK</b>	<b>NS 150kw,</b> 42-14-28/ 114-27-48
<b>Sebring</b>	<b>51 W60CE</b>	<b>QR from ch. 60,</b> <b>39.6kw,</b> <b>27-24-29/ 81-25-53</b>	<b>Idaho Falls</b>	<b>9 KIFI-DT</b>	<b>STA</b> 17.9kw/463m
<b>Tampa</b>	<b>18 WSVT-LP</b>	<b>CL from</b> <b>Bradenton;</b> <b>PR&gt;150kw</b>	<b>Preston</b>	<b>23 K36AD</b>	<b>QR from ch. 36</b> <b>but dismissed</b>
<b>Tampa</b>	<b>47 WFTT-DT</b>	<b>STA</b> 500kw/317m, 27-50-32/ 82-15-45	<b>Soda Springs</b>	<b>33 K33HO</b>	<b>NS 1.135kw,</b> 42-37-48/ 111-41-00
<b>West Palm Beach</b>	<b>5 WPTV</b>	<b>PC&gt;390m</b>	<b>Soda Springs</b>	<b>39 K39GZ</b>	<b>NS 1.135kw,</b> 42-37-48/ 111-41-00
			<b>Soda Springs</b>	<b>51 K51HM</b>	<b>NS 1.135kw,</b> 42-37-48/ 111-41-00
			<b>Sun Valley</b>	<b>5 KIDA</b>	<b>FC; to be UPN</b>
			<b>Twin Falls</b>	<b>13 KIPT</b>	<b>PG&gt;182m,</b> 42-43-46/ 114-24-53
<b>Georgia:</b>			<b>Twin Falls</b>	<b>16 KMVT-DT</b>	<b>STA</b> 1.82kw/284m
<b>Atlanta</b>	<b>17 WTBS</b>	<b>AF 105kw/332m,</b> <b>33-48-26/ 84-20-22 (aux)</b>	<b>Twin Falls</b>	<b>58 KTID-LP</b>	<b>PC&lt;15kw</b>
<b>Atlanta</b>	<b>23 W23CH</b>	<b>XG 33-48-26/84-</b> <b>20-22</b>	<b>Illinois:</b>		



Arbury Hills	46 W46DM	QC from W52BR; 150kw; 41-53-06/87-37-17; CL from Champaign	<u>Iowa:</u>			
Blue Island	48 W48DD	QG from W54AP, 20kw	Des Moines	17 KDSM-TV	90-22-45 PC>612m, 41-48-47/ 93-36-56	
Carbondale	40 WSIU-DT	STA 510kw/271m, 38-06-11/89-14-40	Des Moines	56 960117KE	NS 1000kw, 41-49-47/ 93-36-56	
Chana	46 W46DN	NS 30kw, 41-57-36/89-09-14	Ottumwa	69 NEW	five applications dismissed	
Chicago	26 WCIU-TV	PC>5000kw	<u>Kansas:</u>	51 K51FJ	PR>150kw	
Jacksonville	14 WSEC	PC>34kw/271m, 39-36-09/90-02-47	Colby	17 KLBY-DT	STA 38.4kw/201m, 39-15-09/ 101-21-09	
Moline	23 WQPT-DT	PC 80kw/269m, 41-18-44/90-22-45	Dodge City	43 K43HN	PR>23.3kw, 37-46-51/ 100-04-11	
Olney	19 WUSI-DT	STA 46kw/284m	Dodge City	50 K50HS	NS 150kw, 37-52-26/ 100-33-25	
Peoria	25 WEEK-TV	PC>212m, 40-37-45/89-32-52	Emporia	33 NEW-LP	AF dismissed, settlement	
Peoria	57 WEEK-DT	NW 452kw/212m, 40-37-46/89-32-53	Garden City	18 KUPK-DT	STA 34.55kw/229m	
Quincy	32 WTJR-DT	NW 5kw/89m	Great Bend	30 K30GD	QC from K69DQ, 8.4kw	
Quincy	38 W38DM	NS 500w, 39-58-18/91-19-42	Hays	25 K25CV	PC>8.9kw	
Springfield	36 NEW-DT	AF 200kw, 39-41-29/89-41-27	Hutchinson	35 KSCC-DT	NW 1000kw/310m, 37-56-23/97-30-42	
Springfield	36 NEW-DT	AF 800kw, 39-48-15/89-27-40	Hutchinson	36 KSCC	PC>3470kw/733m 37-56-23/97-33-42 (TYPOS, see below)	
Sterling	19 W52BI	QR from ch. 52, 19.1kw	Manhattan	35 K38GZ	NS 50kw, 39-08-40/96-31-02	
<u>Indiana:</u>			Pittsburg	14 KFJX	PG<163m, 37-13-15/94-42-22	
Bloomington	14 WTIU-DT	NW 224kw/221m	Russell	38 K38GH	QC from K20BU, 7.2kw	
Evansville	9 WNIN	PC>304m, 37-59-01/87-16-13	Salina	51 K51GC	QC from K22CP, 8.5kw	
Evansville	12 WNIN-DT	NW 30kw/285m, 37-59-01/87-16-13	Topeka	23 KTWU-DT	NW 960kw/281m; STA 750kw	
Fairbanks	32 W32CW	NS 80kw, 39-13-03/87-22-35	Topeka	48 KTKA-DT	STA 14.2kw/331m	
Kokomo	54 WTTK-DT	STA 3.3kw/152m	Wichita	3 KSNW	PR>304m	
Terre Haute	38 WBAK-TV	XG 39-13-55/87-23-41	Wichita	5 KCTU-LP	QR from ch. 55, 3kw, 37-41-53/97-19-10 but dismissed - and then granted?	
<u>Iowa:</u>			Wichita	45 KSNW-DT	PR>312m	
Ames	34 960712KL	NS 88kw/150m, 41-58-49/93-44-23	Wichita	51 KSMI-LP	PR>14.1kw, 37-41-53/97-19-10	
Ames	59 WOI-DT	STA 500w/311m, 41-48-01/93-36-27	<u>Kentucky:</u>			
Burlington	41 KGWB-DT	STA 2.73kw/89m	Harlan	51 WAGV-DT	PG<577m	
Cedar Rapids	52 KCRG-DT	PR<350kw	Paducah	60 W60DI	NS 9.59kw, 37-08-32/88-39-01	
Davenport	49 KLJB-DT	PG>344m, 41-18-44/				

Iowa:Louisiana:

Alexandria 32 KLAX-DT STA 2.6kw/52m,  
31-18-58/92-29-00

Baton Rouge 30 WLFT-CA PR>150kw  
Baton Rouge 34 WVLA-DT STA 1kw/31m,  
30-22-40/91-05-49

Baton Rouge 39 WBXH-CA PR<12.2kw, 30-26-36/91-10-54;  
sold to WAFB-9, FC?

Baton Rouge 46 WAFB-DT NW 46kw/146m,  
30-26-36/91-10-54

Crowley 31 KAGN-LP PC>17.8kw,  
30-19-21/92-22-40

Minden 21 KPXJ FC to UPN  
Monroe 22 KMNO-LP FC; drops UPN  
New Iberia 50 960612KF NS  
1000kw/307m,  
30-12-48/  
91-45-58;  
PR>5000kw/303  
m  
30-20-32/91-58-32

New Orleans 15 WGNO-DT STA  
500kw/132m

New Orleans 40 WNOL-DT STA  
500kw/132m,  
29-58-57/89-56-58

Winnfield 4 KCDH-LP PG>2.51kw

Maine:

Presque Isle 16 WAGM-DT STA 3kw/333m,  
46-33-05/67-48-36

Maryland:

Annapolis 22 WMPT PC>273m  
Annapolis 42 WMPT-DT NW 150kw/289m  
Baltimore 11 WBAL-TV NW 100kw/286m  
(aux)  
Baltimore 40 WNUV-DT STA  
9.2kw/373m, 39-20-10/76-38-59  
Baltimore 46 WBFF-DT STA  
46.6kw/373m  
Salisbury 53 WMDT-DT STA  
25.1kw/286m,  
38-30-07/75-44-00

Massachusetts:

Adams 38 W38DL QC from  
W51AE; 6kw  
Pittsfield 51 WNYA NW,  
1580kw/305m,  
42-30-09/73-18-58; UPN  
Springfield 45 W67DF QR from ch. 67;  
20kw; FC to  
"CBS 3"

Michigan:

Alpena 11 WBKB-TV XC 44-42-11/83-31-26  
Bad Axe 15 WDCP-DT NW  
200kw/305m,

Iowa:

Cadillac 17 WCMV-DT 43-28-13/83-50-35  
QG from ch. 58,  
338kw/393m,  
44-44-53/85-04-08

Crystal 31 W26BD QR from ch. 26  
dismissed FTP  
PR>1500kw/324  
m, 42-26-53/83-10-23

Detroit 20 WDWB PR>1500kw/324  
m, 42-26-53/83-10-23

Detroit 41 WXYZ-DT PC>770kw  
Flint 54 WXON-LP CC from W54DA  
Kalamazoo 5 WGVK-DT NS 10kw/174m,  
42-18-23/85-39-25

Lansing 27 W27CN QC from  
W69BJ, 8.5kw,  
42-43-16/84-33-01

Manistee 58 WCMW-DT QG from ch. 17,  
25kw/93m

Muskegon 52 W52DB QG from  
W58CU, 21.7kw,  
43-18-50/86-09-17; CL from Big  
Rapids

Pinconning 44 W44BO NW 250w, 43-50-46/84-05-32

Saginaw 30 WEYI-DT STA  
193kw/356m

Sault Ste. Marie 9 WGTQ-DT QG from ch. 56,  
24kw/291m

Traverse City 12 WLLZ-LP CC from  
W12CX; CL  
from  
Pinconning;  
NW, 70w, 44-45-22/85-40-42

Traverse City 29 WGTU PG<1303kw/393  
m  
PG>30.45kw

Traverse City 54 W54CR

Minnesota:  
Brainerd 48 K48IF QC from K28DF;  
1.14kw

Duluth 38 WDSE-DT STA  
802kw/278m

Frost 23 K23FY PR<1.35kw  
Hibbing 31 K31HE NS 16kw, 47-22-52/92-57-19  
(KQDS-21)

Hibbing 31 NEW-DT NS 500kw, 47-22-53/92-57-15  
(WDSE-8)

Minneapolis 11 KARE PC>455m  
Minneapolis 23 KMWB PC  
3310kw/410m,  
45-03-44/93-08-21

St. Cloud 40 KPXM-DT NW  
1000kw/430m

Virginia 47 K47IR NS 15.6kw, 47-29-18/92-31-12  
(KQDS-21)

Willmar 28 K27CK QR from ch. 27,  
1kw

Winona 51 K51HK NS 31.2kw, 43-56-15/91-36-15

Mississippi:  
Booneville 34 W53AF QR from ch. 53,

Iowa:

Bruce 7 W07BN 23.9kw  
 PC>3kw, 34-01-17/89-21-17

Columbus 25 W25AD PG>9.2kw, 33-33-00/88-23-59

Hattiesburg 50 W50CX NS 9kw, 31-22-15/89-19-49

Jackson 9 WLBT-DT PA from ch. 51 DENIED, see text

Mississippi State 10 WMAB-DT NW 4.3kw/349m, 33-21-14/89-09-00

Vicksburg 35 WUFX CC for NS; NW, Fox for Jackson

Missouri:

Jefferson City 48 K48II NS 4kw, 38-42-15/92-05-21

Kansas City 35 K35CT PR>20kw, 39-01-20/94-30-49

Kansas City 48 K48FS QR from ch. 48, 20kw, 39-01-20/94-30-49

Kansas City 41 KSHB-TV PC<306m, 38-58-42/94-32-02; AF 1320kw/323m (aux)

Kansas City 42 KSHB-DT NW 450kw/276m, 38-58-42/94-32-02

Kirksville 33 KTVO-DT NW 87kw/290m

Osage Beach 49 new PA

Rolla 48 K48IG NS 10kw, 37-57-51/91-45-48 (TBN)

Springfield 21 KOZK PC 1188kw/617m, 37-10-11/92-56-30

Springfield 23 KOZK-DT NW 100kw/617m, 37-10-11/92-56-30

St. Louis 26 KPLR-DT NW 1000kw/288m, 38-34-24/90-19-30; STA 500kw

Montana:

Big Arm 14 K14LT QG from K05EE, 250w, 47-40-39/114-08-30

Billings 10 KTVQ-DT QG from ch. 17, 160kw/165m

Billings 42 K42GF NS 7.08kw, 45-45-59/108-27-21

Bozeman 32 KBTZ-LP XR 45-38-18/111-16-05

Bozeman 40 K40HG NS 5kw, 45-39-33/111-03-22 (TBN)

Butte 5 KXLF-DT QG from ch. 15, 10.7kw/588m

Great Falls 10 NEW-TB AF 3kw, 47-30-17/111-18-02 presume // KMTF-10

Great Falls 31 K53DW QR from ch. 53,

Iowa:

Great Falls 33 K33HN 9.6kw  
 NS 30kw, 46-33-24/111-55-05

Rollins 41 K60AL QR from ch. 60, 250w, 47-40-39/114-08-30

White Sulphur Springs 8 K08LI PG>80w, 46-27-44/110-51-22

Nebraska:

Grand Island 32 KGIN-DT STA 415kw/274m, 40-35-14/98-48-10

Lexington 26 KLNE-DT NW 375kw/251m

Lincoln 25 KOLN-DT STA 340kw/403m, 40-48-11/97-10-52

Merriman 17 KRNE-DT NW 372kw/261m

Norfolk 16 KXNE-DT PG<253m

North Platte 9 KPNE-TV PG>334m, 41-01-22/101-09-14

North Platte 16 KPNE-DT NW 372kw/271m, 41-01-22/101-09-14

Omaha 17 KYNE-DT NW 200kw/117m

Omaha 20 KETV-DT STA 350kw/409m

Omaha 24 KKAZ-CA QC from ch. 18, 12.3kw, 41-15-26/95-59-01

Scottsbluff 29 KSTF-DT STA 3.1kw/228m

Nevada:

Beowawe 18 K18GW NS 165w, 40-37-15/116-41-17

Elko 19 K05JU QG from ch. 5, 10w, 40-42-00/115-54-09

Elko 34 K34HE NS 1kw, 40-49-16/115-42-04

Gabbs 13 K13YK NS 57w, 38-52-02/117-53-39

Golconda 26 K26GG QC from K67FU

Golconda 31 K31FU QC from K59DS

Golconda 33 K33GB QC from K64AD, 1.7kw

Golconda 35 K35GD QC from K61DJ

Imlay 41 K41GI QC from K66AF

Las Vegas 17 KEEN-LP FC; sold to religious organization

Las Vegas 30 KTVY-LP QR from ch. 63, 2.1kw

Lovelock 14 K14KQ NW, 990w, 40-11-01/118-28-47

Quinn River 40 K69BJ QC from ch. 69, 760w

Reno 5 KNPB PC 4.61kw/145m, 39-35-03/119-47-55

Ruth 43 K43IL NS 75w, 39-16-22/114-59-45

Ryndon 18 K18GT NS 156w, 40-57-54/115-36-47

Stateline 59 K59GM PG>8kw

Valmy 27 K69CC QC from ch. 69, 1.13kw

<u>Iowa:</u>			<u>Iowa:</u>		
Valmy	29 K65BL	QC from ch. 65, 1.13kw	Binghamton	4 WIVT-DT	STA 1kw/263m
Valmy	34 K63BH	QC from ch. 63, 1.13kw	Buffalo	43 WNEB-DT	NW 156kw/328m
Winnemucca	19 K19EU	QC from K53BG, 1.49kw	Carthage	35 WWNY-DT	STA 135kw/203m
Winnemucca	21 K21FO	QC from K55CX, 1.49kw	Corning	30 WSKA	CC for NS
Winnemucca	23 K23FR	QC from K57CO, 1.49kw	Easton	15 WNYA-CA	QC from ch. 39, 28kw, 42-38-12/73-59-45; NW, UPN // WNYA-51
<u>New Hampshire:</u>			Elmira	2 WETM-DT	STA 270w/363m; PA to ch. 33
Concord	21 WPXG	PC>2300kw	Garden City	21 WLIW	PC<2735kw
Dover	64 NEW-DT	AF 10.5kw, 43-11-43/70-55-34	Garden City	22 WLIW-DT	PR 92kw/111m, already granted
Keene	49 WEKW-DT	NW 43kw/330m	Kingston	48 WRNN-DT	QG from ch. 21 over objection of WKOB-LP
Keene	52 WEKW-TV	PG to drop DA			NYC which will be bumped from ch. 48; NW, 750kw/378m, 41-29-18/73-56-56
<u>New Jersey:</u>					
Atlantic City	53 WMCN-TV	CC from WWAC-TV			
Camden	22 WNJS-DT	STA 600w/187m			
Linden	47 WNJU	AF 1500kw/348m, 40-44-54/73-59-10 (aux)			
Newark	53 WFUT-DT	STA 3.5kw/227m, 40-45-22/73-59-12	New York	23 WNYX-LP	QR from ch. 35 dismissed ROA
New Brunswick	8 WNJB-DT	STA 1kw/202m	New York	30 WPXN-DT	STA 100kw/360m, 40-44-54/73-59-10
Newton	18 WMBC-DT	STA 360w/154m			
Paterson	40 WXTV-DT	STA 6.5kw/300m	New York	49 WNYN-LP	QR from ch. 39, 25kw; QR to ch. 69 dismissed ROA
<u>New Mexico:</u>					
Albuquerque	38 K17DD	QR from ch. 17, 45.4kw, 35-12-51/106-27-01	Port Jervis	64 W64CW	PG>150kw, 41-00-35/74-35-39
Albuquerque	39 KTEL-LP	QR from ch. 53, 64.7kw	Poughkeepsie	27 WTBV-DT	PG<358m
Capulin	33 K54BN	QC from ch. 54, 880w	Rochester	16 WXXI-DT	NW 200kw/129m
Carlsbad	36 K36GD	NW 10kw, 32-24-16/104-11-13 (TBN)	Schenectady	39 WRGB-DT	STA 31.1kw/256m
Gallina	31 K31HB	QC from K30FT, 980w	Syracuse	5 WTVH	PR 100kw/276m; already granted
Gallup	34 K34HD	QG from K08IJ, 22.14kw	Syracuse	17 WIXT-DT	NW 105kw/402m
Hobbs	16 KHFT-DT	STA 263w/83m	Syracuse	24 WCNY-TV	PC<1875kw/393m, 42-56-42/76-07-07
Hobbs	47 new	PA (KENW-3)			
Lovington	46 K46HM	NS 1.1kw, 32-55-44/103-20-45 (KENW-3)	Watertown	21 WWTI-DT	STA 20kw/331m
Moriarty	25 KTEL-TV	app. for CL from Carlsbad, 5000kw/600m, 34-33-23/105-35-53	<u>North Carolina:</u>		
Penasco	6 K06FT	FC; sold to KOB-4 (NBC)	Asheville	25 WUNF-DT	NW 185kw/797m
Raton	20 K20CV	PC<1.03kw	Asheville	64 WAEN-LP	XC 35-27-40/82-21-27
Roswell	28 KRPV-DT	STA 10kw/115m	Charlotte	11 WTVI-DT	STA 2.8kw/363m
Roswell	30 K30HI	NS 3kw, 33-21-47/104-38-11	Durham	26 WIWW-LP	FC; sold to WRAL-5
Santa Fe	27 KASA-DT	NW 255kw/1278m, 35-12-50/106-27-01	Durham	26 WTNC-LP	CC from WIWW-LP
Santa Fe	46 K46GY	PR>150kw, 35-12-51/106-27-02	Fayetteville	38 WUVC-DT	STA 500kw/509m
<u>New York:</u>			Franklin	60 W60DA	QC from W56AG, 20.6kw
Albany	52 W52DF	PR>45.6kw	Washington	32 WITN-DT	STA 398kw/597m
			<u>North Dakota:</u>		
			Devils Lake	59 WDAZ-DT	STA 6kw/35m, 48-06-01/98-51-26

<u>Iowa:</u>			<u>Iowa:</u>		
Minot	21 K21GQ	NW 10kw, 48-09-48/101-17-55 (TBN)	Portland	8 KGW	PR<524m
Pembina	15 KNRR-DT	STA 3.07kw/158m	Portland	27 KOPB-DT	STA 381kw/509m, 45-31-21/122-44-45
<u>Ohio:</u>			Portland	47 K47IM	QG from K30EH & K57IF; 100kw, 45-31-22/122-45-11; CL from Salem
Bowling Green	56 WBGU-DT	STA 9.2kw/147m	Roseburg	18 KTVC-DT	STA 640w/210m
Chillicothe	15 W59DL	QR from ch. 59, 52.4kw	Roseburg	45 KMTX-DT	NW 12kw/109m
Cincinnati	5 WLWT	NS 69.2kw/199m (aux)	Salem	33 KWBP-DT	NW 750kw/523m, 45-30-58/122-43-58
Columbus	28 WTTE	PC<1440kw/267m, 39-56-14/83-01-16	<u>Pennsylvania:</u>		
Columbus	36 WTTE-DT	STA 11.2kw/271m, 39-56-14/83-01-16	Butler	44 W44CH	QG from W60BL, 2.87kw
Steubenville	9 WTOV-TV	PC>316kw/282m, 40-20-33/80-37-14	Clearfield	15 WPSX-DT	STA 537kw/414m
Steubenville	39 W25CI	QR from ch. 25 dismissed ROA	Greensburg	50 WPCB-DT	NW 362kw/264m, 40-23-34/79-46-54
Toledo	5 WLMB-DT	PG>10kw	Lancaster	15 WLYH-TV	NW 12.9kw/261m (aux)
Toledo	19 WTVG-DT	STA 795kw/222m	<u>Rhode Island:</u>		
Youngstown	20 WFMJ-DT	STA 200kw/235m	Providence	13 WPRI-DT	STAs 13kw/82m & 14kw/305m
Zanesville	40 WHIZ-DT	STA 455kw/169m	<u>South Carolina:</u>		
<u>Oklahoma:</u>			Charleston	47 WCSC-DT	NW 1000kw/521m
Oklahoma City	7 KOCO-DT	STA 47kw/370m	Columbia	21 W21CA	QC from ch. 43, 9.5kw, 34-03-23/80-58-50
Oklahoma City	39 KWTN-DT	STA 270kw/482m, 35-35-52/97-29-22	Conway	9 WHMC-DT	GA & QR from ch. 58; 20kw/230m, 33-56-58/79-06-31
Oklahoma City	48 K69EK	QR from ch. 69, 50kw, 35-16-58/97-20-18	Greenville	9 WNTV-DT	STA 38kw/379m, 34-56-29/82-24-38
Tulsa	10 KTUL-DT	NW 6.9kw/542m	Greenville	21 WHNS	CL from Asheville, NC
Tulsa	23 KOKI-TV	PC<3160kw/400m	Greenville	57 WHNS-DT	CL from Asheville, NC
<u>Oregon:</u>			Hardeeville	27 WTGS-DT	STA 5kw/107m, 32-02-45/81-20-27
Bend	18 KTVZ-DT	STA 600w/157m	North Charleston	22 WTBD-LP	PR>150kw
Bend	50 KBDU-LP	CC from K50DN (FC to UPN // KPDX-49?)	North Charleston	42 WJNI-LP	PR>150kw
Coos Bay	30 K30BN	PC>40kw, 43-23-30/124-07-48	<u>South Dakota:</u>		
Corvallis	7 KOAC-TV	PC<357m	Aberdeen	42 K42GG	NS 5.11kw, 45-28-29/98-30-52
Cottage Grove	14 K14LP	QC from K44DC	Florence	2 KDLO-DT	NW 3.7kw/241m, 44-57-53/97-34-50
Elkton	11 K66BE	QC from ch. 66, 40w, 43-37-16/123-32-03	Huron	22 KTTM-DT	STA 1.14kw/104m
Eugene	17 KMTR-DT	NW 70kw/473m	Mitchell	26 KDLV-DT	STA 3.01kw/153m, 43-45-33/98-24-44
Eugene	29 KEPB-DT	PG<100kw/403m	Raliance	13 KPLO-DT	NW 40kw/318m
Grants Pass	36 K59DU	QR from ch. 59, 42-24-43/123-16-54	Rapid City	2 KOTA-DT	NW 7.1kw/185m
John Day	8 K08NP	NS 100w, 44-26-02/118-57-27 (3Abn)	Rapid City	16 KCLO-DT	STA
Klamath Falls	17 K58BG	QR from ch. 58, 26.8kw			
Lakeview	7 K07NR	PG<1.11kw			
North Bend	13 K13JQ	PC>2kw, 43-23-30/124-07-48			

Iowa:

Rapid City 26 KBHE-DT 38.1kw/154m  
NW  
Rapid City 27 KWBH-LP 76.3kw/192m  
FC to WB; CC  
from KNBN-LP  
Rapid City 44 KZWB-LP CC from KNBN-  
LP (or are new  
calls KWBH-  
LP?)  
Sioux Falls 29 KSFY-DT NW 368kw/589m  
Sioux Falls 36 KWSD FC to WB; CC  
from KAUN  
Sioux Falls 42 KXWB-LP CC from K42CC  
(or KBNW-LP?);  
FC to Pax  
Sioux Falls 7 KTTW-DT STA 22w/96m  
Vermillion 34 KUSD-DT PR to add DA

Tennessee:

Clarksville 60 W60DE NS 439w, 36-32-  
23/87-39-45  
Cookeville 36 WNPX-DT PR<429m  
Hendersonville 51 WPGD-DT PR>264kw/417  
m, 36-16-03/86-  
47-44  
Jackson 39 WJKT-DT STA  
392kw/296m  
Knoxville 14 W14CX QG from  
W50CG, 45kw  
Knoxville 17 WKOP-DT STAs  
15kw/551m &  
5kw/500m, 35-  
59-44/83-57-23  
Knoxville 26 WATE-DT PG>930kw/529  
m  
Knoxville 30 WVLT-DT STA 5kw/500m,  
35-59-44/83-57-  
23  
Lawrenceburg 13 W10BV PR>4.5kw  
Memphis 26 W26CX PG>105.8kw  
Murfreesboro 11 WETV-LP PR>3kw  
Nashville 15 WZTV-DT STA  
24kw/411m, 36-  
15-50/86-47-39

Texas:

Abilene 5 K05LO NS 900w, 32-27-  
02/99-43-37  
Abilene 29 KRBC-DT STA  
2.5kw/227m, 32-  
17-06/99-44-23  
Amarillo 30 K30HM NS 18.07kw, 35-  
05-09/101-54-48  
Austin 24 KVUE PG  
1865kw/393m  
Austin 32 KGBS-CA QC from ch. 65,  
10kw, 30-19-  
08/97-48-05  
Austin 33 KVUE-DT PR  
1000kw/376m  
Austin 42 KEYE-TV PG>5000kw/380  
m, 30-19-19/97-  
48-12  
Austin 43 KEYE-DT PG>1000kw/395  
m, 30-19-19/97-  
48-12; already  
on  
Beaumont 47 K47IO NS 11.64kw, 30-  
00-06/94-05-37  
Beaumont 52 K52IS NS 11.64kw, 30-  
00-06/94-05-37  
Brownfield 50 K50HT NS 20.8kw, 33-

Iowa:

