DXNews

• Serving DX'ers since 1933 •

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Inside . . .

From the Publisher ... This issue is as tight as a tick on that fat dog's … back, so I didn't have any room left to post the Ultralight Contest Rules and FAQ's, but since the contest doesn't start until October 24, you should have plenty of time to prepare after you read the two articles in the October 20 issue, #4. The rules are also available online as announced last week.

NRC Convention 2009 ... The NRC Board of Directors is pleased to announce that Bob Smolarek's bid to host next year's convention in the Allentown, PA area has been accepted. Exact time and place are still TBA. Muchas gracias to Bob for volunteering to take on this big job! Apparently John Malicky is still writing and resting from his experience with this year's convention, as I haven't received his writeup yet.

Unfilled positions ... We're still in need of volunteers for the following positions: someone familiar with phpBB to work with e-DXN maintainance; a DXN publisher, ASAP; a DDXD-West editor by January 1 or so; replacement editors for languished columns ("The Answerman" and "Memory Dredging"), and one or more persons to edit future NRC publications developed by contributors or the club. Training is available, and I'll see if I can't work you into the schedule for use of the corporate jet, too …

DXN Publishing Schedule, Volume 76

	Deadline	*Publ Date*			
3.	Oct. 3	Oct. 13	17.	Jan. 16	Jan. 26
4.	Oct. 10	Oct. 20	18.	Jan. 23	Feb. 2
5.	Oct. 17	Oct. 27	19.	Jan. 30	Feb. 9
6.	Oct. 24	Nov. 3	20.	Feb. 6	Feb. 16
7.	Oct. 31	Nov. 10	21.	Feb. 13	Feb. 23
8.	Nov. 7	Nov. 17	22.	Feb. 20	Mar. 2
9.	Nov. 14	Nov. 24	23.	Feb. 27	Mar. 9
10.	Nov. 21	Dec. 1	24.	Mar. 6	Mar. 16
11.	Nov. 28	Dec. 8	25.	Mar. 20	Mar. 30
12.	Dec. 5	Dec. 15	26.	Apr. 3	Apr. 13
13.	Dec. 12	Dec. 22	27.	May. 1	May 11
14.	Dec. 26	Jan. 5	28.	June 5	June 15
15.	Jan. 2	Jan. 12	29.	July10	July 20
16.	Jan. 9	Jan. 19	30.	Aug. 7	Aug. 17

DX Time Machine

From the pages of DX News

25 years ago … from the October 17, 1983 DXN: Richard E. Wood, PhD, Abha, Saudi Arabia noted that the Enfield convention was fun but that he thought it prudent to leave before the auction lest he spend too much, as he did at the ANARC convention in Arlington, VA. He also mentioned meeting "regulars" Ernie Cooper, Carleton Lord, Frank Merrill, and others.

10 years ago … from the October 12, 1998 DXN: Randy Davis, Clarksville, IN was offering his Superadio III for $50 plus shipping.

FCC Federal Communications Commission

AM Switch

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CRTC

Status changes in AM stations, supplied by the FCC, CRTC, and listeners

CALL LETTER CHANGES

	Old Call			*New Call*	
1150	KSVE*	TX	El Paso	KHRO	[* - call correction from last issue]
1380	WFCL	WI	Clintonville	WOTE	["Wisconsin's Oldies Thirteen Eighty"]

CPs ON THE AIR

640 KFI CA Los Angeles - CP for U1 50000/50000 from their new tower signed on at 5:07 PM PDT on September 25th. They had a Cape Kennedy-type countdown on the *John & Ken* afternoon talk show.

780 WAVA VA Arlington - Is operating under a Special Temporary Authority with D1 2500/0 (normally D1 5000/0) until antenna problems can be resolved.

1080 WALD SC Johnsonville - CP for D1 9000/0 CH 2700 is on, increasing day power, adding CH, and moving from Walterboro **at** a new tower location of **N33-54-36 W79-40-09**.

1330 KOVE WY Lander - CP for U1 5000/250 is on, reducing night power and going non-DA.

1400 WJQQ NC Jacksonville - CP for this new station is on the air with U1 1000/1000 at N34-44-56 W77-24-51.

1400 KLCK WA Goldendale - Coordinate correction to N45-49-25 W120-50-16.

1450 WWSC NY Glens Falls - CP for U1 1000/940 is on from a new, shorter tower at **N43-18-46 W73-35-57**.

1490 KWOK WA Hoquiam - CP for U1 1000 820 is on at the slightly adjusted coordinates of **N46-68-20 W123-51-09**.

1590 WCSL NC Cherryville - CP for U1 10000/30 is on the air.

1640 KDIA CA Vallejo - CP for U2 10000/10000 is on increasing night power. The new directional pattern shoots a long lobe to the south-southwest.

ACTIONS

1230 KXO CA El Centro - CP granted for U1 830/1000 at the new tower site of **N32-48-24 W115-32-44** using a folded unipole antenna.

1270 WTJZ VA Newport News - CP granted for U4 15000/1800.

1330 WKTA IL Evansyon - CP granted for U4 5000/110.

AMENDMENTS TO CONSTRUCTION PERMITS

820 WCPT IL Willow Springs - Licensed for D1 5000/0, WCPT has a **CP for D1 3200**. This amendment requests U2 5000/1500.

APPLICATIONS

840 KXNT NV North Las Vegas - Applies for U4 50000/16000. In addition to the nighttime power change, KNXT is applying to move to the transmitter site of KSFN-1140 and change the shape of the day pattern. The new day signal would be a large circle headed to the northeast.

AMENDMENTS TO APPLICATIONS

650 NEW ME Raymond - Initial application was for U4 250/250, followed by an amendment for U4 1500/250. This request is for U4 1500/2000.

1510 KSPA CA Ontario - Licensed for U4 10000/1000, KSPA has filed various applications over the past four years. The latest is for U7 50000/6000 CH 45000 (already on the books), but this latest try has them changing the City-of-License to Chino.

APPLICATIONS FOR NEW STATIONS

1150 NEW CA Easton - Applies for U4 700/10000 [correct].

1400 NEW AL Taylor - Applies for U1 1000/1000.

1490 NEW ID Dalton Gardens - Applies for U2 810/810.

AM-to-FM Exodus

1090 CKKW ON Kitchener - The CRTC has approved the move of CKKW to 99.5 MHz with (only) **2.1 kW**, which will provide a significant coverage reduction from the AM signal.

APPLICATIONS DISMISSED

820 ------- MI Escanaba - Permit for a new station here has been cancelled per applicant's request.

1100 ------- MN Albert Lea - Hometown Broadcasting has returned the construction permit for a new station here. Since the FCC originally granted the CP, Hometown bought KQAQ-970 Austin, Minnesota to operate alongside its KQPR-96.1 (Albert Lea). The 1100 facility would have required construction of seven towers southeast of Albert Lea.

1350 ------- WA Raymond - Permit for a new station here has been cancelled per the applicant's request.

HEAR AND THAR

☐ Returning to the airwaves: After being off for a few days, **WCOJ-1420 Coatesville, Pennsylvania** returned to the air 10/8/2008 with Catholic religion // **WISP-1570 Doylestown, Pennsylvania**.

☐ But reported as silent: **WRAG-590 Carrollton, Alabama**; **KABA-1020 Eagle River, Alaska**.

☐ **Peoria radio stations WOAM 1350 and WPMJ-FM to close** Two Peoria radio stations, WOAM 1350 and oldies station WPMJ-FM 94.3, will close after today, according to station owner Bob Kelly. Staff was informed this morning that the two stations would leave the air after today's broadcast day, said Roger Monroe, co-host of WOAM's "Breakfast with Royce and Roger." Monroe has hosted the morning show with Royce Elliott for the past seven years. "We're devastated. We knew the station wasn't setting records, but we have an excellent audience," he said. He said word that the stations have been in financial difficulty have been circulating for over a year. "The stations have been up for sale for years. We thought (Kelly) was announcing a buyer," he said. [Peoria Star-Journal online]

☐ Thanks to **Shawn Axelrod, Wayne Heinen, Deane McIntyre, Larry Marshall, Dale Park, Dave Schmidt** and **Upper Midwest Broadcasting**.

