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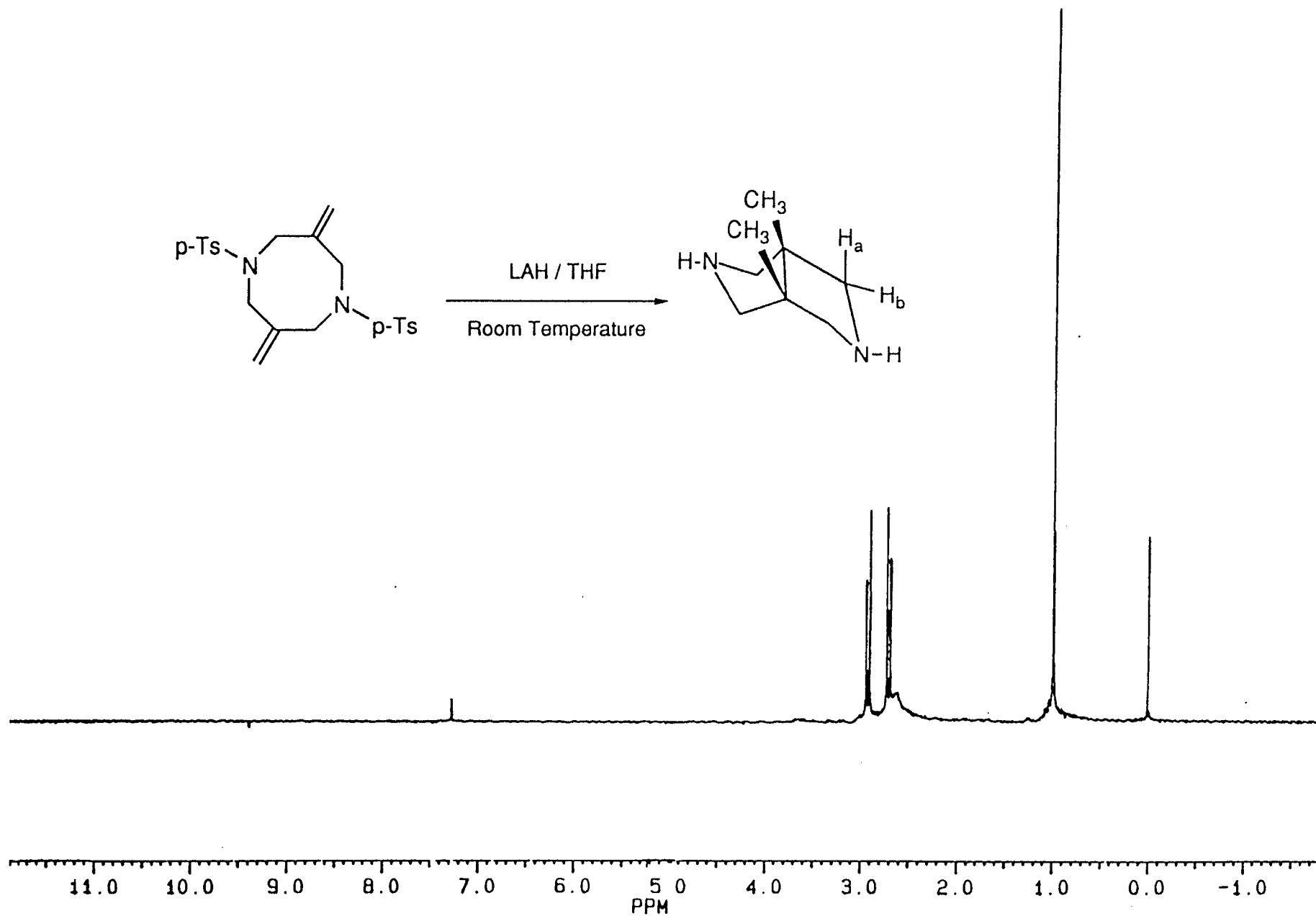
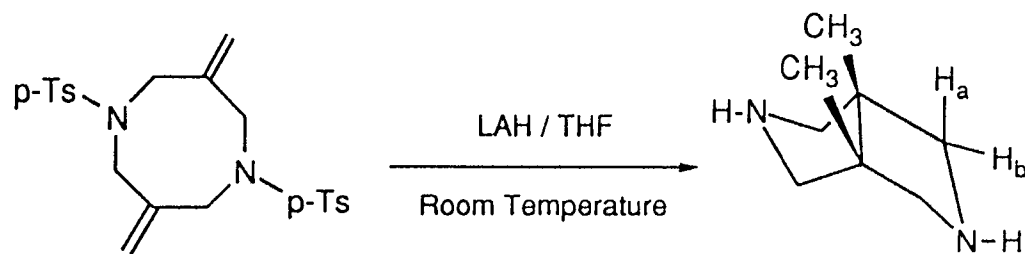


