

Scuttlebutt

October 1991 Issue 95

CONTEST CLUB

Captain's Cabin

Stu Santelmann, KC1F

Albania Mania struck!!! By the time you read this, possibly every station with a transceiver and a hunk of wire will have a ZA in their log. Is it possible that ZA will go from #1 to something like #85 on the mostwanted list ? The number of spots has been enormous, even prompting some on the network to suggest publicly that there have been too many! And while I know who the ZA1A guys are, if the ZA1 "QA" guys are Hungarians, who are the ZA1 "HA" guys ? And do they count yet?

I was not really QRV during the 3Y5X operation, so some of this may not be new, but by listening to these pileups I have heard some of the best and worst that amateur radio has to offer. To hear the expedition ops expertly gliding through the massive pileups was a marvel to listen to, especially when you consider that this must have seemed like a several-week long contest to them. The magnitude of their contact totals seems staggering. But this type of operation seems to bring out the other side also:

There was the DK8 who, while apparently knowing full well that 14.145 was in use, landed there and inquired if the frequency was "busy". After being informed by several dozen "get a lifers" parked on the frequency that it was, he embarked on a lengthy philosophical treatise on what it meant exactly for a frequency to be "busy". Having failed to impress his audience with his existential wisdom, he then resorted to repeated entreaties for someone to "shut him up", to cross a line in the sand, to knock a chip off his shoulder, or something. This began to get dull after a while, so I moved on ...

Then there was the WA4 station, apparently commemorating something as a special events station, parked right on ZA1QA's transmit frequency on 20 SSB. While he was aware of the ZA's presence, he had apparently decided to stand his ground, and was announcing to the few who could hear him that they had staked out this frequency "weeks before". I couldn't help but wonder what they were commemorating - perhaps the Anniversary of Custer being overrun by Indians. He was sounding progressively more exasperated by the time I left.

Then I was listening to that fine contester Martti OH2BH on 14.145, as he went QRT and clearly announced that they would not be back for "two hours" - apparently even Martti could stand it no longer and needed a nap. The problem arose when a 4X4 wanted to use the frequency, hearing nobody there. He was informed by a G3 that the frequency was to be kept clear for two hours as Martti slept, just to make certain. I had visions of a candlelight vigil being kept across Europe, as they waited for the master to awake. The 4X4 naturally took exception to this, and a lively debate ensued concerning the finer points of RF spectrum usage. The conversation quickly expanded to include inquiries about each others' relative country totals. It then moved on to speculative comments about the others' parents marital status, at which point I could stand no more and spun the dial

On a higher note, someone apparently called the FCC monitoring office in Michigan to complain about the usual mess on 28.325, and were surprised to find that the FCC was quite interested, and began monitoring! I had accidentally strayed onto this frequency while in St. Martin, and had made a mental note to avoid this RF pothole in the future.

So what does this all mean? I'm not sure, but I worked ZA1A on eight band-modes, so I must not have been too jaded!

September 25 saw yet another installment of Contest University, held at the QTH of John Kenny, W1RR. Roughly 15 eager students gathered to hear the preachings of faculty K1RX, N6BV, and KC1F. Diplomas were distributed, pizza was consumed in mass quantities, and the new recruits vanished into the night mumbling about sleep cycles and radiation angles. This was a joint East Mass/New Hampshire venture - any other sections of the club want to try this? Maybe we need a correspondence school!

Join us at the next meeting October 13. We already have a full program, which is somewhat unusual this far in advance. Bring new members!!!

Next Meeting Paul Young, K1XM

The next meeting of the Yankee Clip-

per Contest Club will be on Sunday, June 2, at the Sturbridge Host Hotel, beginning at 1 pm. Note: We have not

changed hotels — This is the former Sheraton Sturbridge.

The attempted Coup last summer in the USSR was really a factional fight between groups which wanted to get Ed, NT2X, out of Moscow. The coup fell apart when Ed decided to go to Leningrad, which changed its name to St. Petersburg just to confuse him. Well, I may have a couple details wrong — come to the meeting and Ed will provide correct info.

