Promoting SSB, CW & Digital on 144 Mhz and up

May-June 2007 #317

Chairman's Corner

Saying goodbye to an old friend also means that it is time to face reality.

By Art Jackson KA5DWI - Chairman

Saying Goodbye

On Wednesday night May 2^{nd} , here in Fort Worth, Texas we had our second round of severe thunderstorms with high winds, a few was John,



gustnados and a second round of hail. I had already suffered almost was alright. I \$6,000 in damage two weeks before. I had to prepare our center closet for a quick dash another damn just in case. Luckily we survived. We had nothing but a hard rain and a little wind. I sat back in my recliner to study for my last regular exam and contemplate my last

writings on Criminal Evidence and Process for this semester.

Just as what had happened after our last major storm, out of the blue the phone

rings. It is John Petersen, KM5ES calling to find out if I was okay and what had happened. That making sure that everything gave John the old, "I'm studying for test tomorrow, but we got lucky, no damages this



L to R: John/KM5ES, Bob/ W5FKN, Art/KA5DWI 2004 Lake Texoma

time." John responds back to me," well my minutes are about to run out on this cell phone and I just wanted to know that you are okay." I kind of laughed and thought to myself, "Just like John, down to the last minutes on his cell phone and he's calling me to see if I am okay. What good could he do?" John always cared about his friends. Cont.pg 2

2 METER HAWAII BEACON HEARD IN MAY! By Gordon West WB6NOA

July is the 2 meter and microwave magic month for record breaking tropospheric ducting between California and Hawaii. It was exactly 50 years ago when the late John Chambers, W6NLZ, in Southern California completed the 2 meter recordsetting QSO with Tommy, KH6UK, in Hawaii over a path of 2500 miles via "tropo ducting". The contacts were completed in both CW as well as AM on both 144 MHz and 220 MHz.

During this same time, the military, conducting Operation Tradewinds, established near-daily mainland-to-Hawaii contacts on VHF and UHF, with the greatest documented number of completed comms always occurring in July.

It was 21 years later that Paul Lieb, KH6HME, a California transplant to the big island of Hawaii, completed the first 432 MHz contact with Louis Anciaux, WB6NMT, IN JULY, over the 2500 MILE tropo duct path.

In 1980, Chip Angle, N6CA, completed the first ever 1296 MHz contact with Paul, running 1 watt via a TRW-52601 transistor driven by a Motorola transistor

Cont.pg 4



SWOT Net Control Gordon West works Hawaii on 3 watts over 2500 miles away!

John was a wonderful and intriguing person. He had his faults, but he really had a heart of gold. You might say he was resourceful. John had a Champaign taste with a beer pocketbook, but I was always tickled how he managed to set up quite a station despite his financial difficulties. That is not uncommon for many that live in less than prosperous areas. Somehow, John always landed on his

Somehow, John always landed on his feet and never took for granted what he had.

One thing about John was that if you yelled help, he would be the first one to respond. He would do anything for you without asking for anything in return. Still, if you offered to help him, he was always grateful to those that did. He always offered his home to you like you were part of his family. He was just a good old country Okie, He showed it and talked it, and he was damn proud of it. He could be hard-headed and stubborn, but aren't we all? He was a good soul. He could also stir a hornet's nest now and then with his comments (the only time I have ever been threatened by another Ham was a result of his comment). Despite all of that, for me he became a good friend and confidant. will definitely be missed.

I am typing this today because of John. If it had not been for him, you probably would not be reading this SWOT Bulletin. Five years ago, SWOT was going through some very tough times. These days and ages, many in this hobby are looking for instant gratification and have the attitude "What can SWOT do for me?" It is sad, but that

John Petersen - KM5ES

is the way it is. At least there are a few here that just love the hobby. John on his own initiative got several key members of SWOT together to reorganize and reestablished this club in 2001.

John got frustrated at times and definitely disappointed, but we were always lucky that



W5VYY John Gammon and KM5ES John Petersen, SK

other close associates like Jerry Casey and Jimmy Johnson were able to get him back to his real interest, 2 Meter SSB. John wished to relinquish the title of Chairman and pursue new interests in Ham radio. Luckily, I was to talk him into being Vice Chairman instead and run the club's website, another one of John's favorite side activities. In due time, John's interest in 2 Meters rekindled and soon after he started doing a SWOT Net again. We got him back for one last time.