GRAVEYARD DX UPDATE

 # record held by a DXer in Alaska or Hawaii
*** record held by DXer from North America (excluding Alaska)**
+ record held by a DXer in USA/Canada where a Canadian/USA record exceeds that mileage

					Miles
1230 kHz:					
KYSM	MN	Mankato	Neil Kazaross	Barrington, IL	+ 328
KWNO	MN	Winona	Neil Kazaross	Barrington, IL	217
KWIX	MO	Moberly	Neil Kazaross	Barrington, IL	+ 296
WBBZ	OK	Ponca City	Neil Kazaross	Barrington, IL	+ 608
1240 kHz:					
KDEC	IA	Decorah	Jeff Falconer	Clinton, ON	+ 514
KBIZ	IA	Ottumwa	Neil Kazaross	Barrington, IL	+ 235
KNSS	KS	Wichita	Neil Kazaross	Barrington, IL	+ 576
WJON	MN	St. Cloud	Neil Kazaross	Barrington, IL	+ 380
KWOS	MO	Jefferson City	Neil Kazaross	Barrington, IL	+ 329
KVSO	OK	Ardmore	Neil Kazaross	Barrington, IL	738
1340 kHz:					
KSEK	KS	Pittsburg	Neil Kazaross	Barrington, IL	+ 480
WMTE	MI	Manistee	Neil Kazaross	Barrington, IL	+ 169
KVBR	MN	Brainerd	Neil Kazaross	Barrington, IL	+ 416
KDLM	MN	Detroit Lakes	Neil Kazaross	Barrington, IL	+ 498
KROC	MN	Rochester	Neil Kazaross	Barrington, IL	255
KWLM	MN	Willmar	Neil Kazaross	Barrington, IL	401
KICK	MO	Springfield	Neil Kazaross	Barrington, IL	+ 445
1400 kHz:					
KCOG	IA	Centerville	Neil Kazaross	Barrington, IL	+ 267
KADR	IA	Elkader	Neil Kazaross	Barrington, IL	+ 173
WSJS	MI	St. Joseph	Neil Kazaross	Barrington, IL	+ 87
KMNV	MN	St. Paul	Neil Kazaross	Barrington, IL	+ 319
KLIN	NE	Lincoln	Neil Kazaross	Barrington, IL	(Tie) + 451
KREF	OK	Norman	Neil Kazaross	Barrington, IL	+ 694
KGVL	TX	Greenville	Neil Kazaross	Barrington, IL	+ 760
WRDB	WI	Reedsburg	Neil Kazaross	Barrington, IL	+ 135
1450 kHz:					
KWBW	KS	Hutchinson	Neil Kazaross	Barrington, IL	+ 592
WHTC	MI	Holland	Neil Kazaross	Barrington, IL	+ 112

WMIQ	MI	Iron Mountain	Neil Kazaross	Barrington, IL	+ 252
WKLA	MI	Ludington	Neil Kazaross	Barrington, IL	+ 150
KNSI	MN	St. Cloud	Neil Kazaross	Barrington, IL	+ 380
KIRX	MO	Kirksville	Neil Kazaross	Barrington, IL	+ 268
KGFF	OK	Shawnee	Neil Kazaross	Barrington, IL	666
1490 kHz:					
WTIQ	MI	Manistique	Neil Kazaross	Barrington, IL	+ 278
KQDS	MN	Duluth	Neil Kazaross	Barrington, IL	+ 371
KOVC	ND	Valley City	Neil Kazaross	Barrington, IL	* 587
WLFN	WI	La Crosse	Neil Kazaross	Barrington, IL	+ 194

Domestic DX Digest

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(Division line is between East and Central time zones)

East: Mike Brooker aum108@idirect.com
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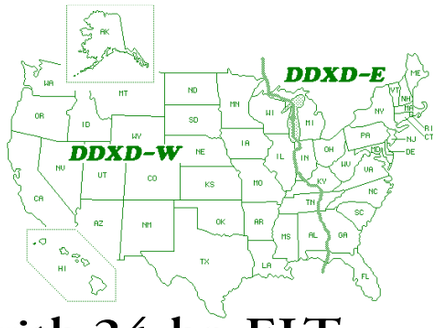

DX Catches in the U. S. and Canada, with 24-hr. ELT

DDXD-East

REPORTERS

JC-DE **John Cereghin, Smyrna –** Yaesu FRG-7, Sony SRF-59

HF-MI **Harold Frodge, Midland -** Drake R8B + 215' center-fed RW, 85' end-fed RW, 125' bow-tie

KK-VA **Kraig Krist, Manassas -** NRD-545, homemade 134 foot multiband antenna running NW to SE

MKB-ON **Mike Brooker, Toronto –** Grundig G5, Grundig YB-400PE, Sony SRF-39FP, Panasonic RF-2200 (receiver emeritus)

LOGGINGS

540 CBK SK **Regina –** 9/30 0705 – over CBEF with CBC news, "you're listening to CBC Radio Overnight" and local weather by woman, into Radio Australia news (not // Radio Australia-9580). **(MKB-ON)**

640 WGST GA **Atlanta –** 10/1 2334 - WGST Vice-Presidential debate spot. In/out with 3-4 others. **(HF-MI)**

WOI IA **Ames –** 10/1 2058 – in and out over/under Leafs pre-season game on CFMJ and two other talkers with opera & jazz music, Iowa weather, Iowa Public Radio spot, "AM 6-40 WOI" ID into CBC's As It Happens at 2100. Looking to KFI on new antenna. **(HF-MI)**

800 CKLW ON **Windsor –** 10/3 0158 – Coast to Coast AM discussing sunspots, ad for ice skating, ToH ID: "Take us home. Take us to work. Take us where ever you go. This is AM eight hundred CKLW. A Chung radio station. It's 2 o'clock. From the National Newsroom of the Canadian Press. I'm Phil GoDan" [sic, name probably is 'Gaudin']. **(KK-VA)**

810 WGY NY **Schenectady -** 10/2 0155 - "Coast to Coast AM" talking about financial bail-out, ad for "Specific Tech Computers", 0200 ToH ID: ". depend on eight ten WGY. WGY dot com" into Fox news. **(KK-VA)**

820 WWFD MD **Frederick -** 10/1 0155 - talk mixing with R. Reloj time pips, ". WWFD." ID noted at 0200, promo for ". Mike Causy. Federal News Radio dot com." at 0206. **(KK-VA)**

830 WCCO MN **Minneapolis -** 9/30 0257 - mixing with WTRU and Spanish talk, ". WCCO radio is once again the proud sponsor of the . Minnesota.". **(KK-VA)**

WTRU NC **Kernersville** - 9/30 0159 – mixing with WCCO and SS talk, woman talking about God's compassion. "Christians for Israel. can be heard every weekday morning at 9 here on eight thirty WTRU Kernersville." into SRN news. **(KK-VA)**

840 WHAS KY **Louisville -** 9/29 0258 – mixing with SS singing, "Hear. weekday mornings at eight thirty and eleven forty and weekday afternoons at six. on news radio eighty four WHAS", "Broadcasting from the Neutral Zone Studios" noted at

0204, "WHAS" jingle into "Bloomberg Market Minute". **(KK-VA)**

850 WRBZ NC **Raleigh -** 9/28 0225 - sports scores with "Touchdown!" yelling, slogan ".radio eight fifty. The Big Fifty. The Buzz, the Buzz". **(KK-VA)**

860 CJBC ON **Toronto -** 9/27 0249 – "CJBC…" ID by man in FF in mix with Radio Reloj time pips and SS talk. **(KK-VA)**

1090 WKTE NC **King** - 9/27 1900 – presumed with southern gospel music, announcer with southern accent, gave weather which matched Winston-Salem area, but no ID. Seemed to be gone after 1900. Under WBAL. **(JC-DE)**

1110 KFAB NE **Omaha –** 9/30 0720 – creaming WBT with local news, "KFAB Timesaver traffic" local traffic report**. (MKB-ON)**

1310 WEMJ NJ **Camden -** 10/3 1100 – in SS with ID "WEMG Camden, Philadelphia…La Mega!" into Latin music. **(JC-DE)**

1330 WEBO NY **Owego -** 9/30 0630 - "1330 WEBO Owego" ID, in the mush. **(JC-DE)**

1370 WFEA NH **Manchester -** 9/30 2115 - oldies, "Unforgettable Hits, 1370 WFEA" slogan. **(JC-DE)**

1380 WSYB VT **Rutland -** 9/29 0605 - local weather and Rutland area news, mentions of an upcoming interview with Vermont governor Douglas. Been a regular in the mornings these days. **(JC-DE)**

1410 WLSH PA **Lansford –** 9/30 1858 – over ESPN sports talker (WELM and/or WNER) with Wall Street report, near-ToH ID: "this is Oldies 1410 WLSH Lansford, Lehighton, Hazleton". **(MKB-ON)**

International DX Digest

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Foreign DX Catches. All times are UTC

Welcome to Richard Allen who writes, "It's been nearly two decades since I contributed to the 'International DX Digest.' It was the idea of DXing with an ultralight radio that brought me back to the hobby earlier this year. Here are some of the things I've recently heard at my location south of Billings, Oklahoma (36°22'51"N / 97°25'36"W)." In addition to Richard's logs, reports from both sides of the Atlantic provide an interesting contrast.

