

**PJ2T**

**The Signal Point Station  
Curacao, N.A.**

**[www.pj2t.org](http://www.pj2t.org)**

**Jeff Maass K8ND**



**Who Is K8ND?**

**Who Is K8ND?**

**Who cares?**

# Who Is K8ND?

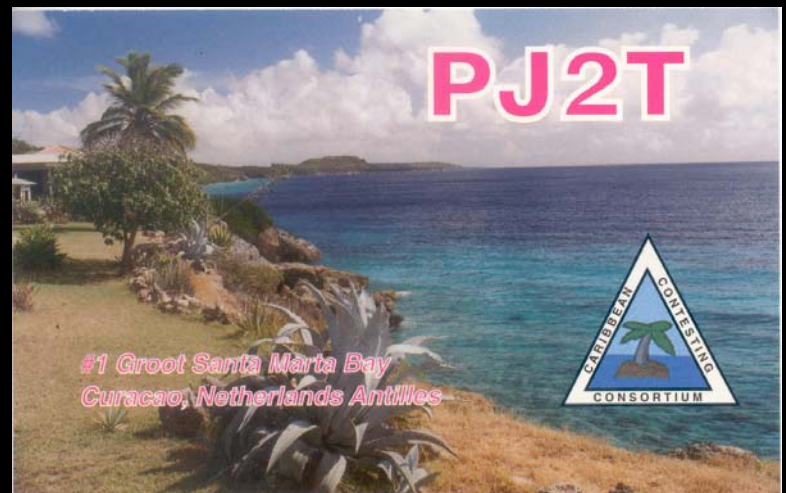
- **Active tester for 30 years.**

# Who Is K8ND?

- **Active contester for 30 years (calls used: K8ND, W8LT, FG7AR/FS7, VP2E, VP2EV, VP2EEV, PJ2T, PJ2/K8ND).**

# Who Is K8ND?

- Active contester for 30 years (calls used: K8ND, W8LT, FG7AR/FS7, VP2E, VP2EV, VP2EEV, PJ2T, PJ2/K8ND).
- Currently, President, Station Manager and one of the Directors of the Caribbean Contesting Consortium (CCC), which built, owns, and operates the Signal Point Station, PJ2T.





# What Is Caribbean Contesting Consortium (CCC)?

- Founded in 1997, after contest Dxpeditons to VP5VW, VP5FOC. Bag-drag contest CCC Dxpeditons then were done to VP5FXB, VP5CW, PJ2C, and KP2F.
- In 2000, John Thompson, W1BIH/PJ9JT was attempting to sell his house on Curacao, site of the many contest successes of PJ9JT and the record-setting CQWW Multi-Multi operations of Team Finland PJ9W in the '90s.
- The Signal Point house was purchased in 2000. CCC began the process of fixing up the house and planning the contest station.
- Major tower and station work took place in 2001. 6000 pounds of antennas, feedlines and towers were shipped in a cargo container in April 2001 and installed over the Summer.
- CCC is an ARRL Affiliated Club. Membership is limited to 20 members. New members are added by invitation.
- Club calls are PJ2T and W0DX.
- *“Dedicated to fun, international friendship, and advancement of the contesting art through superior operating technique and maximum application of technology.”*

# CCC Members (October 2006)

President	Jeff Maass K8ND	Marty Durham W1MD
Vice President	Gary Stouder K9SG	Dan Gravereaux N1ZZ
Sec/Treas	Tom Kravec W8TK*	Mal Preston NP2L
Chairman of Board	Noel Kindt W9EFL*	Doug Klein K4LT*
Director	Steve Bolia N8BJQ	Jack Reichart N4RV
Director	Geoff Howard W0CG/PJ2DX*	Scott Robbins W4PA
Director	Jim Livengood W0NB*	Goose Steingass W8AV*
Director	Tom Kravec W8TK*	Bob Kuhnle N8NR
Director/Station Mgr	Jeff Maass K8ND	Jim Galm W8WTS
Director	Joe Schroeder W9JUV	Keith Wishmeier WA9S*
Honorary Director	Bob Denniston W0DX (sk)	Bill Smith W9VA*
		Jim Fitzpatrick W19WI*
Founding Members		Jerry Rosalius WB9Z
		Marty Tippin NW0L



CURACAO, N.A.

# N Caribbean Sea

- Curacao is 2100 miles from Delaware Ohio
- Travel: 2.5 hours Cleveland to Miami + 2.5 hours Miami to Curacao (American Airlines)



# Curacao, Netherlands Antilles

- Part of the “ABC Islands”:  
Aruba (P4)  
Bonaire (PJ4)  
Curacao (PJ2)
- Size: 37 Miles by 9 Miles
- Population 170,000
- Languages: Papiamentu,  
Dutch, English
- Hato Airport has 11,000  
foot long runway
- Has one of the largest  
ports in the Caribbean,  
with ship repair facilities





Curacao's capital is Willemstad.





Willemstad is a regular stop for cruise ships.



There is a variety of terrain.





