



Operating Tools & Techniques 200 DXCC

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WA7EM

02/19/2024

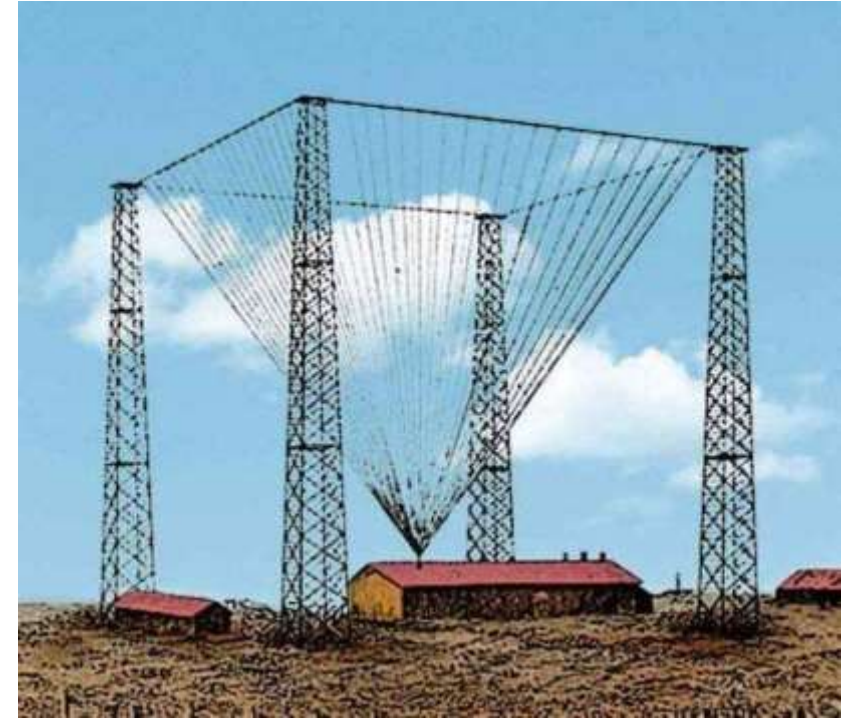
WA7EM HISTORY

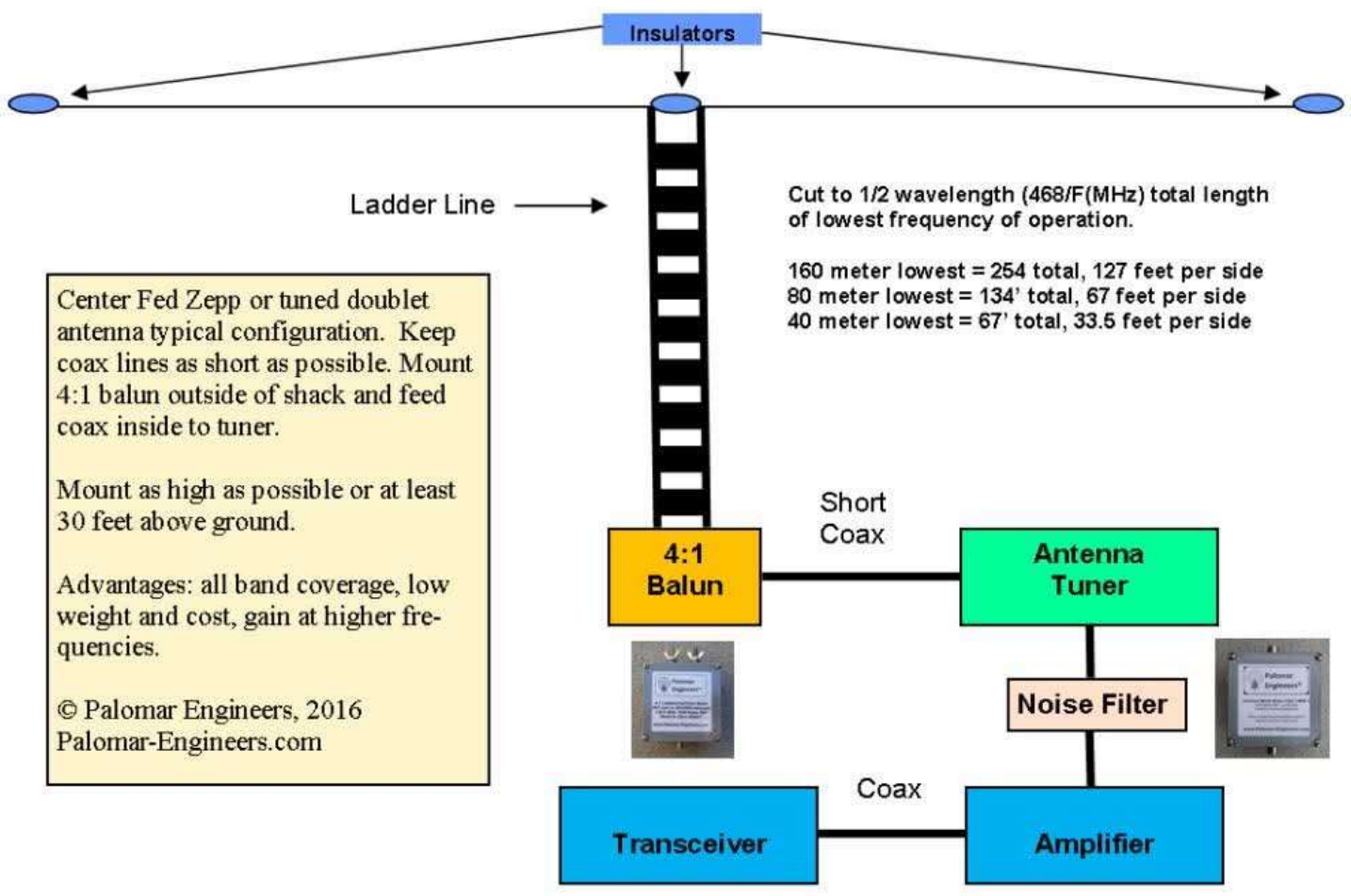
- Licensed in 1964 WA9NDH
 - Operated in parent's basement ~ 2 years
 - Went to college, then to Arizona (WA7PMS)
 - Busy with wife & new job
 - Met very active Ham co-workers in ~1978 (top of sunspot cycle)
 - 100 watts & small 3 element beam @ 25 ft
 - Phone DXCC 1985
 - Got more busy – job & kids
- Moved to Colorado
 - Tiny Yard, HOA
 - Retired 2004
 - Resumed radio, Passed Extra Class, New call WA7EM
 - Modest expectations with 100 watts & a wire & low sunspots



Antenna Efforts

- In the garage attic
 - 5 band loaded Dipole
 - 5 band loaded/shortened Vertical over welded wire fence ground plane
 - Upgraded to FT450
 - 100 FT8 DXCC
 - SSB WAS
- Learned
 - Verticals need very good ground plane
 - Inside attic doesn't tune well, a lot of power lost in roof shingles & lumber
- Discovered the “Classic Multiband Dipole”
 - Autotunes (mostly) 40-10M
 - Fortunately, had a few medium size trees
 - Not bad for a wire
- Upgraded to FTDX10
 - Still 100 watts, very well respected lower cost radio





Center Fed Zepp or tuned doublet antenna typical configuration. Keep coax lines as short as possible. Mount 4:1 balun outside of shack and feed coax inside to tuner.