Transatlantic DX

162 **FRANCE** *France-Inter*, Allouis (47°10'N 02°12'E) SEP 17 0330 with man talking in French and pop music. Poor strength, moderate lightning static. Heard nearly every evening since. [Allen-OK]

171 **MOROCCO** *R.Mediterranee Internationale*, Nador (35°03'N 2°55'W) SEP 17 0359 - A man speaking (didn't note language). Fair strength, moderate lightning static. SEP 20 0412 - Singing and unintelligible speech; poor, moderate static. OCT 1 0151 - Music; poor, moderate static. [Allen-OK]

183 **GERMANY** *Europe 1*, Felsberg (49°17'N 6°41'E) OCT 2 0406-0415 - Man and woman in French alternating - sounds like news. Fair peaks. [Frodge-MI]

189 **ICELAND** *Rikisútvarpid*, Gufuskálar (64°54'N 23°55'W) SEP 28 2249 - Male pop singer. Very good. [Black-MA]

216 **FRANCE** *RMC* Roumoules (43°47'N 6°09'E) SEP 18 0259 - A man speaking in French; fair strength, moderate static and NDB interference. Heard most evenings since. [Allen-OK]

252 **ALGERIA** *R.Algérienne*, Tipaza (36°35'N 2°27'E) SEP 22 0152 - Arabic language singing; fair strength, moderate static and interference by NDB 'SW' at 255 kHz. [Allen - OK] SEP 28 2256 - Woman in French, then mideast music. Top of the hour pips then woman with news in French. 2307 mixing with Ireland, "Raindrops are Falling on my Head." Very good. [Black-MA]

594 **PORTUGAL** *R.Sim*, Muge (39°05'N 8°41'W) OCT 3 0020 - Man in Portuguese, then Tom Jones "Delilah" and interspersing European and US pop music. Poor to fair in peaks under 590 WEZE. [Black-MA]

693 **UNITED KINGDOM** *BBC Radio 5*, Droitwich et al. SEP 26 2334 - Two men in discussion. Poor to fair. [Black-MA]

1062 **TURKEY** *TRT* Diyarbakir (37°49'N 40°19'E) SEP 26 0054 - Definite Koranic chanting. Weak. [Black-MA]

1140 **UNITED STATES** WQBA Miami FL SEP 27 0510 - Talks and commercials in Spanish; very

good at 0516. [Bernardini-IT]

1179 **CANARY ISLANDS** // **SPAIN** *SER* synchros SEP 27 2325 - Good; discussion in Spanish. [Conti-NH]

1180 **UNITED STATES** *R.Martí*, Marathon FL SEP 27 0513 - Politics, Spanish, fair mixed with another unID station broadcasting in Spanish nice Latin romantic songs. [Bernardini-IT]

1190 **UNITED STATES** WLIB New York NY SEP 27 0500 - IDs fair along with an unID signal in Spanish Latin songs non-stop; WLIB very good at 0520. [Bernardini-IT]

1215 **UNITED KINGDOM** *Absolute Radio* synchros SEP 28 0000 - Good; announced phone number 0330-123-1215, promo, *Absolute Radio* ID and rock music. [Conti-NH]

1269 **GERMANY** *Deutschlandfunk*, Neumünster (54°03'N 9°51'E) SEP 28 0000 - Good; instrumental music, time marker, and woman in German. [Conti-NH]

1320 **CANADA** or **UNITED STATES** unID SEP 27 0513 - Gospel and short talks in English; poor, sometimes fair. [Bernardini-IT]

1330 **UNITED STATES** WRCA Waltham MA SEP 27 0520 - Presumed. Música latina and talks in Spanish; fair. [Bernardini-IT]

1370 **UNITED STATES** WDEA Ellsworth ME SEP 27 0516 - Poor to fair with unID USA talk radio (WXXI, NY?) mixed. [Bernardini-IT]

1390 **UNITED STATES** WEGP Presque Isle ME SEP 27 0455 - Talks, IDs; fair to good. [Bernardini-IT]

1500 **UNITED STATES** WFED Washington DC SEP 27 0450 - Talks; poor to fair. Note: The new call should be WFED, ex-WWWT, but I couldn't understand it. [Bernardini-IT]

1540 **UNITED STATES** WDCD Albany NY SEP 27 0503 - Slow religious songs, no ID heard; strong interference from 1539 kHz, poor to fair. [Bernardini-IT]

1566 **BENIN** *TWR* Parakou SEP 12 0434 - Man preaching in English. Poor under heavy domestic interference. [Black-MA]

1660 **UNITED STATES** WCNZ *Relevant Radio*, Marco Island FL SEP 27 0445 - Talks; fair. [Bernardini-IT]

1680 **UNITED STATES** WOKB Winter Garden FL SEP 27 0430 - Phone talks in French, night Haitian program, some slow songs; fair to good. [Bernardini-IT]

1700 **UNITED STATES** WJCC Miami Springs FL SEP 27 0510 - Songs; fair. [Bernardini-IT]

Pan-American DX

530 **CUBA** *R.Enciclopedia*, unknown location SEP 29 2358 - Woman in Spanish with top of the hour "CMBQ" ID and Cuba mentions. "Easy listening" almost religious music format. Recorded. Good. ID verified per Chuck Hutton via RealDX who notes it is the same transmitter used by *R.Rebelde* in the past. [Black-MA] *R.Visión Cristiana* Turks & Caicos has been off the air.

640 **CUBA** *R.Progreso*, multiple sites SEP 29 0734 - Man with ID, "Esta es Radio Progreso cadena… transmitiendo…" and time check. Recorded. Fair. [Black-MA]

700 **VENEZUELA** YVMH *R.Popular*, Maracaibo (10°39'N 71°37'W) SEP 30 0403 - Lively Spanish rendition of "Working for the Yankee Dollar" and then bells and man with "Radio Popular" ID, then time check. Recorded; good with WLW phased. [Black-MA]

Transpacific DX

774 **JAPAN** JOUB *NHK2* Akita (39°43'N 140°07'E) SEP 30 1018 heard heterodyne, then a man speaking in Japanese at 1031; poor strength moderate 780 WBBM interference. OCT 1 1053 - A man speaking in Japanese, then music; fair with moderate WBBM interference. Received on a barefoot SRF-T615 at an estimated 6033 mi/9709 km distance. [Allen-OK]

Contributors

Richard Allen, Billings OK; WiNRADiO G313e with 22.86-m long wire; Icom R75 with Quantum Loop; Sony SRF-T615.

Giampiero Bernardini, Bocca di Magra, La Spezia (Liguria), Italy; Perseus, Wellbrook Loop LFL 1010.

Chris Black N1CP, West Yarmouth MA; Icom 756 PRO II, Icom R-75, SDR-IQ, 35 x 90-ft Flag loop, 200-ft Super-sloper, 300-ft longwire, BWD-90 folded dipole.

Bruce Conti, Nashua NH; SDR IQ, WR-CMC-30, MWDX-5, 15 x 23-m SuperLoop antennas east with remote variable termination and south 1150-Ω terminated.

Harold Frodge, Midland MI; Drake R8B, 215-ft center-fed random wire, 85-ft end-fed random wire, 125-ft bow-tie.

International News

BRAZIL: Confirmed now after several checks ZYJ687 *R.Itapirema*, Ji-Paraná, has been (at least up to 25 Sept) off the channel at 1390.215 kHz. It might have been here already in May as some checks of earlier files (SDR-IQ) show a carrier there. [Tarmo Kontro, Finland, via *mwoffsets*]

73 and Good DX!

College Sports Networks

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Network listings for college sports stations

UPDATE- Looks like there is a change in the Maine Black Bears Radio Network. Scott Fybush's North East Radio Watch (September 29) is reporting a shift in the Maine network. The following network list is assumed now to be: **MAINE BLACK BEARS** Bob Lucy, Rich Kimball * partial schedule

910	WABI-ME	1280	WFAU-ME	94.7	WBCQ-ME	97.1	WAEI-ME
1240	WSYY-ME	1310	WLOB-ME	96.7	WCME-ME	*97.5	WIGY-ME
		1450	WRKD-ME				

Can anyone up north confirm this change?

