Cloud Contesting

Lee J. Imber (WW2DX)

Past
Present
Future

WW2DX

- 1987 age 12
- Grew up in ME

- 10BDXCC
  332 DXCC

- WRTC 2014

- CY9C x2
- V26PD
- FJ/WW2DX
- J8/WW2DX
- S9TM
- IT9/WW2DX
- TF/WW2DX
- OY/WW2DX
- HH2/WW2DX
- CY0 2021!

What we will cover

Past, present and future of contest architectures

1. Some history

2. Old school contesting

3. Where we are today

4. Where we are heading

"OM" Contesting

Design

What makes up a "station"?

- Radio on the desk
- Mic/Key on the desk
- Typewriter
- QST

The Shack

You may not have realized that SO2R has been around for a VERY long time.

SO2R

SO2R

SO3R

M2 RTTY

Old School

- Paper logs

- Dupe sheets

- All manual process (band changes, amp tuning, getting both radio's on the same freq!

- No DXcluster or other "modern tools"

- Antennas in the backyard

- Radio on the desk

- Mic/Key on the desk

- Manual logging

- No automation

"Today's" contesting

LX9DX

Cut through the QRM?

Modern luxuries!

- Local PC for logging (N1MM, WriteLog, etc)

- Software to track mults, dupes, score etc.

- CW generation by computing power

- Transceiver of choice on the desk (Flex, Icom, Elecraft, etc.)