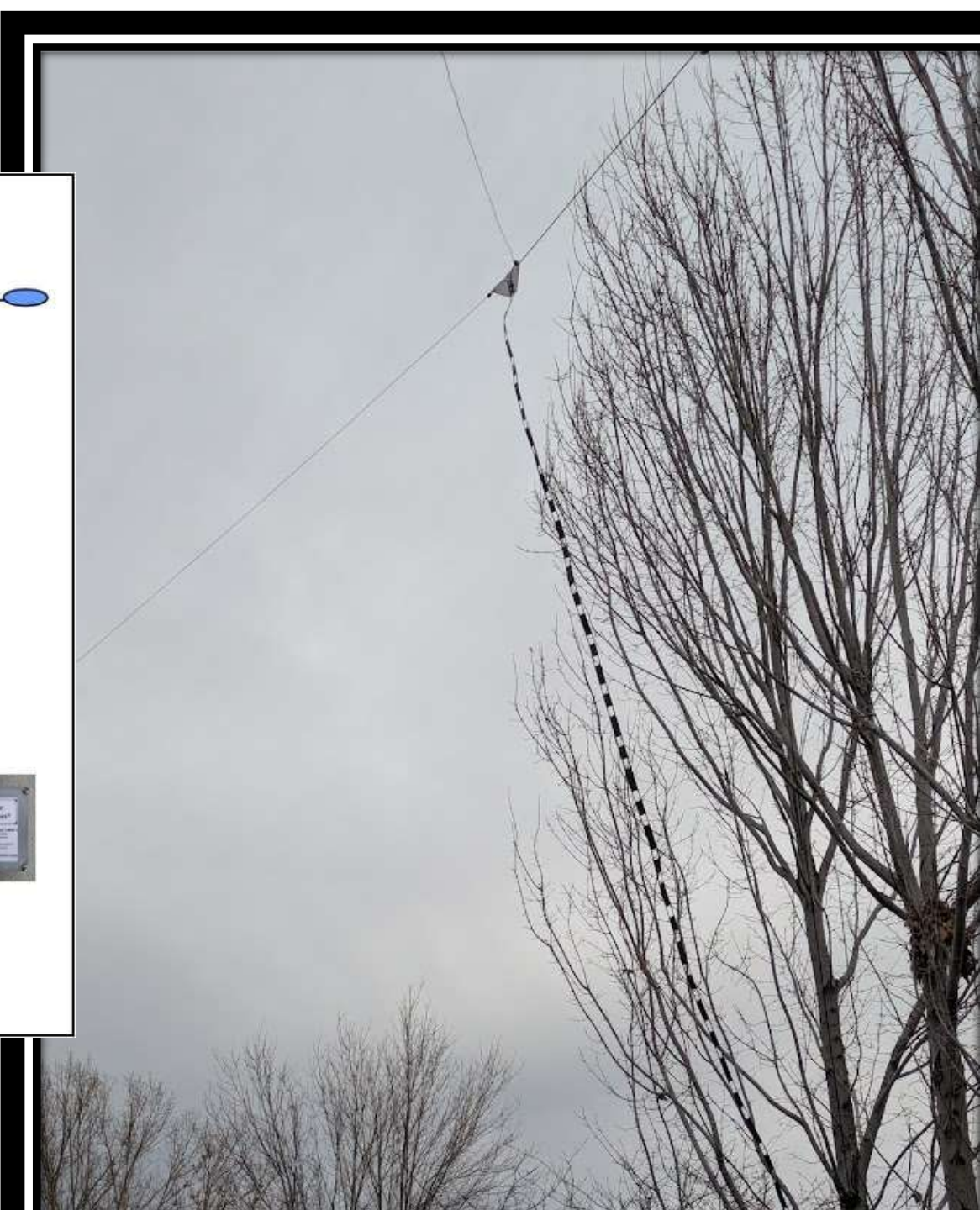
Mount as high as possible or at least 30 feet above ground.

Advantages: all band coverage, low weight and cost, gain at higher frequencies.

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Cut to 1/2 wavelength ($468/F(\text{MHz})$) total length of lowest frequency of operation.

160 meter lowest = 254 total, 127 feet per side
 80 meter lowest = 134' total, 67 feet per side
 40 meter lowest = 67' total, 33.5 feet per side



LDG Electronics RT-100 Combo Remote Antenna

★★★★★ (16) Part Number: LDG-RT-RC-100



QSLing

- Dxpeditons QSL after they are back home
- You can wait a long time
 - Keep a list of those you have sent
- Some still do paper QSLs
- Include SASE and \$5 with your card
- Some use Clublog
 - Online QSL request system
 - You supply lookbook info to match your log to his
 - You need PAYPAL account to submit your electronic \$5
 - Pay more for paper card, less for LOTW only



LOG Book OF The WORLD (LOTW)

- Many hams have moved to internet electronic QSL
 - Postage, Manual Effort
 - Some use QRZ, others – not yet recognized by award issuing bodies (ARRL)
- Setup is a little complicated, due to security
 - ARRL wants to be sure LOTW account tracks to a single licensed station
- Your LOTW account supports DXCC, WAS applications
- Take your paper QSLs to “card checker” to get them added to LOTW

25 Records Shown (26-50)
Sorted by QSL Date (0.016297 seconds elapsed)
Showing **DXCC** Award data for
WA7EM - UNITED STATES OF AMERICA