The program is as follows:

- 1. KY1H on CQWW propagation predictions (slide show)
- 2. KY1H on KY1H multi-multi station tour (slide show)
- 3. NT2X on USSR trip / coup / ham radio expedition (video presentation; poss. slides)
- 4. K1CE on Leningrad hamfest

The Hosts Hotel is located on Route 20 in Sturbridge, Massachusetts, ½ mile West of I-84 (first exit off I-84 when coming South from the Mass. Turnpike).

To get to the Host Hotel, exit I-84 on to Route 20 West. You will pass through two sets of stoplights while noticing several motels on your right. Make a right turn just prior to the Burger King sign. This is the entrance to the Host Hotel. There is plenty of parking in front of the hotel.

The meeting dates for	1991 are:
DATE	DAY
October 13, 1991	Sunday
December 1, 1990	Sunday

Fishing Contest Results

Alan Singer, N2KW

The YCCC fishing contest was almost cancelled due to lack of interest — Both on the part of the anglers and the fish. However, late in the day, Alan, N2KW caught a yellow perch which encouraged a few others to try their luck. Rich, K2WR also caught a yellow perch, but that was the extent of the action.

One bystander kept insisting that it would be easier with a net, but due to the lack of a net control we persevered with hooks. Finally Alan declared Rich the sole winner (ouch). Rich is now the proud owner of a "swift" imported spinning reel. Alan says the other reel will be awarded next year, to the first member to catch a fish at the club picnic.

"Come back anytime!" the staff at the campsite exclaimed. They were impressed with the fact that our group left the area spotless!

What they didn't realize is that Jim, KR1S picked up all the beer cans. Jim says he only needs a few more cans to complete his 160 meter vertical!

Secretary's Report Yankee Clipper Contest Club

The August, 1991, YCCC summer picnic meeting was held at Streeter Dam State Park in Holland, Massachusetts, on August 24th.

Thirty members, their families, and many guests attended, including Rolf, DL7SI. Stu, KC1F, held a brief business meeting. We dispensed with reading the treasurer's report, which showed a healthy balance of \$2960.79. No new members joined, but several procrastinators paid their dues.

Most of the afternoon was devoted to grilling burgers, swimming, and, of course, eyeball QSOs. The funniest stories of the afternoon concerned Matt, KC1XX, his new tower, his landlady, and some of her pine trees. Doug, K1DG, announced that he has not yet learned to speak Finnish, but will be a part of the big OH team operating from PJ2 for the CQ WW SSB.

Allen, N2KW, held a fly-fishing contest, which was won by Rich,

K2WR, despite his late arrival. He took home the prize, a fly-casting reel.

Respectfully submitted,

Charlotte L. Richardson, KQ1F Secretary/Treasurer 27 August 1991

DATABASE OF THE MONTH: SHOW/XREF

Dave Robbins, KY1H

The SHOW/XREF database was assembled by N2KW and is available on either the YCCC or TRI-STATE cluster nodes. It is an extensive store of data about DXCC countries both present and past. To get basic information on how to use it just type SHOW/XREF which will give you a list of major topics that can be viewed.

As an example let's look at the DXCC country listing with the command SHOW/XREF DXCC. Because the list is so long he broke it down into callsign groups. Lets say we were interested in the first group that includes prefixes A through CL. SHOW/XREF CC1. This gives us a listing of prefixes, what country they are assigned to and references to notes about them. For instance many of the C prefixes reference note 81 so we read that, SHOW/XREF NOTE81 Which results in a listing of details about the current and past assignment of the C prefixes, like did you know that before 1957 the C3 prefix was used by Formosa? Or that before Sept 15,1963 C9 was for Manchuria which is now a deleted country?

New England DX Convention

The 1991 New England DX Convention and Dinner will be held on Saturday, November 9th at the Sheraton Tara Hotel in Framingham, MA.

The afternoon program will begin at 1pm and will feature Bob Winn of QRZ-DX bulletin fame giving a slide The evening program will include a DXAC update by Joe Reisert, W1JR, and a League report by Tom Frenaye, K1KI. Tom will also give the famous DX quiz. Jim Dionne, K1MEM will run the DX countdown. Bob Winn will give the feature slide show on Sable Island.

The afternoon session is \$6 and the dinner is \$24. The raffle this year will have a A3WS WARC band Cushcraft Antenna as the Grand prize.