Bryan 50 KBTX-DT 10-30/102-17-20  
STA  
25kw/451m, 30-  
33-16/96-01-51  
Corpus Christi 23 KEDT-DT STA  
50kw/270m, 27-  
39-20/97-33-55  
Corpus Christi 24 KCCX-LP QR from ch. 25  
Corpus Christi 28 KORO PC>287m, 27-  
42-28/97-37-59  
Corpus Christi 33 K33HL NS 10kw, 27-45-  
23/97-36-25  
Dallas 57 KSEX-LP CC from K57IG  
Decatur 29 KMPX FC; to become  
ethnic  
Decatur 30 KMPX-DT STA  
175kw/448m,  
32-35-19/96-58-  
05  
El Paso 17 KVIA-DT STA  
1.3kw/551m, 31-  
48-18/106-28-58  
El Paso 18 KDBC-DT STA  
21.6kw/426m  
El Paso 25 KINT-DT STA  
1.8kw/329m  
El Paso 39 KSCE-DT STA 6kw/520m  
El Paso 51 KTFN-DT STA 3kw/220m,  
31-47-32/106-28-  
47  
Encinal 58 NEW-LP AF dismissed  
Mexican  
objection  
Gainesville 69 KBFW-LP XR 33-19-42/97-  
03-56; CC from  
K69IL  
Galveston 23 KLTJ-DT STA  
4.54kw/81m  
Greenville 46 KTAQ-DT PR<496m, 32-  
32-36/96-57-32;  
already granted  
Harlingen 31 KGBT-DT NW  
1000kw/368m  
Hereford 44 K44GW NS 3kw, 34-51-  
02/102-23-38  
(TBN)  
Laredo 19 KLDO-DT STA 7kw/44m  
Laredo 31 K31HD NS 99w, 27-31-  
28/99-31-21  
Laredo 46 NEW-LP AF dismissed  
Mexican  
objection  
Laredo 49 NEW-LP AF dismissed  
Mexican  
objection  
Longview 31 KFXK-DT STA 250w/27m,  
32-26-53/94-42-  
53  
Lubbock 4 K04PT NS 100w, 33-31-  
33/101-52-07  
Lubbock 25 KPTB-DT STA 6kw/83m  
Lubbock 35 KJTV-DT STA 910w/83m  
Lubbock 44 NEW-LP AF dismissed,  
settlement  
Lufkin 11 KTRE-DT QG from ch. 43  
over objection  
of LPTVs  
McAllen 49 KNVO-DT STA 10kw/285m  
Memphis 30 K30HH NS 920w, 34-48-  
18/100-36-12

<u>Iowa:</u>			<u>Iowa:</u>		
Odessa	13 KWES-DT	PR<391m	Emery	47 K47HD	QC from K27EL, 100w
Odessa	43 KMLM-DT	STA 10kw/142m, 32-02-54/102-18-04	Emery	49 K49GB	QC from ch. 33, 100w
Plainview	29 K29FW	NS 2.5kw, 34-12-42/101-42-44 (TBN)	Fillmore	36 K36FY	QC from K52ED
Rosenberg	46 KXLN-DT	NW 363kw/578m, 29-33-44/95-30-35	Fillmore	38 K38GT	QC from K55BA, 3.24kw
San Angelo	16 KACB-DT	STA 2.7kw/167m	Fillmore	40 K40GD	QC from K58AJ, 3.24kw
San Angelo	19 KIDY-DT	STA 3.7kw/130m	Garfield Co.	16 K59AK	QC from ch. 59, 1.38kw
San Antonio	30 KABB-DT	STA 10.5kw/420m, 29-17-28/98-16-12	Garfield Co.	18 K61AH	QC from ch. 61, 1.36kw
San Antonio	44 KGMM-CA	PG>51kw	Garfield Co.	20 K63AG	QC from ch. 63, 1.36kw
San Antonio	59 KMHZ-LP	PG<51kw	Garfield Co.	22 K65AL	QC from ch. 65, 1.3kw
Snyder	10 KPCB-DT	STA 762w/138m	Garfield Co.	24 K25OC	QC from ch. 25, 1.3kw
Snyder	49 K49GT	PG<40kw, 32-46-36/100-53-53	Garfield Co.	26 K27CE	QC from ch. 27, 1.36kw
Texarkana	15 KTAL-DT	STAs 1.34kw/445m & 15kw/445m	Garfield Co.	28 K67BT	QC from ch. 67, 1.38kw
Tyler	10 KLTV-DT	QG from ch. 38 over objection of LPTVs	Garfield Co.	30 K23EJ	QC from ch. 23, 1.3kw
Victoria	23 K23GQ	NS 9.95kw, 28-47-24/96-56-21	Garfield Co.	36 K36FW	QC from K55BO, 730w
Victoria	34 KVIT-LP	QC from ch. 53, 40kw, 29-34-16/95-30-38	Garfield Co.	53 K53AK	QC from ch. 39, 730w
Welch	19 KWGD-LP	XR 33-18-44/102-13-24	Green River	36 K36FX	QC from K32AI, 600w
<u>Utah:</u>			Green River	38 K38GP	QC from K30AG, 600w
Antimony	42 K54CO	QC from ch. 54, 720w, 38-10-57/112-02-25	Logan	41 K53AP	QC from ch. 53, 2.6kw
Antimony	44 K56AZ	QC from ch. 56, 720w, 38-10-57/112-02-25	Logan	43 K55BM	QC from ch. 55, 2.8kw
Beaver	24 K69EW	QC from ch. 69, 960w, 38-31-05/113-17-03	Logan	45 K45GL	QC from K57AX, 2.8kw
Bloomington	22 KUWB-LP	QC from ch. 65, 790w, 37-03-48/113-34-23	Logan	47 K59BC	QC from ch. 59, 2.8kw
Cedar City	2 K02NU	PG>1.78kw; already on	Logan	49 K49FS	QC from K63EB, 2.54kw
Cedar City	39 K22EK	QC from ch. 22	Logan	51 K51GA	QC from K61AT, 2.54kw
Cedar City	41 K24DC	QC from ch. 24	Marysvale	46 K32AL	QC from ch. 32, 570w
Cedar City	45 K45HD	NW 150w, 37-38-18/113-01-52	Marysvale	48 K30CW	QC from ch. 30, 570w
Cedar City	2 K08MZ	QC from ch. 8	Milford	15 K15FQ	QC from K59BS, 870w, 38-31-05/113-17-03
Canyon			Milford	20 K63BY	QC from ch. 63, 960w, 38-31-05/113-17-03
Delta	35 K35GC	QC from K62ED, 2.7kw	Morgan	29 K62BM	QC from ch. 62, 630w
Delta	39 K39FR	QC from K60EK, 2.69kw	New Harmony	49 K52DW	QC from ch. 52
Delta	43 K66EH	QC from ch. 66, 2.6kw	New Harmony	51 K54DS	QC from ch. 54
Duchesne	23 K26DO	QC from ch. 26, 2kw	Ogden	36 KULC-DT	NW 200kw/1256m, 40-39-33/112-12-07
Emery	41 K41GV	QC from K31DX, 100w	Orangeville	16 K16EW	QC from K50DI, 4kw
Emery	45 K45GP	QC from K29CY, 100w	Orangeville	18 K18FZ	QC from K58EE, 4kw
			Orangeville	20 K20GP	QC from K62BL, 3.5kw

Iowa:

Orangeville 22 K22FX QC from K17EY, 4kw  
 Orangeville 24 K24FI QC from K56EV, 4kw  
 Orangeville 28K28GZ QC from K52DS, 4kw  
 Orangeville 32 K32FR QC from K54DP, 4kw  
 Payson 51 K51HJ QG from ch. 34; CL from Provo; 1.08kw  
 Price 45 K45FW QC from K66AA, 1.66kw  
 Price 47 K47GP QC from K68AX, 1.66kw  
 Provo 32 KCBU NW, 2990kw/825m, 40-16-45/111-56-00  
 Rockville 40 K40FU QC from K60BI, 3.54kw  
 Salina 15 K64BC QC from ch. 64, 160w  
 Salina 17 K68DI QC from ch. 68, 160w  
 Salina 21 K66BK QC from ch. 66, 160w  
 Salina 23 K60FD QC from ch. 60, 160w  
 Tabiona 29 K57CK QC from ch. 57, 7kw  
 Toquerville 23 K66BP QC from ch. 66, 2.57kw  
 Virgin 25 K62BR QC from ch. 62, 540w  
 Washington 47 K47AK PR>1.28kw, 37-09-19/113-52-57  
 Wayne Co. 43 K39FO QC from ch. 39, 38-30-44/111-47-01

Vermont:

Manchester 2 WVBK-LP PG<1.11kw, QR from zero offset to plus

Virginia:

Bristol 9 WOPI-CA PR>3kw  
 Front Royal 21 WVPY-DT NW 50kw/400m  
 Goldvein 53 WTVT-TV CX, DE, becomes digital-only on ch. 30  
 Keysville 30 WERI-LP QR from ch. 39 dismissed ROA STA  
 Lynchburg 34 WSET-DT 17.9kw/568m  
 Manassas 43 WPXW QR dismissed  
 Monterey 11 NEW-TB AF 8w, 38-20-39/79-35-47 (WVPT-DT)  
 Newport News 39 WJHJ-LP CC from W39BW  
 Roanoke 38 WPXR PC>623m, 37-11-37/80-09-25  
 Yorktown 31 WYSJ-CA CC from W31BG

Washington:

Aberdeen 23 K23AS PG>11.6kw  
 Baker Flats 61 K61AY PG<680w, 47-29-37/120-19-14  
 Camas 20 KOXI-CA QG from ch. 19

Iowa:

Kennewick 44 KVEW-DT STA 61kw/373m  
 Pullman 24 KQUP-DT AF  
 1000kw/569m, 47-34-44/117-17-46  
 Spokane 8 KSPS-DT NW  
 21.6kw/558m  
 Spokane 52 KHBA-LP PC<8.16kw  
 Tacoma 11 KSTW PG>276m  
 Yakima 21 KYVE-DT NW 50kw/280m  
 Yakima 27 KAZW-LP PR<44kw, 46-31-57/120-30-37  
 Yakima 41 KCYU-LP PR>25.4kw, 46-31-57/120-30-37

West Virginia:

Bluefield 14 WLFB-DT STA 12kw/428m  
 Clarksburg 10 WVFX-DT STA 24w/212m  
 Grandview 53 WSWP-DT STA  
 35.8kw/283m  
 Huntington 34 WPBY-DT STA  
 60.1kw/378m

Wisconsin:

Crandon 4 WBIJ NW  
 4.3kw/119m, 45-34-23/88-52-57 (FN religion)  
 Green Bay 30 W30BU PC>14.7kw  
 Green Bay 42 WPNE-DT STA 60kw/375m  
 Kenosha 40 WPXE-DT STA  
 700kw/358m, 43-05-44/87-54-17  
 La Crosse 30 WHLA-DT STA 60kw/351m  
 Menomonie 27 WHWC-DT STA 60kw/350m  
 Milwaukee 34 WISN-DT STA  
 570kw/263m

Milwaukee 38 W53CC QR from ch. 53, 34.5kw, 43-05-15/87-54-13; CL from Ludington, MI  
 Park Falls 47 WLEF-DT STA 60kw/244m  
 Tomah 51 WDLS-LP QR from ch. 35, 150kw  
 Wausau 24 WHRM-DT NW 90kw/387m

Wyoming:

Casper 13 KCWY PR>10.25kw  
 Cheyenne 8 KCHY-LP CC from K08NK  
 Cheyenne 30 KGWN-DT STA  
 95.5kw/162m  
 Cheyenne 68 K68GL NS 1kw, 41-06-01/105-00-23  
 Douglas 9 K09XL NW 50w, 42-45-47/105-25-12  
 Laramie 46 K46HK NS 4.2kw, 41-17-06/105-26-41

U.S.Possessions:Guam:

Tamuning 26 K26HK NS 54kw, 13-29-16/144-49-36

Puerto Rico:



Aguada	62 WQHA-DT	STA 2.9kw/310m
Caguas	56 WLII-DT	NW 71kw/357m
Humacao	68 WWSN	PR 437kw/611m; already granted
Ponce	26 WQTO	PC>1000kw
Ponce	43 WSUR-DT	NW 68kw/825m



#### U.S. Virgin

#### Islands:

Charlotte	14 WVGN-LP	CC from W14CP
Amalie		
Charlotte	44 WTJX-DT	STA 45kw/458m
Amalie		
Frederiksted	18 W18CV	PR<1.1kw, 17-41-50/64-52-58

#### **Notes:**

Thanks to Mike Bugaj, Keith Smith, Mike Lazaro, and Jeff Kadet for information appearing elsewhere in this column. My apologies for the lack of a *TV News* in the October *VUD*. I was on vacation for two weeks in mid-September and simply didn't have time to compile a column before leaving. This column includes the information that would have been in last month's.

The FCC database continues to show KSCC's antenna height as 733m. I'm quite confident this is a typo – the figure is roughly 2,400', but that would require a 2,400-foot tower. (I was in Hutchinson, Kansas on my vacation, and it's every bit as f-l-a-t as Kansas' reputation would have it... I guarantee you there's no 2,400-foot tower anywhere near Hutchinson!) KSCC-DT's HAAT is listed as 310m on the same tower, and I strongly suspect KSCC's analog signal is using the same antenna. (so KSCC's analog HAAT would also be 310m, roughly 1,000')

The moves of KNTV and KNTV-DT in California are interesting. The proposed site is Mount San Bruno, just south of San Francisco, and where many of the San Francisco UHF stations transmit from. KNTV's current site on Loma Prieta south of San Jose provides good coverage of that city, but has serious problems in San Francisco and nearby communities. Thousands of over-the-air viewers have been unable to see NBC programs since KNTV became the NBC affiliate. A move to San Bruno would fix this problem. However...

KNTV cannot provide a city-grade analog signal to San Jose – their city of license – from

this site. According to my calculations, KNTV would deliver just under 73dBu to the reference coordinates of San Jose. 77dBu is required – and the signal at distant points of San Jose, south of the center of town, would be even weaker than 73dBu. Under normal Commission procedure, this failure to deliver a city-grade signal would preclude grant of KNTV's application. NBC (who owns KNTV) presents a novel theory to justify their move.

The city-grade signal requirements for digital are much looser than for analog; their 63.7dBu signal into San Jose would be more than adequate. If KNTV's analog signal didn't exist, the FCC would have no problem granting permission for KNTV-DT to move to San Bruno. But KNTV's analog signal does exist.

Quoting from Exhibit 34, attached to the application:

"Because the Station has adjacent analog and digital channels (Channels 11 and 12), NBC must also move the Station's analog facilities to the San Bruno Farm. Unless co-located, the digital operations on Channel 12 would create unacceptable interference to the Station's analog operations on Channel 11."

NBC starts by stating that operating their digital facility from Loma Prieta results in many viewers being unable to receive the station. As the only major San Francisco-market station transmitting from that far south, nobody's antenna is pointed at KNTV. As those with DTV receivers know, this is a serious impediment to digital reception. Front-end overload from the powerful San Francisco TV transmitters at San Bruno and Mt. Sutro is a problem, as is overload and intermodulation from the numerous high-powered FM transmitters on those sites. As mentioned above, once KNTV-DT is on San Bruno, KNTV analog has to be at the same site...

One interesting footnote in NBC's submission:

"Indeed, the city of San Francisco has a higher than average concentration of over-the-air reception due to the high quality of reception resulting from the proximity of Sutro Tower and the inability of many cable companies to wire historic multi-tenant buildings for cable access." Some of the viewer comments cited by NBC confirm

that cable is not available in many parts of San Francisco!

Offhand, I wouldn't give this application much of a chance. The Commission has generally seemed very reluctant to waive city-of-license coverage requirements. However, NBC says a recent grant to WSWS-66 in Alabama allows them to relocate to a site that "misses" a higher proportion of the population of Opelika than the new KNTV site would miss of San Jose's. Keep an eye on this one...

WLBT-3's application to change their digital assignment from 51 to 9 has been denied. Before the digital transition, channel 51 had been allocated to Jackson for analog operation; one of the applicants for that channel filed comments supporting WLBT's application. (as it would free up channel 51 and give the new applicant a shot at a permit) The licensee of a Class A station on channel 9 filed in opposition, stating that the move was not technically necessary and would illegally bump their pre-existing Class A facility from the channel.

DTV channel assignments in transition carry a power assignment as well as a channel assignment. The assigned power levels are believed to not cause interference to existing analog stations, but may be lower than the overall maximums for DTV operation. Stations that feel they can use more power than the assignment in the table may file an application for "maximization", to increase power above the assigned levels. (this might, for example, be possible if the DTV operation plans a different tower site from the analog operation, one more distant from the nearest analog station on the same channel.)

Neither intervention proved necessary. WLBT told the Commission they would only continue to prosecute their application for channel 9 if their maximization application was granted. They weren't interested in operating at reduced power. The FCC, as a matter of policy, does not consider applications that are contingent on some other action. WLBT-DT will stay on channel 51. Going the other direction, WETM in New York State has applied to change its DTV allotment from channel 2 to channel 33.

Contingency does work in the other direction though. W52BR's permit to move to channel 46 and change its principal community from Champaign, Illinois to the Chicago suburb of Arbury Hills has been reinstated, but with an interesting qualification:

*"conditioned on submission of documentation demonstrating the necessity of moving the W52BR transmitter site more than 123 miles from its authorized site and no longer serving the station's protected service area."*

This permit had been granted by Commission staff, then revoked. I'm not sure how this differs from other LPTV moves (for example, W53CC's move across Lake Michigan from Ludington to Milwaukee). My suspicion is that the difference is that W52BR was already operating – that (at least in theory!) Champaign residents would lose a service they'd been viewing.

There have been a number of applications and actions involving new full-power stations. An application for channel 40 at Vallejo, California has been dismissed. (I wasn't aware of a channel 40 allocation at Vallejo, and that might be why the application was dismissed) I'm not aware of an allocation at Dover, New Hampshire on channel 64 either, and suspect that application will meet a similar fate. Expect a new successful applicant soon. "Minority Media TV 38, [L.L.C.](#)" has won Broadcast Auction #54. They'll receive a permit for channel 38 at Corpus Christi, Texas.

Two applications have been filed to add new allotments to the table of allocations. Channel 49+ has been requested at Osage Beach, Missouri. (near Springfield in the southwestern part of the state) Commission staff has already found this allotment to be technically feasible, so barring any legal surprises this allotment is likely to happen. The other application is for channel 47 at Hobbs, New Mexico. This allotment would be reserved for non-commercial use. KENW-3 requested it, though there is no guarantee they'll receive the channel if it is allotted. The Commission has made no comments about the technical acceptability of this application.

Several applications for channel 69 at Des Moines, Iowa have been dismissed, and one for channel 56 granted. These are all the same allotment. One of the applicants (the one that eventually won the permit) successfully petitioned to get the assignment changed from 69 to 56. This adds some life to the station as the 52-59 part of the UHF band will be cleared for land mobile later than the 60-69 portion. I would assume the applicant figures a channel below 52 will become available for them when the DTV transition is complete and analog channels are

(Continues on page 21 )

# ATSC Primer Part 2

Doug Smith

## How? (video)

As I mentioned before, digital television starts the same way as analog. You scan a light-sensitive target, accumulating a series of electrical signals proportional to the amount of light striking each spot on the target. In practice, to get color TV you use three targets. A special mirror and a set of color filters are used to ensure one target receives the red light; one the green light; and one the blue light. The electrical signals from all three targets are added to create a black-and-white signal, called *luminance*. The red and blue signals are also processed.<sup>1</sup>

The resulting signals are “sampled” - measured and converted to numbers at regular intervals. You already know that the picture is scanned – broken up into – horizontal lines. In analog TV there are 525 lines, but roughly 45 of them are used for synchronizing and blanking signals not necessary with digital. Standard-definition digital TV breaks the picture up into 480 lines.

In analog TV, the horizontal lines are not broken up into dots.<sup>2</sup> A single line is sent as a continuous, varying current. In digital, however, the line is sampled as a series of dots, or picture elements. (*pixels*) On a standard TV set whose picture tube is 33% wider than it is high<sup>3</sup> there are  $(4/3) \times 480$  or 640 of these “pixels”. The digital TV system generates a number representing the brightness of the black-and-white luminance signal at each of these 640 pixels; it also generates a number representing the brightness of the red and blue signals at every other pixel.<sup>4</sup>

These numbers (I'll just call them “pixels”) are arranged in *blocks* eight pixels wide by eight lines tall; each block contains only luminance pixels, or only red pixels, or only blue pixels. A group of four luminance blocks is then combined with one block of red blocks and one group of blue blocks to form a *macroblock*.

Macroblocks become handy for compression, for reducing the amount of data that must be transmitted to represent a picture. Macroblocks are predicted to move as a group. Chances are good, for example, that a block of pixels representing an actor's face will move horizontally across the screen; chances are quite a bit less that the actor's face will change shape. (of course, certain movies will shatter this assumption!)

Macroblocks within a given row are arranged in *slices*. The MPEG-2 standard suggests between four and eight slices per row. The start of each slice is marked with a special code, so the receiver can more easily find it.<sup>5</sup> Using more slices makes it easier for the receiver to recover from noise and interference, but it also requires more transmission bandwidth.

Finally, slices are arranged in *frames*. Each frame represents one still picture; as you probably know from analog TV, (or the movies) showing a sequence of stills in rapid succession presents the illusion of a moving picture. There are three types of frame used in MPEG-2:

- ⓐ I frames: (I = “Intraframe”)  
Each I-frame is a complete picture. MPEG-2 requires an I-frame be sent at least every half-second for reasons that will probably be obvious when you understand what P and B frames are.
- ⓐ P frames: (P = “Predicted”)  
The contents of a P-frame are predicted by the previous I or P frame. The P-frame contains only the difference between the picture it represents and that represented by the previous frame. If, for example, you were transmitting a picture of someone adding two stars to the American flag, the first I-frame might display the entire flag while succeeding P-frames might show only the stars.

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1The green signal is tossed out. However, you can recreate it at the receiver. Subtract red from luminance, and then blue, and all you have left is green. Analog TV does the same thing.

2Digital signal processing equipment within an analog TV station may, however, do this “sampling” of the horizontal lines.

3The ratio of width to height is 4:3; this is called the “aspect ratio”. 16:9 is common in movie houses, and is used for most high-definition TV.

4Human vision is sharper for outlines than it is for colors. Analog television also transmits less color information than black-and-white.

5Much like horizontal sync pulses in analog TV.

- ⓐB frames: (B = “Bidirectionally predicted”)  
The contents of a B-frame are predicted by the previous and next frame. (obviously a B-frame cannot be displayed until the subsequent I or P frame is received!)

All of these frames are assembled in order into a stream of data. The stream is broken up into 188-byte<sup>6</sup> “packetized elementary streams”, or *PES*. It is then *multiplexed* with audio and other data, and sent to the 8VSB modulator for transmission. More on all of that later...

### **How? (audio)**

In analog television, a pressure wave striking a diaphragm in a microphone generates an electrical current. This current is amplified and sent to the receiver, where it's used to move the paper cone of a loudspeaker. This speaker converts the current back into changes in air pressure, which the viewer hears as sound.

In digital TV sound, as with the picture, the electrical current is measured at specific times, converted to a number, and that number is sent to the receiver. The receiver uses the number to regenerate the original electrical current and feed it to the speaker.

An ATSC DTV stream may<sup>7</sup> contain one or more audio programs. Audio is coded with the Dolby AC-3 standard. Each audio program is generally either “5.1” or stereo. A 5.1 program has six audio “channels”:

- ⓐLeft
- ⓐRight
- ⓐCenter
- ⓐLeft Surround
- ⓐRight Surround
- ⓐLow Frequency Enhancement (“subwoofer”)

Each channel has a frequency response of 3 – 20,000Hz. (the Low Frequency Enhancement channel's response is 3-120Hz. In theory all six channels have a low end going down to DC, but passing frequencies below 3Hz can screw up the data compression.) Each channel is sampled (measured, and converted to a number) at a rate of 48,000Hz. The sample *resolution* - how small of a difference in signal can be transmitted – can be as many as 24 bits, allowing 16,777,216 different signal levels. The AC-3 standard recommends use of at least 16 bits. (65,536 different levels)

If a stereo program (with no surround-sound information) is provided, it is “rematrixed” for compatibility with surround-sound receivers. Channels may also be “blended” (mixed, trending towards monophonic sound) if there's not enough bandwidth to transmit the data from all channels.

The numbers representing the sound signals are encoded into “sync frames”. Each such frame includes a “sync word” (which tells the receiver where the beginning of the frame is); an indication of the sample rate (48,000Hz in this case); information about the audio data stream; 0.032 second of encoded audio; and a CRC error check code. The latter code allows the receiver to determine whether a frame was received properly, and to discard damaged frames.<sup>8</sup>

AC-3 audio offers eight different audio *services*. In practice, I've never encountered anything besides “CM”. To be complete, the possible services are:

- ⓐCM – Complete Main – a complete surround-sound service.
- ⓐME – Main music & effects – CM but without the dialog.
- ⓐVI – Description of action for the visually-impaired. May or may not also include the music and effects elements.
- ⓐHI – Specially-produced dialog service for the hearing-impaired.
- ⓐD – Dialog only – intended to be mixed with ME. A single program may have several D services in different languages.
- ⓐC – Commentary

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<sup>6</sup>A “byte” is 8 “bits” of information, at least in this context. A “bit” is a binary digit – either 0 or 1.

<sup>7</sup>Uh, almost always does...

<sup>8</sup>Playing a damaged frame could cause a loud “pop”, “raspberries”, or other annoying sounds.

ⓂE – Emergency messages – these will interrupt all other services.

ⓂVO – Voice Over – for example, to read promotions for upcoming shows during the credits of a previous show.

There are two other interesting features offered in the AC-3 standard.

Streams are encoded with a subjective “volume of dialog”. Receivers can use this information to automatically set the desired volume level, independent of changes in encoding between stations. As the standard notes, it's not impossible to cheat! - an advertiser could tell your receiver his audio was 10dB lower than program material, while it's actually 10dB higher, causing your receiver to play his ad 20dB louder than anything else.

Also encoded are audio compression settings. AC-3 anticipates that mild level compression will be used – that loud passages will be turned down somewhat, and quiet ones boosted somewhat. This is generally necessary to ensure viewers in noisy environments (the typical family room!) can hear the program. Viewers with quiet “home theater” environments can use this information to “undo” the level compression and restore the original full dynamic range of the sound.

All of these frames are assembled in order into a stream of data. The stream is broken up into 188-byte “packetized elementary streams”, or *PES*. It is then *multiplexed* with video and other data, and sent to the 8VSB modulator for transmission. More on all of that later... (I'll bet this paragraph was familiar...) (Continued next month)

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## TV NEWS CONTINUES FROM PAGE 18

surrendered.

Two "NEW-TB" entries appear this month. "TB" is "Television Booster". They're essentially the same thing as a translator, but with the output channel the same as the input. More accurately in practice, they usually are a second transmitter, on the same channel as the main, and separately fed (by fiber, microwave, or satellite) with programming. In rare cases it may be possible to pick up the primary off the air, but this tends to result in a gigantic oscillator<grin>. Boosters are rare because they tend to interfere with their primary stations. (as you might imagine, with two transmitters on the same channel in the same area!) They're possible only in areas where rough terrain ensures the primary station cannot be received at any populated place within the booster's service area. Emphasis on populated place.

The application in Monterey, Virginia is especially interesting as the primary station seems to be WVPT-DT. If granted, this would be the first non-experimental booster of a DTV station and the first regularly-licensed station to be authorized to relay a DTV.

WNVT-53 becomes the next analog station to surrender its license and become DTV-only. Reports have it the station's transmitter failed. They told the FCC they're in tough financial condition and can't afford to operate both a digital and analog transmitter. Only about 3,000 households are receiving WNVT's off-air signal, and 11 of the 12 school districts using educational programs broadcast by the

station are receiving them via cable. (the 12<sup>th</sup> will be provided DTV=>NTSC conversion equipment)

WRDQ-DT 14 Orlando, Florida has been fined \$10,000 for beginning DTV operations without authorization. Because of the proximity of channels 14 and 69 to land-mobile bands, permits for these channels contain a condition:

*"Program tests shall not be commenced under Section 73.1620(a) of the Commission's Rules and may only be started after specific authority is granted by the Commission."*

WRDQ-DT sent a letter to the Commission on July 22, 2002 reporting, as required by 73.1620(a), that program tests had begun; on the 24<sup>th</sup>, an application for an operating license was submitted, indicating that the station was already on the air with program tests. If the special condition hadn't existed, this would have been normal procedure and perfectly legal. With the condition, it wasn't.

In November 2002, the station reported their error to the Commission but stated there was no risk of interference to land-mobile, so there was no need for special permission before tests began. However... in February of this year WRDQ requested Special Temporary Authority to go dark for no more than 180 days. There was objectionable interference to land-mobile. The time was necessary to investigate and fix the problems.