Prev	Call sign	Worked	Date/Time	Band	Mode	Freq	QSL		DXCC	Next
Details	WA7EM	JA8COE	2025-01-27 23:32:08	10M	SSB	28.48500	JAPAN	<input type="checkbox"/>	Phone; 10M; Challenge	
Details	WA7EM	KC1NAB	2024-08-01 01:16:58	20M	SSB	14.25400	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	W1WC	2025-01-24 01:32:27	20M	SSB	14.24003	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	N4YFD	2020-09-15 16:03:45	17M	FT8	18.10155	UNITED STATES OF AMERICA			
Details	WA7EM	VE7WJ	2025-01-22 23:44:43	12M	SSB	24.94499	CANADA	<input checked="" type="checkbox"/>	12M; Challenge	
Details	WA7EM	HA3NU	2024-08-10 01:17:12	20M	CW	14.03590	HUNGARY			
Details	WA7EM	KF8AEW	2024-05-31 20:12:02	20M	SSB	14.24997	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	9L5A	2024-12-04 23:20:17	17M	SSB	18.15709	SIERRA LEONE	<input checked="" type="checkbox"/>	17M; Challenge; Phone	
Details	WA7EM	9L5A	2024-12-04 18:30:53	12M	CW	24.89200	SIERRA LEONE	<input checked="" type="checkbox"/>	12M; Challenge; CW; Mixed	
Details	WA7EM	N4ML	2024-12-14 17:32:17	10M	SSB	28.65992	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	KX1X	2024-12-14 17:33:53	10M	SSB	28.67800	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	WP3Z	2024-08-29 22:14:28	20M	SSB	14.26313	PUERTO RICO	<input type="checkbox"/>	Phone	
Details	WA7EM	V31CN	2024-12-13 03:07:23	40M	CW	7.01555	BELIZE			
Details	WA7EM	V31CN	2024-12-12 02:00:23	30M	CW	10.11550	BELIZE			
Details	WA7EM	VE7ACN/7	2024-03-01 17:24:28	15M	CW	21.04279	CANADA			
Details	WA7EM	KD8CCX	2024-03-16 20:54:46	20M	SSB	14.32500	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	VP2V/K2KW	2024-12-10 01:13:47	30M	CW	10.10500	BRITISH VIRGIN ISLANDS	<input checked="" type="checkbox"/>	30M; Challenge	
Details	WA7EM	5R8IC	2024-11-14 02:24:05	20M	CW	14.01400	MADAGASCAR	<input checked="" type="checkbox"/>	20M; Challenge; CW; Mixed	
Details	WA7EM	W4GO	2024-12-14 17:32:50	10M	SSB	28.68400	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	KA1ZD	2024-12-14 17:43:31	10M	SSB	28.78073	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	N3QE	2024-12-14 21:46:39	10M	SSB	28.68817	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	LU7YZ	2024-12-12 21:54:10	10M	SSB	28.43500	ARGENTINA	<input checked="" type="checkbox"/>	10M; Challenge	
Details	WA7EM	N6AR	2024-12-14 17:16:52	10M	SSB	28.47707	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	
Details	WA7EM	KP4AA	2024-12-14 21:43:50	10M	SSB	28.71400	PUERTO RICO	<input type="checkbox"/>	Phone; 10M; Challenge	
Details	WA7EM	N1EK	2024-12-14 21:47:28	10M	SSB	28.71853	UNITED STATES OF AMERICA	<input type="checkbox"/>	Phone	

[Prev](#) [Next](#)

Logging Software

- Many “logging softwares” are multi-function radio control/DX assistant/bookkeeping suites
- Some are specialized
 - Contests (extremely fast entry, record exchanges, dup checking)
 - POTA – no internet
- Some or comprehensive operating aides
 - Radio control – set & read radio frequency, mode
 - Track DX worked – country, band, mode
 - Dup tracking – have I already worked this station?
 - Beam heading
 - Access DX cluster sites
 - Many mega-stations post DX stations modes and frequency.
 - In addition to DX heard by mega-station, others can submit spots
 - Some spots give contact hints (splits, listening “5 up”
 - Extremely powerful – avoid hours of mindless scanning frequencies