Contact Bill Ewing, W1EYT, for more information.

Yagi Stacking John Kenny, WIRR

There have been several articles recently in NCI, DX Bulletin and YCCC Scuttlebutt talking about stacked yagis. The authors of those papers concentrated on the effects of increased gain and improved elevation coverage at low angles. There are additional advantages to stacking which are also very important to contesters.

Coverage of Two Directions Simultaneously

I have two separate rotatable 3 element 20 meter yagis (about 125 and 62 ft above ground). I seldom have them pointed in the same direction during a contest. Depending on propagation conditions there are two arrangements which maintain a good flow of QSOs and multipliers. When there is good propagation to the Far East, the upper antenna will be pointed in that direction and the lower one will be on Europe. These runs yield about 3/3 European and 1/3 Asian contacts. Otherwise I pout one on Europe and the other on Africa/Caribbean/South America, i.e. southeast. As an example of the effectiveness of this arrangement, in the last 3 hours of the 1990 COWW Phone contest I picked up 6 multipliers with the south east antenna. This strategy minimizes antenna rotations and the principle directions are covered at all times. It is a simple matter to switch to a single antenna to pull out an occasional weak one. Once or twice during a contest weekend there will be a pileup big enough to require the use of both yagis pointed in the same direction.

Reduced Precipitation Static on the Lower Antenna

That says it all. The precipitation static is usually at least 20 dB less on the lower antenna compared to what it is on the upper antenna. There have been contests in which I have lost over two hours of prime time due to precipitation static because I had only a high antenna. In any stacking arrangement it is very important to be able to use only the antennas low on the tower and it's important that these be rorarable.

Coax stubs, Part II Dave Robbins, KY1H

This is the second installment of my article about coaxial stubs for filters on transmitters. In the first installment I derived the basic attentuation features of a 1/4 wave length stub connected between a transmitter and an antenna. In this installment I will attempt to answer the question about using 2 stubs together to get better rejection. Before I start this time I must make one note about the previous article ... I made an over-simplification in the calculation of the loss function that added about 6dB of attentuation. The max attenuation for the single stub should have been about 31dB instead of 37dB as plotted.

I am now using the new version of Mathcad for Windows 3.0. It is much nicer than the original and I highly recommend it for anyone seriously planning to work on anything like this. (For you legal eagles out there: Mathcad is a product of MathSoft; Windows 3.0 is from Microsoft.)

In working on this document I changed it quite a bit from the last version. I added separate parameters for the cable for the stubs so I could look at using different cable for the stubs than for the transmission line. I also added the formulas to vary the distance between the two stubs as well as the length of each stub. This results in a much more complex problem and it becomes very difficult at times to visualize what is happening. I will attempt to show the various relationships by the use of plots of attentuation vs. frequency and the distance between the stubs.

First I will define the parameters for the feedline. Zo is the characteristic impedance of the line, V is the velocity factor, a is loss in dB per 100 ft:

Zo=50Ω V:=.66 α=1 dB per 100 ft

Now for the stubs. ZSTUB is the characteristic impedance of the stubs. VSTUB is the velocity factor and a STUB is the loss for the stub. d1 and d2 are the lengths of the stubs and ZL is the termination impedance (0 Ω is of course a shorted stub).

 $Z_{STUB}=50\Omega$ VSTUB=.66 astub=1 dB per 100 ft d1=11.5 ft $Z_{L=0\Omega}$

d2=11.5 ft

These values are for a pair of shorted 1/4 wave stubs on 20 meters. These will of course reject the second harmonic that would fall in the 10 meter hand.

The formulas for ZTRANS and ZPAR are defined at the end of the document. What they do is simple, ZTRANS just uses Smith chart formulas to transform an impedance from one end of a line to the other. Then ZPAR uses the basic formula for paralleling two impedances. The index values (n) and (m) added to some of the variables enable them to vary them over a range of frequencies (for (n)) or to change the gap between stubs (for (m)).