- Antennas in the backyard

- Automatic band/antenna switching

- Auto-tune amplifiers

- High performance transceivers

- Modern "net" tools like DXcluster, PSK reporter, skimmers, etc

Common theme

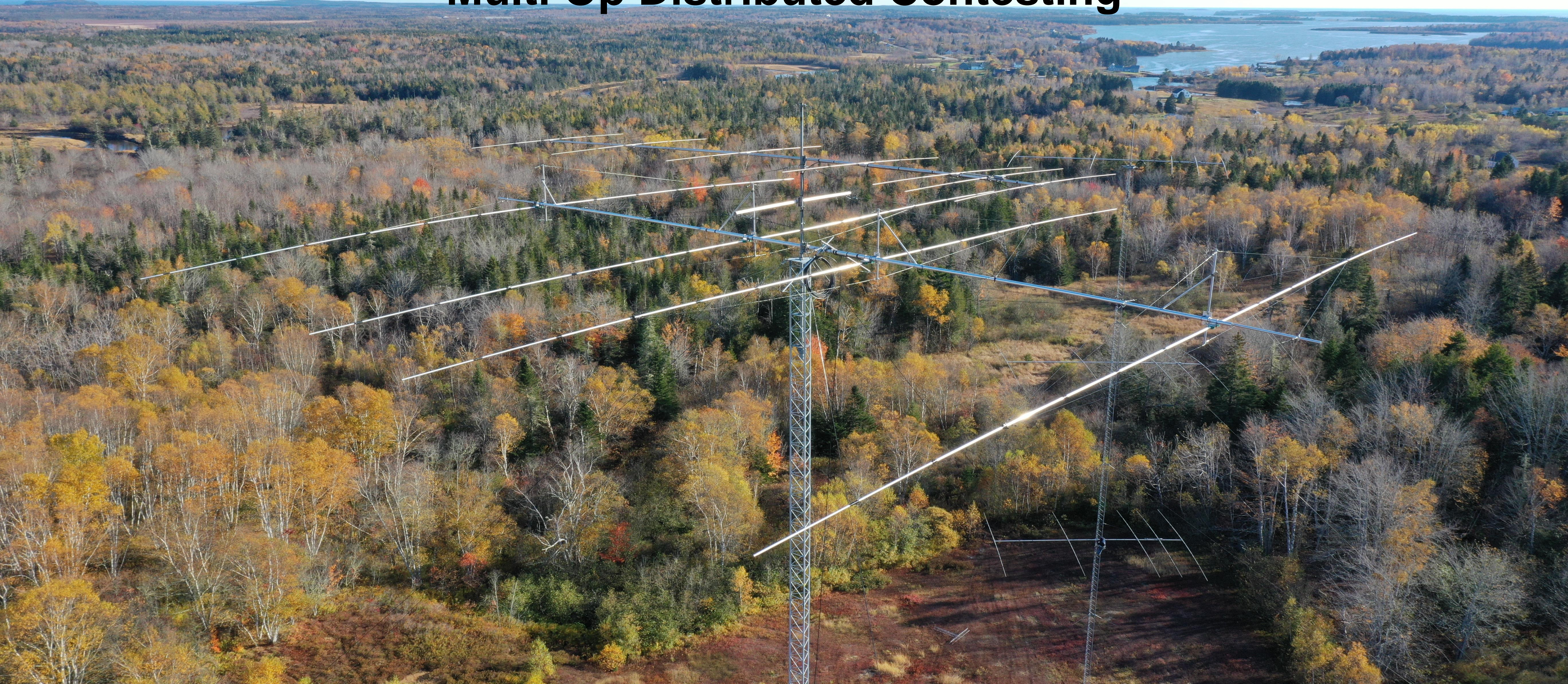Still the "basic" hardware
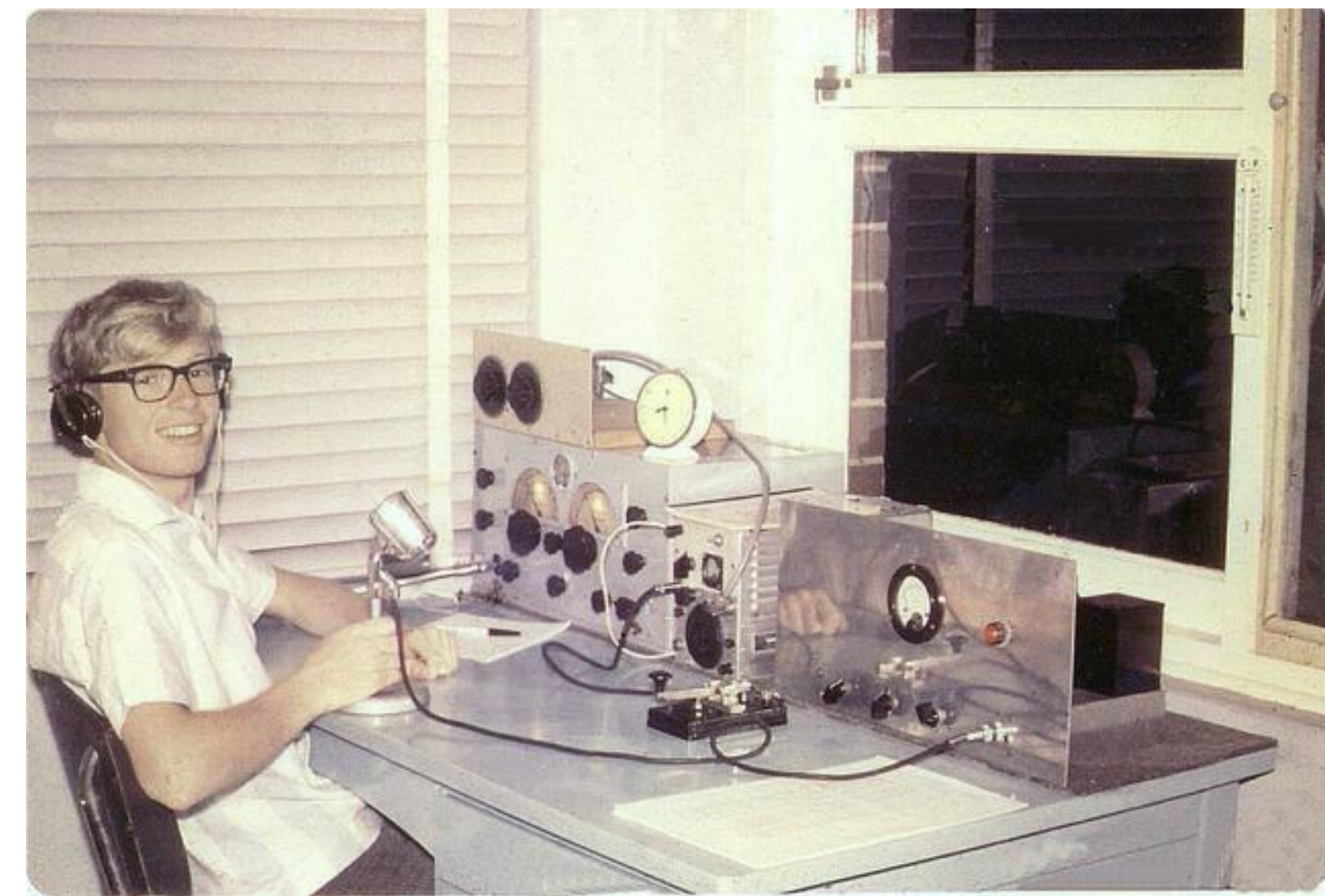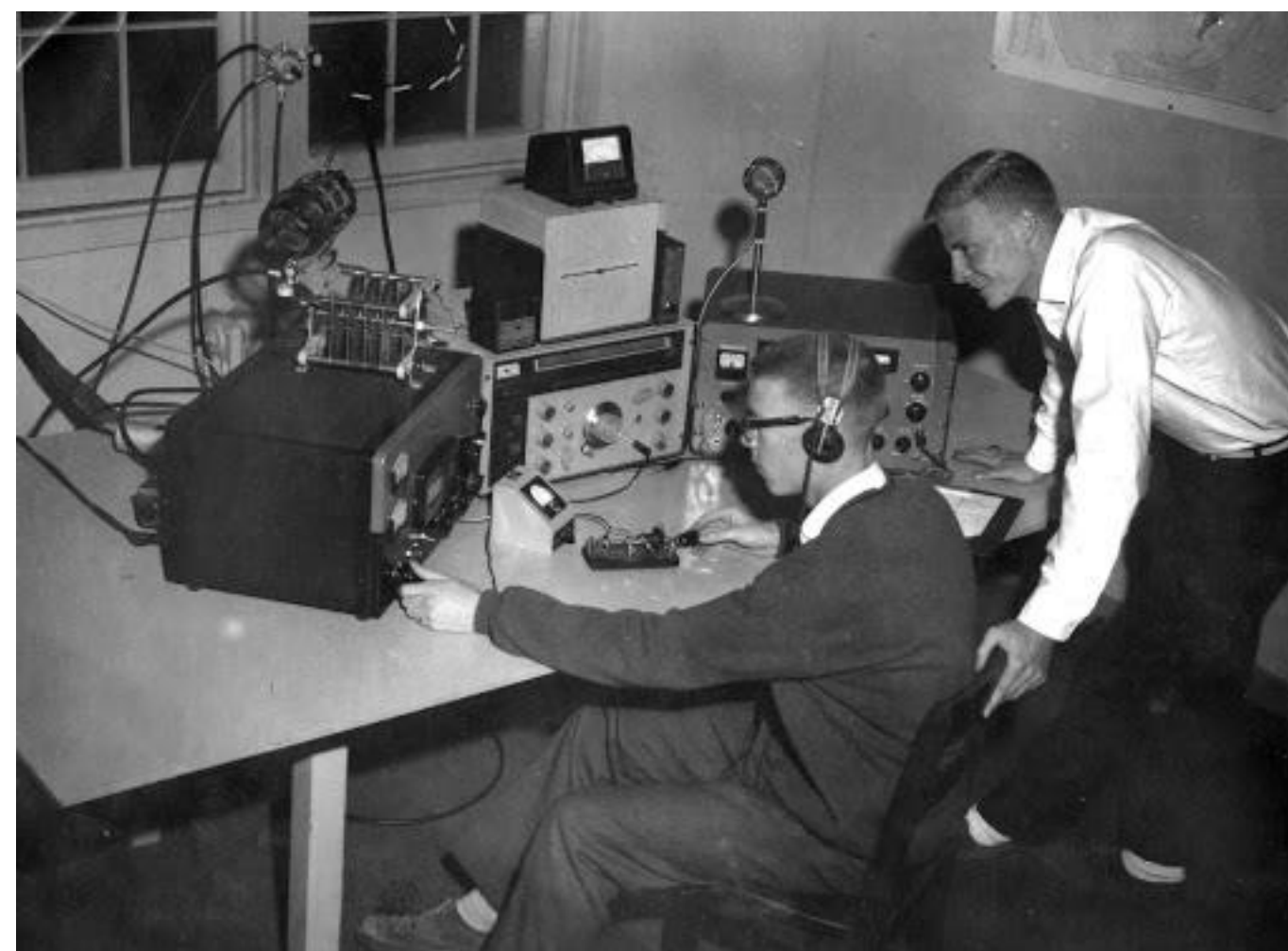