BIG TWELVE CONFERENCE Football networks

BAYLOR BEARS

630	KSLR-TX	1530	KZNX-TX	92.5	KULL-TX	100.7	KKHT-TX
820	WBAP-TX	1660	KRZI-TX	92.7	KJAK-TX	101.9	KYBI-TX
940	KIXZ-TX			98.5	KCUB-TX		
1260	KWNX-TX						

COLORADO BUFFALOES Mark Johnson, Larry Zimmer, Charles Johnson

850	KOA-CO	1470	KEPL-CO	93.7	KSBV-CO	106.1	KNFO-CO
980	KGLN-CO			100.5	KRSJ-CO	107.9	KDZA-CO
1340	KTMM-CO	93.5	KALQ-CO				

IOWA STATE CYCLONES

540	KWMT-IA	1480	KLEE-IA	92.7	KLGA-IA	101.1	KXIA-IA
960	KMA-IA	1520	KSIB-IA	95.1	KCZE-IA	101.3	KKYY-IA
1130	KILJ-IA	1590	KWGB-IA	95.7	KQWC-IA	104.9	KLMJ-IA
1170	KJOC-IA	1600	KGYM-IA	96.5	KSOM-IA	105.1	KCCQ-IA
1310	KDLS-IA	1650	KCNZ-IA	96.7	KIIC-IA	107.1	KDSN-IA
1360	KBKB-IA			97.7	KHBT-IA	107.3	KIOW-IA
1380	KCIM-IL	92.1	KCHE-IA	100.3	KDRB-IA	107.7	KICD-IA
1430	KASI-IA						

KANSAS JAYHAWKS

580	WIBW-KS	1400	KVOE-KS			98.5	KSAJ-KS
610	KCSP-MO	1450	KWBW-KS	93.5	KWME-KS	98.7	KFH-KS
1240	KFH-KS	1490	KBIX-OK	93.9	KZRD-KS	99.9	KWKR-KS
1290	KMMM-KS	1490	KKAN-KS	95.5	KNDY-KS	100.7	KHOK-KS
1320	KLWN-KS	1540	KLKC-KS	96.3	KZDY-KS	104.1	KGGF-KS
1340	KSEK-KS	1550	KKLE-KS	97.1	KYAL-OK	105.5	KKOY-KS
1370	KIOL-KS	1550	KYAL-KS	97.9	KWGB-KS	105.9	KLZR-KS
1400	KAYS-KS	1600	KMDO-KS				

KANSAS STATE WILDCATS Wyatt Thompson Stan Weber Matt Walters

690	KGGF-KS	1390	KNCK-KS			100.9	KCLY-KS
810	WHB-MO	1420	KJCK-KS	92.5	KQMA-KS	101.5	KMKF-KS
990	KRSL-KS	1490	KKAN-KS	93.1	KHMY-KS	101.7	KVOE-KS
1070	KFTI-KS	1530	KQNK-KS	94.5	KSKL-KS	102.5	KBLS-KS
1150	KSAL-KS	1550	KKLE-KS	95.3	KINZ-KS	102.5	KKCI-KS
1190	KVSV-KS	1570	KNDY-KS	98.1	KSKZ-KS	103.9	KNZA-KS
1270	KSCB-KS	92.1	KMZA-KS	100.3	KDVV-KS	106.7	KQNK-KS
1350	KMAN-KS			100.3	KEDQ-KS	107.9	KZLS-KS

MISSOURI TIGERS 2007 affiliate list

800 KREI-MO
980 KMBZ-MO
990 KRMO-MO
1070 KHMO-MO
1120 KMOX-MO
1200 KYOO-MO
1220 KGIR-MO
1230 KLWT-MO
1230 KWIX-MO
1230 KZYM-MO
1240 KLIK-MO
1240 KNEM-MO
1270 KOZQ-MO
1280 KYRO-MO
1300 KMMO-MO
1340 KSMO-MO
1340 KXEO-MO
1400 KFRU-MO
1400 KJFF-MO
1420 KBTN-MO
1430 KKOZ-MO
1470 KMAL-MO
1490 KDRO-MO
1490 KTTR-MO
1550 KSFT-MO
1580 KNIM-MO
92.3 KKOZ-MO
92.3 KTTN-MO
93.7 KTUF-MO
93.9 KSPQ-MO
95.1 KTKS-MO
95.3 KDKD-MO
97.9 KNMO-MO
97.9 KFBD-MO
98.7 KWTO-MO
99.1 KYOO-MO
99.7 KTTR-MO
100.1 KKWK-MO
100.5 KMEM-MO
100.9 KTUI-MO
102.1 KJFM-MO
102.3 KBXR-MO
102.9 KMMO-MO
103.9 KMCR-MO
104.1 KZJF-MO
105.1 KCRV-MO
105.3 KYMO-MO
105.9 KULH-MO
107.5 KFEB-MO

NEBRASKA CORNHUSKERS

610 KCSR-NE
620 KMNS-IA
740 WMIN-MN
790 KURM-AR
810 WHB-MO
840 KTIC-NE
880 KRVN-NE
900 KJSK-NE
930 KOGA-NE
940 KVSH-NE
960 KNEB-NE
1060 KDUS-AZ
1110 KFAB-NE
1140 KSOO-SD
1150 KKNW-WA
1230 KHAS-NE
1230 KTNC-NE
1240 KODY-NE
1260 KIMB-NE
1260 KWYR-SD
1340 KGFW-NE
1340 KSID-NE
1340 KTOQ-SD
1380 KUVR-NE
1400 KBRB-NE
1400 KCOW-NE
1400 KLIN-NE
1400 KSHP-NV
1430 KRGI-NE
1450 KWBE-NE
1510 KCTE-MO
1570 KXST-CO
1590 KTCH-NE
1600 KRFS-NE
93.1 KKYA-SD
93.9 KSWN-NE
94.1 KNEB-NE
94.5 KLIQ-NE
94.7 KNEN-NE
95.3 KBBN-NE
97.3 KRGY-NE
97.7 KMTY-NE
98.1 KFGE-NE
98.7 KSID-NE
99.5 KUTT-NE
101.1 KLIR-NE
101.3 KLZA-NE
103.5 KXNP-NE
103.9 KRFS-NE
105.5 KFMT-NE
105.9 KQKY-NE

OKLAHOMA SOONERS Bob Barry Sr., Mark Rodgers, Merv Johnson

750 KSEO-OK
960 KGWA-OK
1150 KNED-OK
1230 KFPW-OK
1240 KBEL-OK
1300 KAKC-OK
1310 KZIP-TX
1320 KCLI-OK
1380 KXCA-OK
1420 KTJS-OK
1430 KALV-OK
1430 KCOH-TX
1430 KTBZ-OK
1450 KGFF-OK
1470 KGND-OK
1520 KOKC-OK
1580 KHGG-AR
1580 KOKB-OK
1630 KKGM-TX
92.5 KPRV-OK
92.7 KKBS-OK
93.5 KRKZ-OK
94.3 KXOO-OK
95.5 KITX-OK
95.9 KYBE-OK
96.1 KITO-OK
96.7 KBEL-OK
97.5 KMOD-OK
97.9 KJMZ-OK
99.3 KADA-OK
99.3 KLOR-OK
100.1 KWOX-OK
100.1 KYFM-OK
100.9 KGLC-OK
101.7 KTFX-OK
102.3 KDOE-OK
103.1 KHGG-AR
105.3 KDDQ-OK
107.7 KRXO-OK

OKLAHOMA STATE COWBOYS Dave Hunziker, John Holcomb, Robert Allen

780 KSPI-OK
1170 KFAQ-OK
1210 KGYN-OK
1230 WBBZ-OK
1240 KADS-OK
1270 KRVT-OK
1350 KTLQ-OK
1400 KWON-OK
1420 KTJS-OK
1450 KGFF-OK
1450 KWHW-OK
1470 KGND-OK
1570 KMUR-OK
1570 KTAT-OK
1580 KOKB-OK
92.1 KMZE-OK
93.7 KSPI-OK
96.1 KXXY-OK
97.3 KWEY-OK
98.5 KACO-OK
99.3 KCDL-OK
99.3 KGVE-OK
100.1 KYKC-OK
103.1 KNID-OK
104.9 KRIG-OK
105.1 KTMC-OK
106.1 KKBI-OK
107.3 KVRW-OK