There is a variety of terrain.





There is a variety of terrain.





Some wildlife...Iguana (4-feet long)





Troupiale...





If it's a green plant, it wants to make you bleed!





**If it's a green plant, it wants to make you bleed!**



If it's a green plant, it wants to make you bleed!



If it's a green plant, it wants to make you bleed!





**SIGNAL POINT**



Signal Point viewed from the Sunset Waters Beach Resort restaurant. Towers are (L-R): 100-foot European tower, 54-foot WARC tower, and 80-foot USA/JA tower.



Signal Point is the house in the foreground left. It sits on a  $\frac{1}{2}$ -acre lot (200x100 feet) on a bluff 37 feet above the water. This photo looks toward far northern Europe.





Another view, looking roughly in the direction of Central Africa.

# PJ2T TOWERS & ANTENNAS



# PJ2T Towers





# PJ2T USA/JA (Left) Tower 80-Foot Rohn 45

5-element 6 Meter @ 86' (Rotates)

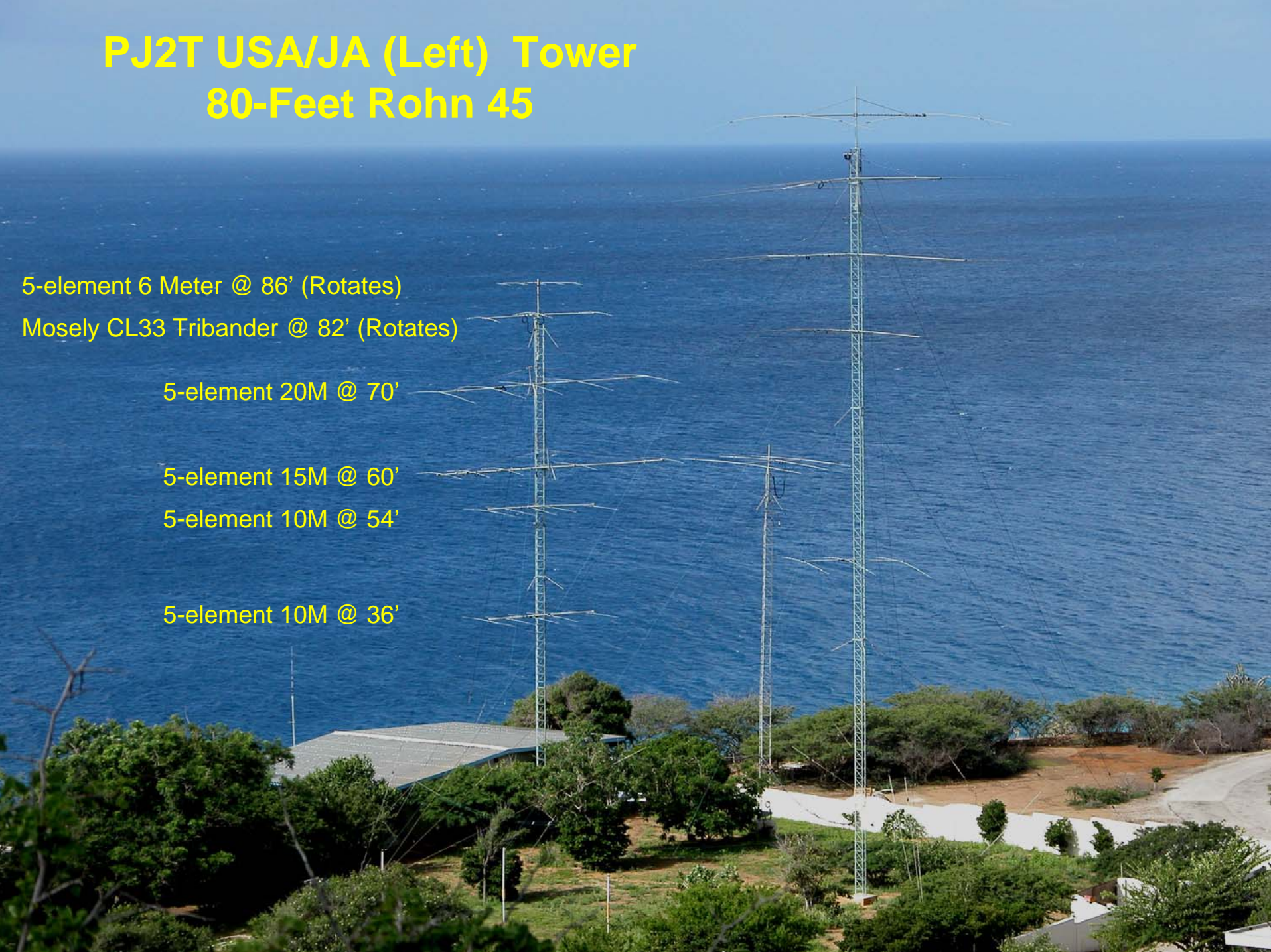
Mosely CL33 Tribander @ 82' (Rotates)

