



# New Trends in DxPedition (and past challenges)

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# Agenda

- Introduction
- RIB (Radio in a Box)
- Spoofing
- DQRM (Deliberate QRM)
- Conclusion

## Acknowledgements:

Some material used for this presentation was taken from the following presentations:

- 72<sup>nd</sup> International DX Convention, “Radio in a Box technology in Dxpediton environment “ by AA7JV, KN4EEI, W6IZT and W8HC
- “RIB, A Technology Solution to get Dxpeditons to No-Go Places Radio In a Box” by KN4EEI, N6MZ and AA7JV

# Introduction

## Traditional DxPeditions

- Individual or team operates on site at DX location
- Requires camping and setting up equipment from scratch
- Setup is time consuming
- Equipment is operated on location



## Remote DxPeditions

- RIB (Radio in a Box) dropped off and operated remotely
- Operators visit site a few times per day for minor maintenance and to top off gas generators
- Equipment operated remotely from ship



# Introduction

## ARRL Rules

- Operator(s) + radio/antenna(s) physically on location → DXCC contact
- Operator(s) + radio/antenna(s) onboard ship moored to location → Not eligible as DXCC contact
- Radio/antenna on location and remotely operated from ship → DXCC contact
- Each contact must be made by a human, no automated or robot operation permitted.

## RIB Advantages

- More cost effective → remember Bouvet Island
- Simpler + faster to setup (no moving tons of equipment back and forth) → remember Bouvet Island
- Safety → remember Bouvet Island
- More time spent operating
- Less environment footprint → easier to get landing permit
- Comfort → operation away from scolding sun, freezing water, dangerous insects and animals

# \*Typical Large DXpedition Operations Time-Line

Day	1	2	3	4	5	6	7	8	9	10	11	12
Non QSO Making Activities	Move Eq.	Move Eq.	Move Ops.	Move Ops. Supp.	Move Ops. Supp.	Move Ops. Supp.	Move Ops. Supp.	Move Ops. Supp.	Move Ops. Supp.	Move Ops. Supp.	Move Ops. Supp.	Tear Down
	Move Supp.	Build Stns.	Build Inf.	Maint.	Maint.	Maint.	Maint.	Maint.	Remove Non-Essential Gear	Remove Non-Essential Gear and One Digi Station	Remove CW 160 m and Digital Stations Gens. Etc.	Move All To Boat
	Build Tents	Build ANT-s	Build Stns.	Build RX ANT-s								Clean Up
Operation Efficiency (QSO rate)	0%	40%	80%	90%	100%	100%	100%	100%	90%	70%	30%	0%

8 days’ worth of operation in 12 days!

\*Technology Solution, Radio in a Box by KN4EEI, N6MZ and AA7JV



# History

## Politics

- In the past 10-15 years many DXCC island entities moved up the Most Wanted List (top 25 of 340)
- Many designated as “protected” areas or “eco-reserves” by their parent governments.
- As a result, access by traditional amateur radio DXpeditioners is being denied frequently.

## Technology

- Technology in the past did not easily permit remote operation
- Modern radios such as the Flex 6700, with simplistic front panel, inherently controllable remotely
- Remote control requires ethernet, serial port or USB

## Sponsors

- Northern California DX Foundation and Flex Radio to enable future DX from rare island entities
- Pioneers in RIB technology and mode of operation: AA7JV, W6IZT, KN4EEI, W8HC, N6MZ