Reality Check

I have on several occasions stated that I wished to part ways. Not because I am no longer interested in 2 Meter SSB or SWOT, but due to the demands of my current college studies. No one, including John has yet shown any direct interest to doing this job. As long as I had the assistance of John, Jim McMasters - KM5PO our Bulletin Editor, Larry Hogue - W60MF with NORCAL, Howard - WD5DJT our Secretary/Treasurer and the wonderful and dedicated efforts of all of our Net Controls nationwide, I would have no problems keeping the job until that volunteer says to us that they would do it. At least I could always depend on John as the sounding board, and vice versa.

have held each other up and have done this for the love of the hobby, and nothing else.

Now that John has left us. It is time for a reality check.

Several months ago, the Western States Weak Signal Society (WSWSS) shut down. It was financially sound and closed from what appears to be a simple reason, a lack of interest and concern on the part of its membership to keep the club contributing to the amateur radio community. Was it the fault of the membership or it is just the way things are? I am beginning to believe that it is the latter.

This wonderful world of the Internet should have been great tool to bring us together by sharing, organizing, and communicating, and foremost benefiting the Ham community. I am afraid it has doing the opposite for quite some time. Amateur radio was exactly that, "amateur". For several years, the Internet has made Ham Radio ".COMmercial". Hams were defined in that they were supposed to have no pecuniary (economic) interests. Today you will find at least hundreds and probably a few thousand MYCALL DOT COMS. On several occasions I and other administrators on the Yahoo Group have had to remind members that SWOT was non-profit, non-commercial and frowned on selfpromotion. About five times each year, I am deleting posts because of that. A few years ago while I was doing the Bulletin, one member of the inner circle suggested that I stop wasting my time and efforts on it and start publishing it for profit.

Times are changing and I can accept that. Now we all need to decide if SWOT can now really exist with this changing of culture. Does promoting Weak Signal best belong to "loosely" organized clubs like us, or does it belong to a .COM that while it describes how to work Tropo with a Squalo, it flashes

"the next time you work that new grid using WSJT or checking into a SWOT Net, give a toast to John Petersen for his contribution to our hobby."

commercial for the latest and greatest new 35 foot long Yagi

that you must have in order to have a fair chance to work it. It is a fair question.

At Ham-Com and the Central States VHF Society gatherings, as well as input from all of you, we need to discuss these issues and make one more attempt to setting a

course for the future. More important, let us realistic.

Answer one of the following statements that have been posed to me on more than one occasion:

What can SWOT do for me?

What can I do for SWOT?

It will help us decide where we go from here.

Finally, the next time you work that new grid using WSJT or checking into a SWOT Net, give a toast to John Petersen for his contribution to our hobby. John did have a sense of humor. He would even appreciate a raspberry. Thanks John, it won't be the same without you.

See you at Ham-Com & 73's Art Jackson KA5DWI

Update from Art Jackson 5/30/07:

After John's death, and no one had yet come forward to take over the SWOT Homepage, I decided to put on the Webmaster hat and do some updating. The website sadly had become poorly out of date. I apologize that it became that way. I will do everything in my power to get it back into shape and insure that it stays that way from here on out. In the last two weeks I have made significant updates and improvements. I need your input on what you would like to add. I want the site to be a service to all who visit it.

To keep maintenance at a minimum, we will be shutting down either the List-Server or the Yahoo Group Page. We will no longer maintain two lists. It is a burden. Visit the Yahoo site and vote in the poll or post your opinion (which one to close) on the list-server. In a few weeks we will pull the plug on one. Thanks again for your input.

Register your vote by visiting-

http://groups.yahoo.com/group/
sidewindersontwo

Howard Holloman WD5DJT - Treasurer May 1st, 2007 Treasurer's Report: \$2,997.67

to a rat-race mixer with a milliwatt at 28 MHz for injection. Chip went QRO with a water-cooled 7289 driver tube that delivered 30 watts output to drive a 7289 amplifier for hundreds of watts out.