The basic flow of calculations is as follows:

- 1. Calculate Z1 which is the impedance at the end of the first stub.
- 2. Parallel first stub with main line = ZA.
- 3. Transform ZA to connection point of the other stub = ZGAP
- 4. Calculate Z₂ for impedance of second stub.
- 5. Parallel second stub with ZGAP to get ZNET.
- 6. Use ZNET to get reflection coefficient and then 'loss' value.

 $Z_1(n) =$

$$\label{eq:constraint} \begin{split} Z \text{trans}[Z \text{stub}, V \text{stub}, \alpha \text{stub}, \\ Z \text{l}, f(n), d \text{i}] \end{split}$$

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Z_{A(n)} = Z_{PAR}[Z_1(n), Z_0]
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 $Z_{GAP(n,m)} =$ $Z_{TRANS}[Z_0, V, \alpha, Z_A(n), f(n), gap(m)]$

Z2(n) =

Ztrans[Zstub,Vstub,αstub, Zl,f(n),d2]

ZNET(n,m) = ZPAR[$Z_2(n), Z$ GAP(n,m)]

Now we can play with fancy graphs to see what we have. First, let's plot attenuation vs. frequency for a gap of 0' (i.e. the two stubs are connected to the same point).

loss[Znet[n,0],Zo]



This shows the attenuation as the frequency is swept across the 20m band. Note that the max attenuation is about 6dB better than a single stub.

Now let's see what happens when the distance between the stubs changes. For this plot I will hold frequency constant and vary the spacing.

loss[Znet[7,m],Zo]



This shows the change from a spacing of 0' to 46', or about 1 wave length at 14.1 MHz. Note the dips at 0, $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ wavelengths.

This is a very interesting result, nothing at all like I had expected. But after long contemplation it seems to make sense. Consider first the farthest stub from the transmitter. It presents a very low impedance to the harmonic that is trying to be rejected. This low impedance is then moved along the transmission line toward the second stub. As this impedance is transformed along the 50 Ω line it changes from low to high and back over each 1/2 wave of the line so that after each 1/2 wave it is back to the original low value. At a point 1/4 wave along the line it presents a very high impedance. When the second stub is added it also presents a low impedance, but the total impedance seen by the source is a parallel combination of the transformed impedance from the first stub and the impedance of the second one. If they are both low at the same time the net impedance is even lower and better rejection results. When the transformed impedance of the first stub is high at 1/4 wave from its connection then the 2 stubs are fighting each other and the rejection is lower.

Now let's take a look at the pass band characteristics, in particular the impedance presented to the radio.

ZNET[n,0]



This shows the frequency dependence of the impedance at a spacing of 0' between stubs. Note how it changes over the width of the 20m band. It shouldn't be enough to affect most transmitters, but it does add another factor to tuning.

ZNET[7,m]



Now we take and hold frequency constant and vary spacing. Note that at $\frac{14}{4}$ wave and $\frac{34}{4}$ wave spacing the impedance is almost exactly 50Ω .

ZNET[n,5]



And now let's sweep the frequency across the band at a spacing of 14 wave

to see how this arrangement behaves. This change shouldn't bother any of today's transmitters or amps.

Now the trade off... For best rejection of harmonic, as I showed above, put the two stubs at the same point. For least effect on tuning of radio/amp put the two stubs ¼ wave apart. Personally I put both stubs at the same point.. It is easier to build, and I don't feel the change in impedance is severe enough to spend the extra time and effort to space them out.

Formula definitions for use above:

For parallel impedances. This can be used to figure net impedance of stub connected to feed line.

$$Z PAR(x,y) = \frac{1}{\frac{1}{x} + \frac{1}{y}}$$

Reflection coefficient given impedance of transmission line Zo and impedance ZLOAD.

$$\rho[Z_{\text{LOAD}}, Z_0] = \frac{Z|\text{OAD} \times Z_0}{Z|\text{OAD} + Z_0}$$

Complex wave number, given f = frequency, V = velocity factor, $\alpha = loss$ of line. Constant c = velocity of light.

$$\beta(f,V,\alpha) = \alpha + 2i \times \pi \times \frac{f}{V \times c}$$

Formula for transformed impedance along length of coax cable. Input values are:

$$\begin{split} &Z\text{trans}[Z\text{line}, V, \alpha, Z\text{start}, freq, len] = \\ & Z\text{line} \times \\ & \frac{Z\text{start} + Z\text{line} tanh(\beta(freq, V, \alpha) \times len)}{Z\text{line} + Z\text{start} tanh(\beta(freq, V, \alpha) \times len)} \end{split}$$

ZLINE = characteristic impedance of transmission line, V = velocity factor, α = loss of line, ZSTART = impedance at starting point (far end of line) freq = frequency len = length of line (in feet)

loss[Zload,Zin] = 20log[1+ρ[Zload,Zline]]

This is formula for loss due to reflection from mismatched load. Used here to figure reflection from intersection of stub with main transmission line.