RX TX **14000.400** **28559940** RX TX

1 Azimuth 329° Elevation 149° 0

BY1CY S 599 R 599

Via Bd1kv Grid **OM89gv** Start 2/16/2025 22:34:57 End 2/16/2025 22:34:57

Band 20m Mode CW Country China

ITU 33 CQ 24 318

Comment Note [LOTW USER] [EXCHANGES QSL] [QRZ.COM]

Freq 14000 400 RX Freq 14000 400 RX Band 20m

Stats (F1) Info (F2) Awards (F3) My (F4) Extended (F5)

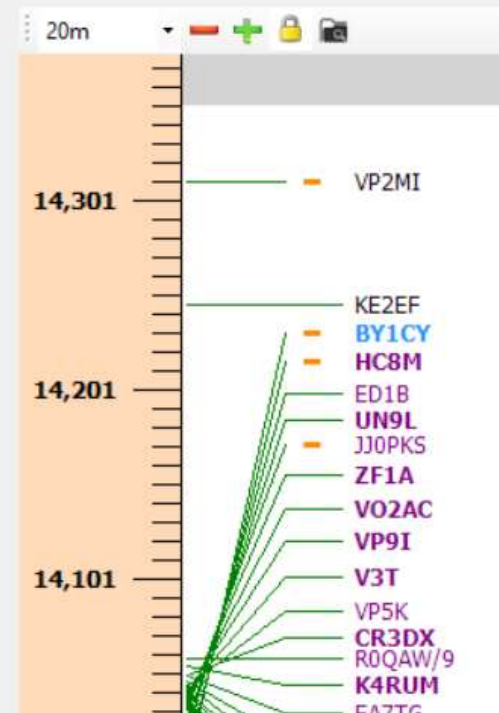
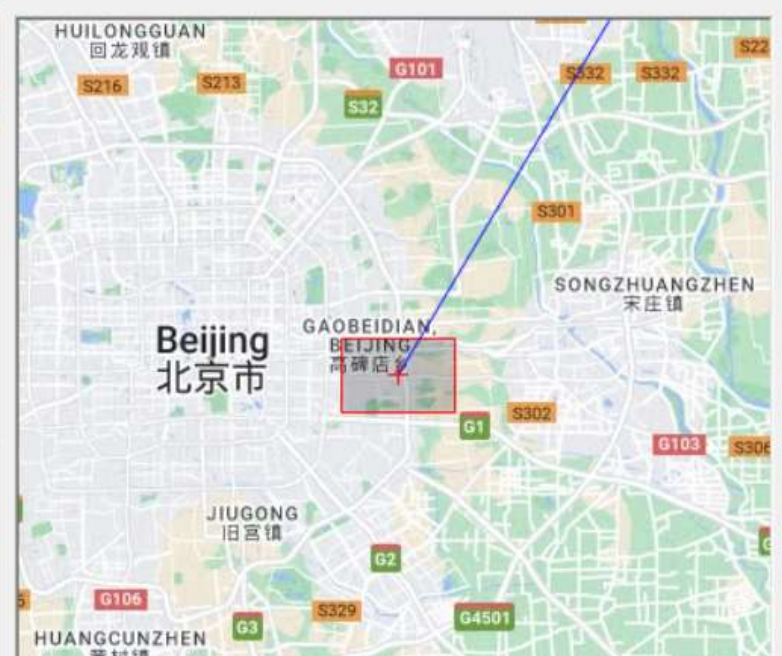
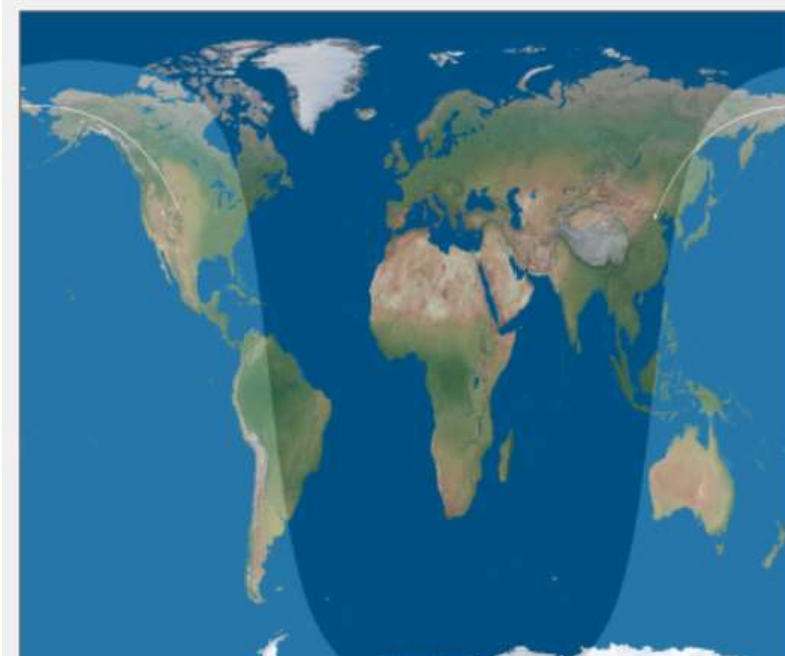
NEW ONE	NEW BAND	NEW MODE
NEW GRID	GRID BAND	GRID MODE
Country - Call	20m - Call	CW - Call
QSL	QSL	QSL
EQSL	EQSL	EQSL
LOTW	LOTW	LOTW

