SOUTHEASTERN DX CLUB

W4NT

HEADQUARTERED IN ATLANTA, GEORGIA

DX ALERT FREQUENCIES:
147.500 SIMPLEX
147.195/R K4SMX (ACCESS TONE: 7)
147.795/T

FEBRUARY 1988

RAGCHEW FREQUENCIES:
147.470; 147.520' 147.540

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NEXT MEETING TUESDAY, FEBRUARY 16, 1988 AT THE DAY'S INN
ON COPLAND ROAD (JUST INSIDE I-285 AT ROSWELL ROAD)

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PRESIDENT:	KEN BYERS, K4TEA	955-5800
VICE PRESIDENT:	DAVE CURRAN, WD4RCO	872-4339
SECRETARY/EDITOR:	SANDI JORGENSON, KL7JAR	476-1374
TREASURER:	NEIL FOSTER, KC4MJ	449-3340
ACTIVITIES MANAGER:	DAVE THOMPSON, K4JRB	448-0588

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ROSTER UPDATE, COUNTRIES NEEDED LISTING AND 1988 DUES ARE DUE!!!

Thank you to everyone who has responded quickly to the club's request for roster update information and payment of 1988 SEDXC membership dues. Your fast response makes Carl's (WB4ZNH) job of preparing the new roster much more civilized. To those of you who have forgotten this paperwork, please take a minute (like today) and send it in before the February 29th deadline. It will be very much appreciated by those who work on this task and prevent their burning the midnight oil to meet printing deadlines.

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CQ 160-METER CONTEST UPDATE

The band was aroar with "599 GA". Some of the members heard were: KN4B, WB4GNT, N4RJ, W4NT, N4HOH, K4EZ, W4DXI, K4UEE, WA4VDE, N4JF, K4RPK, K4SB, W4DMB, WB4ZNH, WA4CUG, KF4CQ, NV4D, K3KG, W4MGN, W4LVM, KB4IT, W4OWY, KC9BC, K4PI, WB4RNA, W6OKX, WN4KKN, WA4FBH, AND KP2A (K4TEA).

I could have missed some members possibly. Here are some rough scores:

Call	QSO's	Multipliers
KP2A	650	102
N4RJ	701	104
WB4GNT	320	75
K4UEE	260	78
K4PI	720	97
WA4VDE	143	57
W4DXI	263	61

If we do this well in the SSB contest, we can take second place. Again, even if only one QSO was made, send it in. We would like to see as many SEDXC calls listed as possible. REMINDER: The SSB portion will be February 26-28. A log sheet is enclosed in this issue for your use.

Mike, K4PI

Val, N4RJ, reported the multi-operator 160-meter effort from his QTH went very well. Operating the contest with Val was Dave, WOMHS, whose solo results from the CW portion would have placed him fifth in the world by last year's scoring. Their country count was 47. Val is planning on operating multi-operator during the SSB portion of this contest later this month and would appreciate club member contacts.

VAL, N4RJ

Ken, K4TEA, has returned from his Dxpedition to the tropical climes of KP2-land where he operated the CW portion of the 160-meter contest. Ken reported that he worked over 20 club members and would like to extend his appreciation to each member who made contact with him and to those who tried but were unsuccessful. [Editorial Comment: The term "DXpedition" is used only in the most general sense as I have seen pictures of KP2A's QTH. This was most decidedly NOT a hardship operating location!] Ken said he had "..a great time."

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MEETING PROGRAM FOR FEBRUARY 16

Don't miss this one. Don Riebhoff (silent key), K7ZZ and CT4AT, program on 1S1A will be presented. Don was killed in an automobile accident in CT-land last year but had completed the work on this slide and audio presentation before his accident. The program comes highly recommended by many DXers as one of the best DX programs they have ever seen.

Dave, WD4RCO

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IMPEDENCE

As DXers, we are all well aware of the importance of our antennas. Although a few members of the club have tried mightedly to disprove the old addage "if you can't hear um, you can't work um" by "improving" the efficiency of their final amplifiers to that somewhat approaching WSB, it still doesn't help pull out the weak one, and 6-inch helical gas-filled coax is expensive!!! Therefore, in this short article, let's concentrate on an easier approach, that of improving our antenna systems, and we will also keep in mind our continuing interest in the low frequency bands.