The 2 meter July path between Southern California and Hawaii was so



Chip Angle, N6CA, (front), Looking for Hawaii on 10 Ghz! (West, rear, during interview)

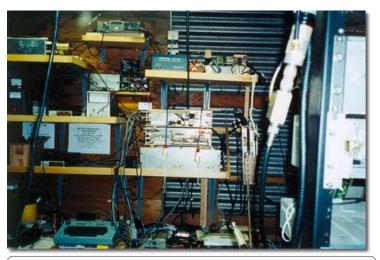
predictable that Chip Angle and Paul Lieb continued to achieve microwave records, conquering 2.3 GHz, 3.3 GHz, and finally 5.6 GHz, where extraordinary path loss is overcome by Chip's homebrew equipment at both ends of the circuit, 2500 miles separated by seawater, and hundreds of db help from the every-July weather conditions between California and Hawaii.

Everyone is hoping THIS July Paul in Hawaii and Chip in Southern California will be first to complete the record shattering 10,000 MHz contact. Liaison will be on 144.170 MHz.

"The tropospheric duct improves as the frequency is INCREASED until the walls of the duct become too irregular for propagation," comments J.B. Knorr. "Guide EM waves with atmospheric ducts", Microwaves and RF, May, 1985, pg 67.

"Duct heights of 150 feet to 1500 feet are most common, and seem to be optimum for frequencies on VHF, UHF, and microwaves," comments Joe Reisert, W1JR. This over-water low level duct may only be 300 feet thick, and routinely forms up high at Hawaii and low in Southern California.

"All of my tropo ducting is conducted at the 8500 foot level of the Mauna Loa volcano," comments Paul Lieb, KH6HME, Hawaii's only active tropo ducting enthusiast.



The KH6HME site on the Mauna Loa Volcano

"Chip Angle, N6CA, has discovered an every July 'hot spot' around 300 feet, for the best reception of my beacons," adds Lieb. 144.170 MHz

a beacon on 222 MHz 432.070 MHz

902 MHz beacon on site 1296.303 MHz

10,368.1 MHz when on site

The Mauna Loa volcano beacon site is at a wind swept corrugated metal "shack" shared with television translator

equipment, towers, and power source. The Hawaiian 2 meter, 423 MHz, and 1296 MHz beacons run 24/7, into a variety of stacked Yaqi's, loops, and microwave to the 48 inch Ku and Prodelin .6f/d offset feed. On X-band, the KH6HME/N6CA built system yields 10.3 watts at the feedhorn,



Paul Lieb has aquired the original 2 meter, 220 Mhz, and 432 Mhz equipment to ever work Hawaii!

with a 1.6 dB noise figure at the receiver. WR-90 waveguide and a W2IMU feed provide the hopefully adequate gain of 40 dbi. The entire 10 GHz is frequency-locked to a Ball rubidium frequency standard which has the local oscillator within 1 Hz/

It takes Paul Lieb almost 3 hours to drive from his home QTH near Hilo to the beacon/operating site on the side of Mauna Loa volcano. Paul must navigate a treacherous lava road to get on site, and bring enough rations in case the band is open for several days.

"When the band opens between
California and Hawaii, I AM THERE!" beams
Paul, strategically placing food in warm
equipment areas so his chow is always warm!

During peak 2 meter tropo times,

it's not uncommon to hear Paul operating from the remote volcanic site for nearly a week!

The July "trigger" to a tropospheric opening is the classic "California High" which settles in between Hawaii and San Francisco. The clockwise motion of the high pressure cell pulls in surface air, circulates this air UP, and since there is a greater concentration of air UP HIGH within this high pressure cell, the air begins to drop, creating a subsidence inversion.

As the air drops within the high, it begins to compress the air beneath it down to about 1500 feet. As the air gets compressed against the moist air below, it heats up and becomes dramatically dry. This creates both a temperature inversion as well as a vapor content inversion. Pressure also increases within this stratified layer, called a tropospheric inversion. This atmospheric stratification between Hawaii and the west coast may become so pronounced that Hawaiians begin hear to Southern Californians and Mexico FM music stations!