318 160 80 60 40 30 20 17 15 12 10 6 4 V U

PH																				
CW																				
DIG																				



Main (F6) Recent QSO's (F7) Cluster (F8) Propagation (F9) Worked before (F10)



File Options

Connect Disconnect Start server Stop Server

Management Internal server Cluster Connection

```

2236 dxc.ai9t.com:7300: DX de NB7Y: 21335.0 IG9AHM 57/57 into MT Tnx Manny 2236Z
2236 dxc.ai9t.com:7300: DX de WA3A: 28040.9 WA3A QSX 28040.942 2236Z
2236 dxc.nc7j.com:7373: DX de WA3A: 28040.9 WA3A QSX 28040.942 2236Z
2236 dxc.nc7j.com:7373: DX de K1TTT-7: 21043.7 K1TTT 2236Z
2236 dxc.ai9t.com:7300: DX de W0XM: 14066.2 EA8RM 2236Z
2236 dxc.nc7j.com:7373: DX de W0XM: 14066.2 EA8RM 2236Z
2236 dxc.ai9t.com:7300: DX de NB1N: 3508.8 RV7F ARRL DX CW TEST 2236Z
2236 dxc.nc7j.com:7373: DX de NB1N: 3508.8 RV7F ARRL DX CW TEST 2236Z
2236 dxc.ai9t.com:7300: DX de 9A5Y: 3518.0 9A5Y ARRL CW 2236Z

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Lock display Clear Save log

Commands Spot simulation

Send Command Send to all servers

Send Spot CALLSIGN KHz Hz SPOT information

Send Announce ANNOUNCE text Broadcast

Set personal info
Moon info
Sun info

File Connect Contest View Utilities Settings Help Kp: 0

RX TX **14005.000** **28559.940** RX TX 1 Azimuth 22° 202° Elevation 0

RU1A S 599 R 599

Contest Station Grid **KO48vr** Start 2/16/2025 22:40:24 End 2/16/2025 22:40:24

Band 20m Mode CW Country European Russia

ITU 29 CQ 16 54

Comment Note

[WKD SAME BAND]
[LOTW USER]
[EXCHANGES QSL]
[QRZ.COM]

Freq 14005 000 RX Freq 14005 000 RX Band 20m

Stats (F1) Info (F2) Awards (F3)

NEW ONE NEW BAND
NEW GRID GRID BAND

Country - Call 20m - Call

QSL EQSL LOTW

54 160 80 60 40 30 20 17 15 1

PH CW DIG

Main (F6) Recent QSO's (F7) Cluster (F8) Propagation (F9) Worked before (F10)

Callsign	Qso Date	Band	Mode	Station Callsign	Address	Age	AIndex	Ant Az
RU1A	9/9/2023 03:52:36	20m	USB	WA7EM	St Petersburg ...	0	0	22

Splits

- Many DX work splits
 - They transmit on one frequency, listen on another “xx up”
 - Will announce “Their call, 5 up”
 - Some very busy stations will state (5-15 up)
 - struggle to find exactly where they are listening
 - Check hints on station/frequency window
 - Almost all modern radios support Splits
 - VFO A – receive, VFO B - transmit

CW