5-element 20M @ 70'

5-element 15M @ 60'

5-element 10M @ 54'

5-element 10M @ 36'





# PJ2T Europe (Right) Tower 100-Feet Rohn 55

2-el 40 Meter @ 107' (Rotates)

5-element 20M @ 95'

5-element 15M @ 85'

5-element 10M @ 75'

Cushcraft A3 Tribander @ 45'  
(Fixed South America)





# PJ2T WARC (Center) Tower 54-Foot Aluminum (Original PJ9JT Tower)

Cushcraft A3WS Duobander (17/12) @ 54 (Rotates)'

30 Meter Inv-V @ 50'



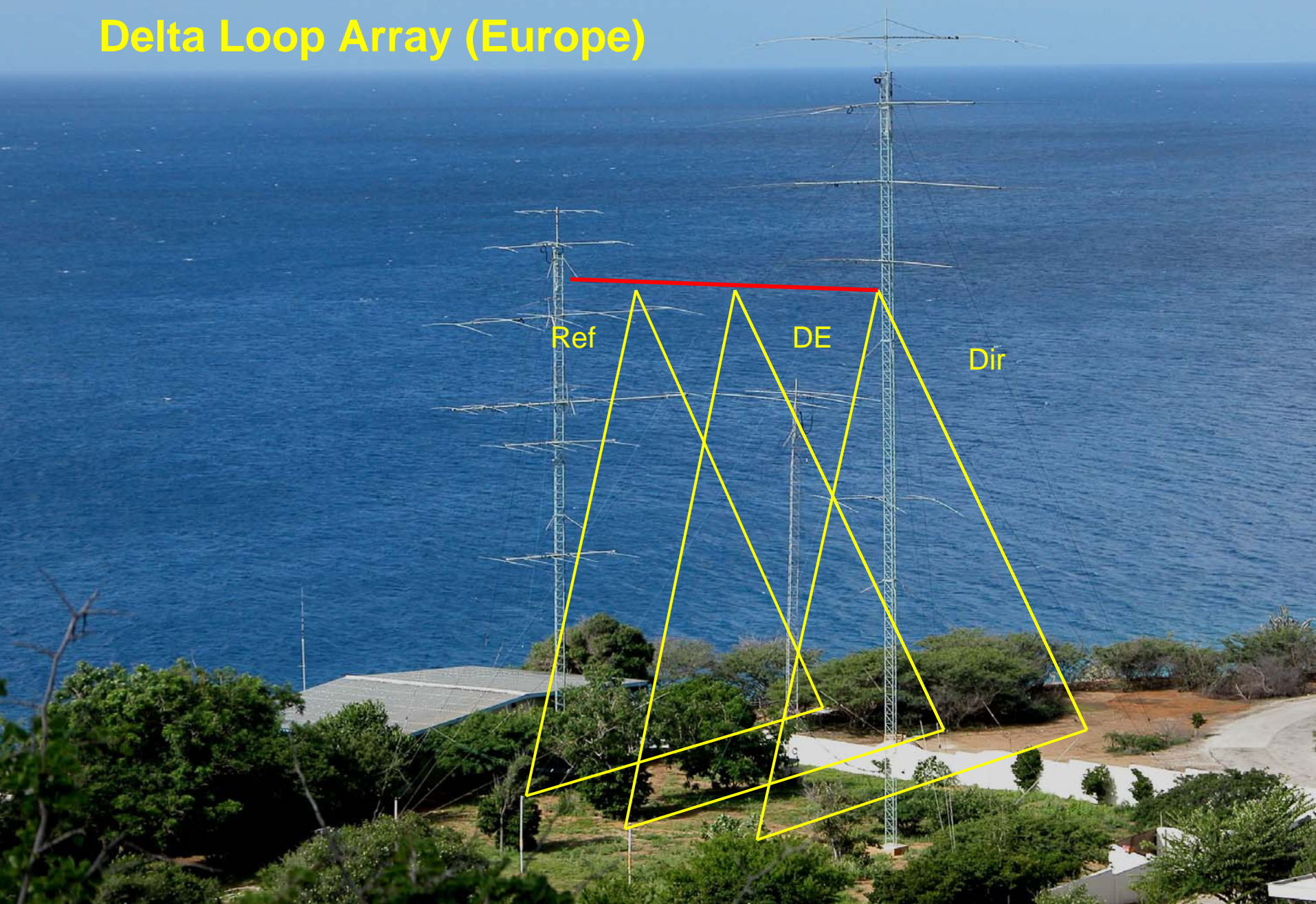


# PJ2T 160 Meter Inv-L





# PJ2T 80/75 Meter Delta Loop Array (Europe)



# PJ2T Beverages

Black + US/JA

Pink = Europe



**PJ2T Beverage Receiving Antennas**





EHS Guy  
Sections

Troupiale

Phillystran  
Guys

## PJ2T Feedline & Guys

Each of the antennas are fed by individual runs of ½-inch heliax hardline.