"I can tell a lot how tropo ducting conditions will be by listening to 88 MHz California and Mexico FM radio stations as I drive up the hill to the volcano," smiles Paul, adding that he always packs his car full of the two-way radio gear right after June Field Day.

This same tropo ducting "HIGH" regularly occurs in July and August all over the United States too:
Great Lakes to Texas path
Texas to Florida
Nova Scotia to Florida
East Coast to Europe?
California to Hawaii-always in July!

"CQ VHF readers can see the latest equipment for the 10 GHz California to Hawaii tropo efforts comments," Chip Angle,

N6CA, www.hamradio.com/N6CA.

"To see construction pictures of



1st ATV from Hawaii, over 2500 miles on 426.250 Mhz

the 10 GHz KH6HME station, go to www.ham-radio.com/KH6HME, and click on the "construction pictures".

The prestigious San Bernardino Microwave Society (www.ham-radio.com/SBMS/ had a visit from Paul, KH6HME, during their January '07 monthly meeting. Paul had a first hand look at all the members were doing to prepare for another potential shot at working Hawaii on 10 GHz, with plenty of interest in higher bands, too, locally. But 2 meters is always the first band to open.

Tropo ducting enthusiasts will tell you there is an untapped reservoir of potential microwave operators who are active on 2 meters SSB. Sidewinders on Two, the largest volunteer 2 m weak signal organization in the country, suggests joining them for their bimonthly newsletter, and continuous updates on all that is happening on 2m SSB. Tell your friends that \$12 a year is your membership fee for receiving the bulletin by mail, or \$6 to receive it by email as a registered member. Contact Howard Hallman, WD5DJT, 3230 Springfield, Lancaster, TX 75134-1214. (www.SWOTRC.org) SPREAD THE WORD!

On our Sunday night net, west coast SWOT net controllers give the latest on the Pacific high, and newsletter articles regularly focus on tropo paths all over the USA with photos and multiple hot web pages to browse.

Getting on 10 GHz is nearly as easy as coming up on 2 SSB. In fact, you can turn your 2 m SSB transceiver into the "business end" of a 10 GHz transverter:



Looking to Hawaii with 2 meters as the liason.

www.downeastmicrowave.com www.SSBUSA.com www.Prodelin.com

These companies all offer nearly "plug-and-play" 10 GHz SSB/CW transverters, ready for 10 GHz microwave excitement. "Put a 10 GHz horn up at any hamfest gathering, and it is like a magnet to attract inquisitive hams to find out what happens at 10,000 MHz," comments Kent Britain, WA5VJB, with the North Texas Microwave Society. (www.NTMS.org).

This same show it off technique was also a big hit at the recent Amateur

microwaves, with
10 GHz ready-made
10 and 24 GHz modules, just waiting for new
ham operators.

Electronic

the local Badgers Contester

Group

and the Southeastern VHHF Society (www.SVHF.org) and the Central States VHF Society

point to

Explore the

10 GHz equipment.

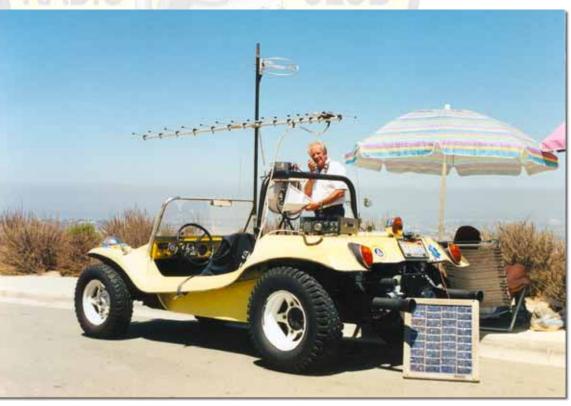
Supply SUPERFEST with 10 GHz demos put on by

microwave team.
(N8KWX@ARRL.net)
The Northeast
Weak Signal

(www.NEWSvhf.com)

(www.CSVHFS.org)
also make it a

regularly demo



Gordo works 2 meters to Hawaii, 2500 miles away from his mobile dune buggy.