- Many of my good DX are on CW
- I had to learn CW to pass by General in 1964, quickly abandoned it
- I took CW Academy course – demanding
 - 2 classes per week, daily 1 hour practice
 - Get on the air – CW QSOs
 - Conversational CW is demanding – don't know what the other guy is going to say
 - DX CW is pretty easy (except for pile-ups)
 - DX sends "TU" to previous station
 - You and everyone else sends your call
 - DX picks one and sends WX0AAA 599
 - WX0AAA sends 599 TU
 - You have to be able to recognize your own call
 - Sending your call many many times gets tiring and error prone
 - Most radios have CW memory – use it
 - Learn to use a keyer for hand sending



Propagation

- Currently at solar maximum – but some days are much better than others
- 10 meters can be great, but typically day time band
- 40 meters typically at night
- 20 meters is almost always good
- DX at the bottom of the band – get your extra so you have low band privilege.

DX Contests

- Bands are packed
- Lots of QRM
- Lots of countries – “target rich environment”
- Higher speed CW
- Some exchanges are simple, some complicated
- You must send the exchange, do not worry about recording his exchange

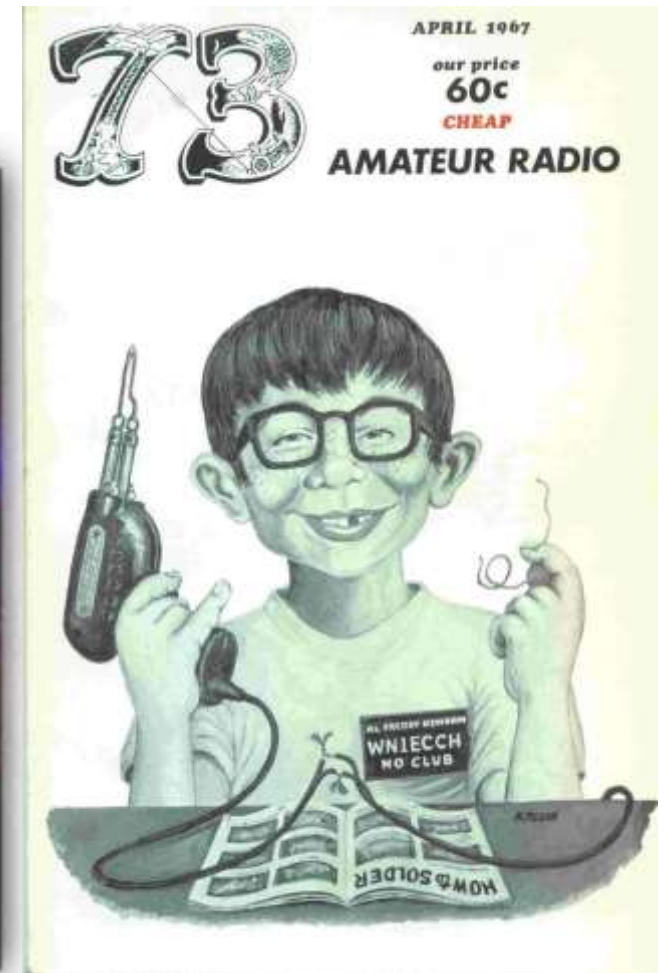
IT GETS HARDER

- Your second 100 is harder than your first
 - You got all the easy ones – developed countries with lots of hams
 - Now you have to chase the Dxpeditions and the lesser developed countries
 - New countries may be one per month instead of one per week



WHAT'S NEXT?

- Tower & Beam – unlikely with HOA
- Amplifier – unlikely – marginal benefit – being able to hear DX is #1 issue
- Get old WA7PMS credits applied to my current call – up-ing my country count by a few
- Chase DX challenge – 1000 band/country combos
- Improve my CW conversational speed
- Heard ARRL is going to offer a 3-way combo DXCC award – FT8/SSB/CW
- Continue to chase the rare & distant contacts
- Spend more time getting old boat-anchors back on the air



Clubs?

- LARC could create a DX mailing list – alert others when you get a new one
- Colorado Mile High DX Association – rebuilding after COVID almost shut it down
- Big Guns
 - Central AZ DX Association
 - Northern California DX Association – Big money Dxpedition sponsors

ncdx.org

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