Because the ground is so hard, all feedlines are run to the house on overhead wires. This has not resulted in any problems, although we cannot shunt-feed any of the towers as verticals.

Towers are all guyed with non-conductive Phillystran down to 10 feet, then EHS steel cabledown to guy anchors.

Feedline  
Bundle

## PJ2T Feedline Entry

All of the antenna feedlines pass through the wall under cover of the porch area.

The greenish fat strap at the lower right is a ground strap, which is tied into the house ground, and then run down to the ocean for good measure. It is connected to the antenna bulkhead inside the wall.



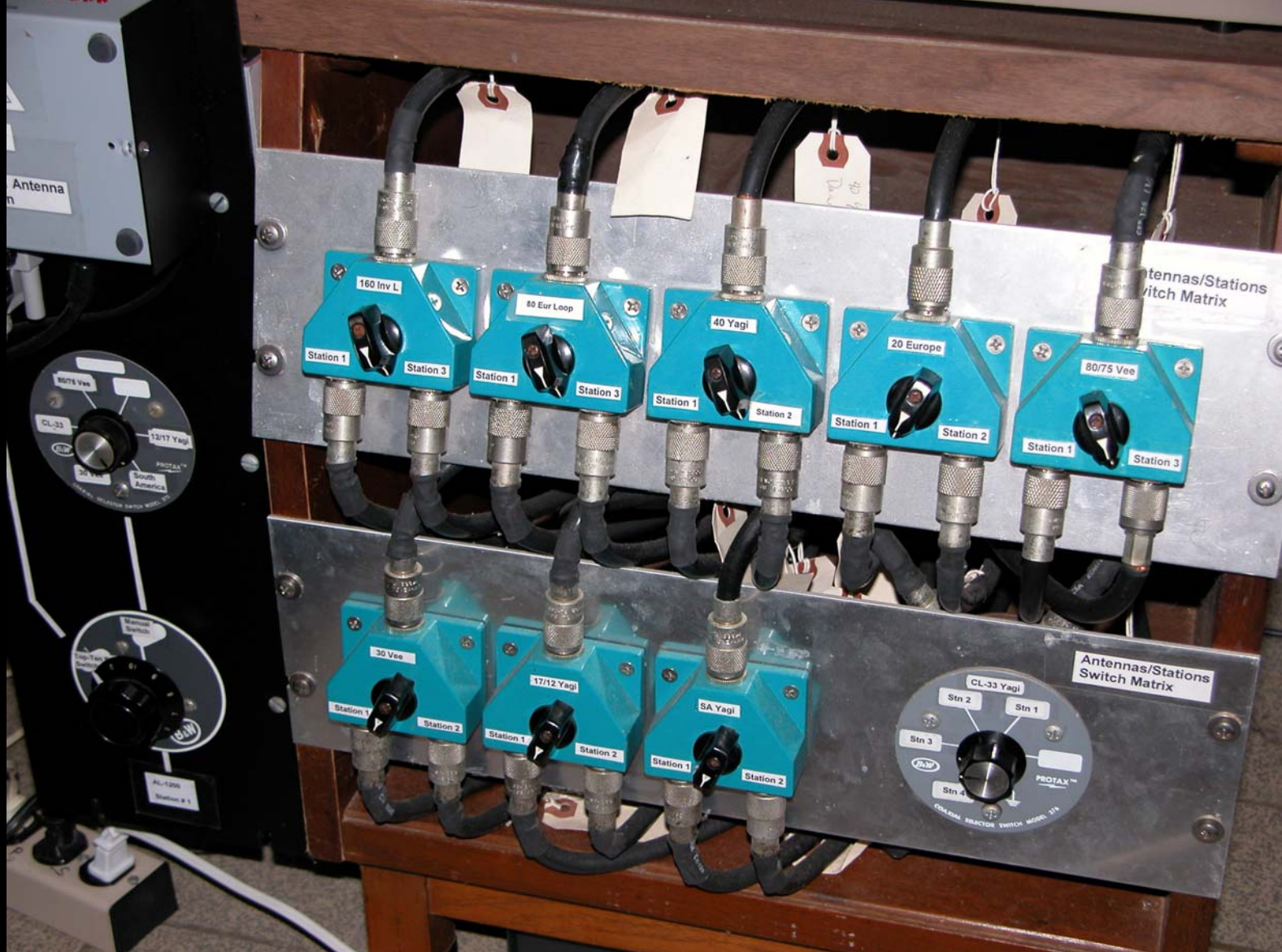
Ground strap





## PJ2T Feedline Bulkhead

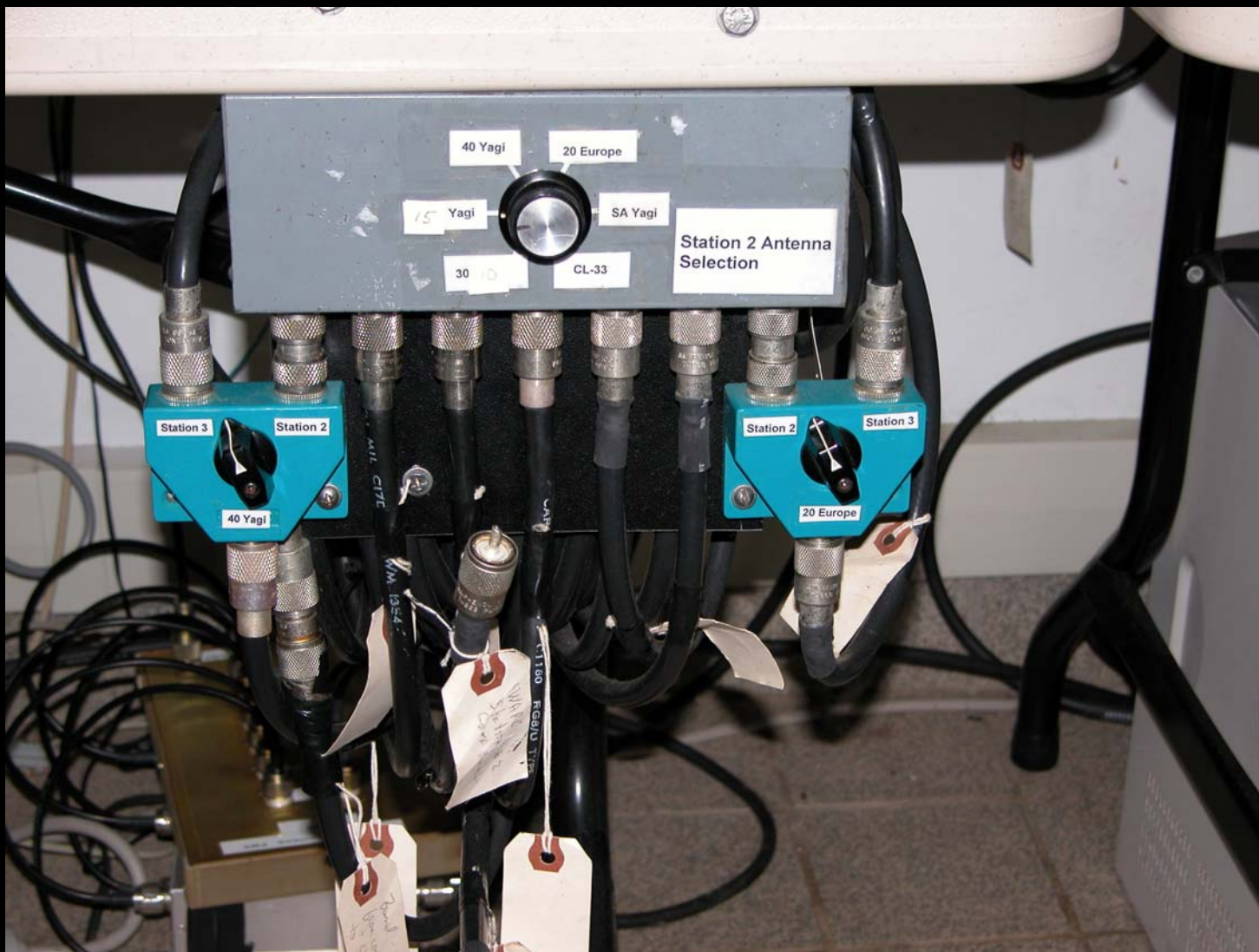
Each antenna is passed through the wall to this connector bulkhead.



## PJ2T Antenna Routing

Each antenna is switched from this panel (or the supplementary switches shown on the bulkhead) to Station 1, 2, or 3, where they may be switched again to another station. With some restrictions, antennas can be routed to any station without re-cabling station.





## PJ2T Antenna Selection / Routing, Station 2

Shown in “contest configuration”, with WARC antennas replaced by additional HF monobanders. Multiple antennas on a band are selected with WX0B StackMaster boxes on the desk.





## **PJ2T Antenna Selection / Routing, Station 3**

**Station 3 is designated during contests as the lowband / multiplier station.**



## **PJ2T Cables Dressed, Station 1**

**This shows how the many, many feedlines are not laying on the floor, but are affixed under the back of the operating tables, safe from feet and mops. Computer at each station is on the floor. We are now standardizing on Compaq Pentiums.**



# SIGNAL POINT HOUSE



## **PJ2T Common Room**

**The house consists of a large common room (which includes the kitchen, station, and a sitting area), and two bedrooms. This is looking towards the stations.**





## **PJ2T Kitchen**

**Station is to the left, bedrooms on either side of kitchen.  
This is a very old photo of the kitchen!**



## PJ2T Bedrooms & Sitting Area

Three double beds, one Queen. The bedrooms are air conditions, the station is not. Using the sitting area during CQWW CW is John K4BAI (left) and Leo S50R (right)





This pavilion / porch area built in 2003-04. Feedline and power were run to the front wall to allow location of a transceiver overlooking the water for casual operations.