TEXAS LONGHORNS Spanish Network

870 KFJZ-TX
1250 KZDC-TX
1300 KLAR-TX
1310 KKNS-NM
1420 XEF-Mexico
1480 KLVL-TX
1530 KGBT-TX
107.7 KINV-TX
107.9 KHCK-TX

STANFORD CARDINALS

710 KFIA-CA
910 KNEW-CA
920 KPSI-CA
1350 KBID-CA
1380 KHJJ-CA
1380 KTOM-CA
1380 KWJL-CA
1440 KVON-CA
1520 KVTA-CA

TEXAS LONGHORNS English Network

550	KCRS-TX	1260	KKSA-TX	1440	KEYS-TX	92.5	KZRC-TX
600	KTBB-TX	1260	KSML-TX	1440	KPUR-TX	94.3	KBTS-TX
610	KILT-TX	1290	KIVY-TX	1450	KMHT-TX	98.1	KVET-TX
660	KSKY-TX	1300	KVET-TX	1490	KWMC-TX	99.9	KSHN-TX
740	KCMC-TX	1340	KOLE-TX	1580	KTLU-TX	103.9	KMHT-TX
860	KFST-TX	1380	KRCM-TX	1590	KGAS-TX	104.3	KGAS-TX
1200	WOAI-TX	1400	KREW-TX	1600	KOGT-TX	104.7	KULF-TX
1230	KESY-TX	1400	KVOU-TX			104.9	KWGW-TX
1240	KSOX-TX	1410	KBAL-TX	92.3	KETX-TX	106.3	KKHR-TX
1240	KVLF-TX	1410	KLVQ-TX				

TEXAS A&M AGGIES

560	KLVI-TX	1190	KFXR-TX	1360	KKTX-TX	92.1	KHOS-TX
580	KRFE-TX	1230	KERV-TX	1370	KJCE-TX	93.5	KBHT-TX
710	KURV-TX	1230	KSEY-TX	1390	KULP-TX	93.5	KOOK-TX
740	KCMC-TX	1230	KSST-TX	1450	KCTI-TX	94.3	KFST-TX
760	KTKR-TX	1240	KSOX-TX	1450	KMHT-TX	94.3	KYOX-TX
790	KBME-TX	1240	KVLF-TX	1490	KBST-TX	94.3	KYXX-TX
900	KPYN-TX	1280	KSLI-TX	1570	KVLG-TX	95.9	KCKL-TX
940	KTON-TX	1280	KWHI-TX	1590	KGAS-TX	98.5	KRXT-TX
960	KGKL-TX	1330	KSWA-TX	1620	WTAW-TX	99.9	KMOO-TX
1010	KBBW-TX	1340	KRBA-TX			100.7	KMVL-TX
1010	KTNZ-TX	1340	KVNN-TX	88.5	KMQX-TX	104.9	KBUK-TX
1150	KZNE-TX	1360	KACT-TX	89.1	KSQX-TX	106.1	KBAL-TX

TEXAS TECH RED RAIDERS

600	KTBB-TX	1360	KACT-TX			96.9	KXYL-TX
690	KPET-TX	1380	KHEY-TX	89.5	KYQX-TX	97.1	KVRP-TX
860	KPAN-TX	1440	KPUR-TX	92.5	KBEY-TX	97.7	KATX-TX
910	KNAF-TX	1450	KCYL-TX	92.5	KRPT-TX	100.3	KVOP-TX
950	KBME-TX	1450	KMBL-TX	92.9	KDCD-TX	101.9	KACQ-TX
990	KSVP-TX	1460	KHFX-TX	94.5	KFMX-TX	103.1	KVWC-TX
1090	KBIM-NM	1490	KVWC-TX	95.3	KHYI-TX	105.3	KLSR-TX
1240	KVLF-TX	1490	KYZS-TX	95.7	KBST-TX	105.5	KACT-TX
1240	KXIT-TX	1530	KZNX-TX	95.7	KPER-NM	106.3	KPAN-TX
1240	KXOX-TX	1550	KZRK-TX	96.9	KOMX-TX	106.3	KSEM-TX
1260	KWNX-TX	1590	KEAS-TX	96.9	KMCM-TX	106.9	KRVF-TX
1340	KKAM-TX						

PAC-10 CONFERENCE Football networks

ARIZONA WILDCATS

1290	KCUB-AZ

CALIFORNIA GOLDEN BEARS

540	KRXA-CA	810	KGO-CA	1340	KCBL-CA	1550	KYCY-CA
540	XESURF-Mex-	970	KESP-CA	1380	KTKZ-CA		
ico/CA		1260	KGIL-CA	1400	KEZL-CA	102.3	KNTK-CA

OREGON DUCKS Jerry Allen, Mike Jorgensen, Jay Allen

590	KUGN-OR	1230	KCUP-OR	1370	KAST-OR		
660	KWRO-OR	1230	KQIK-OR	1400	KBCH-OR	94.3	KTIL-OR
750	KXL-OR	1230	KZZR-OR	1400	KJDY-OR	95.5	KTXG-OR
880	KCMX-OR	1240	KTIX-OR	1430	KYKN-OR	101.1	KSKR-OR
910	KURY-OR	1270	KAJO-OR	1450	KFLS-OR	106.9	KCST-OR
1110	KBND-OR	1340	KIHR-OR	1580	KGAL-OR		

CALIFORNIA-LOS ANGELES (UCLA) BRUINS

570	KLAC-CA

SOUTHERN CALIFORNIA TROJANS

All I have is a 2005 Network List and I don't like to use info that more than a year old. We need some updated info for USC!

OREGON STATE BEAVERS

660	K X O R - O R (Spanish)	1230	KKEE-OR	1360	KOHU-OR	1550	KKAD-OR
		1230	KQIK-OR	1360	KUIK-OR	1590	KMBD-OR
690	KRCO-OR	1240	KEJO-OR	1400	KNND-OR		
840	KKNX-OR	1240	KTIX-OR	1440	KMED-OR	92.1	KWVR-OR
860	KPAM-OR	1250	KCST-OR	1440	KODL-OR	93.5	KQIK-OR
940	KICE-OR	1290	KUMA-OR	1480	KSRV-OR	94.3	KTIL-OR
1130	KHTH-OR	1310	KNPT-OR	1490	KBZY-OR	105.9	KYSJ-OR
1150	KAGO-OR	1340	KWVR-OR	1490	KRNR-OR	106.9	KCST-OR

WASHINGTON HUSKIES

560	KPQ-WA	1170	KPUG-WA	1420	KUJ-WA	1490	KBIS-WA
680	KOMW-WA	1240	KGY-WA	1430	KBRC-WA	1490	KLOG-WA
700	KBYR-AK	1280	KPTQ-WA	1450	KONP-WA	1490	KWOK-WA
950	KJR-WA	1340	KTCR-WA	1460	KUTI-WA		
1020	KWIQ-WA	1360	KUIK-WA	1470	KELA-WA	106.3	KSUP-AK
1030	KMAS-WA	1400	KLCK-OR				

WASHINGTON STATE COUGARS Bob Robertson, Jim Walden, Bud Namek, Dennis Patchin

660	KAPS-WA	1150	KQQQ-WA	1380	KRKO-WA	1490	KEYG-WA
850	KHHO-WA	1170	KPUG-WA	1390	KJOX-WA		
900	KKRT-WA	1240	KCBL-WA	1430	KCLK-WA	92.7	KNCW-WA
920	KXLY-WA	1270	KBAM-WA	1450	KCLX-WA	93.7	KXAA-WA
960	KALE-WA	1310	KZXR-WA	1470	KBSN-WA	96.9	KGY-WA
970	KCMD-OR	1320	KGDC-WA	1470	KELA-WA	104.3	KHTR-WA
1090	KPTK-WA	1320	KXRO-WA				

Using Tuned Passive Loop Antennas

By Kevin Schanilec

I've heard it said that successful medium wave DXing is 50% antenna and 50% receiver. In order to get the most out of the antenna factor, those with sufficient real estate will erect a EWE, Beverage, KAZ or other outdoor antenna. For those like me with little space or who have restrictive homeowners associations, one of the antennas of choice will likely be an indoor loop antenna. This might be a home-made box loop or a desktop ferrite loop such as the Quantum Loop. Those whose passion lies in using portable receivers, including the popular Ultralights, rely on the ferrite loop inside the receiver.

An often-overlooked asset is a tuned passive loop used to augment the primary loop antenna. A tuned passive loop is readily available commercially from manufacturers such as DXTools.com, Terk and Select-A-Tenna and others. Alternately, one can be made quickly by the home hobbyist. This article is a summary of several techniques by which a tuned passive loop antenna can help DXers solve common problems.

1. Signal Enhancement

Facing Orientation

Signal (gain) enhancement is probably the most typical use of passive loops. For maximum gain, one possible orientation is to align the coils of the passive loop so that they face those of the windings on the ferrite antenna in your receiver. This allows the magnetic lines of flux from both loops to couple together.