All too many of us, myself included, have at times let ourselves be unduly influenced by that elusive myth, SWR. But in fact, a SWR of 2:1 produces a power loss of only 4%, and 3:1 only 25%. Well, admittedly, that last case would worry even me. But a loss of 4%? Hardly worth worrying about is it? Well, yes, but not for the power loss. After all, that's only 40 watts per thousand. However, when we consider factors such as our modern day transceivers and the reduced size components of many amplifiers, not to mention tuning difficulties, and our "state of mind," it does become important.

Then too, there are a good many antennas around which are excellent performers, but since their design is ancient, so are the feed methods. So

while the antenna may promise excellent gain, the thought of trying to install and match that 600 ohm line to it causes it to be discarded.

With these factors in mind then, I've written a short computer program which should run on just about any computer in use. This program deals only with coaxial line. The program is pretty straight forward and nothing fancy is used, but if you have any difficulty, give me a call. It's based on that old rule of the quarter-wave transformer. Which brings me to my first point: the quarter wave transformer is NOT the rule, it is the EXCEPTION to the rule. This exception occurs ONLY when the impedence to be matched is approximately twice that of the coaxial line used to feed the antenna, AND the matching section impedence is approximately equal between the two. In other words, 50 ohm coax used to feed a RESONATE antenna of about 100 ohms impedence would require a matching one-quarter wave transformer (90 electrical degrees) of about 75 ohms. One more thing--the matching section is installed AT the antenna. Super! Big Deal! Yes it is! However, the original RULE from which this case is derived says you may match ANY LOAD impedence with ANY COAX of ANY IMPEDENCE by inserting a SERIES MATCHING COAXIAL TRANSFORMER of the correct length at some point in the line. So, how about if the antenna impedence is about 400 ohms? Fairly typical of some wire antennas. Forget it you say. No, it's really just as easy. Let's say we want to feed this 14 MHz baby with 72 ohm coax. Well, just plug in the figures in your computer program and you'll find that you need a series matching section (transformer) 49.74 degrees long (7 feet, 5.73 inches at 14MHz using 0.77 velocity factor) installed 103.85 degrees (15 feet, 7.34 inches) FROM the feedpoint of the antenna. In others words, connect 15 feet 7 inches of 72 ohm coax to the antenna feedpoint, (and use a 1:1 balun if it's a balanced load) put a coax connector on the other end, and then install your series transformer at that point using 25 ohm coax, and finish out the run to the shack with regular 72 ohm line. Whoops....here's the catch. That 25 ohm figure is NOT a typo, and of course you say there ain't no such animal. Wrong. Try figuring out for yourself the impedence presented by two equal length sections of 50 ohm coax which are PARALLELD by the use of two "T" connectors. 25 ohms you say? Right on! Ohms Law applies to ALL resistances. A perfect match. 1.00:1..not bad..and everyone, including your ALPHA and ICOM is happy. Of course, you could also use coax with an impedence of 169 ohms or greater. Now you're really laughing, but have you ever considered the resultant impedence that would occur if you used 52 ohm coax and a 4:1 balun on each end? Unless my limited math fails me, the result is greater than 169 ohms. So, to point two. Coax does come in various impedences including 50, 72, 90, 100, and 150 ohms. And you can parallel 52 and 72 ohm coax to get 30 ohm coax, 50 ohm coax to get 25 ohm coax, and use various baluns to up the figures to just about anything you need. So, it's not as bad as you think. And remember the program will always give you two choices; in the case just mentioned, either 25 ohms or less, or 169 ohms or greater (what a choice!!). But it WILL do the job, and it WILL change that original 6+:1 SWR to a beautiful flat line.

Now, one more case which is representitive of many antennas. Let's say we have a 14MHz antenna with a feed impedence of about 19 ohms typical of any beam of three of more elements, and many of the 80- and 160-meter antennas we use. We want to feed this monster with 52 ohms coax. Well, we could use a "T" or Gamma match, or Beta to get rid of that 2.71:1 SWR, OR, we can fire up our box, input the figures, and discover that a series transformer of 9 feet 10 inches made of 90 ohm coax installed 15 feet 1 inch from the antenna load will do the trick. The SWR is 1:1. No tuning, no fuss, no capacitors to weatherproof and it works every time. Now, don't hold me responsible, but you COULD use 72 ohm coax also. It won't be a flat line, but it will be a distinct improvement. You'll have to play with the line to discover where to place the section for minimum SWR, but it will work.