The pavilion / porch area is a popular spot for meals. These are CCC member N1ZZ and Cindy Howard entertaining visiting PJ4R operators W9RE, KU8E, and N5OT following the ARRL CW DX Contest in 2004.





Here is Dan PJ2/N1ZZ operating the Ten Tec Omni VI in the pavilion. We have since added a large glass table and chairs and a gas grill to this area for dining and operating.



Added in 2006 is the East Sunroom, it's rooftop observation deck, and two porches. The Sunroom contains cable TV, DVD player, and a computer connected to the Internet via ADSL link. Outside, steps lead to the rooftop deck, and a telescope that can be used to stargaze.





Also added during 2006, this new cliff-side "Captain's Deck" (shown still under construction) provides another sitting area. The pavilion is shown in the background, and the tan structure to the right is a planter.



The drop to the water in front of the house is 37 feet high. There are steps (top center) to allow access for swimming and snorkeling.



# SIGNAL POINT - PJ2T STATIONS

# PJ2T Stations

- Additional station(s) can be installed for contests (up to six full-power stations) and operated simultaneously.
- Four (4) full-power Stations are always available to those who rent the Signal Point house.
- Networked computers at each station location run Writelog for contest logging.







## **PJ2T Station 1 – Run #1 (AE9B, K4BAI Shown Operating)**

**Stations are numbered 1 to 4. Station 1 is furthest right, in the corner which housed the PJ9JT station. This is the preferred station for single-op contesting, as it has access to all antenna switching within arms reach. FT-1000MP and either Alpha 78 or AL-1200 amplifier.**



## **PJ2T Station 2 – Run #2 (S50R, WB9Z Shown Operating)**

**Station 2 is left of Station 1, looking directly out the front picture window out to sea. During non-contest periods, this is the preferred WARC-band station. FT-1000MP and Ten Tec Titan II amplifier.**





## **PJ2T Station 3 – Lowband and Spotting (N8BJQ Shown Operating)**

**Station 3 is to the left of Station 2, facing the sitting area. For non-contest periods, the Ten Tec Omni VI is used. For Contests, the radio is another FT-1000MP, and a Cary LK-800 amplifier is used with both (the amplifier is behind Steve on the Station 2 table). The computer for Station #3 is used to distribute the spotting information by staying connected to a spotting node via a ADSL link. (Station #4 transceiver is shown to the left).**



## **PJ2T Station 4 –Spotting & Six Meter**

**Station 4 is left of Station 3, facing the sitting area. For most contests, this station is used infrequently, but it is used for spotting during CQWW Multi-2 operations. The radio is an TS-930 and the amplifier is an Alpha 76PA. Also at this location is the IC-706MK2 used for six meters.**





## **PJ2T Stations in “Full Contest Mode”!**

**This photo was taken in the last few minutes of the 2003 CQWW CW Contest. Ops (L-R): W0CG (Station #2) , K4BAI (Station #1, obstructed), N8BJQ (observing), K8ND (Station #3 on 160 Meters), K8MFO (observing), and W8WTS (listening to Station #3).**



## **PJ2T Supplementary Stations**

**This was the “sixth station” (used for 160 meters) for the 2002 CQWW CW Multi-Multi operation. Night-time operating from the porch area was a pleasure in the warm Curacao climate! In future, the pavilion / porch area might be used instead!**



# PJ2T CONTEST RESULTS

# Signal Point PJ2T Contest Results

## PJ2T World #1

2002 CQWW SSB, Multi-2  
2003 CQ WPX SSB 15M, Low Power  
2003 ARRL DX Contest SSB, Multi-2  
2004 ARRL DX Contest SSB, Multi-2  
2004 ARRL DX Contest CW, Multi-2  
2005 ARRL DX Contest SSB, Multi-2  
2005 ARRL DX Contest CW, Multi-Multi  
2005 WPX SSB, Multi-2 (World Record)  
2006 ARRL DX Contest SSB, Multi-2  
2006 ARRL DX Contest CW, Multi-Multi

## PJ2T World #2

2003 CQWW SSB, Multi-2  
2003 CQWW CW, Multi-2  
2003 ARRL 10 Meter Contest, Multi-Single  
2004 CQWW SSB, Multi-2  
2004 CQWW CW, Multi-2  
(Claimed) 2006 CQWW 160 CW Contest, Single-Op (K8ND)

## #1 DX, South American Record

PJ2T 2003 ARRL 160 Meter Contest, Single-Op (K8ND)



# PJ2T EQUIPMENT

## **PJ2T Radios**

**Main concerns for equipment are reliability and performance in a contest environment. We've found that the Yaesu FT-1000MP is a great choice.**

**We currently have the following radios at Signal Point:**

- 3 Yaesu FT-1000MP Transceivers, INRAD filters**
- 3 Yaesu FT-1000MP Field Transceiver, INRAD filters**
- 1 Ten Tec Omni VI, INRAD Filters**
- 2 Icom IC-765**
- 2 Kenwood TS-930**
- 2 Kenwood TS-940**
- 1 Icom IC-706MK2**
- 1 Yaesu 2-Meter FM radio**
- 1 Icom IC-228 2-Meter Radio (For VERONA Cluster)**