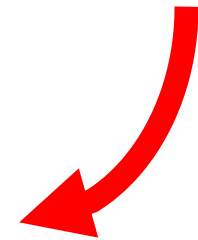


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# Setting up a RIB Station

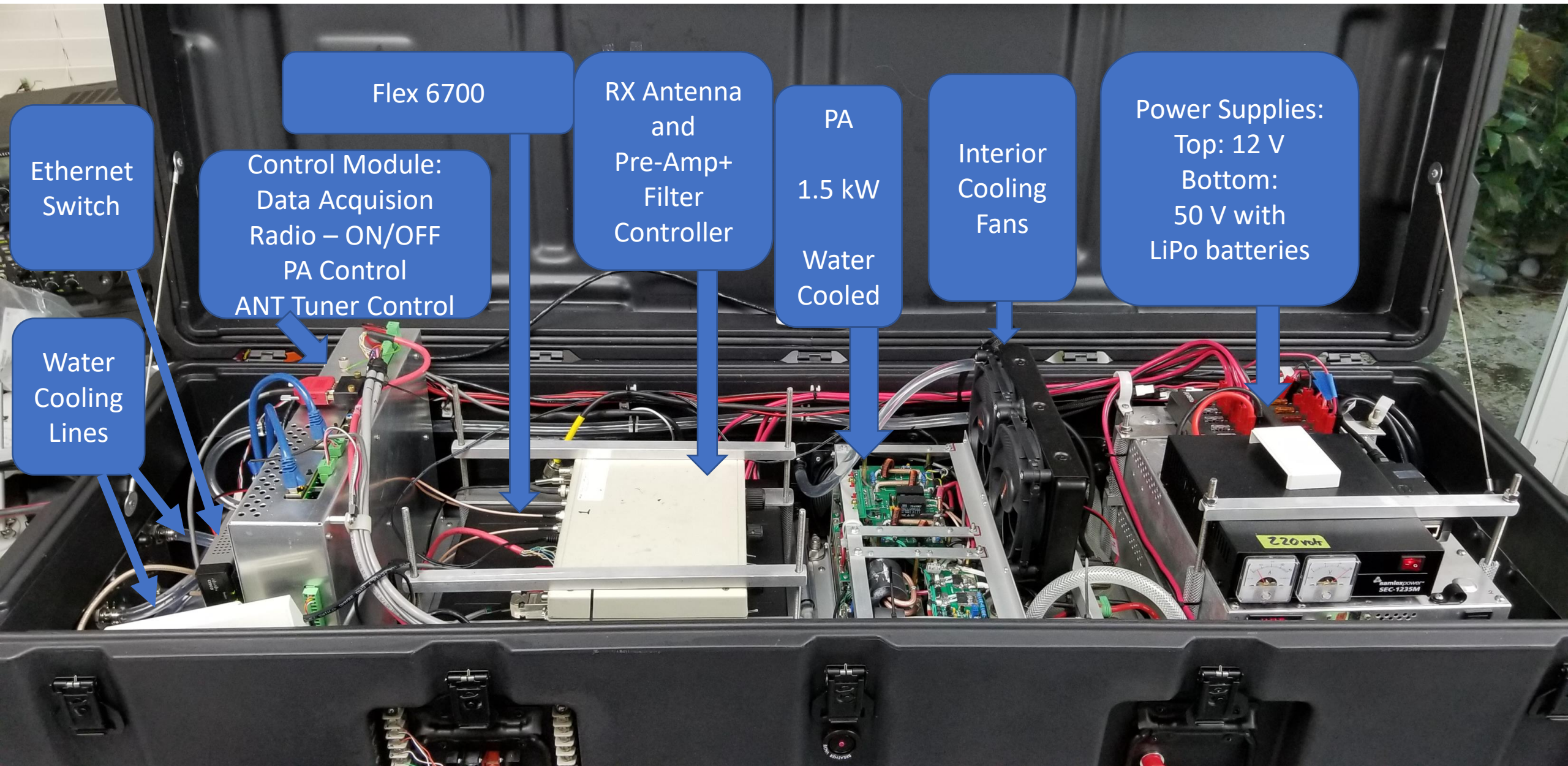


RIB in operation.  
Water cooling is used to remove heat  
from the amplifier and the interior.