Let's finish up with a couple of points. The program examples given assume the antenna is RESONANT, in other words, NONreactive. However, the program will compensate for reactance.

Now, one last truth. A line of coax which is an EVEN multiple of an ELECTRICAL quarter wave will repeat the impedence at its input end AT its output end, REGARDLESS of the impedence of the coax section!! In otherwords, if your antenna has an impedence ot 50 ohms and you feed it with an exact ELECTRICAL half wave of 877.34 ohms coax, and connect it to your SWR bridge, your bridge will read exactly 1:1, which is correct, and neither you nor your system will ever know the difference.

Next month, how to stay up with the Valentines and their multielement 40-meter beams with a 65 foot hunk of wire

Ed, K4SB

EDITOR'S NOTE: See enclosure for Ed's Impedence Calculation Program.

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SOUTHEASTERN DX CLUB 1988 PROPOSED BUDGET

The budget will be voted upon at our regularly scheduled meeting of February 16. The proposed budget is as follows:

INCOME		EXPENSES	
Dues	$ 2,300	Banquet	$ 1,000
Banquet	1,000	Door Prizes	400
Door Prizes	500	DXpedition contributions	300
DXpedition contributions	100	Miscellaneous (badges, hats)	100
Miscellaneous sales	100	Hamfest hospitality	600
		Awards	900
		Supplies/Printing/Postage	1,200
TOTAL INCOME	$ 4,000	TOTAL EXPENSES	$ 4,500
		NET DEFICIT	($ 500)

Neil, KC4MJ

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AIR MAIL ENVELOPES

Sources of air mail envelopes have dried up in the past few years. I still like to use them for overseas mail even though I always get the standard answer "Everything Goes By Air Mail." Not true! I receive a lot of mail via "Sea Mail." Putting a Par Avion or Air Mail sticker on the envelope doesn't always get it into the right batch. The alternating red and blue border of air mail envelopes definitely keeps them on the right track. Jack (N4HOH) found a good source and he and I have split a large box. Our source: Top Flight Paper Products, Chattanooga, Tennessee. Phone 1-800-325-9455. Ask for Tablet Sales (ext. 284). Twenty-four boxes of 42 envelopes will cost $13.78 each plus $2.00 for shipping. Works out to about $0.65 a box. Not bad. The item to ask for is #6900464 1740.

Mike, K4PI

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NEW MEMBERS

Tad Williamson, WA4CUG, Mabelton, Georgia

Rick Morgan, WD4ABO, Canton, Georgia

Tad, WA4CUG, participated in the CW portion of the 160-meter contest as a first timer to that contest. He reported over 160 contacts and is submitting his score toward the club's aggregate score.

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'TIS HAMFEST SEASON, TRA LA LA LA LA TRA LA LA LA

Dalton	March 5-6	Madison	August 27-28
Orlando	March 11-13	Shelby	September 3-4
Charlotte	March 19-20	ARRL National Convention	September 9-11
Columbus	March 26-27	Augusta	September 17-18
Kennehoochee	April 2	Gainesville	September 25
Birmingham	May 14-15	Rome	October 2
Albany	June 4-5	Warner Robbins	October 8-9
Atlanta	July 9-10	Chattanooga	October 22-23
Huntsville	August 20-21		

The SEDXC will again sponsor a hospitality suite at the Dayton Hamvention. Our efforts in the past have given the SEDXC excellent national exposure to the DX community.

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FOR SALE

Large roomy ham shack and connecting custom-built workshop with direct access to antenna farm which includes beverage antennas and 100-foot tower on over five acres of land with three streams, pastures, and barn. The ham shack, workshop, and antennas come with a spacious three-bedroom contemporary home located in west Cobb 8 minutes from the square in downtown Marietta. For more information call: Ed, K4SB at (404) 439-0116.

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MEMBERSHIP COMMENTS PLEASE

The computer program for our SEDXC club roster can be modified so the we can develop want lists for members by band and/or by mode. Your comments are solicited on this addition to the want list for the club's roster.

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CONGRATULATIONS

Dave's, WØMHS, rough score during the CW Sprint contest appears to put him into the top ten.