## PJ2T Amplifiers

**Main concerns are reliability in a contest environment.**

**The power limit on Curacao is 1 KW input for non-contest periods and 1500W output for contests (by special permission). We are migrating towards the more-capable amps, but the Alphas are workhorses.**

**We currently have the following amplifiers at Signal Point:**

<b>1</b>	<b>Cary LK-800A</b>	<b>(2 x 3CPX800A7)</b>
<b>1</b>	<b>Ten Tec Titan I</b>	<b>(2 x 3CPX800A7)</b>
<b>1</b>	<b>Ten Tec Titan II</b>	<b>(1 x 4CX1600B)</b>
<b>1</b>	<b>Ten Tec Titan III</b>	<b>(2 x 4CX800A)</b>
<b>1</b>	<b>AL-1200</b>	<b>(1 x 3CX1200A7)</b>
<b>1</b>	<b>Alpha 78</b>	<b>(3 x 8874)</b>
<b>1</b>	<b>Alpha 76PA</b>	<b>(3 x 8874)</b>
<b>1</b>	<b>Alpha 76CA</b>	<b>(3 x 8874)</b>
<b>1</b>	<b>Homebrew</b>	<b>(1 x 3-500)</b>

## **PJ2T Interstation Interference Reduction**

- **W3NQN bandpass filters are automatically selected by the radio on two stations and inserted manually by the operator on the others two.**
- **A full set of coaxial stubs are also on-site, and are applied when needed.**
- **Proper grounding.**
- **Ferrite is used for troublesome signal incursions on power, audio and control cables.**
- **Quality cable and connector installation are used throughout.**
- **Benchner YA-1 low-pass filters are used at the output of each amplifier.**



# PJ2T Spares

**A serious contest station must prepare for any sort of failure, to allow recovery within the contest period and and continuing while remaining competitive.**

**We have spares for all the main equipment, including tubes for all amplifiers, replacement rotors (all rebuilt by CATS Rotor Doc), rotor control boxes, computers, computer displays, and W3NQN bandpass filters. We have enough keyers, paddles, and headphones for three stations our size!**



## PJ2T Failures

**Any station located near to the ocean and in the subtropics must expect and deal with the problems of corrosion from salt and sun. This 2-meter Ringo Ranger finally fell down! We have learned how to prevent this!**

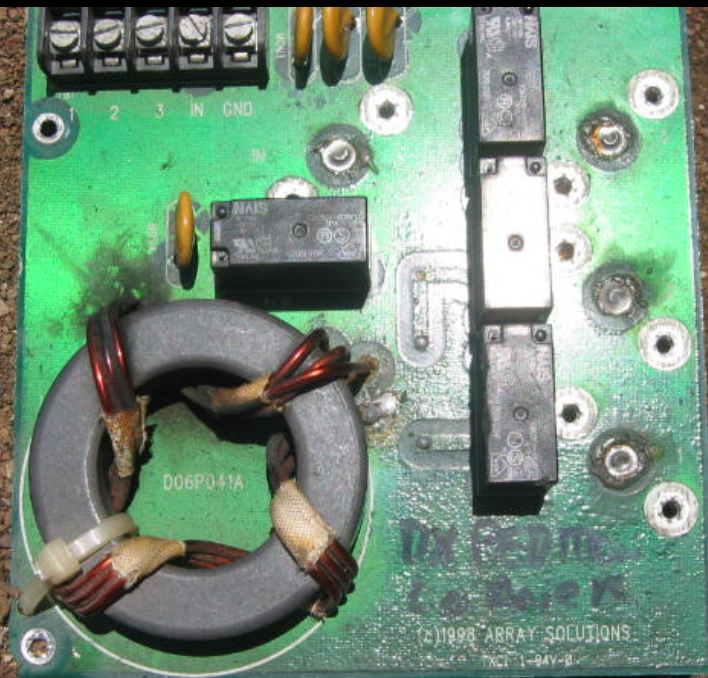




## PJ2T Failures

**Another photo of the 2-meter Ringo Ranger's corrosion. It's since been replaced and properly coated.**





## PJ2T Failures

**This is the tower-end part of the Array Solutions StackMatch system used to switch between the 15 meter yagis. It “crispy-crittered” for unknown reasons.**





**PJ2T Rust - Everything rusts.**





**PJ2T Rust - Everything rusts.**



**PJ2T Rust - Everything rusts.**





**PJ2T Rust - Everything rusts.**



## **PJ2T Tower Painting**

**Here's Jerry WB9Z painting the USA/JA tower. It's dirty, hot work in the Caribbean sun! Two-part marine epoxy paint is used on all towers.**





## **PJ2T Rust**

**All towers are painted on a 6-8 month cycle. It's getting thick, but the rust "blooms" are getting fewer and smaller!**