Roommate Wanted

Radio station for rent: I again am in search of a room mate to share my house. This is a 3 bedroom, 2 bath, and 3 tower (4 next year I hope) house. Rent of \$250 per month includes full use of shack except for major contests that we run as multi-multi in. Some assistance with tower work and house keeping is expected. Non-smokers only. Call Dave, KY1H at 413-655-2714.

Contest Cookbook

Paul Young, K1XM

The 1991-1992 Contest Cookbooks are being prepared. If all goes according to plan, they will be distributed at the next meeting. If you will not be at the next meeting, please arrange with someone to pick up your Cookbook. We will mail them, but it costs a lot!

Contesting Survey

John, K1AR, is collecting information. Please fill out the survey on the next page and send it to him. He will be able to recognize the blue survey sheets

A Limerick

Alan Singer, N2KW

Macgrew is the man of the hour... Even with his 12 meter tower. The DX he works, While we stand by like jerks, Don't suspect that he runs so much power.

His 10KW signal is clear... He can work whatever he hears. Paul called him three times, And gave him five nines, Hey! Don't that guy have any ears?

There is, however a clue... Just listen when he calls CQ. The pileup it reaps Is fourteen layers deep "QRZ" he says, "Who are you"?

The neighbors say things got much better... Someone wrote their congressman a letter

Uncle Charlie came to town And they shut that guy down And the fine made that op into a debtor!

Now "Charlie" can do what he likes... But he just can't touch old man mike. With a little bit of luck, They'll get that fellow Chuck, And tell that loudmouth Herb to take a hike.

THE CLUB RESOURCES PAGE

The Place to Find Club Information

DUES are due at the April election meeting, which begins our club "contest year", with a grace period until the end of June. Membership in the club will lapse at the end of the grace period if dues are not paid up. In order to re-join the club, a lapsed member must attend a meeting, like any new member, and be welcomed back into membership, or may become a subscriber to the Scuttlebutt by paying up (see below). Club members who move out of club territory and so are not eligible to contribute to club aggregate scores automatically become subscribers. New members who join at the last meeting of the club's contest year (February) are credited with dues for the following year (that is, the contest year beginning that April). You can tell if you owe dues by checking your 'Butt mailing label. Only paid-up members are eligible to contribute to the the club score in contests.

FAMILY MEMBER Members of the same family living at the same address may elect to receive only one copy of the Scuttleutt. One member of the family must pay full dues, enabling the rest of the family to join as family members. Being a family member is currently free.

STUDENT MEMBERS Full-time students are eligible for dues at half the regular rate.

SCUTTLEBUTT SUBSCRIBERS Anyone may subscribe to the club newsletter, the Scuttlebutt. A subscription currently costs \$10 per year. At the present time, overseas subscriptions cost the same as domestic (we have very few overseas subscribers). The subscription period begins at the beginning of the club year, in April. New subscribers who begin their subscriptions after the December issue are considered to have paid for the following year (that is, they receive as many issues as new members joining at that time do). You can tell if your subscription is current by checking your 'Butt mailing label. The grace period for late subscriptions is the same as for late memberships

SCUTTLEBUTT ARTICLES should be sent to the Scuttlebutt editor, Paul Young, K1XM, 11 Michigan Drive, Hudson, MA 01749, home phone (508)562-5819. The deadline for each issue is usually three weeks before the next meeting.

CLUB JACKETS We are looking for someone to coordinate club jackets. If you can help contact Ed Kritsky, NT2X, 580 East 17th Street, Apt. 2F, Brooklyn, NY 11226, home phone (718)284-4493.