ACS Publications

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^1H NMR (CDCl_3) of **5**



BRUKER

PPM

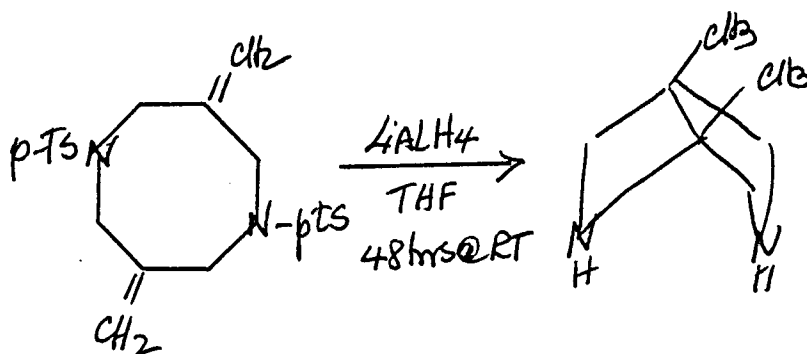
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SY 75.0
O1 8452.111
SI 16384
TD 16384
SW 17241.379
HZ/PT 2.105

PK 2.5
RD 4.000
AQ .475
RG 320
NS 394
TE 297

FW 21600
O2 4525.879
DP 14L PO

LB 3.500
GB 0.0
CX 25.00
CY 0.0
F1 218.085P
F2 -10.122P
HZ/CM 688.897
PPM, CM 9.128
SR 595.30



77.4372
77.0112
76.5872

62.5179

51.6849

20.4128



200

180

160

140

120

100
PPM

80

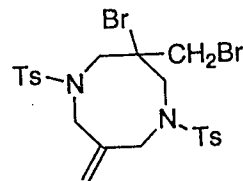
60

40

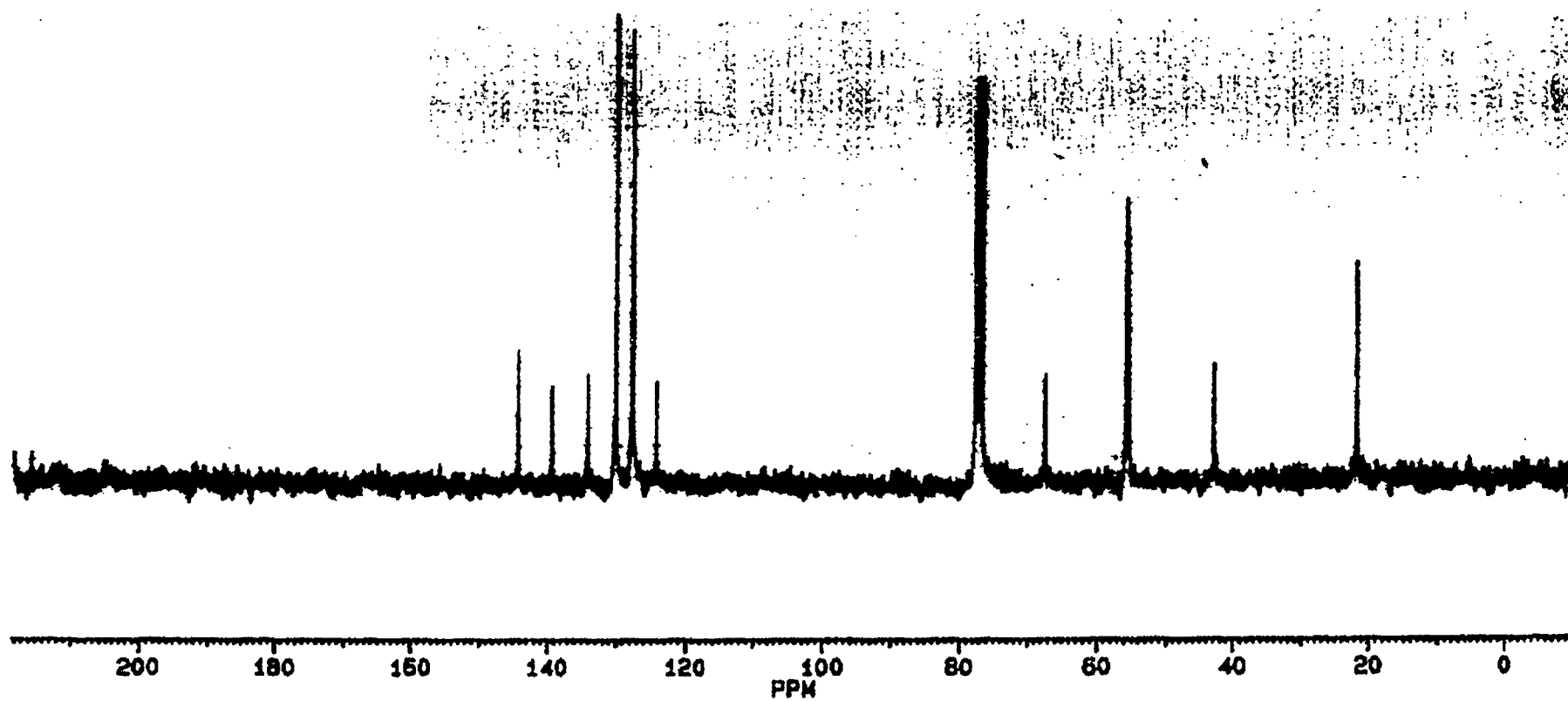
20

0