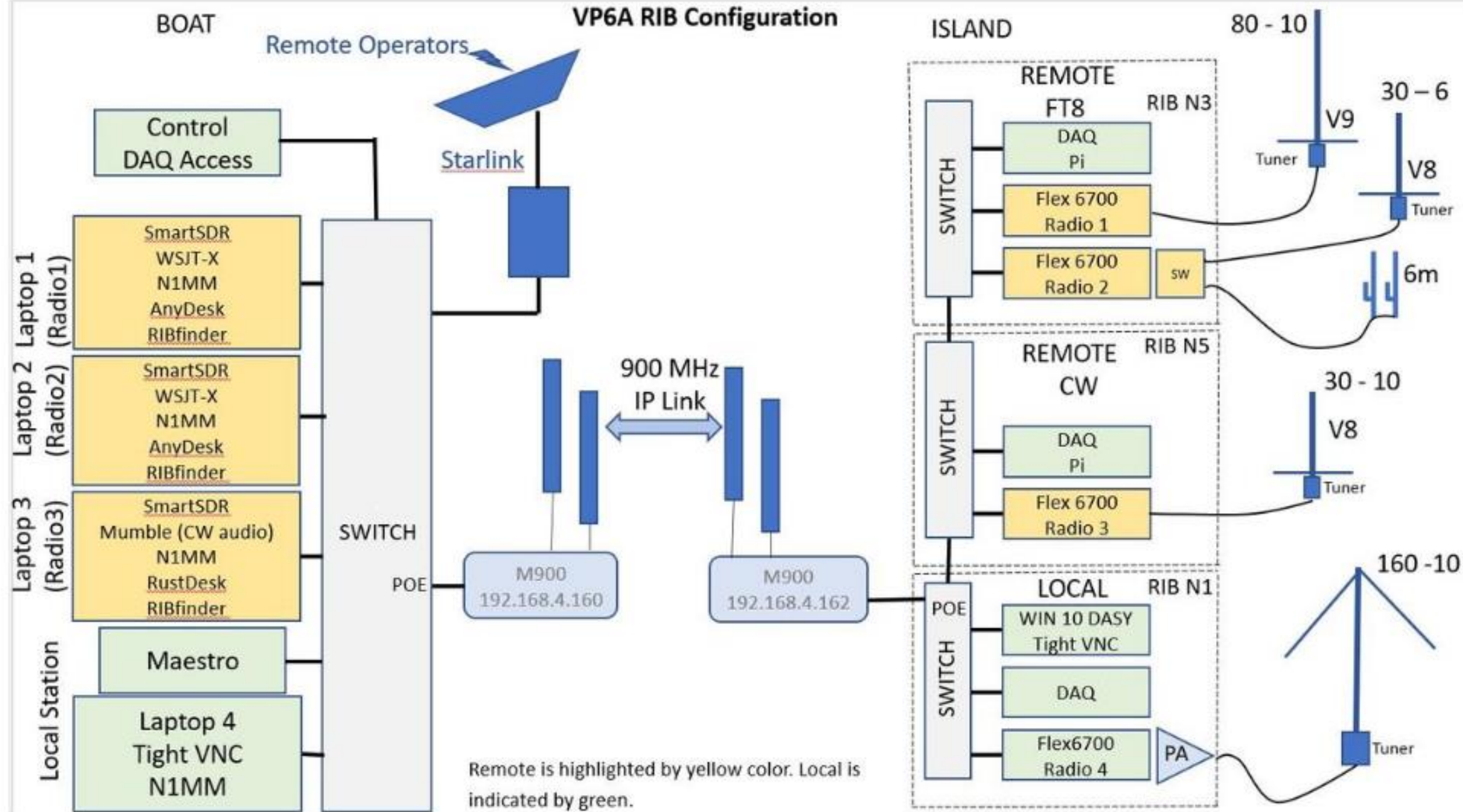


## \*Inside the RIB



\*Technology Solution, Radio in a Box by KN4EEI, N6MZ and AA7JV





\* Diagram taken from George Wallner's AA7JV QRZ webpage.