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NEW COUNTRIES

In case you missed it, ARRL has approved Aruba has a new country effective April 1, 1988. Your QSO's must have been made with an Aruba station on or after January 1, 1986 to count for this new country. QSO's before January 1, 1986 with an Aruba station will count toward Neth. Antilles. If you have worked Aruba after January 1, 1986 and have submitted the QSL toward Neth. Antilles credit with the ARRL you will need to submitt another Neth. Antilles card to replace credit given you on Aruba QSL in order to receive credit for Aruba. The prefix for Aruba will be P4.

GROVER, KC4BX

Put this one under the Rumor Mill. SO maybe classified as a new country.

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ANNUAL SEDXC BANQUET REVISITED

Dinner was delicious, the company terrific, our program excellent, and the speech making kept short. All the elements of a fine evening spent with fellow DXers.

Carl and Martha Hensen's slide presentation on their DXpedition to 5T-land was very entertaining as was Carl's native Mauritania costume complete with head gear.

Awards were presented to the following club members for the club's four contests during 1987:

Greg Carter, KX4R	Phil Latta, W4GTS
Jerry Fiore, N4JF	Dave Thompson, K4JRB

Jerry Fiore, N4JF was given the award for the year.

A special award was given to Roy Conley, N4ONI, as the Most Improved DXer in the club. Roy has been licensed since August 1986 but has only had a good antenna system up for seven months. His country total exceeds 250 confirmed! Congratulations Roy.

To those who came thank you for your participation in making this a very special occasion for the SEDXC. And thanks especially to Dave, WD4RCO for his fine job of organizing the evenings events.

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SEDXC ACTIVITIES

Operating rules, contest events, etc. will be ready to hand out at the next club meeting. For those who will be unable to attend, the SEDXC bulletin will carry this information in the March issue.

Our current contest is the CQ 160-meter for phone and/or CW. Plagues will be presented for the most states worked and for the most countries worked regardless of mode used.

DXCC Endorsements

WN4KKN 178 Phone N4JF 346 Phone (november)

Missed but not overlooked -- N4JF took top honors in the 160-meter SSB for the state of Alabama for 1987.

160-Meter CW Claimed Scores

KP2A	360,000	N4RJ	207,800
K4PI	200,000	WB4GNT	79,786
KN4B	59,000	WB4ZNH	5,220
W6OKX/4	1,032	N4HOH	6,808
K4UEE	80,000	KA4VDE	21,717
W4DMB	31,772	K4EZ	26,680
W4DXI	60,000	NU4D	2,500

Estimated SEDXC total for the CW portion of the contest: 1,150,000 points! Last year we scored 660,000 points or an improvement of 490,00 points for the CW phase. We scored 790,000 points last year in the SSB phase and if we can improve that figure at the same rate the CW phase improved we will easily exceed 2,000,000 point combined score. GREAT GOING FOR THE CW OPERATION--LET'S KEEP OUR MOMENTUM MOVING FOR THE FEBRUARY 26-28TH SSB PHASE.