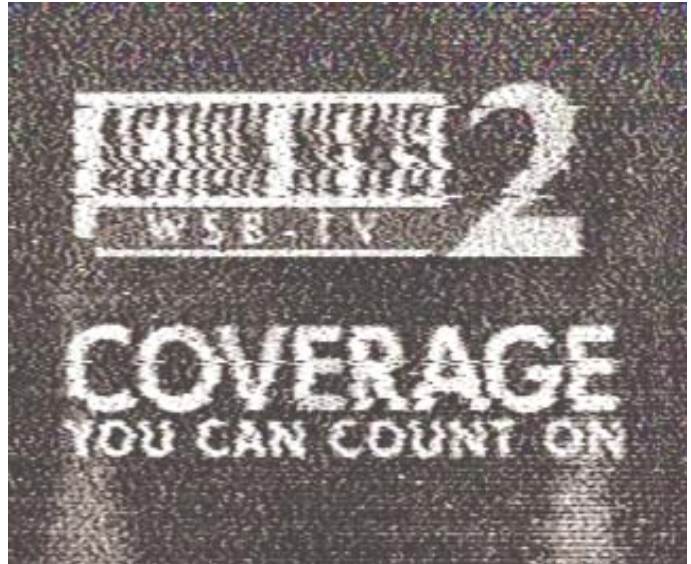
This certainly seems proof the special condition was necessary and needed to be complied with!

November 2003

As promised, more fantastic catches from Matt Sittel, Bellevue, NE:



WWTO-35 La Salle, IL  
364 mi Tr seen 3/15/03  
@0759 CST



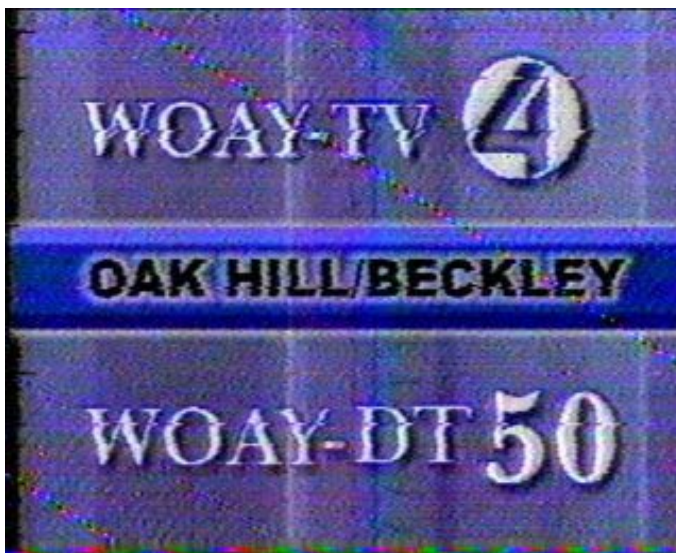
WSB-2 Atlanta, GA  
811 mi Es seen 4/10/03  
@2058 CDT



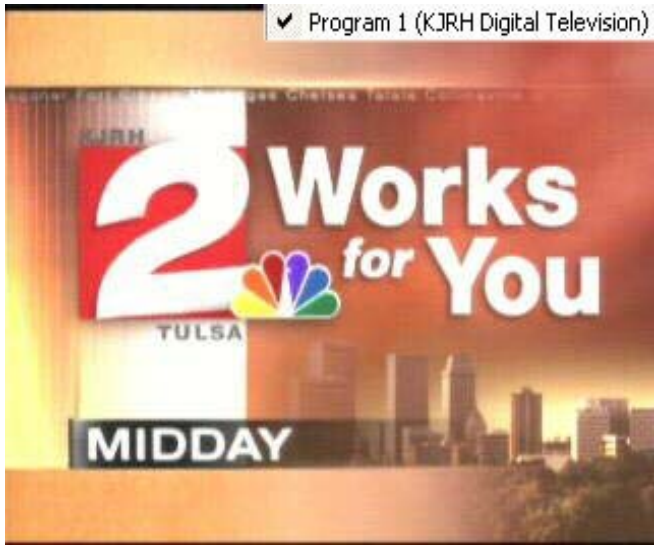
XEFB-2 Monterrey, NL  
1096 mi Es seen 5/26/03  
@0948 CDT



WESH-2 Daytona Beach, FL  
1176 mi Es seen 6/3/03  
@1127 CDT



WOAY-4 Oak Hill, WV  
816 mi Es seen 6/30/03  
@1359 CDT



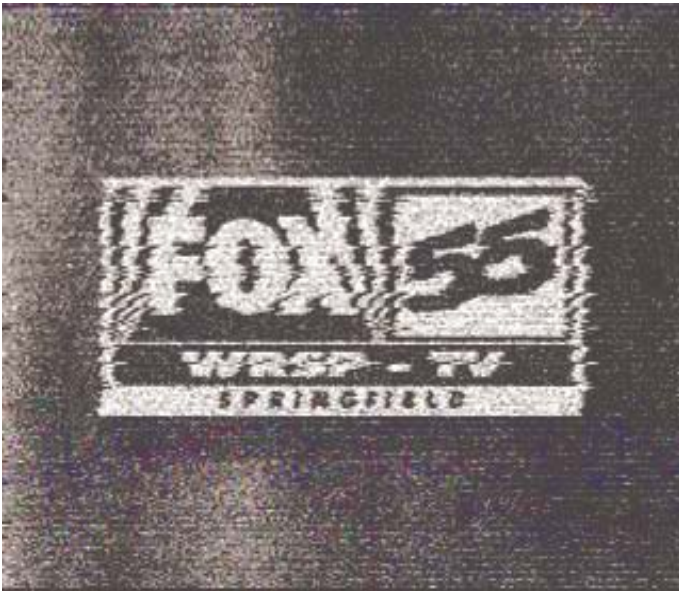
KJRH-DT-56 Tulsa, OK  
 351 mi Tr seen 7/3/03  
 @0956 CDT



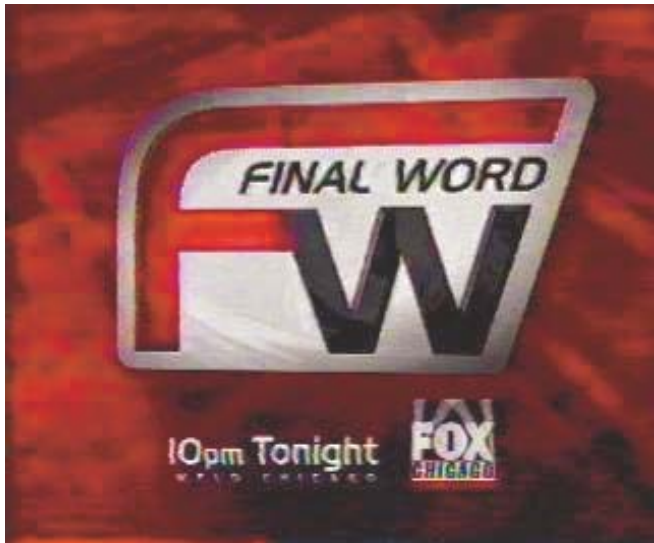
KSTP-DT-50 St. Paul, MN  
 309 mi Tr seen 7/3/03  
 @1820 CDT



KWQC-DT-56 Davenport, IA  
 289 mi Tr seen 7/19/03  
 @1230 CDT



WRSP-55 Springfield, IL  
 352 mi Tr seen 7/19/03  
 @1359 CDT



WFLD-32 Chicago, IL  
 433 mi Tr seen 7/20/03  
 @0329 CDT



WRGT-45 Dayton, OH  
 621 mi Tr seen 7/20/03  
 @0959 CDT



WPWR-DT-51 Chicago, IL  
433 mi Tr seen 7/20/03  
@0331 CDT



WGN-DT-19 Chicago, IL  
433 mi Tr seen 7/20/03  
@0427 CDT



KREM-2 Spokane, WA  
1144 mi Es seen 8/10/03  
@2006 CDT



KXLY Spokane, WA  
1142 mi Es seen 8/10/03  
@2008 CDT



KSTC-45 Minneapolis, MN  
309 mi Tr seen 8/18/03  
@0658 CDT



WFTC-29 Minneapolis, MN  
309 mi Tr seen 8/18/03  
@0659 CDT





WPXK-54 Jellico, TN  
716 mi Tr seen 8/25/03  
@0859 CDT



WSIL-DT-34 Harrisburg, IL  
447 mi Tr seen 8/25/03  
@0910 CDT



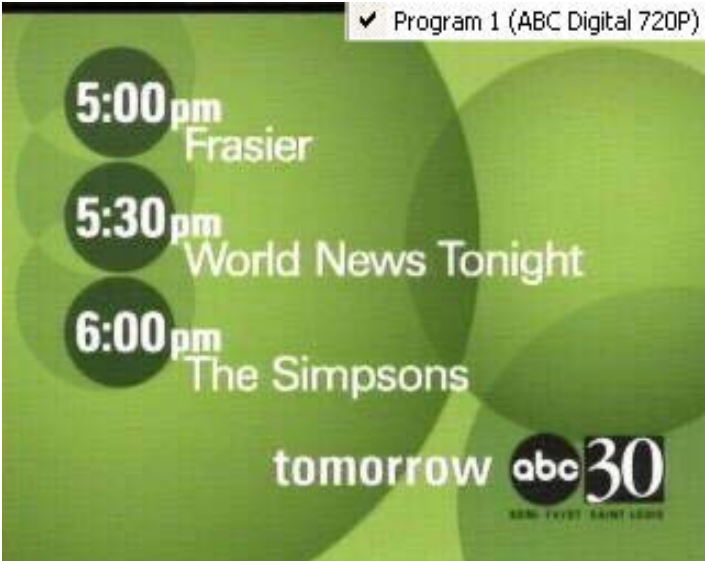
KFAA-51 Rogers, AR  
352 mi Tr seen 8/25/03  
@0825 CDT



WVTV-18 Milwaukee, WI  
434 mi Tr seen 8/29/03  
@0658 CDT



WISC-DT-50 Madison, WI  
355 mi Tr seen 9/2/03  
@0959 CDT



KDNL-DT-31 St. Louis, MO  
344 mi Tr seen 9/3/03  
@0344 CDT

# Eastern TV-DX

Matthew C. Sittel  
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November, 2003

December, 2003 column deadline: Nov. 12

Eastern TV-DX is for reporters from the following states: AL, CT, DE, FL, GA, IN, KY, MA, MD, ME, MI, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT and WV, plus Washington, DC. Also for reporters from the following Canadian provinces: NB, NF, NS, ON, PEI and PQ. Overseas reports welcome!

Jim Renfrew, 6988 Bank Street Road, Byron, NY 14422-9702

Equipment: Sansui TU-9900, FM and UHF antennae with rotor.

<u>9/2 tr</u>					0300 <u>CKXT</u>	52	ON	Toronto "Toronto 1"	
2323 <u>WNPA</u>	19	PA	Jeanette		0303 <u>WFUM</u>	28	MI	Flint	
2330 <u>WCTEt</u>	22	TN	Cookeville		0308 <u>WWJ</u>	62	MI	Detroit	
2331 <u>W46BA</u>	46	NY	Jamestown		0318 <u>WDWB</u>	20	MI	Detroit	
<u>9/3 tr</u>					0324 <u>WKBD</u>	50	MI	Detroit	
0015 <u>WOIO</u>	19	OH	Shaker Heights		0335 <u>CBLFT9</u>	53	ON	London	
<u>9/11 tr</u>					0340 <u>WTVS</u>	56	MI	Detroit	
0100 <u>CFJP</u>	35	PQ	Montreal		0341 <u>CFMT1</u>	69	ON	London	
0105 <u>CJMT</u>	44	ON	Toronto "Omni-2"		0356 <u>CKCO3</u>	42	ON	Sarnia, CTV	

Finally – Detroit, and almost all at once!

Charles Gauthier, St-Lambert, PQ, Canada

gcharles@look.ca

Equipment: JVC AV-20120 20" TV, JVC HR-S3800U SVHS VCR, Antennacraft 32-element VHF-UHF-FM antenna at 30' AG, CM9510A rotor, RG6 coax, Tin Lee MQ7-CH2S6P switchable notch trap for ch. 2 and 6, 20dB indoor "Provo" amplifier for UHF.

<u>8/14 tr</u>					0225 <u>CBLFT14</u>	32	ON	Kingston	165
0050 <u>CICO38</u>	38	ON	Kingston	165	0240 <u>WFSB</u>	3	CT	Hartford	260
0055 <u>CBLFT14</u>	32	ON	Kingston	165	2224 <u>WNYB</u>	26	NY	Buffalo	354
0100 <u>WNLO</u>	23	NY	Buffalo	315	2226 <u>WNLO</u>	23	NY	Buffalo	315
0102 <u>WUTV</u>	29	NY	Buffalo	316	2238 <u>WKBW</u>	7	NY	Buffalo	319
0110 <u>WUHF</u>	31	NY	Rochester	257	2240 <u>WUTV</u>	29	NY	Buffalo	316
0112 <u>WXXI</u>	21	NY	Rochester	257	2315 <u>WIVB</u>	4	NY	Buffalo	319
0126 <u>CKWS</u>	11	ON	Kingston	167	2318 <u>WNYO</u>	49	NY	Buffalo	307
0138 <u>WNED</u>	17	NY	Buffalo	315	2325 <u>WUHF</u>	31	NY	Rochester	257
0144 <u>WPXJ</u>	51	NY	Batavia	284	<u>8/23 GW</u>				
0150 <u>WWTI</u>	50	NY	Watertown	154	1200 <u>LPTV</u>	51	PQ	Montreal	2
0220 <u>WYOU</u>	22	PA	Scranton <1>	317	1205 <u>LPTV</u>	56	PQ	Montreal <2>	2
0230 <u>WWLP</u>	22	MA	Springfield	225	<u>9/1 Es</u>				
0238 <u>WROC</u>	8	NY	Rochester	257	1845 <u>WJXT</u>	4	FL	Jacksonville	1136
0243 <u>WHEC</u>	10	NY	Rochester	257	<u>9/6 tr</u>				
0248 <u>WWNY</u>	7	NY	Carthage	150	1730 <u>WWNY</u>	7	NY	Carthage	150
0306 <u>WNYB</u>	26	NY	Jamestown	354	1735 <u>WXXI</u>	21	NY	Rochester	257
0308 <u>WOKR</u>	13	NY	Rochester	251	1739 <u>WUHF</u>	31	NY	Rochester	257
<u>8/15 tr</u>					1745 <u>WNLO</u>	23	NY	Buffalo	315
0225 <u>CFAP</u>	2	PQ	Quebec	145	<u>9/8 tr</u>				
0245 <u>WNYB</u>	26	NY	Jamestown	354	0200 <u>WTVH</u>	5	NY	Syracuse	216
0304 <u>WOKR</u>	13	NY	Rochester	251	<u>9/10 tr</u>				
<u>8/20 tr</u>					1000 <u>WXXI</u>	21	NY	Rochester	257
2153 <u>WUHF</u>	31	NY	Rochester	257	to <u>WNLO</u>	23	NY	Buffalo	315
<u>8/21 tr</u>					1100 <u>WUTV</u>	29	NY	Buffalo	316
0215 <u>CKWS2</u>	26	ON	Prescott	105	<u>WUHF</u>	31	NY	Rochester	257
0220 <u>WNEP</u>	16	PA	Scranton	320	<u>WPXJ</u>	51	NY	Batavia	284
0222 <u>WYOU</u>	22	PA	Scranton	320	<u>9/12 tr</u>				
0224 <u>WVIA</u>	44	PA	Scranton	320	0150 <u>WNNE</u>	31	VT	Hartford	152

Note 1: Picked up through my LOOK TV service provider, reception from Mount St-Gregoire, PQ (393 meters), distances calculated from that location.

Note 2: "Kangaroo TV" special event LPTVs covering the Montreal Molson Indy Champ Car Series. Partially scrambled.

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Saul Chernos, Toronto, ON, Canada

(416) 364-0725

schernos@sympatico.ca

Equipment: Various portable TV sets. Whip for 2-13, Radio Shack two-bay for 7-13 and UHF.  
BR = Burnt River, TO = Toronto.

<u>8/12 MS (BR)</u>				<u>8/29 tr (Grimsby)</u>			
1312 <u>CFCM</u>	4	PQ	Quebec	1700 <u>PIRATE</u>	15	ON	Toronto
2235 unID	2	PQ	Extra lottery #s, FF	<u>9/6 tr (TO-Bluffs)</u>			
<u>8/12 Es (BR)</u>				1940 <u>WBFF</u>	45	MD	Baltimore
2034 <u>WMAB</u>	2	MS	Mississippi State	2305 <u>W42CO</u>	42	NY	Rochester
<u>8/20 tr (BR)</u>				<u>9/7 tr (TO-Bluffs)</u>			
2345 <u>WXMI</u>	17	MI	Grand Rapids	0020 <u>WKBS</u>	47	PA	Altoona
<u>8/21 tr (BR)</u>				0038 <u>WNPA</u>	19	PA	Jeanette
0127 <u>WSBT</u>	22	IN	South Bend	<u>9/7 tr (TO-Snowball)</u>			
0130 <u>WSJV</u>	28	IN	Elkhart	2332 <u>WJRT</u>	12	MI	Flint
<u>8/28 tr (TO-Snowball)</u>				2340 <u>WJBK</u>	2	MI	Detroit
2221 <u>CHLF13</u>	17	ON	Pembroke	<u>9/8 tr (TO-Downtown)</u>			
2223 <u>CICE16</u>	29	ON	Pembroke	1445 <u>CKXT</u>	52	ON	Toronto
<u>8/29 tr (TO-Bluffs)</u>				<u>9/9 tr (TO-Bluffs)</u>			
0220 <u>CFJP</u>	35	PQ	Montreal	2100 <u>CKXT1</u>	45	ON	Hamilton

Logged MD for new tropo state from Toronto. There are three TVA stations on 4, but CFCM is 100kW and the others way lower. The pic was in crystal clear for a good few seconds, so I am logging this. The French 2 could have been any of about three PQ stations. Ch. 15 Toronto pirate runs 24 hours and was seen in Grimsby while visiting Bill Hepburn, who has an excellent view of the Toronto skyline. The pirate runs kaleidoscope images, text announcements and music. 73s, Saul

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William McGuire, Cheverly, MD

Equipment: 13" Admiral color TV.

<u>9/11 tr</u>				2122 <u>WCPB</u>	28	MD	Salisbury, PBS
2336 <u>WECT</u>	6	NC	Wilmington, logo	<u>8/29 tr</u>			
<u>9/12 tr</u>				2220 <u>WCAU</u>	10	PA	Philadelphia
0030 <u>WVIR</u>	29	VA	Charlottesville	2230 <u>WPPX</u>	61	DE	Wilmington, PAX
<u>9/25 tr</u>				<u>9/1 Es</u>			
0030 <u>WTVR</u>	6	VA	Richmond, CBS	1930 <u>KTBS</u>	3	LA	Shreveport
0033 <u>WRIC</u>	8	VA	Petersburg, ABC	1940 unID	3		"Seinfeld"
0035 <u>WWBT</u>	12	VA	Richmond, NBC	2005 unID	3		NBC
2112 <u>WBOC</u>	16	MD	Salisbury, CBS				

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Adam Rivers, Chicopee, MA patriotsrule417@yahoo.com <http://adamskewlsite.freesevers.com/dx/>

<u>7/3 Es</u>				CBS 2 Chicago weather			
0826 <u>KARK</u>	4	AR	Little Rock, logo	<u>10/11 tr</u>			
0830 <u>KETS</u>	2	AR	Little Rock, AETV	2130 <u>WCVB</u>	5	MA	Boston, rare
0908 <u>WKRN</u>	2	TN	Nashville, logo	to <u>WBZ</u>	4	MA	Boston, rare
1055 <u>WBRZ</u>	2	LA	Baton Rouge, nx	2245 <u>WHDH</u>	7	MA	Boston, 7NEWS
<u>8/19 Es</u>				<u>WGBH</u>	2	MA	Boston
0933 <u>KETS</u>	2	AR	Little Rock, AETV	unIDs on 33, 45, 56			
0956 <u>WBBM</u>	2	IL	Chicago	<u>WFXTt</u>	25	MA	Boston

Not a bad season for a first year TV DXer. Total up to 41 stations, 20 of them by skip. Almost had some UHF tropo there in October, and would have had I used the amplified antenna that I bought, but then returned to Radio Shack. At that time, my mind was all on skip, and it didn't do too well on VHF so I brought it back, forgetting about the UHF tropo season that would be coming on later. Hopefully it gets better. Probably my last report for awhile as the DX has settled down. - Adam

# Western TV DX

**VICTOR FRANK**  
**12450 SKYLINE BLVD.**  
**WOODSIDE, CA 94062-4554**  
**Victor.frank@sri.com**



**Dennis Park Smith**, 3605 San Remo Drive, Santa Barbara, CA 93105-2523 (805)687-7803

This report is for September 2003. Southern-CA tropo (to San Diego/Tijuana, up to 200mi/320km) still existed, as it has for much of the summer, through the entire month. Results have varied, apparently due to changes in the height/elevation of the inversion air layer boundary. The lower it was, the better for me (under 1,000 ft ASL), but any higher than that (up to perhaps 4,000 feet), it was not as good. The evidence was that when it got worse for me, a ch-54 phantom signal would show up on our local K55AP on a 4,000+ ft mountain (KCET-28 Los Angeles translator), courtesy of XHJK-27 Tijuana.

Again, I had too many distractions and did not keep a detailed chart of tropo conditions. From memory, the tropo was good Aug. 26 to Sept. 2, and then poor Sept. 3 to 18. It was then good again Sept. 19 to 23, and mostly poor Sept. 24 to 30.

Best of DX to All. Dennis

**William Eckberg**, 1032 Sterling Rd., Dixon, IL 61021-9355

August 2003 CDT

1 Es	1100 KRGV	5 TX	1189
	1120 KIII	3 TX	1072
	1200 XEFB	2 NL	1162
5 Es	1910 XHHUPN	2 TM	1201
	XEFB	2 NL	1162
	1915 KIII	3 TX	1072
	1950 KRGV	5 TX	1189
10 Es	1030 KWGN	2 CO	811
	1130 KASA	2 NM	972
	1150 KNAZ	2 AZ	1258
	2045 CFQC-1	3 SK	1120
	2050 CKAL	5 AB	1293
	2140 CICT	2 AB	1293
	2200 CKAL-1	2 AB	1217
12 Es	2105 XEFB	2 NL	1162
15 Es	2215 WEDU	3 FL	1031
	2220 KGBT	4 TX	1183
	WFOR	4 FL	1229
17 Es	1010 KBEJ	2 TX	952
	1030 KATC	3 LA	800
	1035 WBRZ	2 LA	784
	KIII	3 TX	1072
	1100 WESH	2 FL	983
	1105 KMID	2 TX	967
	1130 KXAS	5 TX	757
	WOAI	4 TX	992

		KDFW	4 TX	738
18 tr	0800 WAXD	63 MO	???	
	2230 WUNF	33 NC		558
	2250 WUXP	30 TN		408
	2300 WLFG	68 VA		487
19 tr	0110 WOAC	67 OH		417
	0145 WPXK	54 TN		451
	0200 WKSO	29 KY		405
	0825 WUNF	33 NC		558
	0830 WLFG	68 VA		487
	2000 WUXP	30 TN		408
20 tr	0430 WCFT	33 AL		593
	0445 WOAC	67 OH		417
	0515 WPXK	54 TN		451
22 tr	0005 KHNE	29 NE		464
	0620 KGIN	11 NE		458
24 tr	2050 WUNF	33 NC		558
	2145 WOAC	67 OH		417
	WPXK	54 TN		451
	2200 WLFG	68 VA		487
	WUXP	30 TN		408
	2220 WDSI	61 TN		512
	2225 WZDX	54 AL		503
	2300 <u>WTFB</u>	66 TN	Lebanon	<u>413</u>
	2310 WKSO	29 KY		405
	2340 <u>WBKD-LP</u>	57 IN	South Bend	<u>162</u>
25 tr	0410 WPXK	54 TN		451
	0440 WKPI	22 KY		461
	WKSP	29 KY		405
	0500 WLFG	68 VA		487
	0920 WUNF	33 NC		558
28 tr	0245 WOAC	67 OH		417
	0345 CFMT-1	69 ON		419
	0420 WOBC-LP	33 MI		181

Does anyone know of a WAXD-63 TBN station from the MO area I received on August 18? I saw the ID WOBC-LP on a Holland, MI station-- possibly some confusion here as to the listings of the call.

September 2003

5 tr	0130 WCFT	33 AL		593
	0200 KARD	14 LA		680
	0205 WKDH	45 MS		536
	0250 WDBB	17 AL		593
	0400 WMPN	29 MS		651
	0420 WPOM	24 AR		513
	2200 WUNF	33 NC		558
	2300 WDSI	61 TN		512
	2305 WPXK	54 TN		451
6 tr	2045 WPXK	54 TN		451
	2050 WUNF	33 NC		558
	2300 KTBO	14 OK		612
7 tr	0200 KETH	14 TX		904
	0240 KFTH	67 TX		904
	0245 KAFT	13 AR		463
	0300 <u>KTRK</u>	13 TX	Houston	<u>903</u>



direction from here?? Anyway, I now have text IDs from both of them. Now @ 220 DTVs/1862 analogs.  
73, Jeff

**John Ebeling**, 9209 Vincent Ave. So.,  
Bloomington, MN 55431

Here is a listing of my TV DX from the cabin at 6843 Hwy 47 in Alborn, MN. Times are CDT.

Equipment: 19" RCA TV set with 2 antennae: outdoor points SE; attic points S.

March 16 1930 WDIQ-2 AL (Es on 2,3 & 4)  
May 17 2000 WBRZ-2 LA  
25 1000 WDIQ-2 AI  
June 20 1145 Es 2-6 (to FM)  
1840 WJSK-2 TN  
23 1033 WFMY-2 NC  
1034 WUNC-4 NC  
July 2 2235 Unid CBS-2 (cent. time zone)  
3 0837 WESH-2 FL  
1916 WDIQ-2 AL  
2000 WJXT-2 FL  
July 8 2200 WFMY-2 NC  
9 0830 WDIQ-2 AL (weak)  
1800 Intense opening - to FM  
2220 WWL-4 LA  
10 0850 WUNC-4 NC  
12 0001 CKSA-2 AB  
22 0020 CICT-2 AB (good signal)  
0900 Unid-2 Canadian (from west)  
0930 Unid-4 CBC  
23 0900 WFMY-2 NC (+ unid-2)  
0930 WUNC-4 NC  
1000 WUNC-4 NC (+unid-4)  
24 1530 Unid-2 CBC (only one in at the time)  
25 2240 Unid-2 A in Irc (Canada)  
26 0955 Unid-2 French  
Aug. 10 1130 KBEJ-2 TX UPN-2  
19 0850 WSKY-4 NC  
0854 WUND-2 NC  
0900 WRC-4 DC  
0920 WUNC-4 NC  
0930 WRAL-5 NC  
Sept. 1 1900 WDIQ-2 AL  
8 0900 WBKP-5 MI

That's all. Most of my time is spent on FM, but do use TV as an indicator.

**Frank Merrill**, P.O. Box 869, Macomb, IL 61455

All times Central. Only the more significant Es loggings are shown.