# RIB Stations Seen on the Air

## RIB stations I have worked

- RIB experiments began operation on November 2020 from a small private island in Bahamas
- C6AGU (Bahamas) 1<sup>st</sup> RIB station I contacted in was operated by George Wallner, AA7JV  
Operated him on 3 different bands in 2021-22 not knowing he was a RIB station  
Checkout his profile on [www.qrz.com/db/AA7JV](http://www.qrz.com/db/AA7JV)
- FO/AA7JV (French Polynesia) 2<sup>nd</sup> RIB station  
I operated him on 80 meters in early 2023 knowing he was using RIB setup
- VP6A (Ducie Island) 3<sup>rd</sup> RIB station I contacted during June 10-24, 2023 DxPedition  
Team led by AA7JV et al.
- E51D (North Cook Island) 4<sup>th</sup> RIB station I contacted during Aug-Sept, 2023 DxPedition  
Team led by AA7JV et al.

This only the tip of the “iceberg”, expect many RIB stations on the air in the near future

# Anti-Spoofing

## Spoofing

- Spoofing is the impersonation of highly desired station
- The spoofer's aim to give perspective Dxr a fake and useless contact

```
010200 -3 0.1 300 - H44WA 695243
010200 -3 0.1 360 - CQ H44WA QI90
```

## Traditional Detection methods

- Signal strength (DX are weak or moderate signals)
- CW fist
- Phone operator's accent
- FT8, clock offset
- Twitter announcements (e.g. FT8WW Crozet islands)
- DXNews announcements

## H44WA New Anti-spoofing Technique

- Send a periodic code with transmissions
- Compare on their website with timestamp

Last five minutes of verification codes for H44WA.			
Callsign	Date	Timestamp	Code
H44WA	20231019	005830	225674
H44WA	20231019	005900	148917
H44WA	20231019	005930	526016
H44WA	20231019	010000	344803
H44WA	20231019	010030	082164
H44WA	20231019	010100	561546
H44WA	20231019	010130	719038
H44WA	20231019	010200	695243
H44WA	20231019	010230	251444
H44WA	20231019	010300	797090
H44WA	20231019	010330	669870

Make sure that the Code and the Timestamp BOTH match what was sent by the station claiming to be H44WA.



# Deliberate QRM

## DQRM

- DQRM is the transmission of interference over the signal of a highly desired station.
- The DQRM'er aim to prevent or hinder DX hunters from making a successful contact with a Dx station.
- Some cast blame on modern radio code-less licenses
- Reality is DQRM always existed, it is more visible with more hams on the air.

## Traditional counter measures

- Several hams with directional antennas pinpoint location of QRM'er
- After the culprit is found, two options exist
  - Report to authorities, who useless give ham related issues low priority
  - Confront the individual, which can be dangerous
- DQRM'ers crave attention, ignoring or circumvent is currently best approach to combating them in long run.

## Northern California DX Association

- NCDXF allocated \$100,000 to help develop solutions against DQRM
- NCDXF will entertain grant proposals to identify bad actors.
- Better approach would develop technology to tune out or circumvent bad actors.

# Conclusion

- Current politics make RIB operation more attractive
- In response to many DXCC entities designated as “Protected” areas or “Eco-Reserves” by parent governments.
- As a result, access by traditional amateur radio DXpeditioners is being denied.
- Modern technology (e.g. remote operation) makes RIB feasible
- RIB development sponsored by NCDXF and Flex to enable future DX from rare island entities.
- More cost effective → RIB box drop off is cheaper than building up an entire camp
- Simpler + faster to setup → only preconfigured RIB moved and antennas
- Spoofing → Can be identified with traditional methods or anti-spoofing codeds
- DQRM → Seems to be getting worse
- NCDXF is taking issue seriously enough to offer \$100,000 to help develop solutions against DQRM

# Questions ?

## HAM RADIO OPERATOR



WHAT MY FRIENDS THINK I DO



WHAT MY WIFE THINKS I DO



WHAT SOCIETY THINKS I DO



WHAT MY KIDS THINK I DO



WHAT I THINK I DO



WHAT I ACTUALLY DO