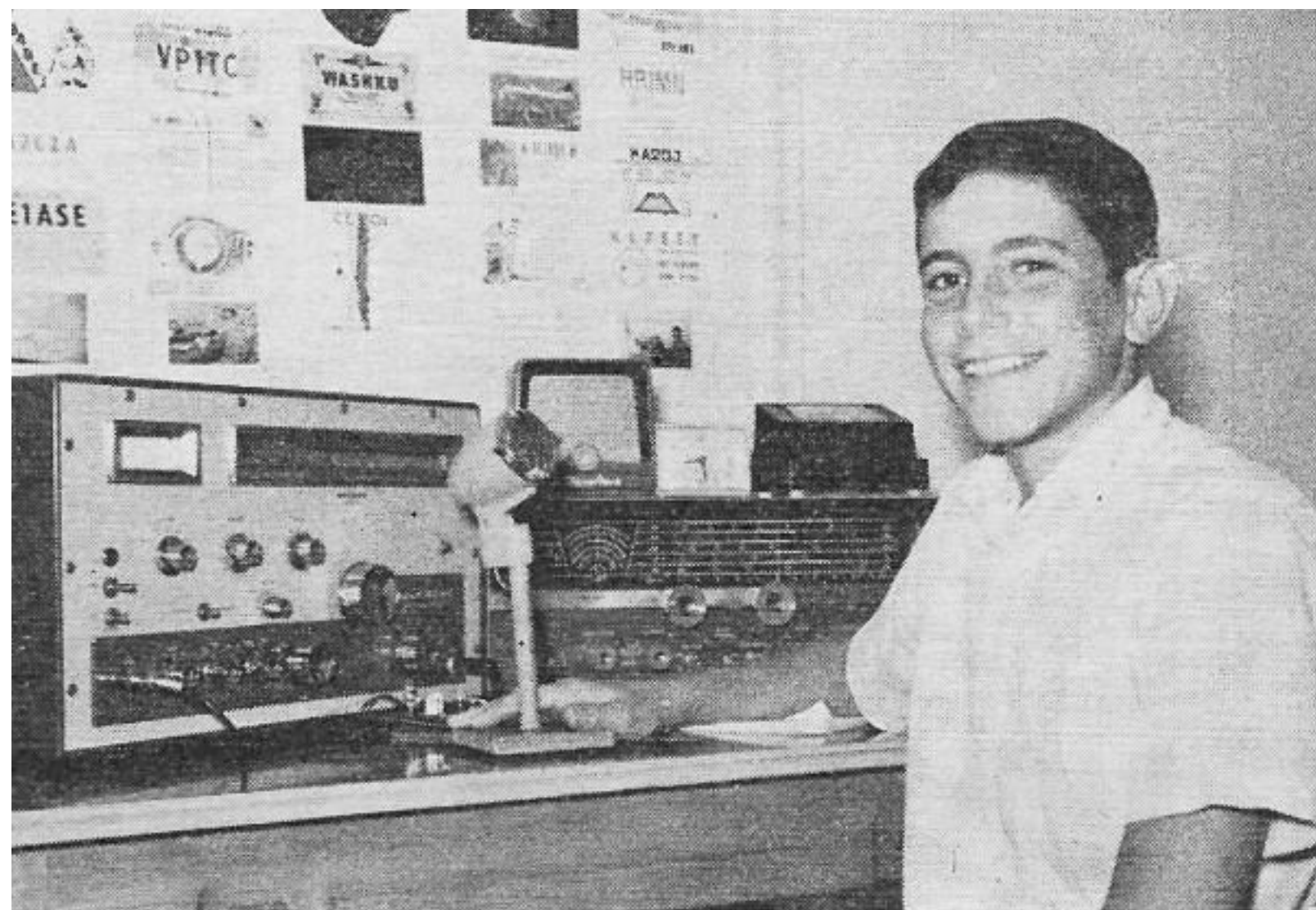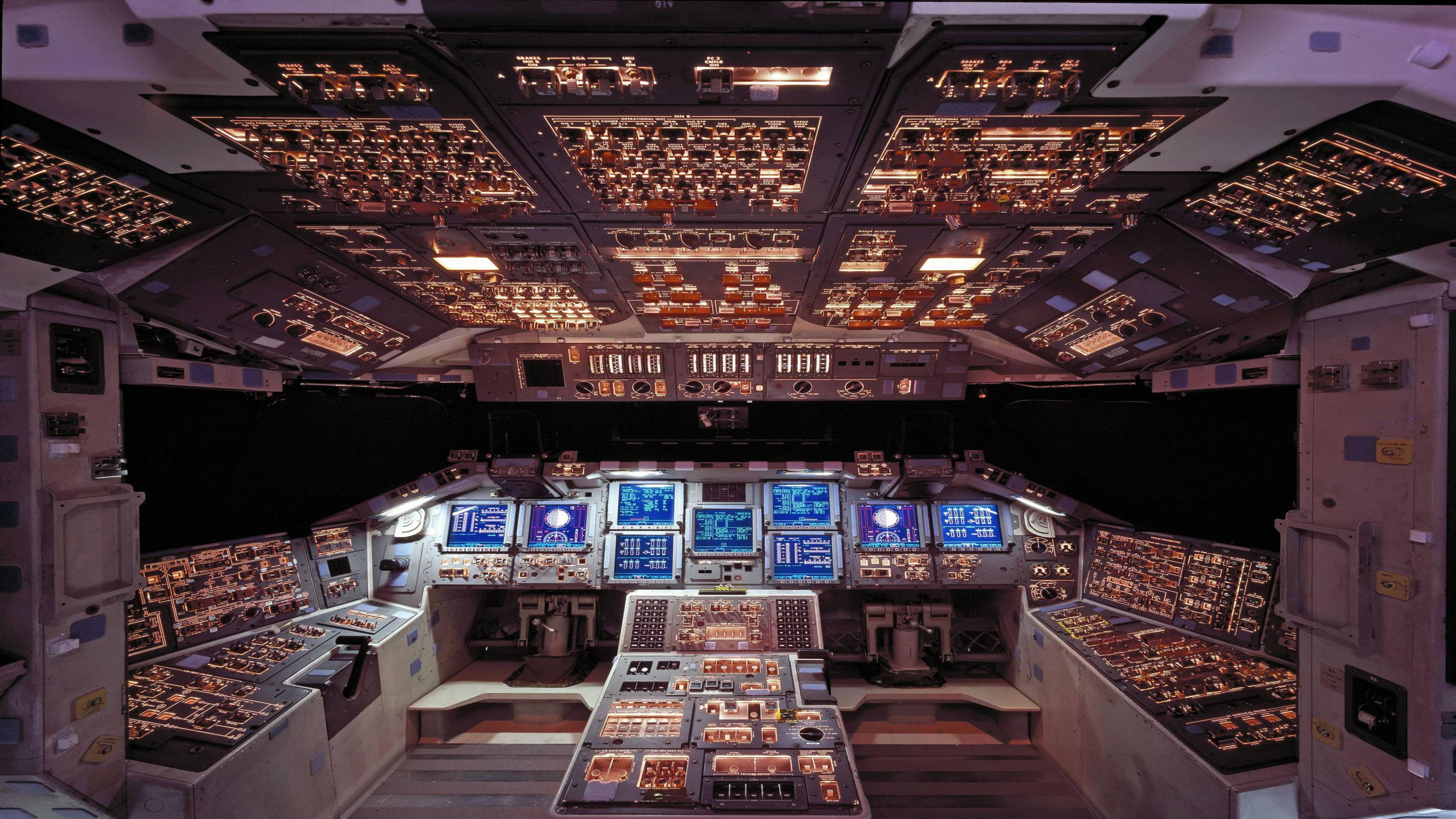
M/M
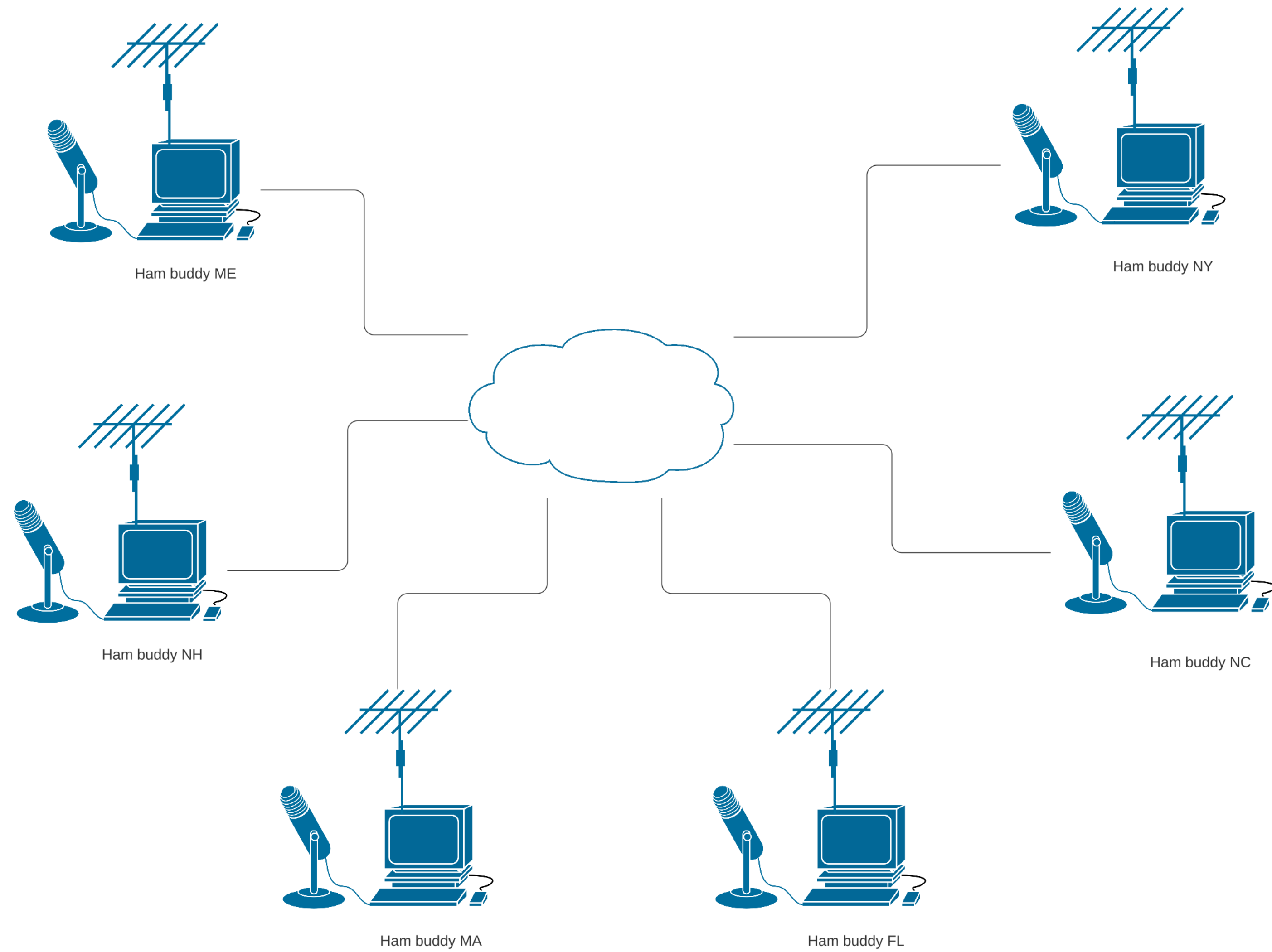## Multi Op Distributed Contesting