May 2003

25 Es 1500-1800 Occupied by high MUF FMs.  
Es 0900 2 Mexicans on Ch. 6, apparent MUF  
30 Es 0000-0130 Various FL + KTVK-3 AZ  
Es 0435-0730 Major Es all directions Note #1  
0444 WBTW 3 NC 646  
0451 WFMY 2 NC Note #2  
0516 WABI 5 ME  
0529 WDTV 5 WV Note #3 551  
0550 WLBT 3 MS 564  
0622 WIVB 4 NY in 2 sec, ID bug 631

June 2003

3 Es 1225 Cuba 2 ICR TP, unknown offset  
4 MS 1700 KACV 2 TX ID, new mode 712

9 Es 1912 3,5 AZ Phoenix  
1959 KUAT 6 AZ  
2046 XH\_\_\_ 5 Azteca 7 on 5  
w/Mr. Bean ad, way cool!!  
10 Es 1500 CHRO 5 ON "the new RO" rare  
1900 French/KNAZ-2 possible double-hop  
14 Es 1950 XHWX 4 NL "first time seen,  
text, ID", UL  
16 Es 0848 unIDs2,3,4 full of Mexicans  
19 Es 1917 CBGAT14 2 QU Carlton SRC"2-"  
100 kw 1277  
1959 CKCK2 6 SK  
2019 KSRE 6 ND  
2042 KXJBt 4 ND Cannot resolve-rats  
2042 WDAYt 6 ND ABC "62" (539)  
but so is KSVI-MT  
both needed here! WDAY-93.7 just heard.  
20 tr 1940 KATV 7 AR nearly on top 420  
23 tr 0040 Arkansas 24 (CCI),31,34,42,48  
0115 K54\_\_ 54 Who is this? Black dance  
videos "towards St. Louis" PTA MO,  
Memphis, E.Ark.  
0217 KAFT 13 AR snowfree  
2030 KATV 7 AR again  
to 2230 AL 33,MS 11(CCI),OK 11, WHBQ-13  
strong KTVE-10 AT (calls readable, etc.) 512  
22 tr 2044 KTVE 10 AR CCI reappears  
WTOK 11 MS CCI reappears  
WHBQ 13 TN reappears  
But that direction fades out!  
2100 WWTW 9 MI blasting! NIL else  
24 tr 0000 Many U's 400-500 mi, SE quadrant  
0142 N.C. CCI against WRGT/WTCI-45  
WBXX 20 TN tearing up WICS 435  
WUNE 17 NC source of WFIE  
zerobeat? Would need! (602)  
0155 East TN 19,39  
0205 WLOS 13 NC totally atop 557  
WKHA 35 KY  
0215 WUNF 33 NC 557  
WLFG 68 VA  
0305 WPXA 14 GA "but who else is 14+?  
Zerobeat CCI.  
0333 WJHL 11 TN 533  
0420 opening fading out  
24 Es 1031 XHMEN 4 YU 1348  
1031 Cuba 6 minus offset 1294  
not truly a new logging, but could never  
determine offset before. Required if I ever  
see a "6z" or "6+" Cuban.  
1101 XHCCN 4 QR black box text ID in  
u.r., same as XHMEN. 1355  
1400 XHCOQ 3 QR Cozumel, Note 4 1400  
25 tr 0006 WWJ 62 MI strong  
many KY, nearly statewide  
WLOS 13 NC CCI 557  
0202 WEMT 39 TN 518  
0305 WCMH 4 OH rare 405  
0310 WIVT 34 NY huh? 775  
26 GW 1156 KHQA 7 MO Note #5  
July 2003  
6 Es 0832 Cuba 3 zero offset  
7 Es 1856 XHVIZ 3 TB Note 6 1558  
new estado, everything else normal Es today  
15 tr 0854 KSNK 8 NE Note 7 525  
0901 KOOD 9 KS blasting in 473  
0910 KBSL 10 KS Note 8 591  
16 tr 1721 Strong Minneapolis/SP,  
even KTCA-2 atop 334  
1732 WHWC28 WI  
KAAL 6 MN "on top"

1806 KCCO 7 MN rare, "CBS 4" logo444  
 2254 K54HA54 MN Albert Tea TBN 261  
 2300 K65 65 MN ? KTCA-2  
 17 tr 0025 W65 65 TBN towards Green Bay  
 0100 K58 58 MN Rochester 3ABN 264  
 Note #9  
 0130 KWWF22 IA Visual&Vocal ID 167  
 0153 K38AB38 with WJFW-12  
 2000 apparent W&Central OH building  
 on 26,34,45,53,7.  
 2100 All gone!  
 18 tr 2300 400+ miles to NW,  
 farthest KTTM-12 SD  
 19 tr 0113 K38 38 IA (Sioux City TBN) 328  
 0215 KCCW 12 MN "hoped for KXMB"499  
 0231 KPLO 6 SD 521  
 0305 KSNB 4 NE strong! 391  
 0345 KCCO 7 MN 444  
 KWCM10 MN 426  
 KDLO 3 SD in & out all AM 449  
 0716 KTTM 12 SD on top 471  
 1412 KTQW-LP 53 KS Wichita Tech 406  
 1414 K21AP55 KS Topeka TBN 284  
 2103 strong Tulsas 41,44,53,34  
 2120 OK City U's  
 Omaha 42 snowfree  
 stuff from SW Ohio  
 2328 KOOD 9 KS 473  
 24 Es 1210 KSNC 2 KS in past 1230 455  
 KTVK 3 AZ 1278  
 1858 KMID 2 TX  
 KIDK 3 ID disparate DX twice  
 1940 KIDY 6 TX  
 1955 KGWN 5 WY "rare KGWC 14"  
 25 Es 1735-2149 N.Central US and Prairie  
 Provinces—busy on FM  
 2005 KXJBt 4 ND Still needed,  
 Second time this year  
 2111 KXGN 5 MT rare  
 2121 CKAL 5 AB  
 26 tr 1830 stuff suddenly building, Ft. Wayne,  
 western OH, Detroit, but it went nowhere.  
 28 Es 1110 XET 6 NL Note 10  
August 2003  
 20 tr 0140-0205MI on 45,54,56, scattered  
 0226 WTOM 4 MI probably their CCI  
 0240 WWUP10 MI 526  
 22 tr 0100 much stuff from NW  
 1945 "Siouxland" stuff again 4,9,13, etc.  
 KDLO 3 semi-readable  
 CCI from SD's on 8,9,12  
 24 tr 2025 East building, to WSNB-48 VA CCI  
 25 tr 0250 Appalachia 39,44,47(CCI),57,68  
 Jellico 54  
 0542 KMCI 38 MO Note 11 240

**Notes:**

**1. 30 May** (generic)—Personally, this was one of the best "overnight" Es openings ever noted by me. I believe this slightly beats the 1989 or 1990 one (when I had Idaho-102.9 at 0330), and a big July 1978 one from Toledo, OH (1450-mile stuff at, like, 0430, but I don't remember much on FM). I spotted auroral CCI on low-band on the evening of May 29 for a short while, so I am guessing this was an "Aurora-induced" Es opening.

**2. 30 May**, 0451—How could they?! I always thought their "2" may have been the nicest logo on the entire channel, if not on the entire spectrum (I also like WKOW-27's a lot). Noted, now, with very plain, white, boring "2." Idiots!

**3. 30 May**, 0529—Ad for "Morgantown" and "Clarksburg" in for no more than 1 ½ seconds atop WCVB, totally gone when I could reach Jeff. This was my most wanted station! Now KTLA Los Angeles is, I believe, my easternmost full service U.S. station (50 states) not yet logged on 5.

**4. 24 June**, 1400—I won't generally count stations this way, via Es: "No ID's 3/minus with XEW." This one, however, I feel quite safe due to the potency and small footprint of this opening (once it left Cuba), and apparent lack of clouds elsewhere. This "3" was in and out, with the Cancuns, for the duration of the opening, and it disappeared when they did. Someday I DO need to have my log on a database, and the Mexicans I wanted this way (actually probably no more than 7 or 8) will be ousted, such as XHGC-5 ("XHGC" seen on 5 is basically meaningless, due to networks), Chiapas on 4 & 5, etc. Some of this was done back in the days when we naively believed there were no more than 15 or so Mexicans on Channel 4, etc.

**5. 1156, June 26**—My notes show "probable Es CCI" on KHQA. However I soon realized this was not the case. By 6/28 I realized something was amiss. They had been off a few days earlier, probably due to a lightning strike. Apparently their new transmitter is no longer "7-" but they now match WLS and KETV, "z" offset. They have continued to use the wrong offset ever since. Dxers in the Midwest should be alert for thusly-changed CCI patterns.

**6. 1856, July 7**—I don't know if it was this, or my loggings on 5/30, which made this happen—but now Jeff uses a digital camera to "film" 5 TV's at once if skip is really "going." This way, apparently, if I see something and if propagation is consistent between QTHs (it's NOT always, believe me!), he might be able to find something he already missed. It's something I'd like to do also, but I doubt it will really ever happen. ID for XHIVZ was in black box in upper right, very much like XHMEN-4. This is the southernmost Es/2Es logging I have, as Villahermosa is even marginally south of Santo Domingo, DR.

**7. 0854, July 15**—Anthony Downs in Anthony KS; 0856 "First KSN News Update" (Yes, they're on Kansas network despite being in NE.) So strong, when found, that even "Skip antenna" brought it in!

**8. 0910, July 15**—With Pat Robertson/"CBN News" program, Zero offset. Confirmed not WTHI, KOLR, KTTZ-MN also has this, but the NW, even Cedar Rapids, Waterloo, wasn't coming in. Faded as 8 & 9 also disappeared. This was available only via audio carrier separation on the ICOM.

**9. 0100, July 17**—Help! I can't keep track of this stuff! I DO need to database my DX, someday. Jeff made an offhand comment about a "Rochester, MN 3ABN on Ch. 58" being new, otherwise I would have ignored it, and not yet logged it if I didn't indeed remember seeing it there strong. Reception time is an estimate.

**10. 1110, 28 July**—All this time, I was convinced that XET-TV never shows any local Ids during regular programming schedule. Wrong—but just blink and you'll miss it. Tiny character ID in upper left, about 4 lines of it, and it is up for one, or may even only ½ second. I doubt anybody even in Monterrey can read this! I don't know if regularly at :10 and :40, but I have noticed Mexicans often have reliable repetition on scheduling these.

**11. 0542, 25 Aug**—Is this station now, truly, licensed to Missouri? Personally, if so, I consider it “new.” Most moves I have not counted, but I will automatically count a state move even if the transmitter stays put. (Have I ever had one of those though? Not sure!) Jeff K. asked about counting this again, and he showed me the piles of comments it caused. One question I ask is whether its intended market audience is changed significantly, and the point was made that its market did not change—WAS and STILL IS Kansas City metro. But I disagree—they no longer intend to serve Topeka, which itself is not small, which seems significant. Every such change is a quandary, as it is hard to have “black and white” criteria for all changes. It is clear that Moberly-97.3 moving to Lee’s Summit is extreme and surely new, but what about Kanhakee-99.9 moving to Park Forest? This seems to be much more common on FM, but such moves are often hard to analyze and deal with.

This was probably the best Es season since the spectacular 2000 season. Personal highlight were the very-early-morning Es of 5/30, in which I logged my final “possibly can be logged” U.S. channel 5, a rare 1500+ mile newbie on 7/7, and two distant VHF Tr’s from the west on 7/15. Overall I consider this one of the worst Tr seasons, as most of the tropo seemed to be stuck in predictable patterns (e.g. strong NE, SD, MN openings). I basically missed the TX opening of September 7, arriving home from a major trip, where a cursory scan found Dallas-21, KTBO-14, and a couple others, but they faded and I went to bed. I may have missed a newbie (potential KTMD-49, moved from 48) by not tuning in when Houstons were in, but what I saw showed no sign of involving FM, so in turn I didn’t get overly involved. Also I had some surgery on the near schedule, and a lot of mail to deal with, which discouraged Dxing an opening where I’d probably get nothing new. (I didn’t know about KTMD-49 yet).

I did not go to Batavia, because I was also in the middle of processing orders from a major sales catalog (old 45 rpm records). Actually it is a “triple whammy,” because I also have some reluctance to travel in the middle of DX season, and I tend to find July/August to be unpleasant travel months in general. Under the right circumstances, if I can ever reach a good “delay/stopping point” on my mail catalog which also coincides with WTFDA, I hope to show up, as WTFDA conventions are fun to attend! 73, and may life be good to all.

Below, for the benefit of people who research such things, I’ve summarized the results of this very good season:

### Summary of 2003 Es Season

(as observed by Frank Merrill when home, awake, etc.)

Total Times Logged, and Total Es Loggings

(Criteria: No station is ever “logged more than once on the same date, even if obviously via different openings.)

Channel 2 (Total for season 168 loggings)  
 WPBT-FL 19, XEFB-NL 18, WESH-FL 17,  
 KNAZ-AZ 12, KBEJ/XHHUPN 11 (Total for both,  
 not sure which I saw), WUND 11, KMID 9, KPRC 7  
 WGBH, KASA 6, WDIQ 5, KWGN 4, WLBZ,  
 WMAR, KTVQ, WFMY, XEFE 3, WBRZ, WCBS,  
 KGFE, WCBF, KACV, CKCK, CFCL 2, CBFT-2.

Once each: KSNC, WKTV, KDTN, KTWO, XEPMI,  
 XHY, CICT, CKSA, CKND2, CBGAT14, CFAP,  
 “Cuba”.

Channel 3 (Total for season: 93 loggings)  
 WEDU 18, KIII 16, KTVK 8, KACB, WFSB 7,  
 XHPN 5, KIDK, KENW 4, KVBC, WWAY, KBME 3,  
 WEAR, WTKR, “Cuba”, 2. Once each: WLBT,  
 KREG, WRBL, WBTV, KFDX, CFSS, CFQC-1,  
XHVIZ, XHCOQ.

Channel 4 (Total for season: 66 loggings)  
 WWL 6, WJXT, WOAI 5, WFOR, KDBC 4, KOB 3,  
 KVOA, WBZ, KOUS, WUNC, KWSE, KWAB,  
 KGVT, CFCM, XHIT, XHWX, CITL 2. Once each:  
 WSKY, KAID, WTVY, KCNC, KFQX, KXLF, WIVB,  
 WRC, WCIV, KAMR, KDFW, KTVX, KCWC, CBKT,  
XHCCN, XHMEN, “Cuba”

Channel 5 (Total for season 60 loggings)  
 KRGV 11, XEJ 7, KENS 6, WPTV, WCVB, KNME,  
 WCSC 3, KPHO, WABI, KVVU, WRAL, KXAS 2.  
 Once each: WKRG, WUFT, KALB, KXGN, WNYW,  
 WTTG, KTXT, KSL, WDTV, KGWN, CKAL, CHRO,  
 CKOS, XHFI.

Channel 6 (Total for season 30 loggings)  
 KRIS, KIDY, XET 4, KUAT, WLNE 3, WDSU,  
 KOCT 2. Once each: KRMA, WBRC, WTVJ,  
 WCTV, KSRE, KCEN, CKCK-2, “Cuba”

Grand total 2003 season: 417 Es loggings, 135  
 stations represented

### Dates with more than 5 Es logged (TV):

May 13<sup>th</sup>-8, 19<sup>th</sup>-14, 25<sup>th</sup>-6, 30<sup>th</sup> (0430-0730) 19  
June 2<sup>nd</sup>-6, 9<sup>th</sup>-9, 10<sup>th</sup>-10, 11<sup>th</sup>-8, 12<sup>th</sup>-10, 14<sup>th</sup>-9,  
 19<sup>th</sup>-21, 22<sup>nd</sup>-8, 24<sup>th</sup>-12, 25<sup>th</sup>-10, 26<sup>th</sup>-19, 27<sup>th</sup>-6.  
July 3<sup>rd</sup>-28, 7<sup>th</sup>-8, 8<sup>th</sup>-8, 9<sup>th</sup>-23, 12<sup>th</sup>-18, 18<sup>th</sup>-6, 24<sup>th</sup>-  
 10, 25<sup>th</sup>-21, 28<sup>th</sup>-7

Disclaimer: The very best Es days are not necessarily the ones with the most loggings! Often a super-Es opening will have me fully occupied by FM Dxing. Also, a super-Es opening can cause channels to be so “deep” in multiple-station CCI that Ids may be difficult.

## THIS MONTH’S COVER

It was a hot Saturday afternoon in late September 2002. The leaves were barely stirring on the trees in Albion, N.Y. as Bob Cooper, Bob Seybold, Frank Merrill and Jeff Kadet posed for pictures. “Make sure you make the caption read over 5500 stations logged”, said Bob.

Well, Bob, you got it. You got it a year late, but there it is.

For those of you who just read the eVUD, well, you’re going to have to find a paper copy somewhere to see what’s on the front cover this month!





John Zondlo  
 4009 Driftwood Circle  
 Yukon, OK 73099  
 sfm@fmdxweb.com  
 Deadline: 15th

For DXers in AL, AZ, AR, CA, CO, DE, DC, FL, GA, HI, KS, KY, LA, MD, MS, MO, NV,  
 NM, NC, OK, SC, TN, TX, UT, VA, WV, Cuba & Mexico

November 2003

**Doug Smith** – W9WI – 1385 Old Clarksville Pike - Pleasant View, TN  
 37146-8098 - w9wi@w9wi.com - [www.w9wi.com](http://www.w9wi.com)

9/7 Tr

1834 WFBQ 94.7 IN Indianapolis, "Q95 weather" 246  
 1928 WILL 90.9 IL Urbana, legal ID 265  
 1930 WTCJ 105.7 IN Tell City, "Owensboro's Party Station" 107

9/8 Tr

0650 WMOJ 94.9 OH Fairfield, "Mojo" 238  
 0705 WCBK 102.3 IN Martinsville, local news and sports 212  
 0710 WTTS 92.3 IN Bloomington, "92-3 WTTS" 213

The rest of this DX was on the car radio while on vacation in the West. Times are local.

9/17 Tr (LeMars, IA)

0706 KJLT 94.9 NE North Platte 273  
 KPNE 91.7 NE North Platte 284  
 KICX 96.1 NE McCook 296

9/18 Gw (Douglas, WY)

KFCB-LPt 105.1 WY Douglas, strong open carrier

9/20 Tr (Leeds, UT)

1730 KKLT 98.7 AZ Phoenix, "The 101 and I-17" 279

9/23 Ms (Shiprock, NM)

0930 KDJZ 100.7 ND Harwood, "...avenue, Fargo" 936

9/24 Tr (Buena Vista, CO)

0820 KKOR 94.5 NM Gallup, "94.5 Core FM" 259

9/24 Ms (Tribune, KS)

1431 KNXR 97.5 MN Rochester, "...in LaCrosse 58" 623

**William McGuire** – 2412 59<sup>th</sup> Place – Cheverly, MD 20785-2918

DX-398

9/11 Tr

2305 WTRG 100.7 NC Rocky Mount, "Oldies 100.7," ID  
 2317 WWWV 97.5 VA Charlottesville, REM song, "3WV"  
 2324 WDSO 92.9 DE Smyrna, "Eagle 92.9," k

9/12 Tr

0025 WTKU 98.3 NJ Ocean City, "Oldies 98.3," mention of Ocean City

**John Zondlo** – 4009 Driftwood Circle – Yukon, OK 73099 – CDT – All new

Akai AT-VO4 tuner (modified w/2 110 filters), APS-9B antenna w/Channel Master 9521A rotor at 16',  
 Conrad RDS Manager

10/10 Tr

0600 KVCX 101.5 SD Gregory, Northwest College Radio ID  
 0641 KUSD 89.7 SD Vermillion, state weather, SD Public Radio  
 0706 KUQL 98.3 SD Wessington Springs, ABC and state news, "Kool 98"  
 0858 KKSD 104.3 SD Milbank, calls, oldies  
 2343 KYOX 94.3 TX Comanche, k, "The Ox", wx  
 2350 KSTV 93.1 TX Dublin, "The Mighty 93"

Lots of the regular Kansas and Nebraska stations were heard along with the stuff in SD. Bill's  
 tropo maps prove accurate again!

# More TV DX!

By Gordon Simkin, former AIPA Intl. TV DX Editor)

**College** - As I said before, after the summer of my first TV-DX, I entered college, studying Physics. Although there were no classes in that college about the ionosphere, that TV-DX inspired me to study everything I could find about the ionosphere. I had learned that all of the TV-DX seen that summer was via ionospheric refraction—sometimes also called reflection. However, it is not reflection like light off of a mirror, but a gradual bending of the radio waves as they enter the ionosphere. As you may already know, the higher the frequency, the less the bending. The 4,000 MHz (4 GHz) signals from a C-band satellite, has little bending by the ionosphere, while WWV on 2.5 MHz rarely if ever penetrates to the top side of the ionosphere. So much for theory.

Having listened to Ahams®, it was a goal to become licensed and operate on 6 meters (50 MHz), which was also Aline-of-sight®, but would certainly have DX before and during all TV-DX. Before long I had my Aham® license, and built a transmitter for 6 meters. I bought a Gonset six-meter converter, and I was on the air. As the summer of 1951 came on, I talked not only to the local hams, but also to many DXers all across the nation, which included double hop sporadic E to the east coast on a number of occasions. I even talked to George Jacobs, which is still probably the most renown propagation expert in the U.S. (I met him in person a few years ago.) Most of my spare time during openings, I spent on 6-meters, not TV-DXing. But I did see a number of TV-DX signals, including KPRC, channel 2 in Houston, Texas. By the way, AEs® stands for ASporadic E®, it does not stand for E-skip, although many people think it does. There is E-skip all day long everyday of the year, all around the daylight portion of the earth. The term ASporadic E® comes from the fact that it is an intense layer which occurs sporadically, not very predictably, but in the normal E-layer of the ionosphere.

**Ionosphere** - It was evident that the maximum frequency that would be refracted from the highest ionospheric layer (F2), would get higher and higher as the sunspot count increased. It also became evident that the sunspot count might get quite high in the next cycle. In 1947 it had peaked at over 150. As I graduated in 1954, it had dropped to under 4! But it climbed rapidly after that, passing 100 in less than 2 years.

In January, 1955, I was drafted into the U.S. Army. All DXing and ham activities stopped for a while. A couple of month later I had an assignment (as a Medical Equipment Repairman) to Ft. Lee, Virginia, where there were several empty wings (barracks-like hospital wards) on

that hospital. The maintenance shop was in one wing. The wing next door was used by our unit as a storage room, and it had an office at the far end which was empty. My boss let me use it for my hobby. I bought a 12" B&W TV (color started in about 1953) I saw how color would work at the very first public demonstration at a AWESCON® show in San Francisco), and made a small UHF Ahorn® antenna, which had high gain and was very directional. It had about unity gain, and almost no directivity on channel 2. I already had an external UHF tuner for channels 14 to 83 (remember?). UHF DXing was new to me. In Virginia, tropospheric DX on UHF was rather common. However, I could only DX before 8 A.M., or after 5 P.M.

**Mystery TV-DX** - One morning I checked the DX right after breakfast, and found many new UHF stations coming in. I had previously identified two on channel 28 (my memory says they were from Norfolk, VA, which would be nearly a local station, although there is none listed there today) and a station in North Carolina, probably Charlotte) but this day there was a third one—three vying for supremacy. By rotating my antenna, I could tell that the new one was from the northerly direction. I knew of the 1,000,000 watt ERP (effective radiated power) station on channel 28 in Wilkes-Barre, Pennsylvania, and I expected that to be what I was seeing. At 8:00 A.M., I listened closely to get the ID. Then it came in, clear as a bell, AChannel 28, Yorktown®. I wrote that down, and dashed to my workplace, only a few seconds late. Later I tried to find a Yorktown with a channel 28. But there was none! There is a Yorktown subdivision today in Baltimore, Maryland, but it certainly had no TV station back then. I could have misunderstood the town name (as most of you know), but how could Wilkes-Barre sound like Yorktown? especially when I was *expecting* it to say Wilkes-Barre? It is usually easier to hear some other town name *sound like* what I am expecting. There did not seem to be any other station that I could have been seeing. This remains one of many mysteries of TV-DXing.

**New assignment** - Then I was transferred again, this time to the hospital at Aberdeen Proving Ground in Maryland. It was not possible to take my UHF horn antenna in my car. This army unit had no place for me to set up to DX—my TV stuff had to stay in the back of my car. It was now late 1955, and the sunspot count was increasing about 10 units a month, soon to approach 100. While in this location, I was changed from AMedical Equipment Repairman® to AElectronic Engineer, Assistant®. Then I was transferred to the Armed Forces Special

Weapons Project (AFSWP), which was the agency that collected data on all atomic and hydrogen bomb tests. The next series of tests was to be *Operation Redwing*, where they were going to drop a hydrogen bomb from an airplane for the first time ever. This would take place on Bikini Atoll. We installed measurement instruments and tape data recorders on various hardened, buried sites around ground zero, so that after the blast, the needed information could be obtained to know how to build safer buildings. (The first surface hydrogen bomb detonated there produced more energy than expected, and evaporated a small island in the north-west part of the atoll's reef. I've flown over that spot, and have seen the round blue hole in the reef where an island used to be.) But that's getting away from TV-DX.

Some time before, I obtained a subscription to MUF (Maximum Useable Frequency) versus sunspot prediction charts for the ionosphere of the whole world. These were from the Ionospheric branch of the U.S. Government (a part of the Department of Commerce). I had noted that the ionosphere over the Pacific, especially near the equator, was much *Abetter* (higher MUF) than most of the world. This was in the spring of 1956, when the sunspot count was expected to reach 120 or so. Therefore, I asked my Army boss if there was any way we could take a TV out there. He said yes, he would ship one out. (As an aside, we found out when we got there that the military had a small TV station there, and before we left, he sold that TV for other army people to watch that one channel.)

**Bikini TV-DX** - We still had a lot of work to do after we arrived on Bikini Atoll, so a working lab was set up in a tent. At one end, I set up that TV with a small dipole antenna outside, maybe 10 feet high. If F2 TV-DX was to occur, it should come in during the morning from the east, and afternoon from the west. To my great disappointment, I never saw a trace of video during the day. More modern propagation prediction computer programs today (VOACAP by the Voice of America) shows that no MUF above 48 MHz would be expected between Hawaii and Bikini even at a sunspot count of 200. No wonder I saw nothing even at a count of 130.

However, being a curious sort, I left the TV on in the evenings as well. And shortly, I was surprised to see something coming in on channel 2. (That local low-power station was on channel 7, I believe.) This video was more scrambled than anything I had ever seen, but the sound was reasonably clear. So at station ID, we found that we were receiving Hawaii, about 2300 miles. As time went on, signals got very strong. Soon, we also received Hawaii on channels 3 and a little later on channel 4, although channel 4 often had no sound, indicating that the MUF peaked often around 71 MHz, barely passing 72 MHz on some

occasions.. Channels 2 & 4 were no doubt from Honolulu (there were not very many stations on the air then in Hawaii), and the channel 3 was likely Wailuku on Maui. We never saw anything on channels 5 or 6. This became almost a nightly session, starting around 8 P.M. local and lasting until midnight or later, if the stations stayed on the air, which they often did. Sometimes, the picture would get clear enough to follow the picture by listening to the sound. The picture did not look like Es ghosting, even multiple hop Es, it was much more torn up. Scrambled is the only word that seems to describe it.

**Even better TV-DX** - Since we were behind on our work, we had 24-hour work schedules. I usually worked to midnight or after. One night, after Hawaii was fading, we noted another signal getting stronger on channel 3. It was soon identified as coming from some part of the Philippines, no doubt from Manila or a town near by. That was about 2800 miles. This happened several nights, but then came the most exciting TV-DX. As Manila was fading one night, another channel started to come in. I stayed up longer to see if I could identify it. The identity was not 100% certain, but someone told us the language was the Siamese (or Thailand) language. There were also words that sounded like Bangkok. It did not have any programs, but was obviously just testing. Later I was told that indeed Bangkok, Thailand, was on the air on channel 3 testing at that time. By rotating our antenna, we could tell that it peaked quite a bit south of the Philippines station. Further, there just wasn't anything else that it could possibly be, as far as we could tell, as no other TV station were even near to being on the air in that whole area. Especially on channel 3. That was about 4200 miles!!! Reception lasted for maybe an hour, then all was dead again. That station was seen only this one night, even though we looked for it often after that night.

We also had a Hallicrafters SX-62 shortwave radios, which tuned continuously from 0.54 to 108 MHz. The *Ajustification* for this was to receive WWV for accurate timing. But the real reason was for anyone who had any spare time to enjoy anything they could find. There were many DX signals of unknown origin during the daytime, mostly with 50 cycle hum, indicating locations not using 60 Hz power which was most of the non-USA world. No FM-DX of any type was heard, except for communication, again from unknown locations, although the Japanese language was recognized by one person. But that could be fishing boats only miles away, except for the typical fading of signal via the ionospheric. These were heard often on frequencies up to about 48 MHz, but never anything on 6 meters. We never tried 6 meters during the reception of TV-DX at night. There was no way to transmit, and little interest in just listening.