For example, the Sony ICF-SW7600GR and Terk Loop are in facing orientation at right. I have found that placing the receiver inside the loop also works well, with the receiver resting next to the tuning dial housing as if in a cradle. A Quantum "Q-Stick" in this orientation would be parallel with the top of the receiver.

Adjacent Orientation

Equal and often superior results are obtained if the loop is positioned adjacent to the receiver, seemingly in the end-fire null of the receiver's ferrite antenna. What makes this work is that the magnetic field flux lines from the passive loop feed into the coils on the receiver's tuning coil as if the two coils were mounted on the same ferrite bar. This same principle is employed on the receiver's loopstick itself in order to transfer signal from the tuning coil to the sense coil. In adjacent orientation, shown at left, you should make sure that the receiver's ferrite is somewhere near the horizontal center of the passive loop; otherwise, the two coils involved may not couple very well. This can be done by flipping down the stand (if the receiver has one) or placing the receiver on a book.

In general, good results are obtained in using passive loops to augment both internal ferrite loopsticks in portable receivers and the small air-core loops supplied with modern home entertainment receivers. Additionally, all passive loops will work in either orientation. I have found that finding the proper position with a ferrite passive loop such as the Quantum Stick can be more difficult, especially in adjacent orientation, whereas air-core loops generally have a wider "sweet spot". Also bear in mind

that signal gain at night may not be very noticeable, since signal levels are much higher than during the day, and with your receiver's AGC circuit limiting gain increases, finding the right position may be more challenging.

Generally, the closer the receiver is to the passive loop, the higher the gain transferred to the receiver. The results can be impressive: a Sony SRF-59 UltraLight receiver, up next to a Terk loop, is more sensitive than a fully-aligned Sony ICF-S5W. Remarkably, even the mighty Sony ICF-2010 registers two more LEDs when matched with my 4" homebrew ferrite antenna/coupler. Conversely, a Quantum Loop requires at least a 15x15 inch box loop for appreciable gain increase. In any event, a general rule of thumb is: the bigger the passive loop, the better the gain.

If you want even *more* gain, try putting two passive loops next to each other. As depicted at right, you can use a Terk Loop or Q-Stick in as an intermediary loop between a larger box loop and the receiver.

When the receiving and passive loops are identically matched or nearly so, the two loops may not compliment each other. For instance, when I use one Terk Loop as the receiver's main antenna and another as a passive loop, there is usually no orientation by which I can get any signal gain – in fact, all I can do is degrade it! Similarly, Gerry Thomas reports that his Q-Stick passive ferrite loop does not work well with the Panasonic RF-2200, both of which have 8-inch ferrite loopstick antennas. In these instances, use of a larger passive loop will be required.

2. Selectivity Enhancement

Critical Spacing

A technique to enhance the selectivity of a receiver consists of simply pulling the receiver away from the passive loop in either orientation. At a critical point, the loop will still be close enough to provide signal gain, but the high-frequency content and adjacent-channel interference are reduced. Electrically, the two coils are now decoupled to a large degree. With the Sony M37V, the critical point is about 3 inches away from a Terk Loop and about 10 inches away from a 15x15 inch box loop. With a receiver employing a larger ferrite loopstick, the critical distance will be further away.

By simulating the resultant loopstick/passive loop circuit on Gene Preston's AC.EXE program, the results of a typical critically-spaced coupling are shown below:

In this graph, the signal is decreased about 6 decibels at 3.5 kHz on either side of the desired frequency, making this roughly equivalent to a 7 kHz filter. Compared to the filtering in many portable receivers, this can be a major improvement. Continuing to separate the receiver and loop will narrow this figure even more. However, past a certain point, the two will be decoupled to such a degree that the passive loop no longer will affect the selectivity. Also, if your receiver has decent IF filtering, or if the passive loop has very low Q, the effects of this strategy may be negligible.

You can also experiment with using more than one passive loop. For instance, I find success putting an intermediate loop such as the Q-Stick near the receiver for gain enhancement in addition to a much larger passive loop for selectivity control. As is shown in the picture on the right, the intermediate loop is pulled away just a bit, which helps to further tighten the selectivity.

The reverse of this selectivity control strategy is also true, in that if you place the receiver quite close to the passive loop, this will generally result in a broadening of the bandwidth. For example, the Quantum Loop by design has rather narrow selectivity. If I want to listen to music, I place it right next to a large tuned box loop, and careful tuning of the loop will produce a pronounced brightening of the audio, especially if the receiver is tuned a bit off-frequency in AM mode.

Critical Angle

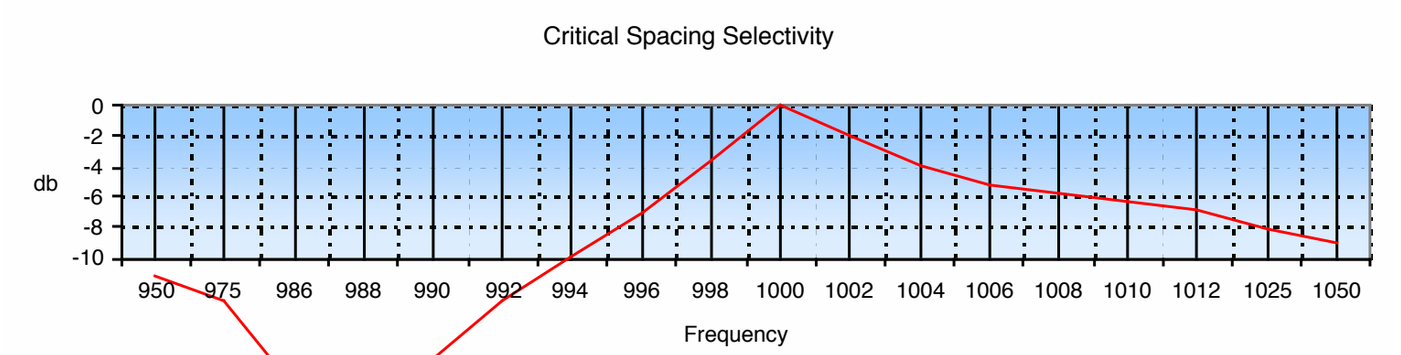
An alternate way to decouple the receiver and passive loop is to place them at approximately a 45 degree angle to each other. By doing so, the coils are in neither facing nor adjacent orientation, but rather half-way in between. At this point, the two are completely decoupled, regardless of the actual distance between them. To find this point, place the receiver and passive loop in this orientation and move the receiver or loop until you find a point at which tuning the passive loop has no effect on the receiver. You can then move the loop or receiver anywhere along an imaginary 45 degree line, and the two units will remain decoupled. Selecting a point just on either side of the imaginary 45 degree line will begin to loosely couple the receiver and loop in either facing or adjacent orientation. The receiver's bandwidth will be narrowed as with critically-spaced decoupling. This is often more convenient with receivers with large loopstick antennas, since the distance required for critical spacing is often correspondingly quite large.

Detuning of the Passive Loop

The tuning of the passive loop will change depending on how far away the receiver is. To verify this, tune to a certain frequency on your receiver, and then tune the passive loop for a peak while the receiver is loosely coupled in facing orientation. Bring the receiver closer and closer to the loop and continue to adjust the tuning of the loop tuning to maintain the peak. With facing orientation, you will find that you must tune the loop higher and higher in the band to maintain the peak, and lower and lower with adjacent orientation. Therefore, depending on the technique you use, slight retuning of the passive loop may be required.

3. Adjacent channel notching

You may have noticed that a passive loop will both peak and notch a particular frequency, depending on the tuning capacitor's setting. For instance, try peaking a station at 1000 kHz or so using facing orientation with the loop pulled back a couple of inches. Then, slowly rotate the passive loop's tuning



capacitor up-band a bit – you should notice a definite notch when the passive loop is tuned to 1020 kHz or so. In other words, in facing orientation, the passive loop will induce a notch below its tuned frequency! With adjacent orientation, just the opposite occurs – a notch will be placed above the passive loop's tuned frequency. In the chart below, the critically-spaced response from earlier is extended down to -25 db to show that there are definite notches about 12 khz away in both orientations.

Because of the way the receiver's loopstick and the passive loop interact, there will *always* be a lower notch in facing orientation and an upper notch in adjacent orientation. Therefore, if you want to put a notch up-band from the desired target to attenuate interference on the neighboring channel, use adjacent orientation, and use facing orientation for notching down-band from your target. As a memory aid, I use the phrase "face down, this side up" to remember the relationships. While not reflected in theoretical calculations, in actual practice there is a more pronounced null in adjacent orientation.