SWOT Net Reports

Here are the net reports for April 2007

Northern California W60MF (Sunday)

April04/01 83
04/08 78
04/15 78
04/22 75
04/29 80

- 30 stations checked in all 5 times

- 29 stations checked
four times

23 stations checke3 times

- 17 stations checked

-23 stations checked once

Total grids = 13 with states

Northeast Missouri

(Monday 8pm) Date Check-ins/Grid: States/SWOT



North Texas W5FKN

(Wednesday 9pm)
Date Check-ins/SWOT,
Grids/States

04/04 19 - 10 - 13 - 02 04/11 21 - 14 - 14 - 03 04/18 30 - 19 - 16 - 03 04/25 25 - xx - 12 - 03

E. Oklahoma KD5ZVE

(Thursday 8pm)
Date Check-ins/Grids/
States/SWOT
04/05 no net
04/12 no net
04/19 22 - 14 - 04 - 14
04/26 20 - 09 - 04 - 11
03/01 15 - 07 - 03 KD5ZVE

E. Texas Piney Woods KM5PO

(Saturday 7am)
Date Check-ins/Grids/SWOT/
States

04/07 14 - 08 - 07 - 03 04/14 14 - 10 - 08 - 03 04/21 14 - 09 - 08 - 03 04/28 18 - 11 - 10 - 03

Southern California WB6NOA

(Sunday 8pm)



Event and Contest Calendar:

June 8-9 Hamcom 2007 Plano, Texas

June 9-10 ARRL June VHF contest

June 23-24 ARRL Field Day

July 26-29 CSVHFS conference San Antonio, Texas

Aug 4-5 ARRL UHF Contest

Aug 18-19 ARRL 10 GHz and Up Contest

Sep 8-10 ARRL September VHF QSO Party

Sep 15-16 ARRL 10 GHz and Up Contest

What to expect Apr-May

Meteors:

Omicron Cetids May 25, 7 zHR
Chi Scorpiids Jun 3-6, ? zHR
Arietids Jun 8 peak, 60 zHR
Zeta Perseids Jun 13, 30 zHR

June Lyrids Jun 15/16, 8 zHR

Phi Sagittariids Jun 18/19, 5 zHR

Ophiuchids Jun 20/21, 6 zHR

Beta Taurids Jun 29, 25 zHR

Alpha Lyrids July 14, 25 zHR

Delta Aquirids July 28/29, 25 zHR

Full Meteors calendar: W8WN
Gary Kronk

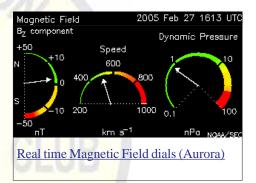
Aurora:

Watch:

http://umtof.umd.edu/pm/
latest2day.gif

www.spaceweather.com

http://www.aurorasentry.net/



Tropo:

Always keep an eye on:
the Hepburn Forecast.
the APRS Real time VHF propagation map.
the Presence of radar
reflectivity (false echos) HERE
the Green Page (144 Mhz Propagation Logger)
the Surface Map (there are many
choices)

Just a reminder to all concerning our SWOT Nets during the storm season in which we are now in. It will be at the descretion of the net controls in the event of severe weather that the SWOT Nets may be cancelled for that particular evening or morning. Especially during storms with a lot of lightning activity. Do not put your self at risk and use common sense.

How to control a Texas sized stack of Yaqis !!!!!

By Jim KM5PO

Here for the first time is a look at the KM5PO June contest secret weapon! This year we are challenging all other multi-ops with our new 70' stack of 7 element beams for 6 meters. This fine array is made up of 2 side mount yagis at 24.5 and 49 feet (home brew side mounts) and a third yagi top mounted at 72.5 feet. This makes the phasing distance 1.2 lamda. However, the real secrets are in the Stack Match and the rotor control software.