**How did it happen?** - So what was the mode of propagation? I thought it must be some form of super-ducting over the oceans. So I checked weather charts. At first there seemed to be a correlation between a certain weather pattern and our reception. But such tropospheric DX would probably be very weak at that distance and not scrambled. Even ghosting is rare on tropospheric DX, right? Years later I learned about ATE<sup>o</sup>, trans-equatorial scatter. Maybe you know that TE is caused by the so-called Aequatorial bulge<sup>o</sup>, where the ionosphere seems to have a greater height over the magnetic equator (not the geographic equator). As a result, it acts like a sloping reflector, which allows a smaller angle of bending to refract it to the other side of the bulge, where another smaller angle brings it down to the earth againBbut much farther away than expected.

The problem is that all of these sites were north of the geographic equator. I don't have data now that shows where the magnetic equator goes in the Pacific. Although I have never heard of it as such, I believe that it was a variety of TE. It is called TE scatter, because the night-time F2 layer is often very Ascattered<sup>o</sup>, and clean reflections are not then possible. A similar condition is technically called Aspread-F<sup>o</sup>. This would account for the scrambled video. Could a similar thing happen on an east-west path after sundown? Maybe one of you out there knows what I have never been able to learn for certain. But the video sure looked like a form of ionospheric TV-DX. I'll write more on the scatter subject when I write about TV-DX via the aurora (northern lights).

**Europe F2 TV-DXing** - Now that I was back in Maryland, and since the charts relating the F2 MUF to the sunspot count were in my possession, I was quite sure that by September, BBC-TV audio on 41.5 MHz should be receivable in the eastern U.S. How I wanted to hear itBand see the picture at 45 MHz in October. Well, it just so happened that I had been courting a nice young lady, and we were married in August, 1956. I was then allowed to move off base, into a rented apartment where I could set up all my DXing equipment. Not only that, the project that I was working on required two shifts, and I was placed on the evening shift. So now I had the mornings off, the very time of day that F2 DX would come into the U.S.

Soon I had my TV-DX equipment set up.

Then I built a converter to tune 40 to 54 MHz and deliver it to my TV on channel 4. I modified the horizontal scan rate on my TV, so I could adjust it down to 10,125 for the old BBC-TV 405-line system. I had to add a reverse polarity detector, as that BBC TV system made black where ours is white. I also had to add an AM detector for the audio on my

TV, as BBC audio was AM, not FM. I had all of this ready by mid-September. The sunspot count had passed the 150 mark, so the TV-DX from England was Acertain<sup>o</sup>. But were the charts correct? Would it really happen? They seemed to have failed in the Pacific, or was I just too optimistic?

There were others also looking for BBC-TV in the U.S. The NBC Today show talked about that possibility, and they had set up a listening post on Long Island. They were planning to show their TV-DX to the nation. Morning after morning, they would go out there to see if TV was being received. But it was not seenBpartly because the Today program went off the air at 9 A.M., and the DX usually came in between 9 A.M. and noon. As far as I know, they never showed any TV from BBC.

**BBC audio** - But right on schedule, before the end of September, I started hearing BBC-TV audio on 41.5 MHz around 10 A.M., almost daily, and lasting only a few minutes at first. Soon I was also getting FM audio on 41.25 MHz (uniquely FranceBvideo was 11.15 MHz higher at 52.4 MHzBtheir old Ahigh definition<sup>o</sup> system with 819 lines, and not seen at this time). On the average, the length of reception was getting longer, starting a little earlier most days, and lasting a little longer. In early October (sunspot count was now 155), I began to *hear* the first BBC-TV video. It was not strong enough yet to make of viewable picture, and was probably from Aforward scatter<sup>o</sup>. I had listened to U.S. video many times, and I could recognize the 60 Hz buzz. But this was clearly video, but a lower frequency. That was because Europe used 50 Hz power, and so the TV vertical scan was also 50 Hz.

**BBC video!** - On Oct 11, 1956, around 10 A.M., the 45 MHz video signal got quite strong, and I was able to see a very ghostly picture on screen. All I could make out for sure was vertical curved black and white lines. It was not as scrambled as was the Bikini TV-DX. I did not know what those curved bars were. Later I saw a print of the BBC test pattern (which was on the air at that hour), and I saw that they had large vertical white arcs on each side of the center picture. A few days later, I got a good photograph of what I was seeing, sent it to BBC, and they sent me the print of their test pattern. Later yet there was 50 Hz video on 41.75 MHz, always the same odd pattern (uniquely a test pattern from East GermanyBaudio was never heardBmaybe 5.5 MHz higher). Those were exciting days, as you can imagine.

Although I no longer have (or can find if I have it) my log from those days, my memory says that I also had audio a time or two from the BBC channel 2. That was not far above the 45 MHz videoBin the area of 46-47 MHz. But I do not remember the exact frequency any

more. It was also AM sound with the video 3.5 MHz higher, which was never seen or heard there. It also was on the old 405 line system.

**Benefitting from my TV-DX** - I had learned of a local TV program in Baltimore, Maryland, called *AGet To the Point*. It was similar to a network program called *Al=ve Got a Secret*. Each contestant had something unknown to a panel, who tried to get the identification of the unknown item with questions that had to be answered. I was accepted to challenge their panel with the converter that I built (my *Apoint* had to be an object) which allowed me to see BBC-TV. By this time I had the verification from BBC-TV that I had in fact seen their video. The panel never even came close to asking the right questions in the allotted time, and I won. What I won, I still use today, even as I write this. It was not a big prize, but a very useful one. It was a Black and Decker 1/4 inch electric drill. It has outlasted at least one newer one that I bought in the 70's!

**Another type of TV-DX** - Another UHF *Ahorn* antenna was built, and I often saw UHF TV-DX. There was one thing I wanted to see *Band* that was Wilkes-Barre on channel 28. There was a channel 28 in Virginia to the SSE (although I see no such station listed there any more), so I would tune to that station (analog tuners were hard to place on a exact UHF channel), then rotate my antenna to the north, trying to aim it correctly, while minimizing the signal from the south. Then I just watched and wished. But soon I started getting short intervals of TV, which was clearly not the other station. It would come in, gradually getting stronger for about 5 seconds, stay around about as long, and then slowly fade out. Then I noticed that many times, some time later, a plane would fly south. So I started watching for planes to fly north. And sure enough, at the same amount of time, I would get this short burst of TV. And yes, this was *IDed* as Wilkes-Barre, after many passes. You know doubt have seen airplane flutter (or heard it on

FM), as a plane reflects the signal of a distant station you are watching or listening to, causing interference. The higher flying airplanes of today do not produce as strong of a *ADX* signal. Only on landing and take off are they low enough to give good *ADX*.

**Another mystery on channel 28** - One morning I was receiving the channel 28 from Virginia very strong, and I began to note interference coming in. So I carefully rotated my horn antenna, so that I nulled the Virginia station, and peaked the second one, coming in more nearly from south to south-west. Remember, my antenna was aimed to minimize Virginia, and was not aimed straight at this station. But it was *not* from the north. It was typical of tropospheric DX, with not too strong signals, and very slow fading. As most DXers have noticed, such TV-DX seems to always fade out at the ID time. Although I could see that station for over 3 hours, I was never able to get an ID. I logged all of the programs, and what I could tell of the ads. I guessed it was a station in Charlotte, North Carolina. I did not see any other station listed in that direction on channel 28 that it could be. So I confidently wrote to the station, expecting to get an agreement that I had likely seen them. But they wrote back, that they were a different network, and carried none of those programs and no ads similar to what I had heard!! It must have also been that *Achannel 28, Yorktown*, right?

During that winter, my 2-year army term ended, and I returned to my job in Loma Linda, California. The next segment of this article will be my FM & TV-DX during the peak of that sunspot cycle, which occurred that November, when the sunspot count peaked at 200.8!

(To Be Continued)

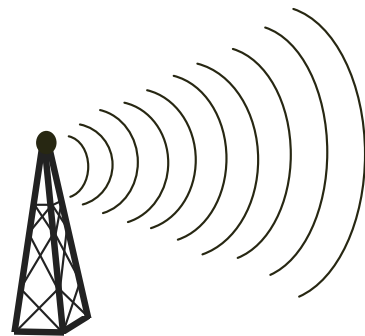
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## METEOR SHOWER SCHEDULE

Shower	Dates	Peak
Alpha Pegasids	October 29 – Nov 17	November 1-12
Northern Taurids	October 12-December 12	November 4-7
Andromedids	Sept 25- December 6	November 14-15
<b>Leonids (MAJOR!)</b>	November 14-20	November 18th
Alpha Monocerotids	November 13-December 2	November 21

! Remember, the leonids is a major meteor shower!

# Northern FM DX



**Keith McGinnis**  
**387 Shirley Street, Winthrop, MA 02152**  
**longwave@attbi.com 617-846-5760**

For Dxers in the following states: CT IA ID IL IN MA ME MI MN MT ND NE NH NJ NY OH OR PA RI SD VT WA WI WY and all of Canada. Please submit by the 10<sup>th</sup> of each month. If possible please submit in the formats shown Below.

**EDITORS NOTE: PLEASE NOTE THAT ANY TYPEWRITTEN OR HANDWRITTEN REPORTS MIGHT BE DELAYED TILL A LATER ISSUE AS TIME PERMITS. ALSO PLEASE KEEP REPORTS AS RECENT AS POSSIBLE (THE LAST 3 MONTHS SHOULD WORK FINE). THANK YOU.**

## Alan Michalek – Springfield MA Equipment: Sangean ATS909 Underlined are new

### May 25 Es

1726	KMOD	97.5	Tulsa	OK	RDS "KMOD"
1740	KTGS	99.9	Fort Smith	AR	
1747	KVOO	98.5	Tulsa	OK	RDS "KVOO-FM"
1750	KRXO	107.7	Oklahoma City	OK	
1752	KIXQ	102.5	Joplin	MO	Kicks 102.5
1758	KEZA	107.9	Fayetteville	AR	
1804	KESN	103.3	Allen	TX	ESPN 103.3 FM
1807	KKOW	96.9	Pittsburg	KS	RDS "KKOW"
1810	KMAC	99.7	Gainesville	MO	K-MAC
1813	KYKC	100.1	Byng	OK	
1820	KMMZ	96.9	Enid	OK	The Bull

### May 30 Es

0718	Unid				Minnesota Weather
0721	KMFY	96.9	Grand Rapids	MN	
0723	Unid	97.5			

### June 6 Es

1242	KDHX	88.1	St Louis	MO	
1605	WFIT	89.5	Melbourne	FL	
1830	<u>WSVH</u>	91.1	Savannah	GA	
1832	<u>WQBT</u>	94.1	Savannah	GA	
1835	Unid	101.7			RDS "M A G I C"
1838	<u>WDMG</u>	99.5	Douglas	GA	
1847	WJXR	92.1	MacClenny	FL	

### June 10 Es

0755	WJIS	88.1	Bradenton	FL	Joy FM
1041	Unid	89.5			Call 369 K Star Radio
1052	WRMB	89.3	Boynton Beach	FL	
1053	WFIT	89.5	Melbourne	FL	
1057	Unid	94.3			Good News Radio
1059	WMCU	89.7	Miami	FL	
1121	Unid	92.9			92.9 Country
1124	WBZE	98.9	Tallahassee	FL	Star 98
1128	<u>WLPT</u>	88.3	Jessup	GA	RDS "WLPT"
1151	WEBZ	93.5	Port St. Joe	FL	The Beat
1151	WOBB	100.3	Tifton	GA	RDS "R-100"
1201	<u>WKAK</u>	104.5	Albany	GA	
1208	<u>WMGB</u>	95.1	Montezuma	GA	B95.1
1211	WDJR	96.9	Enterprise	AL	RDS "CNTRY 969"
1219	Unid	94.3			His Radio
1256	KZMZ	96.9	Alexandria	LA	
1258	WUWF	88.1	Pensacola	FL	

June 20 Es

1130	WCIC	91.5	Pekin	IL	
1131	Unid	89.7			KBIA???
1133	<u>WZPW</u>	92.3	Peoria	IL	Power 92
1135	Unid				Country 92.7
1137	WPMJ	94.3	Chillicothe	IL	Magic 94.3
1151	KRNA	94.1	Iowa City	IA	
1920	<u>KQHT</u>	96.1	Crookston	MN	The Fox
1923	KMFY	98.9	Grand Rapids	MN	
1926	CKJR	97.5	Winnipeg	MB	Power 97
1935	CHIQ	94.3	Winnipeg	MB	Q94
1950	<u>CJEL</u>	93.5	Winkler	MB	The Eagle
2008	WOZZ	93.5	New London	WI	
2012	Unid	103.5			Country 103.5

July 19 Es

1228	WTVY	95.5	Dothan	AL	Country 95.5
1230	WDJR	96.9	Enterprise	AL	"RDS "CNTRY 969"
1231	Unid				Major League Report..ad for Bellamy Strickland
1231	WOOF	99.7	Dothan	AL	
1235	WBAM	98.9	Montgomery	AL	Star 98.9
1236	WNSL	100.3	Laurel	MS	SL100
1238	WXBM	102.7	Milton	FL	
1245	WMXV	105.7	Canton	GA	
1249	<u>WYZB</u>	105.5	Mary Esther	FL	
1250	<u>WBUV</u>	104.9	Moss Point	MS	V 104.9
1253	<u>WACR</u>	103.9	Columbus	MS	
1257	WMXS	103.3	Montgomery	AL	Mix 103
1302	WDXB	102.5	Jasper	AL	The Bull
1307	WYOY	101.7	Gluckstadt	MS	Y 101.7
1312	Unid	98.5			Paul Harvey
1318	Unid	93.5			Mention of Braves Baseball
1321	WUSJ	96.3	Jackson	MS	US 96.3
1322	WOKK	97.1	Meridian	MS	97 OKK
1326	Unid	99.9			The Fox Golden Triangle ad for Fitchner Automotive in Tupelo and Aberdeen Laser 96
1338	<u>WLZA</u>	96.1	Eupora	MS	
1340	WTCB	96.9	Indianola	MS	
1341	WWMS	97.5	Oxford	MS	Miss 98
1356	unid	94.9			The New Mix 94.9 ....Columbus MS???
1412	<u>WKYQ</u>	93.3	Paducah	KY	
1419	KAMS	95.1	Mammoth Spgs	AR	K Country 95
1422	<u>WUEZ</u>	95.1	Cartersville	IL	
1428	KKOW	96.9	Pittsburg	KS	RDS "KKOW"
1430	Unid	89.7			Gospel..mentions of 91.1 WIB?..Tele-Kids
1432	WIL	92.3	St. Louis	MO	
1433	KATI	94.3	California	MO	Kat Country 94.3
1436	KTKS	95.1	Versailles	MO	Ozarks KS95 Lake Country

July 21 Es

2149	CJEL	93.5	Winkler	MB	Eagle 93.5 FM
2204	Unid	89.7			CBC Radio 1

July 23 Es

1059	WMIX	94.1	Mt. Vernon	IL	RDS "WMIX"
1110	KYKC	100.1	Byng	OK	
1110	<u>KOMC</u>	100.1	Kimberling City	MO	
1124	Unid	94.1			The Buzz
1128	KATI	94.3	California	MO	Kat Country 94.3

July 30 Es

0849	Unid	88.1			on the river 642-FM88
0851	<u>WGTF</u>	89.5	Dothan	AL	
0853	<u>WNCM</u>	88.1	Jacksonville	FL	
0854	WWKA	92.3	Orlando	FL	
0902	WNLE	91.7	Fernandina Bch	FL	
0907	Unid	94.3			Real Radio...ad for Cattleman's Mkt
0911	WDJR	96.9	Enterprise	AL	RDS "CNTRY 969"
0922	WSJT	94.1	Lakeland	FL	
0927	WKQL	96.9	Jacksonville	FL	
0928	WBAM	98.9	Montgomery	AL	

0932	<u>WFYV</u>	104.5	Atlantic Beach	FL	
0933	WZHT	105.7	Troy	AL	RDS "Hot 105"
0940	WDXB	102.5	Jasper	AL	
0943	WQSB	105.1	Albertsville	AL	
0945	<u>WMAX</u>	105.3	Bowdon	GA	RDS "WMAX 80s"
0953	WMXS	103.3	Montgomery	AL	Mix 103
0958	WUAL	91.5	Tuscaloosa	AL	Alabama Public Radio
1004	WZBQ	94.1	Carrollton	AL	RDS "94.IZBQ"
1023	Unid	103.7			Ad for Visionland Splash Park
1032	Unid	103.9		GA	Atlanta Hwy in Athens mentioned
1106	<u>WLRH</u>	89.3	Huntsville	AL	FM 89.3 in Huntsville

August 8 Es

1826	WMCU	89.7	Miami	FL	Spirit FM
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August 9 Es

2050	Unid	103.3	Nashville?	TN	Cleveland-Tennessee Football
2052	Unid	93.5	Savannah?	TN	Cleveland-Tennessee Football
2053	WXRZ	94.3	Corinth	MS	
2054	WTCD	96.9	Indianola	MS	Ment of MS Dept of Health
2056	WZLQ	98.5	Tupelo	MS	

August 21 Tr

2100	<u>CBOQ</u>	103.3	Ottawa	ONT	CBC Radio 2
2111	<u>CBOX</u>	102.5	Ottawa	ONT	French
2117	<u>CJMJ</u>	100.3	Ottawa	ONT	Magic
2120	<u>WTSS</u>	102.5	Buffalo	NY	Star 102.5
2145	<u>CBO</u>	91.5	Ottawa	ONT	CBC Radio 1

**Ralph Strobel – 106 E Davidson St. Muncie IN 47303 Equipment: McIntosh MR 78 FM Tuner with two CM Stereo Probe 9 antennas and rotors at 38 and 32 feet above ground separated by 23 feet with the use of Bolin Phase Box. Underlined are new. Number at end indicates mileage.**

November 12 Ms

0315	KCIL	107.5	Houma	LA	"today best in...country 107.5 KCIL" 791
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November 19 Ms

0218	KXTN	107.5	San Antonio	TX	"KXTN" 1050
0450	<u>KGND</u>	107.5	Ketchum	OK	"KGND...point 5...music that makes.." 586
0541	KSCB(t)	107.5	Liberal	KS	"Kansas Commitment to quality & svc" 866

December 7 Tr

1107	<u>WKLO</u>	96.9	Hardinsburg	IN	Xmas Music 129
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December 13 Ms

0827	KLDE	107.5	Lake Jackson	TX	local ad and mentions 960
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December 14 Ms

0938	WMPS	107.5	Germantown	TN	"...WMPS.." prev heard via TR 428
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December 25 Ms

0533	KGND	107.5	Ketchum	OK	"...KGND 107.5..." 586
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January 04 Ms

0303	<u>KARZ</u>	107.5	Marshall	MN	"...KARZ 107.5..." prev hard via TR 608
0658	KCIL	107.5	Houma	LA	"Thibodaux-New Orleans...." 791

January 26 Es

2325	Unid	107.5			FF Mono
2327	Unid	93.3			FF
2330	Unid	94.9			

January 29 Es



0820	KCIL	107.5	Houma	LA	"...107.5 KCIL...."	791	
<u>March 2 Ms</u>							
019	KSMX	107.5	Clovis	MN	local mentions ...heard prev via Es	1059	
<u>March 6 Ms</u>							
0825	KCIL	107.5	Houma	LA	local mentions..Ray's Limo of Thibodaux		
<u>March 18 Gw</u>							
1900	WHHC	107.5	New Castle	IN	LP ....Testing	18	
<u>March 27 Ms</u>							
0057	KXKZ	107.5	Ruston	LA	"..KZ 107.5 Reba McIntire..."	665	
<u>April 2 Tr</u>							
1800	WLWD	93.9	Columbus Grove	OH	s	with WGRL phased	87
<u>April 24 Tr</u>							
1900	WZZZ	107.5	Portsmouth	OH	r	with WIOK phased	162
<u>April 30 Es</u>							
1427	KKBQ	92.9	Pasadena	TX	k	914	
1429	XET	94.1	Monterrey	NL	SS	Ads	1325
1432	XHITE	94.9	Monterrey	NL	SS	PSA	1325
1435	XHRYS	90.1	Reynosa	TM	SS	Ads	1226
1440	XHCAO	89.1	Reynosa	TM	SS	Ads	1226
<u>May 13 Es</u>							
1600	KTEP	88.5	El Paso	TX	c	1316	
<u>May 14 Tr</u>							
0600	WXQQ	96.9	Wauseon	OH	114		
<u>May 19 Es</u>							
1010	WPOW	96.5	Miami	FL	ad	1040	
1011	KLTG	96.5	Corpus Christi	TX	r	1098	
1028	KRFQ	94.5	Harlingen	TX	1201		
1030	WSMR	89.1	Sarasota	FL	g 902		
1043	WAYJ	88.7	Fort Myers	FL	g 959		
1052	WAVW	101.1	Marco	FL	m	1009	
1101	WIKX	92.9	Port Charlotte	FL	k	931	
1108	KSBJ	89.3	Humble	TX	g 898		
1115	WOLZ	95.3	Fort Myers	FL	Ads	959	
1124	WEOW	92.7	Key West	FL	Ads	1100	
1129	C---	90.3	Havana	Cuba	"Progresso" RDS		
1143	KBNL	89.9	Laredo	TX	RDS	1193	
1148	KROM	92.9	San Antonio	TX	Ads	1050	
1150	KSJL	92.5	Devine	TX	RDS	1083	
1200	XHEC	91.9	Sabinas	CL	SS	1240	
1204	KXMG	93.3	Cedar Park	TX	Ads	965	
1207	KSTX	89.1	San Antonio	TX	c	1050	
1217	KNEL	95.3	Brady	TX	k	1002	
1222	KDLK	94.1	Del Rio	TX	k	1155	
<u>May 22 Es</u>							
0915	KLUX	89.5	Robstown	TX	m	1109	
<u>May 30 Es</u>							
1758	CKLE	92.9	Bathurst	NB	ff 1108		
1900	KUWR	91.9	Laramie	WY	mx	1060	
<u>June 2 Es</u>							
1222	WBRH	90.3	Baton Rouge	LA	sm, j	752	
1230	KILT	100.3	Houston	TX	k	915	

1242	KSBJ	89.3	Humble	TX	g 898	
1249	KBUC	95.7	Jourdanton	TX	ad	1080
1251	KBBT	98.5	Schertz	TX	s	1040
1253	KONO	101.1	Helotes	TX	o 1055	
1255	KWRD	100.7	Highland Village	TX	g "the Word"	808
1300	KUT	90.5	Austin	TX	c	978

June 6 Es

1907	WRQC	92.5	Estero	FL	p 970	
1909	WSJT	94.1	Lakeland	FL	smooth jazz	861

June 9 Es

2236	KMUN	91.9	Astoria	OR	r	1981 (Double hop see note 1)
2300	KPRH	88.3	Montrose	CO	c	1208
2338	KSPZ	92.9	Colorado Springs	CO	o 1040	

June 10 Es

1107	KXMJ	94.1	Amarillo	TX	r	RDS 962
1124	KSNZ	93.3	Lamar	CO	r	RDS 935
1140	KUVO	89.3	Denver	CO	j	1040
1852	KSNZ	93.3	Lamar	CO	Ads	935
1854	KFLV	89.9	Wilbur	NE	g "K Love"	620
1858	KQLS	100.3	Colby	KS	ad	833
1904	KGFT	100.7	Pueblo	CO	g 1038	
1908	WGCR	107.7	Goodland	KS	g weather	869
1911	KQKS	107.5	Lakewood	CO	s 1045	
1923	KSPZ	92.9	Colorado Springs	CO	o 1040	

June 11 Es

0837	KSJL	92.5	Devine	TX	r	1083
0844	KPAC	88.3	San Antonio	TX	c	1050
0850	XHEC	91.9	Sabinas	CL	ss	1240

June 14 Es

1600	XHMIA	89.3	Kanasin	YU	ss, l	1352
1603	XHYVC	92.9	Merida	YU	ss	1351
1605	XHMRI	93.7	Merida	YU	ss	1351

June 16 Es

0905	XHMIA	89.3	Kanasin	YU	ss, l	1352
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June 19 Es

1958	KQDY	94.5	Bismarck	ND	ad	897
2007	KDSR	101.1	Williston	ND	ad	1058
2008	KZRV	107.5	Billings	MT	ads, r	1228
2012	KACL	98.7	Bismarck	ND	o 897	
2014	KCAD	99.1	Dickinson	ND	ads, k	987
2050	KLND	89.5	Little Eagle	SD	reggae	868
2055	KQSD	91.9	Lowry	SD	j	816
2100	KMCI	99.5	Colstrip	MT	g 1142	
2105	KEMC	91.7	Billings	MT	RDS	1228
2118	KXLB	100.7	Livingston	MT	k	1329
2122	KRZN	96.3	Billings	MT	p 1228	
2124	KZWY	94.9	Sheridan	WY	Ads	1145
2137	KUWY	91.9	Laramie	WY	c	1060

June 22 Es

1415	KEOM	88.5	Mesquite	TX	PSA	807
1428	KGZ	88.1	Abilene	TX	g 961	
1453	KATX	97.7	Eastland	TX	ads, k	921
1500	KXYL	96.9	Brownwood	TX	t, mono	960
1501	KHHC	98.9	Leander	TX	ss, l	962
1512	XHEC	91.9	Sabinas	CL	ss	1240

June 23 Tr

0201	WFJX	105.7	Hilliard	OH	op (w/ WYXB phased)	117
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June 24 Tr

0050	WBHK	98.7	Warrior	AL	s	447
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2035 WTNE 97.7 Trenton TN k 349

June 24 Es

1200 XHGL 92.7 Merida YU r 1351  
Merida also in on 89.3, 92.9, 93.7 and 99.3  
1320 XHCCQ 91.5 Cancun QU ss 1319  
1328 XHCAQ 92.3 Cancun QU ss 1319  
1340 XHCBJ 106.7 Cancun QU ss 1319  
1401 XHNUC 105.1 Cancun QU ss 1319  
1413 XHQOO 90.7 Cancun QU ss 1319

June 26 Es

1135 KAML 96.9 Gillette WY k 1068  
1139 KAJZ 105.1 Santa Fe NM sm jazz 1185  
1150 KZYR 97.7 Avon CO r 1126  
1202 KWYK 94.9 Aztec NM ads 1244  
1210 KRWN 92.9 Farmington NM r 1257  
1211 KLVO 97.7 Belen NM ss 1234  
1218 KKOB 93.3 Albuquerque NM r 1217  
1235 KMOZ 100.7 Grand Jct CO k 1235  
1236 KLVF 100.7 Las Vegas NM r 1127  
1238 KKSS 97.3 Santa Fe NM ads 1185  
1241 KXRQ 96.3 Roosevelt UT o 1297  
1246 KTDB 89.7 Pine Hill NM t 1330  
1247 KKCH 92.7 Glenwood Spgs CO r 1164  
1248 KZRR 94.1 Albuquerque NM ads 1217  
1249 KKOR 94.5 Gallup NM ads 1314  
1252 KQSW 96.5 Rock Springs WY ads 1249  
1303 KQBA 107.5 Los Alamos NM r 1177  
1306 KGLX 99.1 Gallup NM k 1314  
1321 KYVA 103.7 Grants NM nx 1278  
1416 KWYK 94.9 Aztec NM still in! 1244  
2101 XHNZ 107.5 Ciudad Juarez CI ss 1317  
2104 XHH 100.7 Ciudad Juarez CI ss 1317  
2120 XHFM 99.1 Precidio CI op "The Bandit" 1312

June 27 Es

1940 XHMZI 91.1 Monclova CL ss, baseball game 1302  
1950 KTXI 90.1 Ingram TX c (over WFYI ) 1048

June 28 Tr

0210 WYIL 98.7 Oliver Springs TN s 291

July 3 Es

1030 KUT 90.5 Austin TX c 978  
1036 KGNZ 88.1 Abilene TX g 961  
1039 KTZA 92.9 Artesia NM k 1171  
1054 KPER 95.7 Hobbs NM k 1114  
1116 KCBR 99.5 Lubbock TX k (over WZPL) 1018  
1128 KLLL 96.3 Lubbock TX k 1018  
1132 KJAK 92.7 Slaton TX g 1014  
1133 KZOR 94.1 Hobbs NM r 1114  
1137 KXCL 98.1 Lorenzo TX o 999  
1201 KQRI 90.9 Lubbock TX g 1018  
1209 KTXQ 93.7 Lubbock TX l 1018