As an example of using this technique, I have a strong local on 1000 kHz which makes reception of 990 and 1010 a challenge. In facing orientation (down-band notch) I can listen to 1010 much more easily, and the same for 990 using adjacent orientation (up-band notch). If I get the orientation wrong, as the chart above shows, the interference is 20 decibels worse than when I started!

Notch Depth vs. Notch/Peak Spread

As you decouple the receiver and passive loop, in addition to tightening the selectivity, the "spread" between peak and notch will narrow. The graph below shows the effect of progressively decoupling the receiver and loop.

The trade-off here is that not only does decoupling decrease the gain imparted to the receiver, the depth of the notch gets shallower as well. As with the critically-spaced selectivity technique above, an intermediary loop between the main passive loop and the receiver will help restore gain should you need it.

Notching an Interfering Station

For the DXer, the optimum situation is where the peak and notch are spread exactly 9 or 10 kHz apart (and even narrower for transoceanic split-frequency DXing) so that the target is peaked and the interfering station is notched. A casual placement of the loop and receiver may result in a 20-30 kHz spread, and a critically-placed loop for selectivity alone might still put the notch up to 15 kHz away from the peak.

By moving the receiver even further away from the loop, the spread between peak and notch decreases, and at a critical point, the spread will be exactly 10 kHz. The spacing will depend on the receiver and passive loop being used. For instance, with a Sony M37V and a 15x15-inch box loop, the distance is usually around 12 inches with either orientation. You will need to experiment to find the distance that works for each receiver/loop combination, and the distance in one orientation may be different than the other. As above, the use of an intermediary loop can help provide extra gain if needed.

A recommended approach to find the critical placement for a 9 or 10 kHz spread is as follows:

Select the orientation based on where the co-channel interference is (i.e., adjacent orientation for upper notch and facing orientation for lower notch).

Tune the desired target frequency on both the receiver and loop for maximum gain, with the receiver a few inches away from the loop.

Tune to the interfering frequency on the receiver *without touching the tuning on the passive loop*.

Move the receiver either closer to or away from the loop along the imaginary perpendicular line until the notch on the interfering station is found; it may disappear or perhaps the background noise will elevate. If you have trouble discerning any notch effect, try orienting the receiver and passive loop to place a simple directional null on the interfering station so that you can better hear the notch.

If you end up moving the receiver further away from the loop in Step 4 to minimize the interfering station, that means you started out too close in the first place. Similarly, moving the receiver closer to the loop for the notch means you started out too far away. In either case, come a little bit back towards where you started and repeat steps 2-4 until the target peak and interference notch coincide.

For example, in order to receive a semi-local on 620 kHz under a strong local on 630 kHz:

Select adjacent orientation to put a notch above the desired target.

Tune the receiver to 620 and place the receiver several inches away from the loop, then find the peak on the loop. For this example, assume the initial distance is 14 inches away.

Tune the receiver to 630 (the interfering station).

Move the receiver either closer to or farther from the receiver to find the notch. For this example, assume that the receiver is moved closer, to 10 inches away, for the notch on 630.

This means that the distance was too great to begin with, so come back a little towards the original distance (say, to 11 inches away) and retune both receiver and loop for a peak on 620. If repeating steps 3 and 4 shows that no further movement is required, the desired 10 kHz spread has been found.

Notching out split-frequency interference is much easier. In this case there will generally be a heterodyne as an indicator, so you don't need to actually tune to the interfering station in Step 3. Rather, adjust the tuning on the loop to minimize/notch the heterodyne while tuned to the desired target, and then increase or decrease the distance between the receiver and loop (followed by slight retuning of the loop) until you find the position of maximum clarity of the target and minimum heterodyning. This becomes a very quick process with a little practice. In many case, notching of the interfering carrier will cause the receiver's AGC to increase gain for the target, resulting in an apparent increase in sensitivity.

Once you have found the desired notch, depending on the situation you can then:

- Move the receiver or loop a little, either closer to or further away, to see if there is a better relative position, rather than trying to fine-tune the loop's tuning
- Retune the loop *slightly* away from the interfering station (e.g., tune the loop slightly down-band when listening to 620 under a local on 630) while keeping the distance between the receiver and loop the same. This will maintain the 10 kHz spread, but will put the peak on the target's sideband which is furthest away from the interference and the notch on the closest interfering sideband.
- Move the receiver a little closer to the loop in order to increase the peak/notch spread (say, to about a 12 kHz spread for domestic DXing) and then retune the loop slightly to the point of best clarity. The result is that you will peak the sideband of the target which is <u>away</u> from the pest while keeping the notch on the carrier of the interfering station.

<u>Dealing with IBOC Digital Noise</u>

One variation to the orientation rule above is in dealing with IBOC noise. This stems from the fact that the digital sidebands which produce the noise are centered about 12 kHz away on either side of the station's actual carrier frequency. For example, if my 630 kHz local were using IBOC, the digital noise would be centered at 618 and 642. Therefore, to tune in 620, one must actually use facing orientation to put a notch below on 618, even though the interfering station itself is above on 630.

Of course, by doing so, the analog sidebands from the main signal on 630 will cause interference, although the decoupled passive loop may provide increased selectivity in addition to the notch. In any event, my experience has been that notching out the noise associated with IBOC broadcasts results in a more readable signal, especially with weak DX targets that would otherwise be completely buried in the noise. Unfortunately, if there is an IBOC station on the other side as well (in this case on 610, with the upper digital sideband on 622), then there isn't much that can be done, since both sidebands of the target on 620 would suffer from the noise.

<u>Notch Depth and Q</u>

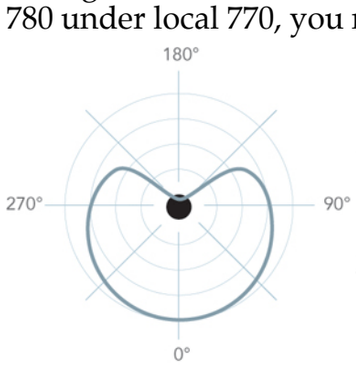
The "Q" of a passive loop, which essentially describes the tuning sharpness of the loop, also influences the peaks and notches achieved. Specifically, both the peak and the notch are more pronounced as the loop's Q increases: therefore, a higher the Q of the loop, the better.

While the above graph depicts results from using the high-Q loop in facing orientation, the principle applies in either orientation. For example, to listen to 1200-WOAI some 1750 miles away on a Sony M37V, I need to deal with IBOC noise from a strong semi-local on 1190 and a strong local on 1210. Using the IBOC strategy above, I must use adjacent orientation to avoid 1190's upper digital sideband on 1202. Favoring the lower sideband of 1200 in this way, interference from 1210 is reduced, but 1190's upper analog sideband will interfere: a tight situation indeed.

Using a 9-inch Terk loop, I can barely make out 1200-WOAI amidst the various sources of interference. With a small (3.5 inch) basket-woven Litz wire loop with very high Q (at right), there is a definite peak of intelligibility: even though the gain isn't as great as with the Terk loop, 1200-WOIA comes in just fine!

4. Adjacent channel interference – Fixed Channel "Detuning"

If your receiver only tunes in fixed 9 or 10 kHz increments, as with many UltraLights and other portables, DXing split frequencies can be difficult. For example, tuning to a trans-oceanic signal on 774 kHz next to a local on 770 would be much easier if you could slide over to 775 or 776. Such "detuning" is also common practice with domestic stations spaced 10 kHz apart; for instance, to hear 780 under local 770, you might tune up to 782, placing 12 kHz between you and the problem. In both of these cases, you will be favoring one sideband over the other in order to avoid interference.



The peak/notch technique above can provide considerable help with fixed tuning receivers. It is probably impossible to move the receiver far enough away to effect a 1 or 2 khz spread between peak and notch. However, you can move the receiver out to a point of extreme tuning sharpness in order to <u>increase the slope</u> of the peak-to-notch curve to the maximum extent possible.

In looking at the "Notch Depth vs. Notch/Peak Spread" graph several

sections earlier, as the notch draws closer and closer to the peak, the depth of the notch is shallow, but the slope of the line is significantly greater. Therefore, in tight situations you can take advantage of the steep slope to significantly favor one station, or one sideband, over the other. In selecting where on the slope you want to be, you will either peak the target or notch the adjacent interference; let your ear be the judge.