CLUB QSL CARDS are ordered through John Dorr, K1AR, 2 Baldwin Street, Windham, NH 03087, home phone (603)434-5661.

PACKET NET information is available from Dick Newell, AK1A, 8 Golden Run Rd., Bolton, MA 01740, home phone (508)779-5198, or Dave Robbins, KY1H, Baumann Road, Peru, MA 01235, home phone (413)655-2714.

CONTEST SCORES are sent to the club scorekeeper, Jeff Detray, NK1F, P. O. Box 524, Troy, NH 03465, home phone (603)242-7995.

CLUB ROSTER appears in the summer issue of the Scuttlebutt every year. Updates are published when members move or change callsigns. If you want a new copy of the club roster, contact the club secretary/treasurer, Charlotte Richardson,KQ1F, 11 Michigan Drive, Hudson, MA 01749, home phone (508)562-5819.

CONTRIBUTIONS The YCCC welcomes your contributions, be it money to help offset the cost of the Scuttlebutt and club operations, scores for the club aggregate score, time spent helping other members, articles for the Scuttlebutt, or presentations at club meetings.

DXCC LIST The club maintains a one-page version of the ARRL DXCC Countries List. To get a copy, send an SASE to the club secretary, Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749. Complete DXCC rules are only available from the ARRL.

CT by K1EA is available from Bill McGowan, KC1EO, 33 Truell Rd., Hollis, NH 03049. Send \$40 (US funds) to register and receive the latest version. CT phone: (603)465-2392. CT BBS: (603)465-2161 (1200/2400 N81). Visa/MC accepted.

ARRL LIAISON For ARRL matters, contact Tom Frenaye, K1KI, PO Box 386, West Suffield, CT 06093, home phone (203)668-5444.

Dues are \$15 per year, payable 1 April. Non-members may subscribe to the Scuttlebutt by sending \$10 to the treasurer: Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson MA 01749. Subscribers who subsequently become members will be credited as having paid \$10 towards dues.

The Scuttlebutt may be reprinted in whole and in part, except for separately copyrighted articles, provided proper credit is given.

The Yankee Clipper Contest Club (an ARRL affiliated club) holds six official meetings per year, on the Saturday or Sunday afternoon of the first full weekend of every even month, usually in the Sturbridge, Massachusetts area. The deadline for article submission to the Scuttlebutt is usually three weeks before the next meeting date. The next meeting will be on Sunday, October 13, 1991. Attendance at an official meeting is required in order to become a member. Club members congregate on 3830 after contests. The packet frequencies for DX spotting are 144.95, 145.69, 144.93, and 144.97 MHz.

Rosters are mailed to all paid members each summer. For more information and/or assistance, contact the area manager nearest you.

Officers:

President	Stu Sa	Intelmann	KC1F	603-672-2509
VP-Activities M	anager Rich (Gelber	K2WR	212-580-1075
Secretary-treasur		otte Richardson	KQ1F	508-562-5819
Editor	Paul Y	oung	K1XM	508-562-5819
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CT/RI	K1RU	Gene Frohman	203-393-1772	203-386-6137
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WMass	W1GG	Gary Gaudette	413-443-3404	
VT/NH	K1GW	Glen Whitehouse	603-673-6290	603-627-7877
ME	N1AFC	Peter Archibald	207-767-2169	207-797-8931
NLI	NQ2D	Jim Metcalf	516-744-9422	516-467-4800
NNY	K2TR	Fred Lass	518-355-4813	518-346-6666
SNY/NJ	K2EK	Bill Gioia	914-221-1672	914-697-3250

YCCC 11 Michigan Drive Hudson, MA 01749

First Class

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		r most memorable contest experi	ence (e.g., participating in the last multi-multi
a			?
1. What perce DXpedition		oliday time do you use for contest	ing and related activities (e.g., antenna work,
I less that		□ 25-50%	🗆 greater than 90 %
□ 10-25%		50-90%	
2. Do you use	some form of computer s	support while operating?	
	10		
3. Given the ri eventually v	ght set of circumstances vin the Single Operator ca	(e.g., best station, access to good ategory in a major DX contest?	d operators to learn from, QTH), can most anyon
C YES C N	10		
omments: (us		(0622	