July 4 Es

0948 WQRC 99.9 Barnstable MA ad 794  
0954 WTKK 96.9 Boston MA t 758  
0955 CIEZ 96.5 Halifax NS ad 1153  
1003 CHFX 101.9 Halifax NS k 1153  
1005 Unid 97.7 Sports Radio 97-7

(editor's note...considering the are of this opening I think it's a pretty sure bet that this would be WNSX Winter Harbor ME)

1007 WCXU 97.7 Caribou ME wx 985  
1118 WBPW 96.9 Presque Isle ME k 980  
1122 WCXX 102.3 Madawaska ME ads 984  
1132 CBHA 90.5 Halifax NS nx 1153  
1725 XHGL 97.7 Merida YU ss 1351  
1740 XMHM 95.3 Merida YU ss 1351  
1750 XEVG 94.5 Merida YU ss 1351

July 6 Tr

0155	<u>WOWF</u>	102.5	Crossville	TN	k	292	
0415	<u>WMYI</u>	102.5	Hendersonville	NC	k (with local WMDH off the air)		372

July 7 Es

1015	KLUX	89.5	Robstown	TX	m	1109	
1830	XHGL	97.7	Merida	YU	ss	1351	
1908	KONO	101.1	Helotes	TX	o 1055		
1916	KNBL	89.9	Laredo	TX	RDS	1193	
1918	KSJL	92.5	Devine	TX	RDS	1083	
1920	KJBZ	92.7	Laredo	TX	Ads	1193	
1937	KSAB	99.9	Robstown	TX	Ads, l	1109	
1942	XET	94.1	Monterrey	NL	ss	1325	
1943	KUKA	105.9	San Diego	TX	l	1131	
1946	WJGO	102.9	Tice	FL	r	955	
2015	XHRK	95.7	Monterrey	NL	ss	1325	
2027	WTNT	94.9	Tallahassee	FL	k , previously heard via MS		678
2029	WJYO	91.5	Fort Myers	FL	g 959		
2030	WAVV	101.1	Marco	FL	b 1009		

July 12 Es

1800	KPAC	88.3	San Antontio	TX	c	1050	
1802	KSJL	92.5	Devine	TX	RDS	1083	
1825	KRXT	98.5	Rockdale	TX	k	928	
1839	KQUR	94.9	Laredo	TX	r	1193	
1842	KJIC	90.5	Santa Fe	TX	g 919		
1844	KLEY	94.1	Floresville	TX	l 1054		
1847	KRYS	99.1	Corpus Christi	TX	ads	1098	
1900	KOIR	88.5	Edinburg	TX	g 1211		
1900	XHQI	102.1	Monterrey	NL	ss	1325	
1913	KLUX	89.5	Robstown	TX	m	1109	
1922	KZSP	95.3	So. Padre Island	TX	ads	1196	

July 15 Tr

0100	<u>WOFR</u>	89.5	Schoolcraft	MI	g 135		
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July 17 Tr

0000	<u>KHGN</u>	90.7	Kirksville	MO	g 380		
0032	<u>KZBK</u>	96.9	Brookfield	MO	r	408	
1900	<u>WIGH</u>	88.7	Lexington	TN	g (over local WICH)		354
2000	<u>WCQR</u>	88.3	Kingsport	TN	g 295		
2100	<u>WBFG</u>	96.5	Parker's Crossrds	TN	mono	ESPN	345

June 20 Tr

0003	KNWS	101.9	Waterloo	IA	g 397		
0155	KIOA	93.3	Des Moines	IA	o 441		
0215	<u>KRGY</u>	97.3	Aurora	NE	k	664	
0300	<u>KBBX</u>	97.7	Nebraska City	NE	L, ss	552	
0303	<u>KGOR</u>	99.9	Omaha	NE	o 558		
0311	KLIR	101.1	Columbus	NE	r	633	
0456	KTGL	92.9	Beatrice	NE	op	599	
0500	<u>KGBI</u>	100.7	Omaha	NE	g 558		
0501	<u>KFRX</u>	102.7	Lincoln	NE	r	596	
0516	<u>KLTQ</u>	101.9	Lincoln	NE	rm	596	
0614	<u>KUSO</u>	92.7	Albion	NE	k, ads	667	
0620	<u>KQKY</u>	105.9	Kearney	NE	r	721	
0647	<u>KUTT</u>	99.5	Fairbury	NE	k (over local WZPL)		623
0659	KXCV	90.5	Maryville	MO	c	500	
0700	<u>KUCV</u>	91.1	Lincoln	NE	c	596	
0730	<u>KZKX</u>	96.9	Seward	NE	ads	617	
0800	<u>KHNE</u>	89.1	Hastings	NE	c	685	
0829	<u>KMAJ</u>	107.7	Topeka	KS	ads	554	
0920	<u>KBBK</u>	107.3	Lincoln	NE	ads	596	
0937	<u>KKJO</u>	105.5	St. Joseph	MO	r	500	
1030	KXUS	97.3	Springfield	MO	ads	472	
1050	<u>KFME</u>	105.1	Garden City	MO	r	484	
1059	KWFC	89.1	Springfield	MO	g 472		

July 21 Tr

0215	<u>WJZN</u>	98.9	Munford	TN	sm jazz	400	
0225	<u>WSRR</u>	98.1	Millington	TN	r	407	

July 22 Tr

0200 WBEW 89.5 Chesterton IN j (w/ WBSB off the air) 132

July 24 Es

1955	XHNZ	107.5	Ciudad Juarez	CI	ss	1317
1956	XHH	100.7	Ciudad Juarez	CI	ss	1317
1958	KTEP	88.5	El Paso	TX	c	1316
2000	KTZA	92.9	Artesia	NM	PSA	1171
2007	KRWG	90.7	La Cruces	NM	PSA	1293

July 28 Tr

0115 WMHD 90.7 Terre Haute IN s (ex 90.5) over WGLE) 118

August 1 Es

1145	KROM	92.9	San Antonio	TX	ss, ads	1050
1153	KMVM	96.9	McAllen	TX	g 1219	
1215	XHCAO	89.1	Reynosa	TX	ss	1226

August 15 Ms

1218 KGND 107.5 Ketchum-Tulsa OK "...Oklahoma's convention center on K-Grand 107.5..." 386

August 17 Es

1225	KONE	101.1	Lubbock	TX	op	1018
1228	KMCM	96.9	Odessa	TX	o	1110
1230	KGNZ	88.1	Abilene	TX,	g	961

August 18 Tr

1800	KWBZ	107.5	Monroe City	MO	mr	339
1829	WQUB	90.3	Quincy	IL	c	318
2359	KPCR	94.1	Bowling Green	MO	"Joy-FM,"	g 314

August 20 Tr

0205	WQLF	102.1	Lena	IL	r	274
0232	WXRO	95.3	Beaver Dam	WI	k, PSA	288
0258	WFDL	97.7	Fon du Lac	WI	mr	283
0332	WFZH	105.3	Mukwonago	WI	gr, "The Fish"	240
0600	<u>WYKX</u>	104.7	Escanaba	MI,	k, (o/WFRN 104.7 IN Elkhart)	
					"kix country"	394

August 23 Tr

0220 KUPH 96.9 Mountain View MO r, "The Fox" 407

August 24 Tr

0200	KIAQ	96.9	Clarion	IA	k	467
0225	KUOO	103.9	Spirit Lake	IA	r	348
0304	KBBX	97.7	Nebraska City	NE	l, SS	552
0350	KYSM	103.5	Mankato	MN	k	521
0402	KELR	105.3	Chariton	IA	r	420

August 25 Tr

0023	<u>WXBC</u>	104.3	Hardinsburg	KY	k	176
0202	<u>WBLO</u>	104.3	Charlestown	IN	sr (o/WLBC 104.1 w/ overload)	121

September 1 Es

2005	KTSC	89.5	Pueblo	CO	PSA	1038
2008	KOSI	101.1	Denver	CO	mr	1040

(other Denver and CO Springs also in)

September 3 Tr

0042	<u>KRBZ</u>	96.5	Kansas City	MO	p (o/WAZY 96.5 IN Lafayette)	495
0105	KRLI	103.9	Malta Bend	MO	r	429
0758	<u>KLTE</u>	107.9	Kirksville	MO	g (o/WTPI 107.9 IN Indianapolis)	380
0830	KPOW	97.7	La Monte	MO	nx, wx	439

September 6 Tr

0500 WATI 89.9 Vincennes IN g, AFR (o/WDPG 89.9 OH Greenville) 155

September 8 Tr

2300 WKNO 91.1 Memphis TN c 432  
2347 WBTG 106.3 Sheffield AL g 395

September 9 Tr

0000 WDNX 89.1 Olivehill TN g 365  
0001 WQPR 88.7 Muscle Shoals AL sm j 396  
0012 KASU 91.9 Jonesboro AR c 417  
0020 WSM 95.5 Nashville TN k 289 (other Nashville stations were in)  
0120 WRLV 97.3 Salyersville KY k 209  
0200 WMAE 89.5 Booneville MS c 417  
0317 WXKZ 105.3 Prestonsburg KY o 224

September 13 MS

0204 WUAW 88.3 Erwin NC "...WUAW..." 496

October 4 Gw

1755 WYJZ 100.9 Speedway IN sm. j 55 (ex-IN Lebanon-Indianapolis, with tower move closer to Indianapolis)

October 5 Tr

2300 WJMM 99.1 Keene-Lexington KY g 152 ex-99.3 KY Harrodsburg-x Lexington (o/WHKO 99.1 OH Dayton)

October 10 Tr

0655 WSGP 88.3 Glasgow KY southern g 222

(note 1) It pays to play a tape back, as I didn't realize what I had! I telephoned KMVN and played the legal ID for the nice male DJ. This makes Oregon state #45 for me. It has taken 31 years to hear the west coast from Indiana. It was worth the wait! Doubtful I will ever hear NV, CA, or WA. I'll keep trying. There has been quite a bit of Es this summer bust mostly to TX and Mexico, my most common skip area. I now have 301 stations logged from TX.

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**Saul Chernos – Toronto ON – 416-364-0725 – schernos@sympatico.ca**  
**Equipment: Sangean ATS909 portable (has RDS) and 1996 Toyota Corolla car radio. BR = Burnt River, TO = Toronto.**

Aug 10 MS (BR)

2340 KZKX 96.9 Seward NE 96 Kicks

Aug 11 MS (BR)

0920 WLLK 93.9 Burnside KY RDS: WLLK noticed after half-hour nap  
1159 KKOW 96.9 Pittsburgh KS Country 96.9 is KKOW  
1319 KFTK 97.1 Florissant MO St. Louis' 97-1 FM  
1357 WTBX 93.9 Hibbing MN A 25-minute music mix starts now on WTBX  
1530 WKLW 94.7 Paintsville KY K-Light  
1535 WZOR 94.7 Mishicot WI Razor Rocker  
1543 KDLO 96.9 Waterdown SD RDS: KDLO; Watertown ad  
1549 KSKK 94.7 Staples MN FM 94.7 KSKK, weather  
2338 WCYI 93.9 Lewiston ME Pizza ad: India St. right here in Portland  
1859 CBON20 89.3 Thunder Bay ON French CBC // 95.1

Aug 12 MS (BR)

1006 KSOU 93.9 Sioux Center IA N.W. IA...Pine Bank is now open in S. Ctr  
1007 KKOT 93.5 Columbus NE 93.5 The Hawk, Nebraska (Same burst)  
1011 KNIM 97.1 Maryville MO The home of good time rock'n'roll, KNIM  
1039 KPZK 98.9 Paynesville MN Clearwater Rodeo promo  
1055 KZKX 96.9 Seward NE Lincoln's country leader  
1317 WSIP 98.9 Paintsville KY Paintsville QTH  
1441 WYKK 98.9 Quitman MS 98-9 WYKK  
1604 W... 104.9 NC You'll go to the show in Chapel Hill

1653	WDDJ	96.9	Paducah	KY	FM-96-9 is WDDJ
1756	WLFJ	89.3	Greenville	SC	Local PSA: Mitchell Road Baptist Church
2045	WJEQ	102.7	Macomb	IL	Ad: 101 Corvette (in Macomb)
2159	WCAL	89.3	Northfield	MN	KMSE, a public service of ... Rochester

Aug 13 MS (BR)

0024	WSUY	96.9	Charleston	SC	You're smart for listening to Sunny 96.9
0046	WWDV	96.9	Zion	IL	97-1 FM the Drive (co-owned)
0643	CFIX	96.9	Saguenay	PQ	Quatre Vingt Seize Neuf, C-Fixe (French)
0657	CHEY	94.7	Trois Rivieres	PQ	French news
0816	KSOU	93.9	Sioux Center	IA	Sioux Falls news
1059	WVCX	98.9	Tomah	WI	A portion of today's b'cast time on WVCX
1234	KNOX	94.7	Grand Forks	ND	Best selection at Grand Forks
1326	KMFY	96.9	Grand Rapids	MN	We play more of your favorites...on KMFY
1407	KIAQ	96.9	Clarion	IA	RDS: KIAQ-FM noticed while fishing – ahh!
1422	Unid	93.9			An Elvis Lives wkd here at the oldies stn
1430	KDLO	96.9	Watertown	SD	RDS: KDLO
1446	KFNW	97.9	Fargo	ND	1-888-NEED-HIM (this checks)
1532	KYCK	97.1	Crookston	MN	E. Grand Forks country music event promo
1656	KYCK	97.1	Crookston	MN	Extreme country at Buck's...Grand Forks

Aug 13 Tr (BR – Nicholson Road)

2159	WEZF	92.9	Burlington	VT	WEZF Burlington 92.9, Delilah
2208	WVPS	107.9	Burlington	VT	Classical
2255	WKKF	102.3	Ballston Spa	NY	102.3 Kiss FM, urban
2318	WZRT	97.1	Rutland	VT	97-1 Kiss-FM, Rutland ads, Fun Café prgm
2321	WGNA	107.7	Albany	NY	ID, k, Alabama concert promo
2348	WFLY	92.3	Troy	NY	Fly 92, pr

Aug 14 Tr (BR – East Hill then cottage site)

0706	WRUR	88.5	Rochester	NY	WXXI 1370/88.5, central NY blasting in
0742	CHRZ	91.3	Parry Island	ON	Rez 91, \$tereo, r, Victor ancr
0830	CHTK1	89.5	North Bay	ON	Very low power g station, north strong

Aug 14 Tr (TO - Scarborough Bluffs with widespread blackout)

1700	WKSU	89.7	Kent	OH	Local ref to Cleveland Orchestra
1717	WHKS	94.9	Port Allegany	PA	94.9 Kiss-FM, r, Olean (NY) ad
1718	CIMF	94.9	Gatineau	PQ	ID, FF talk
1720	WICB	91.7	Ithaca	NY	ID, p
1722	WGAR	99.5	Cleveland	OH	ID, k
1725	WGGY	101.3	Scranton	PA	Today's best country, Froggy 101
1726	W207BD	89.3	Medina	NY	FLN g //88.3, 88.9
1727	WYYY	94.5	Syracuse	NY	Syracuse ads
1728	WPEL	96.5	Montrose	PA	SRN News, ID, wx
1730	WHGL	100.3	Canton	PA	Wiggle 100, k, Elmira ad
1731	WUSL	98.9	Philadelphia	PA	Power 99, black urban
0532	WLLW	99.3	Seneca Falls	NY	SF ads
1735	WPSB	90.1	Kane	PA	University Park in PA
1738	WKZA	106.9	Lakewood	NY	106.9 Kiss FM
1739	CKQB	106.9	Ottawa	ON	Ottawa's best rock, Mix 106.9 the Bear
1743	WSHH	99.7	Pittsburgh	PA	Wish 99.7, r
1744	WAAL	99.1	Binghamton	NY	Binghamton, Southern Tier QTH, WBTM ? TV
1749	WMXY	98.9	Youngstown	OH	Mix 98-9, r
1752	WNBT	104.5	Wellsboro	PA	Wellsboro QTH, 814 AC, 92.3/104.5 The Buzz
1801	W256AC	99.1	Solvay	NY	Mentions 105.5 (WTKW-NY xltr, 99 watts)
1802	WBDI	106.7	Copenhagen	NY	The Border, Kingston-Watertown QTH
1803	W297AB	107.3	Williamsville	NY	//107.7 WNSA, Yankees, local & NYC ads
1816	WAKS	96.5	Akron	OH	Kiss-FM, Cleveland QTH
1820	CBO	91.5	Ottawa	ON	CBC EE mono, Ottawa coverage
1822	WSLU	89.5	Canton	NY	North Country Pub R, full list, QTH, NPR
1824	CJBC1	94.3	Belleville	ON	CBC French
1826	WHBC	94.1	Canton	OH	N.E. OH QTH, Delilah
1828	CJBX	92.7	London	ON	London QTH
1833	WFRY	97.5	Watertown	NY	Watertown QTH
1834	WTKW	99.5	Bridgeport	NY	TK-99, De Witt and area ads
1840	WEMG	104.9	Egg Hbr City	NJ	Jersey Shore's home fr k mx Country 104.9
1841	WNKI	106.1	Corning	NY	Wink 106, Chemung County QTH
1850	WXKC	99.9	Erie	PA	Classy 100, 814 AC
1852	WBRR	100.1	Bradford	PA	Cool 100, Bradford & McKean County QTH
1855	WROZ	101.3	Lancaster	PA	Lancaster ads
1859	WVIA	89.9	Scranton	PA	ID
1903	WENY	92.7	Elmira	NY	South Corning QTH
1906	CJBC2	99.5	Kingston	ON	French CBC
1910	WCOG	100.7	Galeton	PA	FLN g-t //88.3

1913	WZXL	100.7	Wildwood	NJ	The Best Classic Rock
1919	WORD	101.5	Pittsburgh	PA	g-t
1928	WFXF	107.3	South Bristol	NY	107.3 The Fox, classic rock
1929	WKDM	106.9	Camden	NJ	WKDM Camden-Philadelphia, g-t
1930	WNTQ	93.1	Syracuse	NY	93Q, Fulton QTH
1940	CKNX	101.7	Wingham	ON	FM-102, local wx
1941	WRKT	100.9	North East	PA	Rocket, Erie & North East ads
1943	WJJZ	106.1	Philadelphia	PA	Smooth jazz
1945	CHLX	97.1	Ottawa	ON	Classical music
1953	WDKC	101.5	Covington	PA	KC-101, k, local references
2001	WITF	89.5	Harrisburg	PA	ID, witf.org, NPR
2015	WITR	89.7	Henrietta	NY	Henrietta QTH, SC in calls?
2030	WQKX	94.1	Sunbury	PA	94 Kicks, 94-KX, ID, The Retro Show (pr)
2031	WKBI	93.9	St. Mary's	PA	B-94, local ads, stn # 824-2921, hit mx
2041	WHUZ	94.3	Saegertown	PA	The New Buzz 94.3/107, Meadville QTH
2042	WYSP	94.1	Philadelphia	PA	wysp.com, Pha QTH, pr
2051	WCID	89.1	Friendship	NY	FLN g //88.3
2055	WAWN	89.5	Franklin	PA	AFR, ID, wx
2100	WEOS	89.7	Geneva	NY	ID
2105	WRTY	91.1	Jackson Twp	PA	NPR nx, ID, j
2119	W284AP	104.7	Buffalo	NY	FLN g //88.3
2123	WDAC	94.5	Lancaster	PA	familylife.com ends, ID, Lancaster QTH
2130	WOTT	100.7	Henderson	NY	Real Rock, reports back on air
2131	WXXO	104.5	Cambridge Sps	PA	The all-new Kiss FM
2144	WKNB	104.3	Clarendon	PA	Kinzua Country 104
2147	CKKL	93.9	Ottawa	ON	Ottawa QTH
2151	WKXW	101.5	Trenton	NJ	New Jersey 101.5, coastal NJ wx
2155	CBBP	103.9	Peterborough	ON	Relaying FF when 94.1 off
2204	WSPI	99.7	Mount Carmel	PA	ID, r
2228	WIII	99.9	Cortland	NY	NY Nat'l Guard ad, 70s r
2233	CFLG	104.5	Cornwall	ON	Cornwall ads
2236	CIHT	89.9	Ottawa	ON	Ottawa's #1 hit mx stn, the new hot 89-9
2255	WOWQ	102.1	DuBois	PA	St. Mary's QTH, k
2300	WLEV	100.7	Allentown	PA	ID, Allentown QTH, Delilah
2344	WFGO	94.7	Erie	PA	Oldies, Erie QTH
2349	WOMC	104.3	Detroit	MI	Running WWJ
2351	WUSE	93.9	Fairview	PA	Erie QTH, k

Aug 15 Tr (TO – Bluffs – Blackout continues)

0613	WMMS	100.7	Cleveland	OH	ID, rp
0630	WSQE	91.1	Corning	NY	Full station list, NPR
0631	WKLL	94.9	Frankfort	NY	Modern Rock / K-Rock
0632	WQHZ	102.3	Erie	PA	Erie's Classic Rock Z-102-3, Bob & Tom
0649	WBKX	96.5	Fredonia	NY	96-Kicks, Chautauqua QTH
0707	WNTI	91.9	Hackettstown	NJ	ID-QTH, Centery College, 908-979-0900, NPR
0725	WSQX	91.5	Binghamton	NY	Your jazz and news alternative, ID-QTH, wx
0730	CBBP	103.9	Peterborough	ON	Relaying The Zone when 94.1 off
0731	WDNY	93.9	Dansville	PA	Area QTH
0755	WRUW	91.1	Cleveland	OH	ID, 216-368-2208 studio, local PSA

Aug 19 Tr (TO – Snowball)

0046	CKNR	94.1	Elliot Lake	ON	Elliot Lake & Sault Ste. Marie ads, r
0106	WYBR	102.3	Big Rapids	MI	Big Rapids Y-102; Today's hit music Y-102
0112	CHFN	100.1	Neyaashiin'g	ON	Urban, pop, later country; no talk
0137	CHTK	95.5	Sudbury	ON	g-mx, Celsius wx, \$
0152	WYLZ	100.9	Pinconning	MI	Wheels 104.5 & 101, Midland & Tri-Cities
0215	WJNR	101.5	Iron Mountain	MI	Froggy Country 101.5; ID w/phone & address
0219	CHRZ	91.3	Parry Island	ON	Rez 91, pop music
0301	WMQT	107.7	Ishpeming	MI	Hit music WMQT
0317	WPFF	90.5	Sturgeon Bay	WI	ID, g-mx
0320	WRVM	102.7	Suring	WI	Music Through the Night (Moody)
0325	WGKL	105.5	Gladstone	MI	Harris ad: Chip In Island Casino
0344	WJLW	106.7	Allouez	WI	Classic Rock...106.7 the Eagle
0355	WPCK	104.9	Kaukauna	WI	104-dot-9 WPKR, Winnebago County QTH k
0408	WIHC	97.9	Newberry	MI	Classic Rock The Bear
0412	WBNZ	99.3	Frankfort	MI	99-3-BNZ, r
0415	WLYD	99.7	Sturgeon Bay	WI	Wild 99.7 breaking out fresh jams; rap
0444	WJOJ	89.7	Harrisville	MI	Joy 89-7-FM your stn for mx and fun, g-mx
0449	WWWX	96.9	Oshkosh	WI	97 & 107 The Fox, Brillion-Green Bay QTH
0512	WOZZ	93.5	New London	WI	Green Bay & Appleton ads, 70s rock
0516	WZOR	94.7	Mishicot	WI	The cutting edge of rock Razor 94-7
0521	WLDR	101.9	Traverse City	MI	Sunny 101.9 WLDR soft rock while you work
0522	WMUS	106.9	Muskegon	MI	107-MUS, k
0525	WWKR	94.1	Pentwater	MI	Classic rock...94 K-Rock
0540	WAPL	105.7	Appleton	WI	30-min rock block...WAPL...WI's rock stn
0554	WEMI	91.9	Appleton	WI	Christian Family R., 91.9/91.5/101.7, g-mx



0559	WPNE	89.3	Green Bay	WI	NPR, WI wx
0607	WFMR	106.9	Brookfield	WI	Classical music
0607	WVCY	107.7	Milwaukee	WI	g-mx
0619	WMYX	99.1	Milwaukee	WI	ID

Aug 19 Tr (TO - Aurora)

2119	WZFS	106.7	Des Plaines	IL	106.7 The Fish, WYLL 1160 mentioned
2121	KBOB	104.9	De Witt	IA	Great Country 105, ID, ment KQWC 36, k

Aug 19 Tr (BR)

2353	WWGN	88.9	Ottawa	IL	ID, n.e. IL QTH, American Family Assoc'n
2354	WAUS	90.7	Berrien Sprgs	MI	RDS: WAUS90.7, c

Aug 20 Tr (BR)

0000	WJCH	91.9	Joliet	IL	Voice of Fam'y R, the New Life, g, ID/QTH
0001	WPNE	89.3	Green Bay	WI	ID, c
0002	WDLM	89.3	East Moline	IL	ID, QTH, wx
0013	WMBI	90.1	Chicago	IL	wmbi.org, g
0016	WAOR	95.3	Niles	MI	95-3 WAOR, South Bend's Choice
0020	WZZN	94.7	Chicago	IL	New Rock 94-7 The Zone
0024	WBYT	100.7	Elkhart	IN	B-100, QTH, k, b100.com
0040	WXAJ	99.7	Hillsboro	IL	The All New 99.7 Kiss FM, Sprgfd QTH, rap
0050	WLEY	107.9	Aurora	IL	La Ley, SS t, lively Mexican brass music
0052	WYST	107.7	Fairbury	IL	Star 107-7, ment IL State Football
0053	WFRN	104.7	Elkhart	IN	ID, wx
0059	WNSN	101.5	South Bend	IN	Sunny 101.5, Remax of IN ad, Delilah
0105	WFMB	104.5	Springfield	IL	Continuous Hit Country B-104.5, CDT
0133	WONU	89.7	Kankakee	IL	Shine 89-7, 1-800-987-WONU
0221	WDDD	107.3	Marion	IL	107.3-W3D, k, After Midnite (800-722-nite)
0226	WSPY	107.1	Plano	IL	Light & Easy Favorites WSPY
0230	WLLR	103.7	Davenport	IA	FM 103.7, Quad Cities ad
0240	WSWT	106.9	Peoria	IL	Light Rock 107, Peoria ads
0250	WWDX	92.1	St. Johns	MI	92-1 The Edge
0255	WMHX	93.9	Lincoln	IL	The New Mix 93-9
0258	WMMQ	94.9	East Lansing	MI	RDS: WMMQ94.9; ID: Classic Rock 94.9 WMMQ
0300	WGLT	89.1	Normal	IL	Jazz continues on GLT
0311	WITL	100.7	Lansing	MI	After Midnite, k, ID
0313	WBBM	96.3	Chicago	IL	The New Killer Bee B-96
0325	WILZ	104.5	Saginaw	MI	Wheels 104.5 & 101
0339	WBNQ	101.5	Bloomington	IL	ID, local ad, wx
0958	WLIT	93.9	Chicago	IL	ID, QTH, Soft Rock Less Talk
1002	WOJO	105.1	Evanston	IL	SS
1003	WMYX	99.1	Milwaukee	WI	ID, 99 minutes of non-stop variety
1004	WLUP	97.9	Chicago	IL	97-9 The Loop, r
1030	WGRD	97.9	Grand Rapids	MI	Grand Rapids ad
1031	WLAV	96.9	Grand Rapids	MI	97-LAV
1205	WPWX	92.3	Hammond I	N	Make the switch to Power 92, R&B/s
1207	WWDV	96.9	Zion	IL	Chicago ads, Imagine (John Lennon) //97.1
1208	WDRV	97.1	Chicago	IL	Chicago ads, Imagine (John Lennon) //96.9
2314	WVPS	107.9	Burlington	VT	c (quick trip to Nicholson Rd)
2320	WRKR	107.7	Portage	MI	ID, 978-1077, s.w. MI ads
2357	WGLM	106.7	W. Lafayette	IN	ID, Delilah
2358	WZNX	106.7	Sullivan	IL	106.7 the Fox, Decatur QTH