DAVE, K4JRB

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SOUTHEASTERN
DX
CLUB

COMPUTER PROGRAM FOR K4SB's IMPEDENCE CALCULATIONS

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10 CLS:A$="###.##":C=57.2957786666166
20 INPUT"ENTER FREQUENCY IN MHZ. (14.1-28.5- ECT) ";F
30 PRINT:INPUT"ENTER RESISTANCE OF ANTENNA OR LOAD";RL
40 PRINT:INPUT"ENTER CHARACTERISTIC IMPEDENCE OF MAIN TRANSMISSION LINE";ZO
50 INPUT"ENTER VELOCITY FACTOR OF MAIN TRANSMISSION LINE ";VF(1)
60 PRINT:INPUT"ENTER REACTANCE OF ANTENNA OR LOAD";XL
70 SWR$=" :1":SWR=RL/ZO:IF SWR<1THENSWR=ZO/RL
80 Z1=ZO*(SQR(SWR)):Z2=ZO/(SQR(SWR))
90 IFXL<>0THEN130
100 PRINT"PRESENT SWR IS ";:PRINTUSINGA$;SWR;:PRINTSWR$
110 IF SWR<>1THEN130
120 PRINT:PRINT"SWR CANNOT BE IMPROVED. READY FOR NEXT CASE ":GOTO30
130 PRINT:PRINT"THE SERIES MATCHING SECTION MUST BE GREATER THAN ";INT(Z1);" OR"
140 PRINT"LESS THAN ";INT(Z2);" OHMS"
150 PRINT:INPUT"ENTER IMPEDENCE OF SERIES MATCHING SECTION";Z3
160 IF Z3<Z1 AND Z3>Z2 THEN CLS: GOTO 130
180 INPUT"ENTER VELOCITY FACTOR OF SERIES MATCHING SECTION ";VF(2)
190 N=Z3/ZO:ZQ=SQR(ZO*RL)
200 R=RL/ZO:X=XL/ZO:WL=984/F:WA=WL*VF(1):WB=WL*VF(2)
210 ZM=Z3-ZQ:IFZM<0THENZM=ZQ-Z3
220 IFZM=>5THEN240
230 CLS:PRINT"SPECIAL CASE **** USE QUARTER WAVE TRANSFORMER ***":PRINT:GOTO310
240 B1=((R-1)[2)+(X[2):B2=(R*((N-1/N)[2)):B3=((R-1)[2):B4=(X[2)
250 B=((B1/(B2-B3-B4))):IFB<0THENB=B/-1
260 B=SQR(B)
270 A1=((N-(R/N))*B)+X:A2=(R+(X*N*B))-1:A=A1/A2
280 L1=ATN(B):L2=ATN(A):LA=L2*C:LB=L1*C
290 IFLA<0THENLA=180+LA
300 AF=(WA*LA)/360:BF=(WB*LB)/360:AI=12*(AF-INT(AF)):BI=12*(BF-INT(BF)):CLS
310 IFZM=>5THEN320ELSELA=0:AF=0:LB=90:BF=WB/4:AI=0:BI=12*(BF-INT(BF))
320 PRINT:PRINT"FREQUENCY";F;"MHZ  **  ANTENNA";RL;"OHMS  **  REACTANCE ";XL
330 PRINT"MAIN TRANSMISSION LINE ";ZO;" OHMS--VELOCITY FACTOR";VF(1)
340 PRINT"SERIES MATCHING SECTION ";Z3;" OHMS--VELOCITY FACTOR";VF(2):PRINT
350 PRINT"ELECTRICAL LENGTH FROM LOAD TO SERIES SECTION = ";:PRINTUSINGA$;LA;:PR
INT" DEGREES"
360 PRINT:PRINT"DISTANCE FROM LOAD TO SERIES SECTION =";INT(AF);"FEET";:PRINTUSI
NG A$;AI;:PRINT" INCHES"
370 PRINT:PRINT"SERIES SECTION ELECTRICAL LENGTH = ";:PRINTUSINGA$;LB;:PRINT" DE
GREES"
380 PRINT:PRINT"SERIES SECTION LENGTH =";INT(BF); "FEET";:PRINTUSINGA$;BI;:PRINT
" INCHES"
390 PRINT:INPUT"PRESS <N> FOR NEW RUN <P> FOR PRINTED READOUT OR <E> TO EXIT";NE
$
400 IFNE$="N"THEN10ELSEIFNE$="P"THEN420
410 IFNE$="E"THENCMD"S"SELSE390
420 LPRINT:LPRINT"FREQUENCY";F;"MHZ  **  ANTENNA";RL;"OHMS  **  REACTANCE ";XL
430 LPRINT" ":LPRINT"MAIN TRANSMISSION LINE ";ZO;" OHMS--VELOCITY FACTOR";VF(1)
440 LPRINT" ":LPRINT"SERIES MATCHING SECTION ";Z3;" OHMS--VELOCITY FACTOR";VF(2)
:LPRINT" "
450 LPRINT"ELECTRICAL LENGTH FROM LOAD TO SERIES SECTION = ";:LPRINTUSINGA$;LA;:
LPRINT" DEGREES"
460 LPRINT" ":LPRINT"DISTANCE FROM LOAD TO SERIES SECTION =";INT(AF);"FEET";:LPR
INTUSING A$;AI;:LPRINT" INCHES"
470 LPRINT" ":LPRINT"SERIES SECTION ELECTRICAL LENGTH = ";:LPRINTUSINGA$;LB;:LPR
INT" DEGREES"
480 LPRINT" ":LPRINT"SERIES SECTION LENGTH =";INT(BF); "FEET";:LPRINTUSINGA$;BI;
:LPRINT" INCHES":CLS:GOTO320
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