The Stack Match from Array Solutions is a device that allows the operator to select any single yagi plus any combination of the three. There's also an additional function which is called BIP/BOP and refers to the ability to use the array with all 3 yagis in phase (BIP=Both In Phase) versus using the array with the top two in phase but the bottom yagi 180 degrees out of phase (BOP=Both Out Of Phase). All this fancy talk translates to ways in which you "steer" the vertical ray angles and it's been done for many years by savvy 6 meter contesters. Switching between configurations while monitoring DX signals is amazing. Sometimes the incoming signals will be strongest on the lower antenna because the signal is arriving at a high angle and sometimes you want to use an odd combination like coupling just peering over the horizon, all the way



The Texas sized stack of Yagis for meters (left), the 2 meter through 2304 MHz tower, (right).

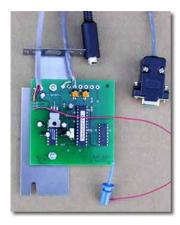
the lower yagi to the upper yagi..?!#* Modeling software predicts a pretty crummy pattern for this configuration but it actually works because at times you're needing to reduce noise or a birdie and this setting will do it! E-skip signals can come down on your antenna anywhere from very low angles

> to very high angles. The KM5PO secret weapon can handle all angles from 1.5 to 30 degrees.

The rotor control software is another story. What's a ham supposed to do when there doesn't exist a method to independently control multiple rotors and at the same time have the ability to slave any combination? Yep, you got it. All resourceful hams at this point go build it themselves.. and that's exactly what we did. Using the RotorCard DXA from Idiom Press, each rotor control box was modified so that the unit could be controlled by digital signals from a computer. We also placed a fourth unit in the "2



Hey, everyone gets into the act getting close to the June contest at KM5PO! Here is the XYL, Delilah helping to calibrate the rotors by talking to the guy on the tower. The Stack Match is the small blue box.



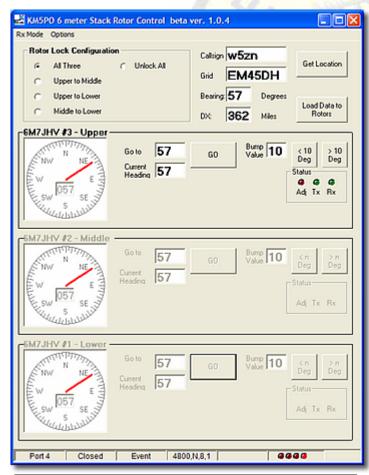
The Idiom Press RotorCard DX unit. 5 minutes to install and calibrate.

meter and up" rotor control so we could use software controls to position the 10 antennas Fits easily into the on this tower such as when we call the SWOT Yaesu rotor and took net each Saturday morning from EM12. Then it was time to roll up the sleeves and start some down home programming. I wanted the program to be easy to use for visitors to the station so it needed to have a web service

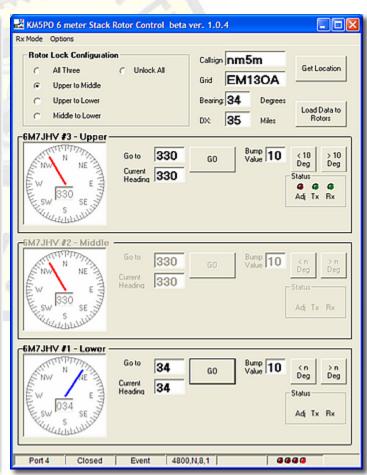
interface that would be as simple as the operator keying in a callsign heard, the program then fetching the station's longitude and latitude from a web service, calculating the bearing and distance from our grid and optionally loading the bearing data into one or many rotors. See the screen shots of what was developed or should I say, what is under development as this work will probably continue right down to the contest day! It's fun to keep adding features.

So if you're on the air during the contest (June 9 - 10) and hear us, you will know a little more about our efforts and if you're really working the contest for points, then best of luck to you!!

73's, Jim and the KM5PO contest team.



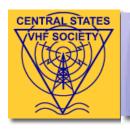
In this example the rotors have been all three locked together. The callsign w5zn was keyed which brought up pertinent data that is passed into the rotor controls. Only the Upper control is active since the Middle and Lower yagis are slaves to it. The operator may also enter a grid directly or a "Go to" bearing and click the GO button.