Aug 21 Tr (BR)

0018	CHOA	96.5	Rouyn	PQ	FF pop
0019	WAZY	96.5	Lafayette	IN	96-5 WAZY
0028	WNWN	98.5	Coldwater	MI	Coldwater & W-MI ads
0035	WBFX	101.3	Grand Rapids	MI	GR ad
0038	WNCI	97.9	Columbus	OH	Col's best mix of music 99-7 WNCI
0043	WWKN	104.9	Marshall	MI	Superhits 104-9, Battle Creek QTH
0046	WMEE	97.3	Fort Wayne	IN	wmee.com
0100	WBCL	90.3	Fort Wayne	IN	ID, ment stns in Archbold & Spencerville
0111	WCOL	92.3	Columbus	OH	92.3 WCOL FM Columbus, After Midnite, k
0112	WVIC	94.1	Jackson	MI	ID, r
0113	WCSY	98.3	South Haven	MI	Cosy 98-3, smooth jazz
0116	WFXN	102.3	Galion	OH	Bob & Tom Show weekdays on The Fox
0133	WMUK	102.1	Kalamazoo	MI	Jazz all night
0141	WTLZ	107.1	Saginaw	MI	Hot 107 with slow jams
0144	WYBR	102.3	Big Rapids	MI	More of today's hit music on Y-102, MI QTH
1045	WZBL	103.7	Hartford	MI	SouthWestMichiganJobs.com
0200	CHLM	91.5	Amos	PQ	//96.5 CJBC3
0210	WCSG	91.3	Grand Rapids	MI	ID, g-mx

0230	WFUR	102.9	Grand Rapids	MI	This is Christian Radio WFUR Grand Rapids
0844	CHGO	104.3	Val d'Or	PQ	GO Classique Rock, r
0859	WBNI	89.1	Fort Wayne	IN	ID, n.e. IN QTH
0905	WJYW	88.9	Union City	IN	88-9 Joy-FM, IN QTH

Aug 28 Tr (TO – Snowball)

2352	CHGK	107.7	Stratford	ON	TT ID, Mix-FM, 519-271-2450, r
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Aug 29 Tr (TO - Bluffs)

0204	WUBJ	88.1	Jamestown	NY	NPR news, ID for WBFO-WUBJ-WOLN
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Aug 29 Tr (Grimsby)

1818	LP	100.3	Grimsby	ON	Mostly oldies fade up-down to local PSAs
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Sep 3 Tr (TO – Snowball)

1923	WINN	104.9	Columbus	IN	Gd times & great oldies, oldies 104.9, QTH
1926	WKKG	101.5	Columbus	IN	101.5 WKKG, Columbus ads
1938	WTTS	92.3	Bloomington	IN	New music on 92-3 WTTS
1940	WRZQ	107.3	Greensburg	IN	Q-Mix 107 dot 3, S'ern IN & Ohio River QTH
1947	WQKC	93.7	Seymour	IN	The Duck 93.7, k

Sep 6 Tr (TO – Bluffs)

1854	WPDX	104.9	Clarksburg	WV	k, WPDX sung IDs
1910	WBRB	101.3	Clarksburg	WV	FreshNewMx&AllYrFaves,WBRBTheBear, k (332)
2035	WVAQ	101.9	Morgantown	WV	WV coll fb, lcl ad (285)
2041	WKYE	95.5	Johnstown	PA	Key 95, oldies prgm, local ads (230)
2055	WJJZ	106.1	Philadelphia	PA	WJJZ-Ph'a A Clear Channel Stn (325)
2057	unID	99.3			Saturday Night Alive w/Diana Wheeler, 1-800-827-7882
2124	WBIG	100.3	Washington	DC	Big 100, o, 1-800-493-100.3 (350)
2157	WMAJ	104.9	Holidaysburg	PA	Wx, dual ID w/ WXMJ, RighteousBros (220)
2340	WNAR	100.3	Arcade	NY	WNAR-LP Arc. NY, www.discoveronline.org,

Sep 8 Tr (TO – Snowball)

0000	WMSD	90.9	Rose Township	MI	g-mx, ID, address (Box 42, Rockton MI)
0015	WVXH	92.1	Harrison	MI	BBC news o/WIDL-MI

Sep 13 Tr (BR – East Hill)

0815	CBVX	95.3	Quebec City	PQ	Radio Canada (FF) news
0810	CJBR1	89.5	Riv. du Loup	PQ	R. Can. (FF) nx, Chicoutimi QTH, (prev Es)
0815	CIGB	102.3	Trois Rivieres	PQ	Radio Energie partout Quebec, FF pop
0828	CBVE	104.7	Quebec City	PQ	CBC Radio 2, EE, Montreal number in promo
0830	CHIK	98.9	Quebec City	PQ	Energie, FF pop/dance, Quebec QTH
0834	WVPS	107.9	Burlington	VT	NPR news, later Car Talk
0846	CJMF	93.3	Quebec City	PQ	Commercial FF station
0846	CFIX	96.9	Saguenay	PQ	96,9 C-Fix Radio Rock Detente; pop, w/CKOI
0858	CJAB	94.5	Saguenay	PQ	Energie, FF, pop, Quebec ad (both prev Au)
0913	WTOJ	103.1	Carthage	NY	Watertown ad
0918	CIME2	101.3	Mt. Tremblant	PQ	Radio Laurentide, Ste. Therese QTH
0929	CHOI	98.1	Quebec City	PQ	FF, pr, Quebec QTH
0945	CIEL	103.7	Riv. du Loup	PQ	Ciel-FM, FF, pop (prev Au)
0950	CIBM	107.1	Riv. du Loup	PQ	FF pop
1015	CBF8	88.1	Trois Rivieres	PQ	//88.3, 91.9 w/Radio Canada (FF)
1016	CBF15	88.3	L'Annonciation	PQ	//88.1, 91.9 w/Radio Canada (FF)
1024	CHEY	94.7	Trois Rivieres	PQ	//CIMF 94.9 w/FF, pop

Sep 13 MS (BR)

1250	KDLO	96.9	Watertown	SD	RDS: KDLO; k
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Sep 17 Tr (TO – Snowball)

2309	Unid	90.1	Orangeville	ON	The Gd Frds R. Bible Handbk, 90.1, O'vl
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Sep 18 Tr (TO – Bluffs)

0151	W220DE	91.9	Greece	NY	Standing firm on God's Word, we're the FLN
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Oct 1 Tr (TO – Davis Drive)

1817	CKJJ	102.3	Belleville	ON	CK-Double-J testing, \$ g, 613-966-4022
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Oct 1 Tr (BR)

1931	CKJJ	102.3	Belleville	ON	CK-Double-J, testing, \$ g, 613-966-4022
1932	CJLF2	89.3	Peterborough	ON	Life 100 dot 3, testing repeater, \$ g

Oct 2 MS (BR)

0809	WGKS	96.9	Paris	KY	96.9 Kiss FM
1156	unID	96.9			Warrior football is starting to roar. I'm Mark Masters. Join me Friday night for the pre-game at 7:20...begins at 7:30

HIGHLIGHTS: August 14-15 blackout logs in Toronto coincided with a bit of ducting to Philadelphia & New Jersey for a few hours of thrilling DX in the car atop the Scarborough Bluffs. Had I not been close to empty on gas, I'd have stayed out all night and tried a few of my other Toronto-area DX sites. Aug 20-21 Tropo to the west was one of the strongest openings ever noted here. And, I netted more DX during this year's Perseid meteor shower than in any previous Perseids. It seemed to run in streaks of very busy activity followed by relatively quiet periods. 73s, Saul

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**Russ Edmunds Blue Bell, PA ( 360' ASL ) [15 mi NNW of Philadelphia]  
40:08:45N; 75:16:04W, Grid FN20ID wb2bjh@yahoo.com  
Yamaha T-80 & APS9B @15'**

August 19 Es

1157	KJAB	88.3	Mexico	MO	USA News, ID 885 mi New
1202	unID	88.7			SRN News
1205	KZNA	90.5	Hill City	KS	Local promotions, "High Plains Public Radio" 1302 mi New
1208	KMUW	89.1	Wichita	KS	"Wichita State Radio" 1198 mi New
1210	KCFN	91.1	Wichita	KS	RDS ID; PI" 15D7 1198 mi ( Relog )
1213	KYFW	88.3	Wichita	KS	BBN promo, local mention 1198 mi (Relog )
1215	KZZD	90.7	Wichita	KS	"Life In The Word" pgm; ID 1198 mi New.

August 19 Tr

1900	WFSO	88.3	Olivebridge	NY	mention of "Family Radio" ( again ) and then "...support for WFSO is provided by ....", finally something more than only FR net programming - 135 mi New
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August 20 Tr

0640	WVBH	88.3	Beach haven West	NJ	underwriting announcement for a professional corporation with a 302 area code ( DE ) then parallel with the 97.1 Collingswood NJ translator. 68 miles but still new.
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September 1 Es

1905	KUHF	88.7	Houston	TX	ID in news (1354 mi - relog )
1911	KAXF	88.3	Conroe	TX	local event promo, ID ( 1309 mi relog )
1950	unID	88.7			Religious music, talk, record by Dion (remember him ?) mixing with KUHF & KRVS
2000	KRVS	88.7	Lafayette	LA	ending "Fresh Air"; ID ( 1169 mi - relog )

September 7 Tr

1340	WZWW	95.3	Bellefonte	PA	Rock, ID "95.3 3WZ" ( new - 146 mi )
1520	WSLC	94.9	Roanoke	VA	Country, "Start 94.9" ID cutting thru WRBT-PA ( relog - 333 mi )
2015	WLNK	107.9	Charlotte	NC	Concert promo, ID ( new - 463 mi )
2145	WOBO	88.7	Batavia	OH	Folk-type music, ID, Cincinnati COC promo ( new; 1st OH - 475 mi )
2235	WSSL	100.5	Grey Court	SC	Jeff Foxworthy's Top 20 Country Countdown, local ads, ID ( new - 537 mi )
2247	WKQQ	100.1	Winchester	KY	Rock, then "Double Q Rocks" (new -511 mi )
2300	WKEE	100.5	Huntingdon	WV	Very strong with "Saturday Night Open House Party", ID ( 404 mi )

## Morris Sorensen Winnipeg MB Radio Shack DX-392 with whip

### August 16 Tr

0903 KQLX 106.1 Lisbon ND news, local ads etc 241 miles relog

### August 18 Tr

0959 KGVA 88.1 Ft Belknap Agcy MT Drumming. Call letter ID. NPR News. 535 miles. MT #1 State #28.

1012 KPHR 106.3 Ortonville MN rock music. Ads for Watertown SD. 319 miles. Relog.

### September 6 Tr

0959 CBQX 98.7 Kenora ON CBC Radio 1 with news and Northwestern weather. Relog. Only 124 mies but not that common here.

1006 KACL 98.7 Bismarck ND oldies, "Cool-98.7" 272 miles. ND #30.

### September 12 Tr

0910 CBWY 92.7 Jackhead MB CBC Radio 1 parallel local CBW-990 under CBC Radio 2, CBWS Brandon which has almost three times the power, MB #34. Had been one of my most wanted.

### NOTE:

At 535 miles, KGVA is my most distant tropo here. My previous record was KICD 107.7 in Spencer IA at 476 miles logged Aug.2, 2001 during a similar period of hot, humid weather, also using a DX-392 portable with whip.

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## Jason Koralja Surf City, NJ Sony ICF-SW7600GR w/ built in whip

These were heard from Lacey Twp. NJ on a Sony CDX-L600X car radio.

### September 11 Tr

WKOC	93.7	Chesapeake	VA	251mi
WPTE	94.9	Virginia Beach	VA	237mi
WCMS	100.5	Norfolk	VA	234mi
WSFL	106.5	New Bern	NC	373mi

From Surf City, NJ with the SW7600

### September 17 Tr

WVKL	95.7	Norfolk	VA	233mi
WPGC	95.5	Morningside	MD	157mi
WOCM	98.1	Selbyville	DE	100mi

### September 22 Tr

WKOC	93.7	Chesapeake	VA	242mi
WZMX	93.7	Hartford	CT	148mi
WVKL	95.7	Norfolk	VA	233mi
WTIC	96.5	Hartford	CT	162mi
WPEL	96.5	Montrose	PA	175mi
WCEI	96.7	Easton	MD	120mi

### October 12 Tr

WPOC	93.1	Baltimore	MD	140mi
WKOC	93.7	Chesapeake	VA	241mi
WPGC	95.5	Morningside	MD	157mi
WVKL	95.7	Norfolk	VA	233mi
WIYY	97.9	Baltimore	MD	134m

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## Jim Renfrew 6988 Bank Street Road Byron NY 14222-9702

Equipment: Car radios, Onkyo Tuner with Radio Shack antenna

\* = New, # = call change, q = since QSL'ed, t = tentative

September 7 Tr

2250	*CJET	92.3	Smiths Falls	ON	"Country 92"
2324	*WYLZ	100.9	Pincoming	MI	

September 8 Tr

0100	*CBLA	100.9	Wingham	ON	
1056	*WDMKq	102.7	Mt Clemens	MI	
1057	WRIF	101.1	Detroit	MI	
1112	*WJIMq	97.5	Lansing	MI	
1115	WKRK	97.1	Detroit	MI	
1119	*WHNNq	96.1	Bay City	MI	
1124	*WFBE	95.1	Flint	MI	
1129	CIDR	93.9	Windsor	ON	
1134	*WDRQ	93.1	Detroit	MI	
1135	WMXD	92.3	Detroit	MI	
1139	WDTR	90.9	Detroit	MI	
1141	CBE	89.9	Windsor	ON	
1144	WOM	104.3	Detroit	MI	
1148	WIOT	104.7	Toledo	OH	
1152	*WMGCq	105.1	Detroit	MI	"Magic"
1153	*WDTJq	105.9	Detroit	MI	"Jams"
1157	CHKS	106.3	Sarnia	ON	
1158	*WKAR	90.5	E. Lansing	MI	RDS
1201	*CJDV	107.5	Cambridge	ON	"Dave"
1223	*WQBXq	104.9	Ima	MI	
1234	WKQI	95.5	Detroit	MI	
1237	WCSXq	94.7	Birmingham	MI	
1247	CKSY	94.3	Chatham	ON	
1251	*WGTE	91.3	Toledo	OH	RDS
1257	*WUOM	91.7	Ann Arbor	MI	
1313	*WGPR	107.5	Detroit	MI	"Jazzy"
1321	*WCKYq	103.7	Tiffin	OH	"Buckeye Country"
1323	*WWWMM	105.5	Toledo	OH	"Star"
1324	WDET	101.9	Detroit	MI	RDS
1331	*WRVFq	101.5	Toledo	OH	"River"
1340	*WYCD	99.5	Detroit	MI	
1342	*WVMVq	98.7	Detroit	MI	"V 98.7"
1351	*WIMXq	95.7	Gibsonburg	OH	"Mix"
1412	*WFHM	95.5	Cleveland	OH	"Fish"
1412	*WMUZ	103.5	Detroit	MI	"Light"
1427	*WSWRq	100.1	Shelby	OH	"Cruisin 100"
1430	*WMMS	100.7	Cleveland	OH	"Buzzard"
1926	*CIBQ	101.1	Barrie	ON	"B 101"
2335	*CHKA	100.9	Haliburton	ON	"Canoe"

September 9 Tr

1014	*CKMS	94.5	Waterloo	ON	"Moose"
1030	C???	105.9	Orillia	ON	"Jack"
1058	*WUCXq	90.1	Bay City	MI	

September 10 Tr

0018	WXTM	92.3	Cleveland	OH	"Extreme"
0048	WNIC	100.3	Dearborn	MI	
0052	*WYFM	102.9	Sharon	PA	"Y 103"
0059	WKK	104.7	Geneva	OH	
0101	#WJJJ	104.7	Pittsburgh	PA	
0112	*CIKR	105.7	Kingston	ON	"K Rock"
0132	*WRQK	106.9	Canton	OH	"Rock 107"
0300	*WCVJ	90.9	Jefferson	OH	
0329	WDVD	96.3	Detroit	MI	
1054	*WATZ	99.3	Alpena	MI	
1110	#CJPT	103.7	Brockville	ON	"Bob"
1111	WKJC	104.7	Tawas City	MI	RDS
1232	*CKYCq	93.7	Owen Sound	ON	"Country Diner"

September 16 Tr

2210	*WGRC	91.3	Lewisburg	PA	
2259	*WJSAq	96.3	Jersey Shore	PA	
2301	*WKQWq	96.3	Oil City	PA	"Oldies 96.3"
2327	WDDH	97.5	St. Mary's	PA	"Hound"
2339	*WOXXq	99.3	Franklin	PA	"Kiss" // 104.5
2348	*WYTR	103.3	Brookville	PA	"Cool 103.3"

September 17 Tr

0011	WJJJ	104.7	Pittsburgh	PA	
0114	#WMTT	94.7	Tioga	PA	"Met"
0120	*WOLNq	91.3	Olean	NY	"WBFO"
0158	*WSQX	91.5	Binghamton	NY	(WXXI off)

September 18 Tr

0146	*WKNB	104.3	Clarendon	PA	"Kinzua Country"
0249	*WZPTq	100.7	New Kensington	PA	"Star"

September 19 Tr

0055	*WZYq	106.3	Saranac Lake	NY	
1330	*CBBS	90.1	Sudbury	ON	"Radio 2"
1758	*WONE	97.5	Akron	OH	
1831	CHST	102.3	London	ON	"New Bob"
1837	*CFHK	103.1	St. Thomas	ON	"Energy"
1905	*CIXX	106.9	London	ON	
1912	*WFXJ	107.5	N. Kingsville	OH	"Fox"
1915	WGPR	107.5	Detroit	MI	
1923	*WCPNq	90.3	Cleveland	OH	
1945	*WZAK	93.1	Cleveland	OH	
2100	*WNIR	100.1	Kent	OH	
2140	*WXXO	104.5	Cambridge Spgs	PA	"Kiss" // 99.3
2145	*WQKTq	104.5	Wooster	OH	
2220	WBNY	91.3	Buffalo	NY	

September 20 Tr

0043	*W284AP	104.7	Buffalo	NY	"Family Life Net."
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September 21 Tr

1730	*CJBC-2	89.9	Paris	ON	// 90.3
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September 22 Tr

0007	*CFBU	103.7	St. Catharines	ON	
0020	WQKT	104.5	Wooster	OH	RDS "WQKT"
0027	*WYHT	105.3	Mansfield	OH	"Y-105"
0037	WVNO	106.1	Mansfield	OH	
0105	WNIR	100.1	Kent	OH	"Talk of Akron"
0114	*WQMX	94.9	Medina	OH	
0120	*WHBC	94.1	Canton	OH	
0136	CIDR	93.9	Windsor	ON	
0140	*WZKL	92.5	Alliance	OH	"Q-92"
0159	WVBV	98.7	Detroit	MI	
0214	*WKDDq	98.1	Canton	OH	
0223	WMMS	100.7	Cleveland	OH	
0226	WQXK	105.1	Salem	OH	
0230	*WENZ	107.9	Cleveland	OH	"Z-107.9"
0255	*WHOT	101.1	Youngstown	OH	"Hot 101"
0300	WKAR	90.5	East Lansing	MI	
0640	UNID	104.7			"Star 104" maybe my ears were still asleep, but I wonder if this was Charlotte NC?
0725	WRRN	92.3	Warren	PA	RDS "92 Gold"
0757	#WHUZq	94.3	Saegertown	PA	

With an FM rotor I'm hearing a lot of new stuff. WRVF was #1000.

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## Harry Hayes Wilkes-Barre, PA Equipment: Superadio II, 110 khz filter, FM-6 antenna in attic

September 6 Tr

2323	WEGW	107.5	Wheeling	WV	V/good w/NASCAR coverage.(250 mi)
2333	WFRB	105.3	Frostburg	MD	C/w MX,"105.3 and 98.5 WFRB" (200)

September 7 Tr

0000	WJUN	92.5	Mexico	PA	"Country 92.5" strong, new one (110)
0007	WIKZ	95.1	Chambersburg	PA	"Mix 95.1", good at times w/70's rock.(110)

0057 WSOX 96.1 Red Lion PA Strong at time o/WCTO.(110)

Miles in parenthesis are approximations. This month was a big disappointment as no major tropes developed. Just too much rain I guess. The New England crew came upon some good openings to MI again this year and congratulations to them, but I didn't notice anything despite keeping the antenna headed that way with almost constant monitoring. I think maybe it just never got this far south. I wish more of the DXers who used to report from New Jersey and PA would report in. I feel like the lone wolf in this area.

---

**Adam Rivers – Chicopee, MA [patriotsrule417@yahoo.com](mailto:patriotsrule417@yahoo.com)  
<http://adamskewlsite.freesevers.com/dx/>  
Sherwood S-7250 tuner, FM dipole, RDS manager**

August 13 MS

1531 WILL 95.1 Kenosha WI ad for carthage.edu, which is in Kenosha

August 15 Es

1524 WINK 96.9 Fort Myers FL Wink 96.9 Southwest Florida weather  
1527 WWKA 92.3 Orlando FL ads

August 19 Es

1021 KQCH 94.1 Omaha NE Channel 94-1 Jamz, listened to them as  
passed thru Omaha a couple of weeks earlier  
1022 KKOT 93.5 Columbus NE The Hawk 93.5 one of most common Es  
catches  
1030 KEFM 96.1 Omaha NE Mix 96.1 in WSRS null  
1037 KNDY 95.5 Marysville KS call ment.  
1038 KDNS 941 Downs KS bunch of local ads  
1041 KREP 92.1 Belleville KS KR 92 country  
1045 KFIX 96.9 Plainville KS KFIX is classic rock  
1049 WAPE 95.1 Jacksonville FL 95.1 WAPE  
1054 KHAZ 99.5 Hays KS KZ Country  
1109 WJXR 92.1 MacClenny FL calls; most common Es catch here  
1119 WNFB 94.3 Lake City FL Mix 94.3, another common catch  
1124 KBFC 93.5 Forrest City AR calls  
1126 WMBZ 94.1 Germantown TN ad for some fancy restaurant in Memphis and  
then something that had “the buzz”  
1132 KATI 94.3 California MO Cat Country 94.3  
1150 KCVZ 92.1 Dixon MO Spirit FM KCVO  
1157 KMMZ 96.9 Enid OK another very common catch  
1200 WTCD 96.9 Indianola MS legal ID; CNN news  
1207 KIZS 92.1 Broken Arrow OK 92-1 Kiss FM, “Stacy’s Mom”  
1211 KVOO 98.5 Tulsa OK RDS: KVOO—FM (first RDS catch of Es  
season)  
1212 KXBL 99.5 Henryetta OK pledge drive and ads  
1236 WLAY 100.3 Tuscomb AL Contemporary Country, WLAY  
1237 WMXL 95.1 Carthage MO Mix 95.1  
1239 WOXD 95.5 Oxford MS BullsEye 95-5  
1245 WEBZ 93.5 Port St. Joe FL 93-5 The Beat  
1249 WBAD 94.3 Loland MS 94 Bad FM Jamz  
1251 KWEN 95.5 Tulsa OK K95.5  
1252 KKOW 96.9 Pittsburg KS ds; RDS flick

August 20 Tr

2120 WKSJ 102.7 Williamsport PA 102-7 KissFM  
2253 WBBS 104.7 Fulton NY  
2254 CFCA 105.3 Kitchener ON 105.3 Cool FM and legal ID

August 21 Tr

0018 WCKM 98.5 Lake George NY oldies and a cool jingle  
0021 WRRV 92.7 Middletown NY  
0037 WODJ 107.3 Greenville MI Oldies 107.3 WODJ; 650+miles, over WAAF.  
1044 WMUZ 103.5 Detroit MI “..here on 103.5 FM, WMUZ...”  
1048 WOMC 104.3 Detroit MI “..Oldies 104.3, WOMC, where we always remember  
(something)..”  
1758 WXPX 107.1 Briarcliff Manor NY K104/K107  
2211 CJMJ 100.3 Ottawa ON Magic 100, Ottawa’s Best Mix  
2212 CBOX 102.5 Ottawa ON French CBC  
2224 CKKL 93.9 Ottawa ON 93.9 Bob FM, crazy music mix

2236	<u>CHEZ</u>	106.1	Ottawa	ON	Classic Rock, Chez "Shay" 106
2237	<u>CKBY</u>	105.3	Ottawa	ON	ads
2243	<u>CFMX</u>	103.1	Cobourg	ON	classical mx
2255	<u>CHVR</u>	96.7	Pembroke	ON	Today's Country, Star96FM

August 24 Tr/GW

WMAS offair 4pm-7:15pm, WFME dominant on 94.7, WKLL on 94.9 and WJMN on 94.5

1734	<u>WRDX</u>	94.7	Dover	DE	NEW STATE! WMAS offair, ment of River947.com and Delaware something (fair?), quickly covered by WFME
1740	<u>WRCZ</u>	94.5	Ravena	NY	ad for Hyundai of Schenectady, long a target
1757	<u>CIMF</u>	94.9	Hull	PQ	// web stream

September 1 Es

1903	<u>WMGB</u>	95.1	Montezuma	GA	B95.1, Mid GA's #1 Hit Music Station
1911	<u>WJJN</u>	92.1	Columbia	AL	92-1 Jamz, WJJN

September 6 Tr

1948	<u>WTSS</u>	102.5	Buffalo	NY	(note #1)
2007	<u>WBZA</u>	98.9	Rochester	NY	98-9 The Buzz
2040	<u>WNSA</u>	107.7	Weathersfield Tws	NY	SN Radio; legal ID
2046	<u>WSNI</u>	104.5	Philadelphia	PA	Sunny 104.6

September 12 Tr

2149	<u>WCTO</u>	96.1	Easton	PA	ads
2206	<u>WMCM</u>	103.3	Rockland	ME	Real Country 103.3

September 13 Tr

0818	<u>WMCM</u>	103.3	Rockland	ME	Real Country 103.3
0826	<u>WQCB</u>	106.5	Brewer	ME	Q106.5 country
0829	<u>WCYY</u>	94.3	Biddeford	ME	Portland's new rock alt., WCYY
0953	<u>WQSS</u>	102.5	Camden	ME	102.5 The Peak
1045	<u>WKSQ</u>	94.5	Ellsworth	ME	Kiss 94.5
1049	<u>WRED</u>	95.9	Saco	ME	(note #2)
1122	<u>CHSJ</u>	94.1	Saint John	NB	Country 94
1515	<u>WVOM</u>	103.9	Howland	ME	The Voice Of Maine

September 25 Tr

2000	<u>WAYV</u>	95.1	Atlantic City	NJ	
2115	<u>WUSL</u>	98.9	Philadelphia	PA	Power 99 FM
2122	<u>WCYY</u>	94.3	Biddeford	ME	rare w/ WYBC

October 11 Tr

2120	<u>W289AD</u>	105.7	Selden	NY	ID'd for WSHU thx to Mike B & Bill N for lding
2150	<u>WRTN</u>	93.5	New Rochelle	NY	immigration program; 718 area code; thanks again to Mike and Bill

The Oct.11 opening had huge signals but was pretty much confined to our local area. WQGN, WHJM (over a local LP), WBMW, WBLI, WHFM (over semi-local), WLNG were all 4+/5 on my ol, unmodified DX tuner (with no filters, pretty much).

(note #1)- Star 102.5 took a long time. Countless times of Mike B. getting it, and several of my friends hearing it on their boomboxes/stereo systems at lower elevations than me. I was wicked frustrated and almost gave up... but they came in, strong and in stereo, and a couple RDS flicks. If I went in the car , surely would have had the RDS.

(note #2)- Matched 3 songs – R. Kelly's "ignition", Busta Rhymes/Mariah's "I Know What You Want", and Aaliyah's "Back and Forth" to yes.net. Portland isn't monitored by Mediabase, but is by yes.net. I recorded 3 different promos that ID'ed absolutely nothing for me.. all they all sounded like was a bunch of bass, no treble. Of course, I was sitting in between 2 pretty good strength signals (WKSS 95.7 and WSRS 96.1), but still, they seemed pretty strong..