Today's Distrubuted Contest Station

Lee Imber | May 10, 2021

Ham buddy ME

Ham buddy NY

Ham buddy NH

Ham buddy NC

Ham buddy MA

Ham buddy FL

4.2. "Distributed" Multi-Ops (IARU Headquarters stations, for example)

in-edit

It is possible to set up N1MM Logger to allow some or all of the other stations outside your LAN to communicate over the internet. Possible uses for this feature are: Headquarters (HQ) stations in the IARU contest and distributed special event stations.

4.2.1. Configuration

There are some caveats when trying this. You need more than basic computer knowledge for this. You need to know about IP-addresses, firewalls, routers, port settings, NAT etc.

You need to know your computer (external) IP-address. When directly connected to the internet, this can be obtained using the program ipconfig. The command 'ipconfig' should be entered in a command (cmd) window to see the output. When your computer is in a LAN your connection to the internet will probably be made via a router. All computers will use internal IP-addresses; the router uses the external IP-address. This link ☑ will give you your (external) ip-address.

It is strongly recommended that static external IP addresses be used. When DHCP is used to obtain the external IP address from the Internet Service Provider (ISP) the external IP address can change at random and unexpected times. You should not depend on Dynamic DNS (dyndns.org) and similar services to provide the correct IP address to other computers in the extended network. Often, the domain name-to-IP address mapping is stored in your local computer or router, and may not be updated by Dynamic DNS.

Your router should be set up to route incoming UDP and TCP traffic to your local PC IP address. This is done using a router feature that is typically called Network Address Translation (NAT), Port Forwarding or Port Redirection.

The incoming port will be 12070 + Station Nr (0-15). 12070 is used for the first PC in the list, 12071 for the second etc. An example of how this might work out in practice is described XXXXXXX

You must also configure your computer and router Firewall(s) to allow port 12070 + Station Nr (0-15) to be passed for incoming UDP and TCP traffic.

Setting up N1MM in WAN mode

Better way? 🤞

"Tomorrows" Contesting

Tomorrow's Distrubuted Contest Station

Lee Imber | May 10, 2021

Remote TX Multiband NY

Remote TX 10-160 ME

Remote TX Multiband ME

Remote TX Mutliband GA

All data proccessed and controlled here.