## PJ2T Rust

Here I am taking a wire brush to the steel portion of one of the guys. It was later painted with the same 2-part marine paint used on the towers. Not initially painting all the guys was a major error, and all steel guys at PJ2T were replaced in 2006 as a preventative measure. Non-Phillystran guys were painted, then sealed in Scotch 33+ electrical tape to limit access to the constant salt



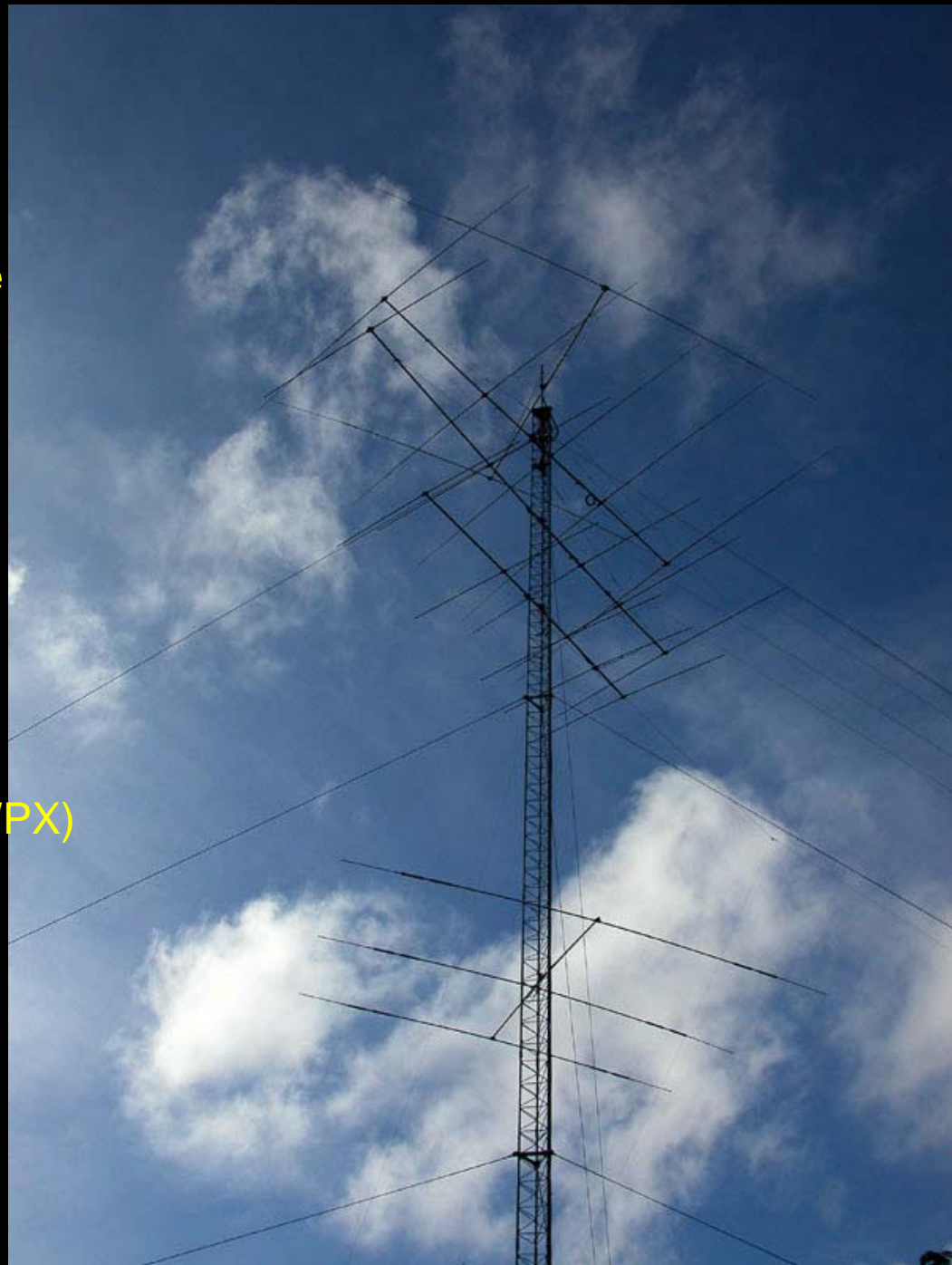
# **SIGNAL POINT / PJ2T RENTAL**

The Signal Point Station is available  
for rent by licensed Amateurs only.  
Details are on the web site at:  
[www.pj2t.org](http://www.pj2t.org).

**Rent** 1-2 persons: \$1400/week;  
3 or more persons: \$1550/week

**Station Support Contributions**  
(Major Contests - CQWW, ARRL DX, WPX)  
\$450 + add'l \$50/opr if more than one

**Station Support Contributions**  
(Non-Major Contest)  
\$200 + add'l \$50/opr if more than one







The obligatory Curacao Sunset Photo! On non-contest days, everything stops when sunset happens so everyone can watch!

# The Signal Point Station – PJ2T



More information on the web at: [www.pj2t.org](http://www.pj2t.org)