Here, we were working signals to the Pacific northwest (Hi Larry!) using the upper two yagis indicated by red needles meaning the two are slaved. Then a local station comes on that we can work with our third (lower) yagi on the blue needle and using the Stack Match we can direct RF to and from each group of yagis with the flip of a switch.

SWOT and **Selected 2-Meter Nets**

Day	Local Time	Area	Net	Frequency	Net Control Station
SUN	8:00 pm	Vacaville, CA	North California	144.250	W6OMF Larry
SUN	8:00 pm	Costa Mesa, CA	South California	144.240	WB6NOA Gordon
SUN	8: 30 am	Tucson, AZ	Arizona	144.250	N7SQN AI
SUN	8:30 pm	Zebulon, NC		144.220	N1GMV
SUN	9:30 pm	Holland, MI	Michagan SWAM	144.155	K8NFT
MON	7:30 pm	Albuquerque, NM	New Mexico	144.200	N5XZM Bobby
MON	8:00 pm	Colorado	Rocky Mt. VHF +	144.220	NOVSB W6OAL
MON	8:00 pm	Midwestern United States	Northeast Missouri SWOT	144.250	NOPB Phil
MON	8:00 pm	Sandusky	East Michigan VHF	144.250	W8IDT Bart
MON	9:00 pm	Tidewater, VA	ALI	144.230	
TUE	8:00 pm	California North Citys	NORCAL	144.250	KN6NG Tony
TUE	8:00 pm	Greensboro, NC		144.225	K4HC
WED	8:00 pm	Florida	Daytona Beach SWOT	144.250	W2RAC Richard W1LVL George
WED	9:00 pm	Texas, Okla, Ark, Louisiana	North Texas SWOT	144.250	W5FKN Bob
THU	8:00 pm	California South Citys	NORCAL	144.250	KA6CHJ Paul
THU	8:00 pm	Oklahoma, Texas, Ark, Missouri, Kansas	Eastern Oklahoma SWOT	144.250	KD5ZVE Jimmy
THU	9:00 pm	Tennessee	Upper Cumberland	144.225	N2BR Bobby
SAT	7:00 am	Texas, Okla, Ark, Louisiana	Piney Woods SWOT	144.250	KM5PO Jim



41st Annual CSVHFS Conference

July 26-29, 2007 • San Antonio, TX • Omni Hotel

SIDEWINDERS ON TWO ENROLLMENT OR RENEWAL FORM

NOTE: Though your membership and number are good for life you must renew annually to receive the newsletter and stay on the active list..

Enclosed find check/MO. to: Howard Hallman WD5DJT, Sec.Treas. 3230 Springfield Lancaster, TX 75134-1214							
New member: \$6 - receive bulletin by email \$12 - receive bulletin by US post office I have worked the following SWOT members: Call:SWOT NoSWOT No							
Renewing: S6 - receive bulletin by email S12 - receive bulletin by US post office My SWOT No. is							
Name:Street address		Grid Square					
CityStateZip Code Telephone Nos Optional: I check into the following nets: E-mail							
Receive Newsletter By Email: YES	NO						

SECRETARY - TREASURER :

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S.W.O.T. GENERAL INFORMATION

Send renewals and new applications for membership to Howard Hallman WD5DJT (See address above). Please make all checks payable to SIDEWINDERS ON TWO. Include your SWOT # for your renewals.

Send your SWOT "Members Worked" from your log to, SWOT Awards manager, Wade Massey, 1016 Weiss Ave, Princeton TX., 75407 \$1.00 fee for certificate and your certificate number would be appreciated, also SASE.

E-Mail all articles and reports to the Editors' email address listed above or you can mail them to Jim McMasters KM5PO, 2805 Shady Lane South, Arlington, Texas 76601.

MERCHANDISE:

Decals and listings available for \$1.00 each for shipping and handling from the Secretary/Treasurer.

SWOT Patches are available at a price of \$4.00 Each + \$.50 for mailing Badges are available from "The Sign Man", Rick Pourciau NV5A, $\underline{\text{http://www.thesignman.com/menu.html}}$