Ham buddy NY
No radio/station or logging just web browser

Ham buddy CT
No radio/station or logging just web browser

Ham buddy Spain
No radio/station or logging just web browser

Ham buddy Bulgaria
No radio/station or logging just web browser

Ham buddy NC
No radio/station or logging just web browser

Ham buddy TN
No radio/station or logging just web browser

Radio, voice keyer, amp controls

Rotor/4sq controls

Colored text based on mult, worked or not

Super check partial

History of worked and dupe alert

Summary of bands/q's/points/rate, etc

Operator stats

Cabrillo log generator

Universal log

Many advantages

- Having all the data centralized = control

- All station intelligence in the "cloud"

- Centralized logging

- Centralized packet feeds

- Cloud "lockout"

- All users are "terminal connections"

- No "sync" issues

- No local station configuration hassle

- No network configuration issues

- No local distractions

- Focused operator experience

Panadapter

S3

NR Off | NB Off | -2.5 kHz | -0.1 kHz | Vol 80% | Stereo | AGC Fast | DAX 1

Split ▾ | ✕ Remove

▶ Admin

Phone Macros

F1 CQ CONTEST WW2DX | F2 WW2DX | Macro Mon 10% | Repeat 2.0s

Transmit

PTT (Ctrl) | Vox Off | 100 W | Proc DX | Mon Off | TX DAX On

ALC | – dB

Expert 1.3K-FA Amplifier

0 W | 1.0
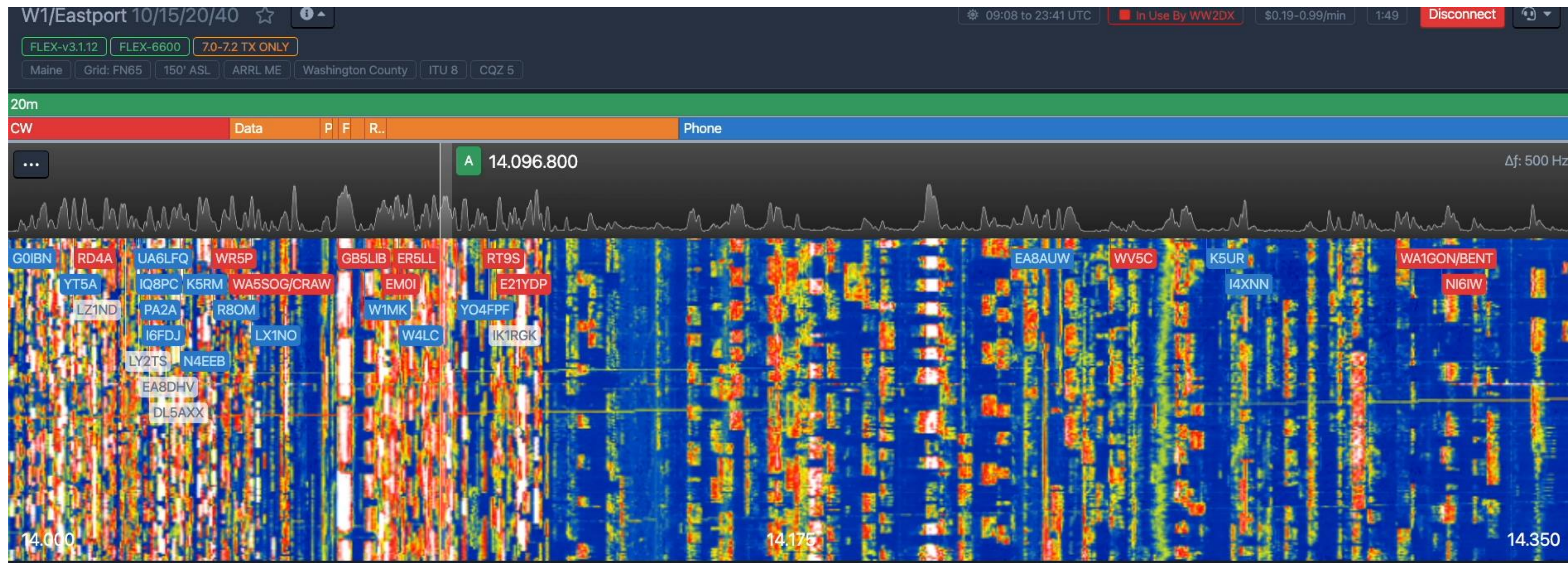
EU | AF | SA | PAC | JA

Go Anywhere | Go | •••

OFFICIAL WPX SSB 2020 (WW2DX) ▾ | LSB ▾ | WPX SSB M/M ▾

Callsign | RX Serial | TX Serial | Band
LZ9W | | 2463 | 40m

▾ Check Log

LZ9W

KZ9W	LZ4W	LZ9A	LZ8W	3Z9K	AF9W	IR9W
LZ2W	LZ5W	LZ9R	G9W	3Z9M	DR9W	
LZ3W	LZ7W	LZ9V	LY9	4K9W	GD9W	

▾ History

Dupe?	Call	Rcvd	Sent	Band
	LZ9W			20m
DUPE!	LZ9W			40m
	LZ9W			160m
	LZ9W			80m

▾ Summary

	QSOs	Points	WPX	DXCC	10 min Rate	60 min Rate
10m	153	239	12	8	0	0
15m	755	1,451	114	55	0	0
20m	2,967	7,056	597	102	0	0
▶ 40m	2,468	7,202	458	81	0	0
80m	1,028	4,094	273	67	0	0
160m	263	998	68	32	0	0
Mults 🔔		×1522				
Total	7,634	32,022,880	1,522	126		

Radio, voice keyer, amp controls

Rotor/4sq controls

Colored text based on mult, worked or not

Super check partial

History of worked and dupe alert

Summary of bands/q's/points/rate, etc

Summary	QSOs	Points	Mults	DXCC	10 min Rate	60 min Rate
160m	263	998	68	32	0	0
80m	1,028	4,099	274	67	0	0
40m	2,468	7,207	458	81	0	0
20m	2,967	7,062	595	102	0	0
15m	755	1,451	114	55	0	0
10m	153	239	12	8	0	0
Mults 🔔		**×1,521**				
Total	**7,634**	**32,026,176**	**1,521**	**126**		

Operator	QSOs	Points	Mults
---	1,805	5,224	490
AA4LS	322	459	35
K3JO	1,223	3,617	282
KM4SII	228	467	32
W1ADI	533	1,460	56
W2RE	1,426	4,969	359
W4FS	278	535	57
W4IPC	513	1,088	53
WW1X	289	468	32
WW2DX	1,017	2,769	125

∨ Options

Operator | WW2DX

☑ Mult Bell

Download Cabrillo Log

Log file requires editing before submission.

09:08 to 23:41 UTC | In Use By WW2DX | $0.19-0.99/min | 0:28 | **Disconnect**

FLEX-v3.1.12 | FLEX-6600 | 7.0-7.2 TX ONLY

Maine | Grid: FN65 | 150' ASL | ARRL ME | Washington County | ITU 8 | CQZ 5

40m

CW | **Data**

...