Total is now up to 631 stations. It has been an absolutely amazing year. With some offseason Eskip or some good late season tropo I hope to hit around the 650 mark. I think of how many stations I also could have bagged in the countless Es openings that happened on my big trip out west (which will not be happening next year, although most of my family wants to, we are going to return back to Maine



next summer). Also if I had a little more patience I could've got a lot more stations, especially in that Michigan opening.

The Michigan opening was great. I never thought that I would ever hear Western Michigan (WODJ, 107.3) via Tropo. I heard the rock station (Calls escape me at this moment) on 94.5 via wicked short skip in 2002; but never like that. And the Detroit stations by tropo, too, were excellent to hear. I was so excited that I almost had a heart attack and forgot to run tape. I was so mad when I looked to record what was going on and looked to see no tape in there (I had taken it out to transfer the last nights tropo, CFCA/WODJ most notable, to the MP3). That will never happen again.. there is now ALWAYS a tape in there, for no matter what. You never know what could happen.

I am pretty happy with this DX season. If not for baseball in the spring and cross country in the fall (and friends, of course) I may have been able to stay up later and/or have been around to DX more. Although I do like the idea of going to one of my friend's houses to DX next time there is a western opening – she had Star 102.5 and WNSA on a boombox (she really wasn't mystified.. she was like "yeah, whatever") while I was sitting 45 feet higher in elevation with my much better equipment and couldn't get it. I really do have a problem getting rid of Boston and NYC stations when there's tropo, and maybe when I get out of here (if FM Dxing is still around when I turn 24 or so) I'll be able to have a more elaborate setup. See you next month..-Adam

**John Ebeling Bloomington MN**

**Equipment: Pioneer TX 9500 IF Modified Tuner along with a Stereo Probe 9 at 25 ft AGL. All Times are CDT New are underlined>**

July 14 Es & Tr

2038	<u>KFTX</u>	97.5	Kingsville	TX	1223
2332	<u>KBDC</u>	88.5	Mason City	IA	116

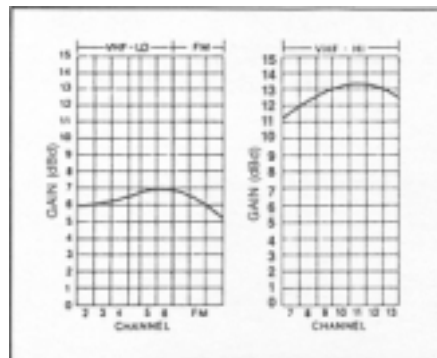
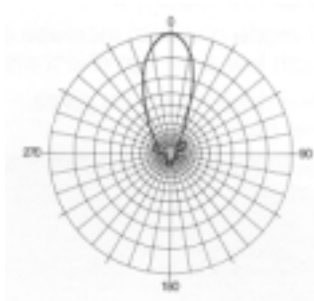
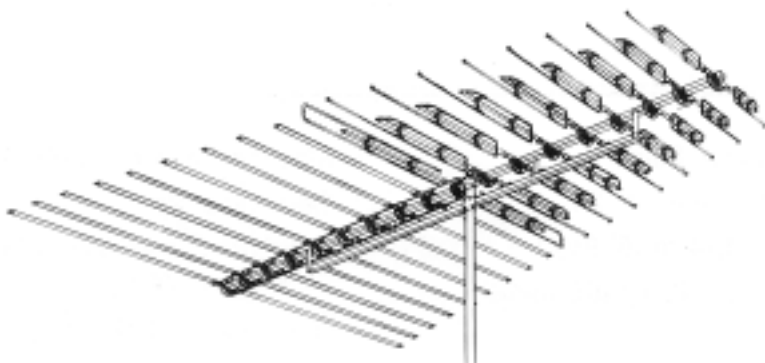
July 17 Tr

1941	KDCR	88.5	Sioux Center	IA	186 Thru local KBEM
2000	KESD	88.3	Brookings	SD	175
2005	<u>KKYY</u>	101.3	Whiting	IA	Thru local
2030	<u>KVCF</u>	90.5	Freeman	SD	gospel
2033	KUSO	92.7	Albion	NE	320

# Antenna Performance Specialties

**V-307 \$175.00**

- Reception Area: Deepest Fringe
- Impedance: 300 Ohms
- Elements: 43 (10 Driven, 33 parasitic)
- Beam Width (Degrees): 64° Lo, 31° Hi
- Front-to-Back Ratio: 24 dB Lo, 26 dB Hi
- Boom Length: 194"
- Turning Radius: 108"
- Weight: 16.5 lbs.
- Converts To Coax STO 82 Balun (not included)
- Shipping Cost: \$22.00
- No returns or refunds on outdoor antennas.



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**Note: this is not an endorsement for any specific Product or products. This is presented for Informational purposes only.**

# Co-Channel Interference Solution PART 1

BOB COOPER

On 11 VHF channels (3 Band I, 8 Band III), New Zealand has more than 1,050 operating TV transmitters; with radiated powers ranging from 325 kilowatts to 1/10th of a watt. While the vast majority of transmitters operate with powers under 30 watts (870 transmitters), radiated power greater than 30 kilowatts is not uncommon (18 transmission channels). To fit each of these transmitters into the 11 available VHF channels, allocation engineers at the Department of Commerce juggle polarizations (V or vertical; H or horizontal), antenna beam patterns (i.e.. directional to serve restricted geographic areas). and something called offset; a technique that moves the precise transmitter frequency +/- up to 26 kilohertz from the nominal channel frequency (see footnote\_#1) in an attempt to reduce the objectionable screen display it



not the actual interference level that is bound to occur when two or more transmitters operating on the same channel arrive at a common receiving location. When two (or more) transmitters operating on the channel can be received at one off-air site, the interference that results is called Co-Channel Interference or CCI. This typically manifests itself as horizontal lines (bands) across the screen not unlike looking at the primary picture through venetian blinds (indeed, many people call it Venetian blind interference). The exact pattern of the lines/venetian blinds depends upon two factors:

- 1) The difference in signal strength between the two signals;
- 2) The precise offset employed by each transmitter, as certain offsets (i.e., difference in the two operating frequencies) create far more intense interference for a given ratio of signal levels than others.

The offset selected by allocation engineers is an attempt to minimize the severity of the venetian blind effect when there is no way to guarantee that two transmitters operating on the same channel will not be received at a common site. And if there are three (or more) stations all on the same channel receivable at a common off-air site? CCI or venetian blinds becomes a constantly changing pattern of both horizontal and diagonal lines resulting from the video information contained by each signal 'modulating' one another in the detector of the TV receiver. This Tech Bulletin will spell out antenna solutions to CCI interference; solutions you as a stocking installer can employ to greatly improve the quality of your customer's reception under interference conditions. Additionally, when the data contained in this Tech Bulletin is employed in conjunction with other Tech Bulletin issues, you as an installing stockist may be able to provide first-time reception to one or more sites for 'missing services ; such as TV3.

Quality reception of any broadcast transmission requires that a single modulated waveform appear at the detector of the receiver. For example, when two (or more) AM radio stations are simultaneously heard, the speaker may emit an annoying tone; the result of the two stations slight frequency offset being detected by the demodulator. This 'beat note', or whistle, is a *form* of CCI. The relative difference in signal level between the desired transmitter (we'll call it the 'DT') and the undesired transmitter ('UT') determines the loudness or annoyance level of the 'beat note'. The actual frequency offset between the DT and the UT creates the tone of the whistle.

Example: One AM transmitter operating on 837.0 kilohertz and a second AM transmitter operating on 837.5 kilohertz; the difference between the two carriers is  $837.5 - 837.0$  or .5 kilohertz (500 hertz). The frequency of the 'whistle' coming from the speaker will be ~ 500 hertz. The tone will be as constant in frequency (i.e., 500 hertz) as the relative frequency stability between the *two* transmitters. The amplitude (loudness) of the tone will be determined by the relative strengths of the DT and UT signal sources, with the loudness increasing as the ratio of signal levels to the receiver detector decreases; i.e., being most annoying (loudest) when the DT and UT signals are of the same approximate amplitude to the receiver detector.

Because the video portion of TV transmissions is amplitude modulated (just like our AM broadcast band example), the effect described for AM radio appears in TV transmissions as well; affecting the video portion of the transmission. The AM detector in this case is demodulating wideband video, not audio, and rather than being displayed through a speaker (as with radio) it is displayed on a cathode ray (picture) tube. The beat note we hear in an AM radio situation

becomes a beat note we see on television. The horizontal lines appearing across the screen are the visual equivalent to the whistle in an AM radio system. The two carriers (DI and UT) appear at the TV receiver's detector. If one (channel 1) TV transmitter is operating on a frequency of 45.260.1 MHz while the second is operating on a frequency of 45.239.8 MHz there is a frequency difference at the receiver detector of  $45260.1 - 45.239.8$  or 20.3 kilohertz. Were this an AM radio system, the 20.3 kilohertz audio beat produced in the receiver detector would go unnoticed by the listener; neither the listener ears nor the AM radio's audio amplifier stage(s) would process such a high audio frequency. In the case of two amplitude modulated TV carriers, the wideband detector of the TV receiver (it must be capable of demodulating signals with a baseband range from nearly 0 hertz to more than 4,500,000 hertz) treats the 20.3 kilohertz beat just as if it were a part of the demodulated TV video information. Video amplifier stages subsequent to the detector process the beat signal along with the desired video waveform 'baseband' and the result is not a whistle in the speaker but rather horizontal lines appearing on the picture tube. The lines in the video are the same thing as the whistle in the speaker in an AM radio system. As with AM radio, two factors determine the 'annoyance level' of the lines on the TV screen; the frequency of the beat and, the amplitude difference or ratio between DT and LIT. The perceived quality of reception, given co-channel interference (CCI) conditions, can be greatly improved by 'fine tuning' either (or both) of the two conditions: i.e., the frequency of the beat, and/or the amplitude of the beat note.



**1) FREQUENCY:** TV transmitters (including very low power translators) are assigned precise offsets; i.e., specific operating frequencies with a precision approaching 100 hertz (.1 kilohertz, .000 1 megahertz). Studies conducted in the UK and North America in the late 1940s and early 50s determined that when CCI was unavoidable, the effects or viewer annoyance levels could be improved if certain offsets were avoided. Further, the degree of viewer annoyance could be markedly impacted by selecting precision offsets which produce the least disruptive pattern or lines on the TV screen. *if* the channel assignment personnel at the Department of Commerce have done their jobs properly, and if the field measurement personnel at RFS who verify operating frequencies monitor these offsets routinely, the antenna system installer will have little to say about the offset portion of the equation. On the other hand, if the beat pattern found at a receiving site is consistently more annoying than you believe it could (or should) be, a review of your particular offset situation might be in order (first contact RFS to ask if the transmitters in question might have strayed away from their assigned precision offsets).

**2) AMPLITUDE:** At any given off-air receiving site where two or more stations are picked up when the directional receiving antenna is pointed towards (optimized) on the desired transmitter/DT, the installing stockist can create an antenna receiving array which will minimize or totally eliminate the CCI. The weakest link in the receiving system producing CCI is the receiving antenna. The most practical solution to CCI is to eliminate it before it occurs at the antenna.

## RECEIVING ANTENNA PATTERN

Virtually all receiving antennas sold to the trade for stocking and re-sale to the home viewer have certain characteristics. It is difficult to find a TV receiving antenna that does not exhibit:

- a) Gain: measured (if known) in dB but more properly either dBj or dBd.
- b) Match: enumerated as 300 ohms/balanced~ 75 ohms/unbalanced.
- c) Pattern/beamwidth: stated as so many degrees wide at the half-power (3 dB) points in both antenna planes.
- d) Front-to-back ratio: stated (if known) as so many dB.
- e) Bandwidth: stated in megahertz or more commonly as band I or bands I, III IV and V.

In most situations involving CCI the desired transmitter (DT) is arriving from one direction while the undesired transmitter(s) arrives from a different antenna pointing direction. If the

receiving antenna's pattern and front-to-back-ratios were perfect, the antenna would respond (i.e., pick-up) the signal from the DT only when you are pointed towards it, and reject all UTs coming from other directions. Alas no such perfect antenna exists.

The reality is that most antennas sold concentrate on match over bandwidth rather than on

<u>TASO GRADING IN ABSENCE OF CO-CHANNEL INTERFERENCE</u>			
<u>TASO GRADE</u>	<u>VIEWER DESCRIPTION</u>	<u>ACTUAL SNR</u>	<u>ACTUAL dBmV</u>
#1/Excellent	"Extremely high quality, as good as could desire"	40 dB	0 dBmV/1 mV
#2/Fine	"High quality, interference perceptible"	34 dB	-6 dBmV/500 uV*
#3/Passable	"Acceptable quality; interference not objectionable"	28 dB	-12 dBmV/250 uV*
#4/Marginal	"Poor quality; you wish you could improve it. Interference somewhat objectionable"	22 dB	-18 dBmV/130 uV*
#5/Inferior	"Picture very poor (no colour), but you can watch it. Interference definitely objectionable"	16 dB	-24 dBmV/63 uV*
#6/Unuseable	"Picture so bad you cannot watch it"	10 dB	-30 dBmV/32 uV*

Note: Worldwide a signal level of **0 dBmV** (1,000 microvolts/60 dBuV) at a Signal to Noise Ratio (SNR) of **40 dB** is accepted as a target signal level to deliver to a TV set input terminals. \*/**uV** here means microvolts.

optimized beamwidths and forward gain. This often makes them poor performers when called upon to reject signals arriving at the antenna from a side or rear direction. Recall that the degree of viewer annoyance is determined by the precise offset frequency between the DT and UT, and, the relative amplitude (i.e., signal strength) difference between the DT and the UT. Some background data.

a) Co-Channel annoyance vs. amplitude difference. Assuming the offset frequency has been properly assigned, we can refer to extensive viewer testing conducted in North America during the period 1956-1959 by a group known as TASC. These tests created simulated CCI and asked viewers to subjectively rate their acceptance of picture quality. Both the offset frequencies and the amplitude of the two (or more) carriers were varied over a 40 dB range while the diverse panel of viewers (young/old, male/female, professional/unskilled et al) recorded their picture quality judgements. From these landmark test results a 'TASO Scale' has been adopted by engineers throughout the world. Our interest in that scale is three fold; a fraction of the total results.

First, we want to know how much signal is required in the absence of CCI to create an acceptable picture for most viewers. Secondly, we want to know how much UT (undesired transmitter signal) the viewer will tolerate when the offset frequency is optimized., and conversely, how much UT can be tolerated when the offset signal is optimized. We will do this in various forms of dBmV scales; i.e., decibels above or below one millivolt on your signal level/field strength meter where the standard reference level is 0 dBmV (which is the same as 1,000 microvolts or 1 millivolt).

b) TASO Grades. Without CCI. Viewers were asked to rate the quality of pictures while the signal + noise to noise ratio was varied. In this test, the noise figure (i.e., threshold or floor) of the receiving system is measured and known to the engineers. The received noise is the sum of:

1) Any noise contributed from the antenna system (i.e., power line, electric stock fence, etc. radiated broadband noise).

2) Any noise contributed by the receiver's RF/IF amplifier stage(s); i.e., the receiver noise figure within the bandwidth of the TV signal.

In the tests, the signal is injected into the receiving system at precise amplitude levels; such as 40 dB greater than the receive system noise floor. In a separate quantitative measurement, the actual signal levels (in microvolts or dBmV) were then deduced for the various signal + noise to noise ratios (SNR) as a guide to receive system planners (see Tech Bulletin 9302 for further discussion of these tests; pages 8 and 25). A table on page 5, here, summarizes the findings.

c) TASO GRADING With CCI. Now that we understand the basics of TAS() grading, what degradation does co-channel interference bring to the viewer? There are three variables here.

1) Offset 'beats'. Tests tell us certain offsets are 'taboo'; i.e., the annoyance level is far worse

(for a given DT to UT amplitude ratio) than with the desirable offsets. Unfortunately for the installer, offsets are out of his control (established at the respective transmitters) although 'tweaking' of the frequency control circuits at the transmitter site can certainly vary the offset.

2) Signal plus noise to noise ratio. It is interesting that as the signal level from the DT goes down (i.e., becomes weaker), the ill effects of the interfering carrier signal may become less noticeable. The same thing obviously happens if the signal level from the DI is more or less constant while the signal level from the UT fades up and down; the result of changing on-path weather conditions or freakish long distance skip from hundreds of miles distant.

a) As the table below relates, we need the greatest possible amplitude difference between the DI

<b>TASO GRADING / PICTURE QUALITY WITH CCI PRESENT</b>		
TASO GRADE	dB ADVANTAGE OF 'DT' OVER 'UT' AT:	
	Most Desirable Offset	Least Desirable Offset
#1/Excellent	31 dB	55 dB
#2/Fine	25 dB	49 dB
#3/Passable	19 dB	43 dB
#4/Marginal	13 dB	37 dB
#5/Inferior	7 dB	31 dB
#6/Unuseable	not feasible	25 dB

**NOTE:** When the frequency offset is most desirable an excellent grade picture will remain excellent down to a ratio of (-)31 dB between the desired carrier and the undesired carrier. If the frequency offset is least desirable TASO test viewers judged the picture excellent only down to a level of (-)55 dB for the desired carrier to the undesired carrier. Note as signal quality (SNR) deteriorates, CCI may become a less important factor; an example of two wrongs making a right!

and the UT in order to reduce the visual impairment of CCI. The installer may need to consider increasing the gain of the overall antenna system in the direction of the DT as a partial solution to CCI. We'll see why shortly.

3) Ratio of the Desired Transmitter (DT) signal to the Undesired Transmitter (UT) signal. If the normal antenna for the site in question is not rejecting the UT signal, the installer must create a new receiving antenna system which has been engineered to reject the CCI UT source at the antenna. **NOTE.** While hardware does exist to reduce the undesirable effects of CCI at the TV set rather than at the antenna, such systems are notoriously difficult to tune, require considerable day to day minding (i.e., tweaking) and are seldom suitable for a typical consumer. The preferred solution to CCI is to design, install and if required 'tweak' the off-air antenna system so as to reject the UT signal source(s) before the receiver. That is the focus of the balance of this Tech Bulletin.

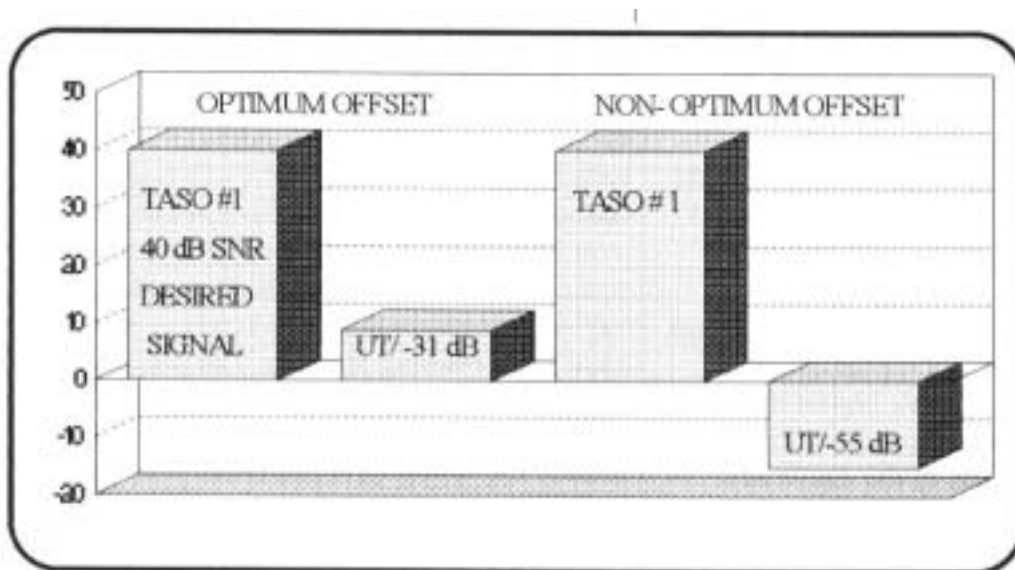
The table appearing below shows the CCI test summary. On average, the viewer would be protected from picture degradation caused by co-channel interference by 24 db more if the offset frequency of the interfering transmitter was controlled precisely. As an illustration, see the TASO (Grade 4 (marginal) entry. From the table on page 5 here, we know a Grade 4 picture is in the region of 22 db SNR at a level of around 130 microvolts (-18 dBmV). A signal 37 dB weaker (i.e., -55 dBmV or 1.8 microvolts) from a non-desired station will seriously degrade the already noise-degraded picture if the non-desired signal is on a poorly chosen offset. However, if the offset is moved to an optimum frequency, the interfering carrier can rise to a level only 13 dB below the (already weak) -18 dBmV signal before there is serious degradation.

So in fact interfering signal levels too weak to detect, even with test equipment, will 'appear' as co-channel interference when the offset frequency between the two carriers is not optimized.

### **MAXIMIZING ANTENNA GAIN**

In the serious antenna design world, all antennas have their forward gain referenced to something called the isotropic antenna. In other words, if a professional antenna manufacturer says his antenna has 10 dB of he is advising you that if you compared the gain of his antenna (in the frequency band specified) to an isotropic antenna, his antenna would have 10 dB more gain than the isotropic reference antenna. The isotropic antenna is a mathematical reference: you cannot build one, nor hold one in your hand. It exists only on paper as a 'mathematical model'. The isotropic antenna is a point source (like this • on the paper) which has the real-world impossible task of radiating equally in all directions. The nearest reference antenna you can

build or hold in your hand is the resonant dipole; a simple halfwave (length) antenna that radiates equally in directions perpendicular the element. Antenna manufacturers find it more convenient to construct a test reference dipole for the frequency (channel) in question and then compare their gain antenna to the test dipole. The dipole, however, has gain when it is compared to the isotropic model, so when a manufacturer makes a gain claim (which you, the installing stockist, depend upon for accuracy), you should be clear whether the gain is referenced to an isotropic model, or a dipole. The difference is 2.14 dB. That is, a dipole in the real world has 2.14 dB more gain than the isotropic model. A manufacturer who wants his antenna to look better on paper (i.e., on spec sheets) than a competitor may quote his gain as dBi (dB gain reference an isotropic model) rather than dBd (db gain reference a resonant dipole). A detailed discussion of this appears in Tech Bulletin 9302 but cannot be totally ignored here for reasons soon to be obvious. If your installation problem is in an area with generally weak reception (i.e.. below TASSO Grade 3), you already know that part of your customer's viewing problem can be traced to too-little-signal from the DT. So some quick basic data relating to improving the signal level from the desired transmitter (DT) before delving into antenna rejection of the



undesired transmitter(s) (UT). Consider these numbers:

1) Measured signal level (with FSMJSLM) from desired transmitter = -20 dBmV (100 microvolts).

2) Measured signal level from undesired transmitter with the antenna pointed the undesired transmitter -30 dBmV. That is 10 dB ratio between desired and undesired. However, when you rotate the antenna towards the desired transmitter the undesired transmitter drops off appreciably. And, you measure it as approximately -45 dBmV (6 microvolts). Now you have a ratio between DT and UT of 25 dB (ie., -45 to -20 dBmV). TASSO would grade this as between passable and marginal in a

best-case offset or between inferior and unusable in a worst-case offset situation. The likelihood is YOU would be closer to inferior than passable since we have both co-channel interference and weak signal levels to deal with here. In our just stated example, the first challenge is to raise the signal level of the DT.

1) The antenna manufacturer says there is 10 dB of gain with the antenna we are using. From Tech Bulletin 9302, we know by doubling the frontal area (i.e., size of the antenna array) we can expect to gain 2.5 dB additional signal. Or by quadrupling the antenna, we can expect to gain of 5 db of additional gain (over the first, single, antenna).

2) The installation could also be improved with a mast head amplifier. We'll see how a 20 dB gain unit with a 2 dB noise figure affects the performance of our 'system' in Tech Bulletin 9302. Of course the masthead amplifier is going to increase the amplitude of everything the antenna array receives; that includes any background noise in the area plus the undesired co-channel interfering station. We'll return to these numbers. First, a more serious challenge is to the level of interfering signal at the antenna.

(Part two of two concludes next time)

The WTFDA Mailing list at Topica.com  
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Send an email to WTFDA-subscribe@topica.com. See what you're missing!



# SATELLITE NEWS

**GEORGE W. JENSEN**  
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In the morning of Friday, September 19 - Telstar 402R at 89 West failed and ceased all operations. It was launched in December 1995 and supposedly had several more years of service left. Both C and Ku Band are off permanently. ABC feeds have shifted to Telstar 5 C and are unencrypted at the moment. Other services off and need to be located are the Porn channels - which were in the process of possibly moving to the Pay-Per-View suite on Galaxy 10. Georgia Public Television (Peach Star) 4DTV, South Carolina Public Television, Louisiana Public Television all 4DTV Digicipher are off and presumed elsewhere as well as Montana Public Television in MPEG2. Also lost at the moment is the PBS "X" channel on XPDR 18. ALSO - in another matter - Motorola Broadband which operates the Digicipher system, has developed severe problems with its Interactive Program Guide - which isn't functioning.

Now, to November...

Hope everyone has had a good month. Now to the changes:-

**Galaxy 1 - 7** - The Disney Channel West - delete to ??????????

**Satcom C4** - Sundance Channel - East - delete to ??????????

**Telstar 7** - HBO HDTV East and West delete to Galaxy 9 - 118 and 120

**Galaxy 9** - see above item plus - S Networks - xpdr 3 - delete

**Galaxy 5 - 23 - A and E** - West - delete to ??????????

**Telstar 6** - Add the following from failed

**Telstar 4** - TEN - porn VC2 on XPDR 1

T N Exxxxstasy - VC2 - XPDR 1

TeN Blue Plus - VC2 - porn on XPDR 7

**Galaxy 11** - 607 - J C T V - delete to ????

perhaps MPEG 2 680 - The Church Channel - to ?????? perhaps MPEG2

**Telstar 4** - C and Ku Band - NO LONGER EXISTS

**Panamsat 9** - Has been continuing rearrangement of the DMX music service on 800 to 849.

That's all for this month - I have had to totally dump all programmed material on my 4DTV receiver due to a massive malfunction. I am gradually bringing it back to life with the help of their tech department. They had never heard of the problem that I had. - So it's been a learning experience.  
"73"s and Good DX

## Clear Channel To Install Audemat-Aztec RDS Generators

RADIO INK, OCTOBER 22, 2003

Clear Channel Radio will work with Audemat-Aztec to install dynamic RDS generators across the country.

The technology will enable Clear Channel to enhance current radio broadcasts by scrolling the artist name and title playing on the air, station call letters, traffic information and other locally focused messages for immediate display on listeners' radios.

Clear Channel has committed to the largest roll out across the United States by launching the technology on 192 of its FM stations in the top 50 markets by the end of November.

Audemat-Aztec VP/Business Development Christophe Poulain added, "As more cars are equipped with RDS, we've seen a steady increase in interest for this technology. Audemat-Aztec has worked with the RDS forum since 1987 to improve the technology and we're proud to be a world leader in RDS generator manufacturing. We're also excited to work with Clear Channel -- given their leadership in the radio industry."

## SIGN UP/Renewal form

Name \_\_\_\_\_

Address \_\_\_\_\_ Apt # \_\_\_\_\_

City \_\_\_\_\_ State/Prov \_\_\_\_\_ Zip \_\_\_\_\_

Country \_\_\_\_\_ Interests: TV ( ) FM ( ) 30-50( ) Weather( )

email address \_\_\_\_\_

Sign me up/renew me for: 1 year ( ) 2 years ( ) More ( )

Yearly dues \$24 to US addresses, \$26 to Canada and Mexico  
\$38 to the rest of the world (payable in U.S. Funds)

**Mail your dues to: WTFDA, P.O. Box 501, Somersville, CT USA 06072**

**Make your checks/money orders payable to: DAVE JANOWIAK**

**And *thanks* for your support of the WTFDA!**

Return this form with your dues or make a copy of it and return that.

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