For example, my semi-local on 1190 kHz has substantial man-made interference which renders the lower sideband (centered around 1188) completely inaudible, while the upper sideband at 1192 is clean. While my higher-end communications receiver can simply be placed in USB mode for clean reception, an UltraLight with only fixed-tuning AM (dual sideband) mode receives both sidebands, and the overall result is an unintelligible signal. Using well-separated facing orientation to favor the upper sideband over the lower, I can first tune the loop for a peak on the interference (so I know where I'm at), then tune slightly up-band to notch out the noise. While not necessarily isolating the desired sideband, it is now emphasized in the receiver's passband compared to the other sideband.

But wait, there's more! By using a second passive loop as an intermediate, the results are even better. In my test on 1190 khz above, I started out with a Sony M37V receiver and a 15x15 inch box loop. Separating the two units enough to increase the slope of the peak-to-notch curve meant that signal gain was rather low. By first placing a tuned Q-Stick in between the units, about 1 inch away from the receiver, I was able to provide more gain to the receiver. The intermediate loop also further enhanced the rejection of the lower sideband – tuning on the box loop was much sharper, corresponding to a steeper peak/notch slope. As a result, the upper sideband of 1190 was loud and clear with just a hint of the noise from the lower sideband. While this is not actual exalted carrier single sideband (ECSS) reception which eliminates the offending sideband altogether, it is probably about as good as you can do with an AM-only receiver, and it can make a huge difference.

This can be a valuable strategy even if your receiver is able to tune off-channel. For example, on a recent DXpedition I used an Eton e100 UltraLight in Alaska to listen to Asian split-frequency stations. The e100 not only tunes in 1 kHz increments, but also has surprisingly tight filtering. However, in situations such as an Asian on 972 kHz next to a domestic on 970, the e100 was not able to produce decent audio, even if I tuned up to 974. Using a Terk Loop in loosely-coupled facing orientation, I was able to not only provide extra gain, but also strongly attenuate the domestic on 970. By favoring the upper sideband of the target on 972, it came in loud and clear.

4. Co-channel interference – Passive Phasing

When a passive loop is oriented such that its signal for a given station is precisely out of phase with the signal generated by the receiver's antenna, the two will cacel each other out. As a result, an otherwise dominant station will delightfully disappear, allowing you to hear what was lurking underneath. This technique produces a reception pattern in the shape of a cardioid (right), with a pronounced null in one quadrant and virtually undiminished reception in the other three.

Either orientation can be used for passive phasing, although adjacent orientation often seems to work better than facing orientation. Here is a basic procedure for passive phasing (paraphrased from Gerry Thomas' Q-Stick phasing procedure):

Tune the passive loop to maximize the frequency of interest using the selected orientation, then set it well away from the receiver.

Orient the receiver to place a simple null on the station to be eliminated. If possible, tilt the radio up or down (i.e., azimuth change) to get an even better null, using a tripod for stability if desired.

With the passive loop still tuned to the desired frequency, position it a few inches away from the receiver. Then, begin rotating it about its vertical axis as you also change the distance from the receiver. At a certain distance and angle, you will hear the unwanted station's signal level go down, or see it on the S-meter of the receiver. If you don't have an S-meter, try decreasing RF gain so that you can better hear the null.

Once you have found the general distance and angle, try going off-axis a bit (i.e., not at a 90-degree angle from the receiver) to see if there is an even better orientation of the loop, or try the other orientation. Some phased nulls may be found with the loop at nearly a 45-degree angle from the receiver. Elevating the passive loop an inch or two may make a big difference. Also, with adjacent orientation, the passive loop might have to be tuned slightly up-band to account for decreased coupling; facing orientation may require re-tuning slightly down-band.

Once you have found the right distance and angle for the passive loop, *slightly* adjust the passive loop's tuning or the receiver's position to fine-tune the null.

If you get a decent directional null in Step 2 above, you may notice that the audio becomes distorted. As a result, the eventual phased null may not be very good because the out-of-phase signal produced by the passive loop is now significantly different than the distorted signal produced by the receiver's directional null. In this case, try to

Adjacent Orientation - Quantum Loop and 15" box loop

Facing Orientation - Eton e100 and Terk loop

lessen the directional null a bit and then re-do the phased null.

In phasing out the undesired station, the strength of the remaining stations on that channel will depend on the levels present in the receiver antenna and passive loop individually. In other words, the final result will only be as good as the weakest antenna. For example, the M37V has a very small ferrite antenna, and the limited in-phase signal it produces doesn't need much opposite-phase signal from the passive loop to cancel it out; therefore you will have to decouple the loop a significant amount, resulting in less gain for the DX targets underneath. To remedy this, use an augmenting passive loop for gain, then use a second loop for the phased null – it really works well! In the case of an M37V with a Q-Stick (right), I am essentially phasing the Terk loop with a receiver with an 8-inch ferrite antenna, so there is sufficient gain to hear the remaining stations.

With a high-Q passive loop, you may find that its narrower opposite-phase signal doesn't phase very well with the broader contribution of the receiver's loopstick. In such a situation, you can use an intermediate loop with the receiver to narrow its selectivity, then apply a larger high-Q loop for a phased null. In the picture just above, the opposite occurs: the Q-Stick causes the receiver component to have a narrower bandwidth than the component supplied by the low-Q Terk loop, so a higher-Q passive loop would work better in this situation.

Once you have nulled the unwanted station to the extent possible, you can then employ a second passive loop and move it around either the receiver or the first passive loop until you find an even deeper null. This "double phasing" technique can be very effective, and has allowed me to hear stations under fairly strong locals that would have been impossible with single passive phasing alone.

Another application for phasing is to reduce co-channel interference. For example, a target on 810 may be sitting alone on the channel, but a local powerhouse on 820 is completely obliterating the target. In this case, use adjacent orientation and tune the passive loop to 810, and then tune to 820 on the receiver and passively phase 820 to the extent possible. Then tune the receiver back to 810 - the co-channel interference will be significantly reduced.

5. Images and spurs

Images are created when a strong station causes the receiver to generate a phantom signal of that station two IF bandwidths down from where it actually is. Since most receivers use either 450 or 455 khz IF stages, the phantom image will show up 900 or 910 khz down-band. For example, I have a local station on 1590 khz, and many of my receivers have a very strong image on 680 or 690 khz which itself sounds like a local!

Spurious mixing products ("spurs") are produced when two strong local signals mix together to produce a third signal, which is comprised of the arithmetic difference between the two local signals' frequencies or some other combination. For example, my strong locals 1590 and 1000 produce a huge spur on 590 (1590 - 1000 = 590), which is a "second order" product, and 1000 combines with another strong local on 880 to produce a third order product on 1120 (1000 + 1000 – 880 = 1120).

The notching technique is very effective in eliminating these artificial signals, tuning the passive loop to place the notch on the offending station which is causing the image or spur. As discussed earlier, the notch produced with adjacent orientation is much deeper than that produced with facing orientation, therefore use adjacent orientation for image and spur notching.

In order to find the correct tuning position on the passive loop for an image/spur notch, place the passive loop in adjacent orientation close to the receiver, and tune the passive loop in order to maximize the image or spur in order to get close to the final spot on the loop's dial. Then, tune the loop *slightly* down-band for the notch – the image or spur should disappear or be substantially reduced. Once you get the hang of this, you can skip the peaking step and simply listen for and tune to the notch.

Some receivers such as the super-sensitive Sony ICF-S5W are so prone to images that, on a night with decent propagation conditions, I can get a heterodyne on just about every frequency in the lower part of the band, meaning that even moderate-strength distant stations are enough to cause the S5W to produce an image. Using a passive loop in adjacent orientation, as I tune up and down the band on the receiver, I can tune the passive loop up and down as well to make the images disappear.

An added advantage to image and spur notching is that you can use another passive loop in facing orientation for gain. For example, with the Sony ICF-SW7600GR, during the day my strong local on 1590 creates an image on 680, obliterating a weak semi-local on this frequency. By notching out 1590 with an adjacent loop and peaking 680 with a facing loop (see picture at right), the weak station is easily heard, a feat I can't accomplish with just one loop, regardless of the orientation.

Summary

Whether you are using a stock UltraLight or the Sony ICF-2010, judicious use of a passive loop (or two!) can make a huge difference. Additionally, for those like me who like to use a Quantum Loop or similar as the primary antenna for a communications receiver, all of these techniques are available. Optimum results are typically obtained when you employ the largest, most selective (highest Q) loop possible, your space and budget allowing. However, as described above, even an inexpensive commercial loop can be very effective. To find out more about loop design and construction, the document "Air Core Loop Designs" is available at the DXer.ca web site in the UltraLight File Area. It provides information on and links to a variety of different designs.

With all these tools in the toolbox, hopefully one or two will work for you in a given situation.

Good DXing to you!

Bainbridge Island, WA

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