A 7.024.850

Δf: 50 Hz

XE3VDK | BD4QJP/QRP | LR1YOTA | ZL3AB | NM1I

7.015 | 7.026 | 7.037
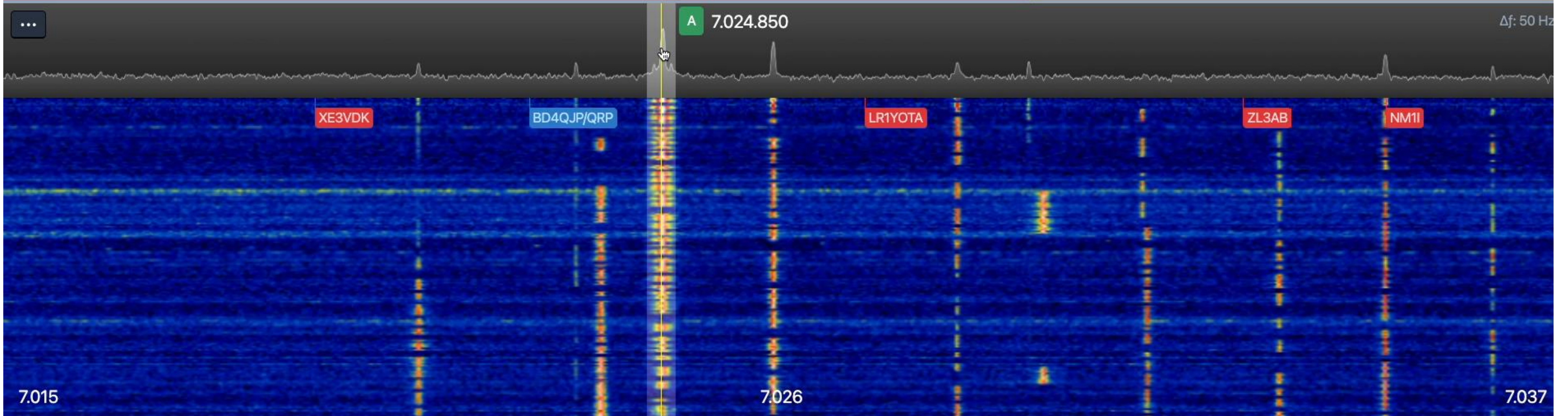
DXing ▾ | **Full ▾** | **CW ▾** | **WPX CW - Single Op ▾**

Callsign | TX Serial | RX Serial | Band

—— | | 40m

▸ TEST WW2DX | Enter | **RUN**
? | Shift + Enter

▾ Check Log

No matches

▾ History | Dupe? | Call | Rcvd | Sent | Band | Mode

None

1500 Watt Solid State Amplifier | ⚙▾ | ANT2 | 40m | 91° F | **Full ▾**

0 W | 1.0

| A | TX | | 7.024.850 ▾ | 40m ▾ |
| | RX | | | CW ▾ |

◀◀◀ | ◀◀ | ◀ | ▶ | ▶▶ | ▶▶▶

S7

NR Off | NB Off | ANF Off | BW 0.4 kHz | Vol 50% | Stereo | AGC Fast

+32 dB | DAX 1 | Split ▾ | ✕ Remove

▸ Admin

CW

Does it work? 🫤

PREMIUMDX

W1/Eastport	10/15/20/40
W1/Eastport	WARC/80
W1/Eastport	6/160
W1/Jonesport	6/10/WARC/40
W1/Jonesport	15/80
W1/Jonesport	160
W1/Jonesport	20
W1/Lubec	10/15/20/40/80
W1/Lubec	6/WARC/160
W2/Summit	15/20/40/80/160
W2/Summit	6/10/WARC
W4/Atlanta	
W7/Portland	
W7/Phoenix	
W7/Seattle	

REMOTEDX

W1/Athens	$0.09
W1/Chaplin	$0.09
W1/Marconi	$0.09
W2/Morse	$0.09
W2/Blueberry	
W2/Jefferson	
W2/Quaker	
W2/Taconic	
W0/Meeker	
W7/Tacoma	

DX

HH2AA	
KP4/Palmas	
9A/Croatia	
9A/Croatia-2	30

TEST

RHR/FlexTest

Console Settings
Devices

120%

Contact Support

W1/Eastport 10/15/20/40

09:05 to 23:44 UTC   In Use By WPXCW2021 $0.19-0.99/min   28:09   **Disconnect**

FLEX-v3.1.12   FLEX-6600   7.0-7.2 TX ONLY

Maine   Grid: FN65   150' ASL   ARRL ME   Washington County   ITU 8   CQZ 5

20m
CW

A 14.009.300   Δf: 100 Hz

PY1AX   SV2HXX   WW2DX   9A/K6BFL   ES4RD

14.000   14.025   14.050

GXP 4/4/4 Element Super Stack   83°   20m

EU   **AF**   SA   PAC   JA

Go Anywhere   Go

WPXCW-2021-PRACTICE (WW2DX)   CW   WPX CW - Multi Op

Callsign	TX Serial	RX Serial	Band
DL2	5		20m

DL2 5NN 5   Enter
DL2?   Shift + Enter   RUN

Check Log

DL2F	DL2CC	DL2FK	DL2JX	DL2OE	DL2QT	DL2TG
DL2AK	DL2DX	DL2FQ	DL2LI	DL2OM	DL2RH	DL2TM
DL2AL	DL2EH	DL2IC	DL2MM	DL2PK	DL2RZ	

History	Dupe?	Call	Rcvd	Sent	Band	Mode
None						

Summary	QSOs	Points	Mults	DXCC	10 min Rate	60 min Rate
40m	16	70	14	10	84	16
20m	4	12	4	4	18	4
Mults		×18				
Total	20	1,476	18	12		

Operator

Options

A   TX RX   14.009.300   20m   CW

S3

NR Off	NB Off	ANF Off	BW 0.4 kHz	Vol 70%	Stereo	AGC Medium

+32 dB	DAX 1	Split	✕ Remove

Admin

CW

Type CW

F1 CQ	F2 WW2DX	F3 TU 5NN	✎ Edit Macros	ESC Abort	Clear	Check RBN	33 WPM

600 Hz	Repeat 4.0s

Transmit

PTT (Ctrl)	Vox Off	Delay 0.2s	30 W	Proc DX	Mon 50%	TX DAX On

ALC   − dB

1500 Watt Solid State Amplifier   ANT1   20m   108° F   Full

0 W   1.0

WPXCW2021 Team   ☐ Priority

20m TX OK

TX	7.019 CW	W4/Atlanta		W4IPC
TX	7.021 CW	W1/Jonesport (6/10/WARC/40)		W2RE
TX	14.009 CW	W1/Eastport (10/15/20/40)		WW2DX
TX	14.012 CW	W2/Summit (15/20/40/80/160)		NN2DX

Summary	QSOs	Points	Mults	DXCC	10 min Rate	60 min Rate
160m	263	998	68	32	0	0
80m	1,028	4,099	274	67	0	0
40m	2,468	7,207	458	81	0	0
20m	2,967	7,062	595	102	0	0
15m	755	1,451	114	55	0	0
10m	153	239	12	8	0	0
Mults 🔔		x1,521				
Total	**7,634**	**32,026,176**	**1,521**	**126**		

Operator		QSOs	Points	Mults
---		1,805	5,224	490
AA4LS		322	459	35
K3JO		1,223	3,617	282
KM4SII		228	467	32
W1ADI		533	1,460	56
W2RE		1,426	4,969	359
W4FS		278	535	57
W4IPC		513	1,088	53
WW1X		289	468	32
WW2DX		1,017	2,769	125

Options

WPX SSB CONTEST - 2020
Multi-Operator Multi-Transmitter
WORLD
WINNER
Station WW2DX

Operated by W2RE K3JO W4IPC W4FS W1ADI AA4LS
WW2DX WW1X KM4SII K1LZ

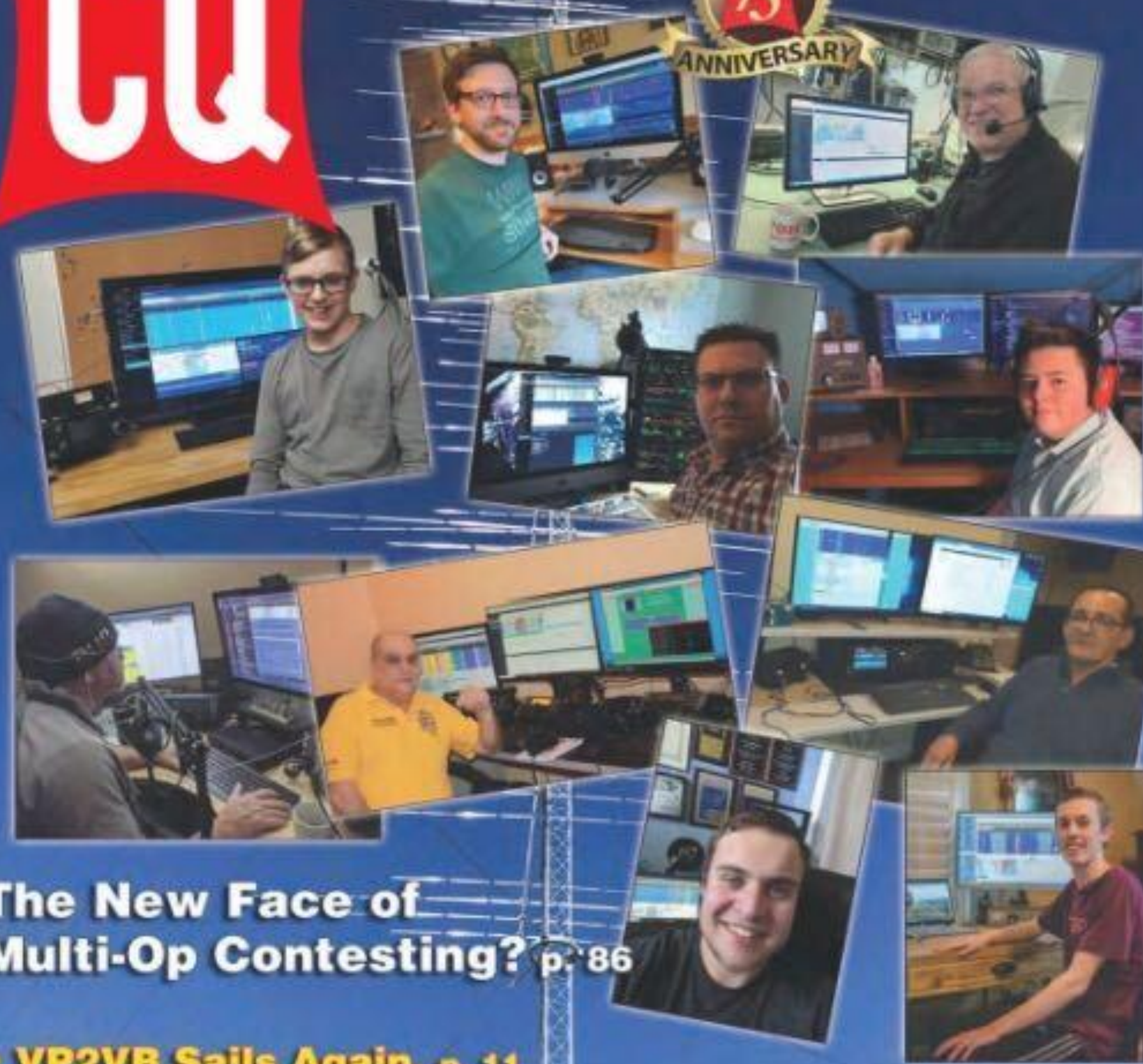Score: 29,798,224

Sponsor: Sid Caesar, NH7C

The New Face of Multi-Op Contesting? p. 86

- VP2VB Sails Again, p. 11

- Results, 2019 CQ WW DX CW Contest, p. 12

On the Cover: Could this be the new face of multi-op contesting? A team of 10 operators, all at their home stations, remotely operated WW2DX in Maine during the CQ WPX SSB weekend in late March. Details on pages 82 and 86.
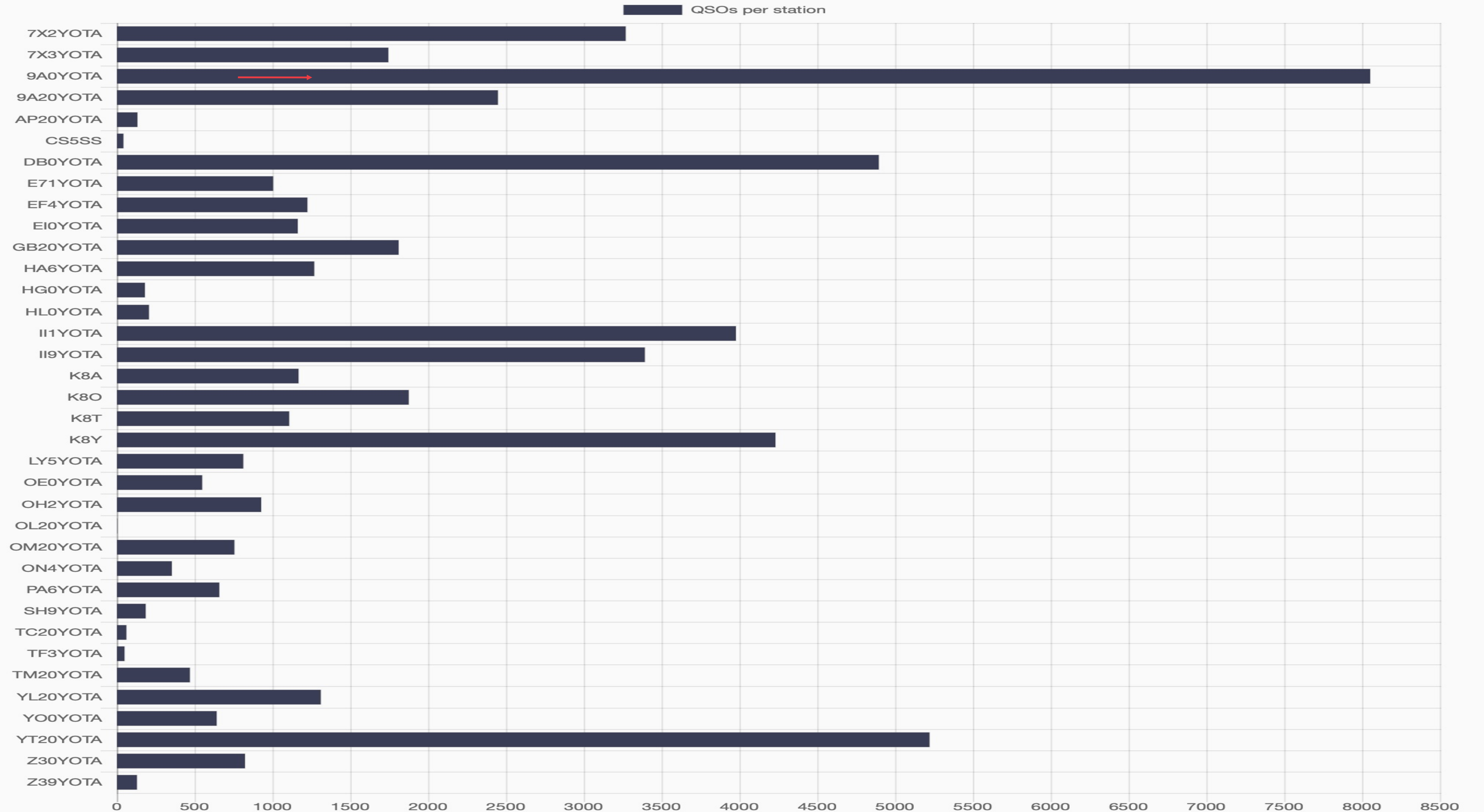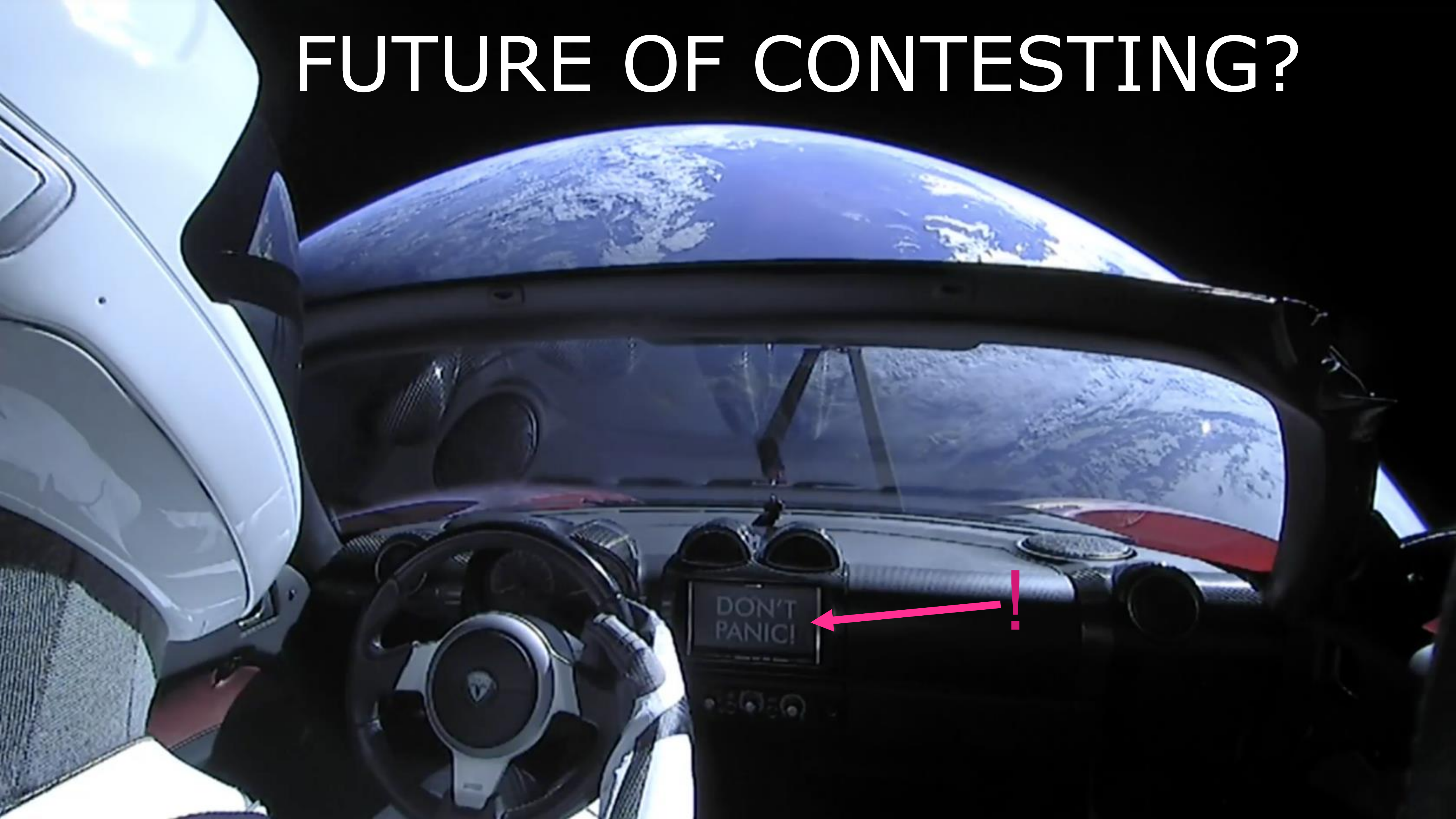
QSOs per station

Station	QSOs (approx)
7X2YOTA	3250
7X3YOTA	1750
9A0YOTA	8050
9A20YOTA	2450
AP20YOTA	125
CS5SS	40
DB0YOTA	4900
E71YOTA	1000
EF4YOTA	1250
EI0YOTA	1150
GB20YOTA	1800
HA6YOTA	1300
HG0YOTA	175
HL0YOTA	200
II1YOTA	3950
II9YOTA	3400
K8A	1150
K8O	1900
K8T	1100
K8Y	4250
LY5YOTA	800
OE0YOTA	550
OH2YOTA	950
OL20YOTA	10
OM20YOTA	750
ON4YOTA	350
PA6YOTA	650
SH9YOTA	175
TC20YOTA	50
TF3YOTA	40
TM20YOTA	450
YL20YOTA	1300
YO0YOTA	650
YT20YOTA	5200
Z30YOTA	800
Z39YOTA	125

FUTURE OF CONTESTING?

What's on the horizon?

- Lines between hardware/software become blurred.

- You may open two "VFO's" on your "transceiver" with one in Maine and another in Georgia.

- More advanced automation (antenna selection based on time of day or by auto polling of arrival angle)

- Centralized "station" computer to handle all aspects of the station.

- Radio gear/accessories will be networked OOB.

- Auto configuration and discovery.

- Standard API between hardware/software both open source and commercial.

- Same architecture will exist for DXpeditions.

KEEP PUSHING THE BOUNDARIES!

73!

WW2DX