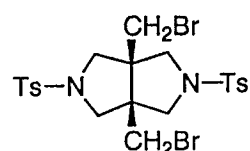
^{13}C NMR (CDCl_3) of 7



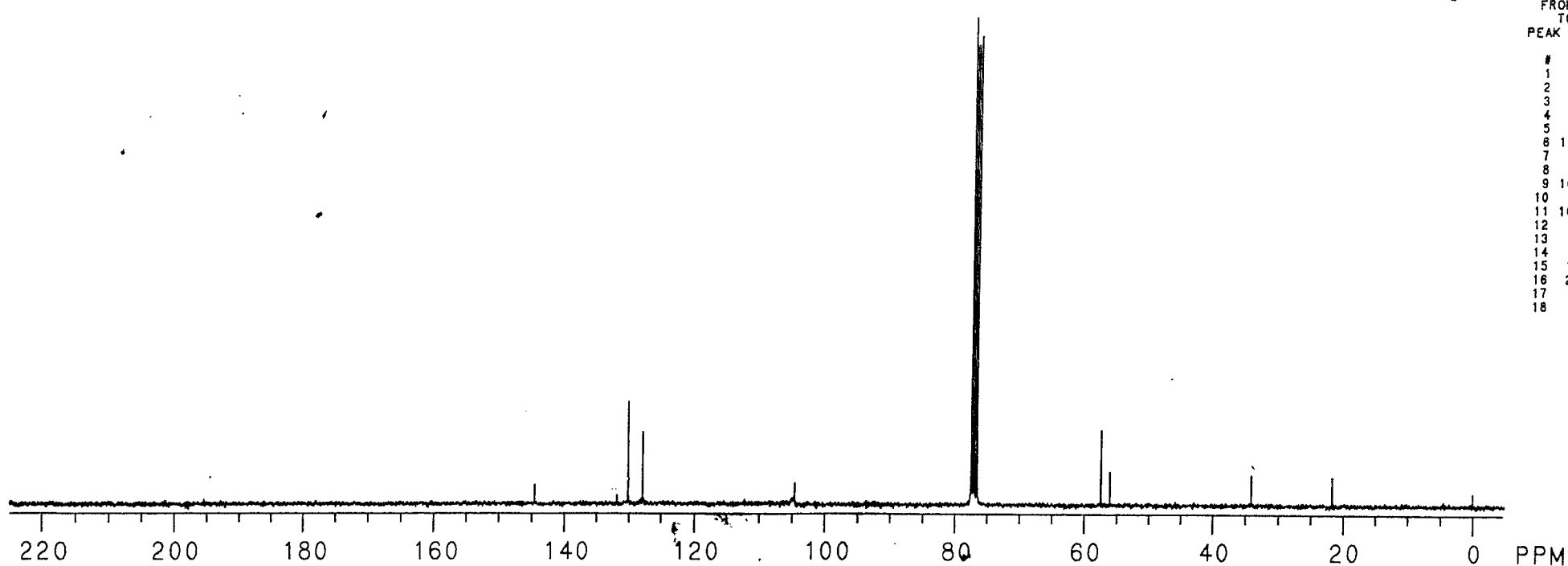
7



^{13}C NMR (CDCl_3) of **8**



8



FF.C
28J

CDCL3

OPERATOR

ONE PUL

PULSE W

ACQ. TI
RECYCLE

NO. OF
DATA SI
LINE BR
SPIN RA

OBSERVE
FREQUEN
SPEC WI
GAIN

DECOUPLE
FREQUEN
POWER

PLOT SCA
51

FROM
TO
PEAK LI

#	HT
1	2
2	6
3	6
4	7
5	16
6	104
7	2
8	2
9	102
10	4
11	108
12	4
13	2
14	2
15	15
16	22
17	1
18	4

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hidd

7.77194
7.74625

7.40775
7.38115
7.27678
7.27306

4.37610
4.32456
4.19076

3.35799
3.30525

2.47517

1.57256



¹³C NMR (CDCl₃) of 9

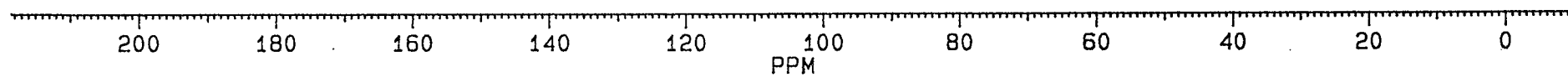
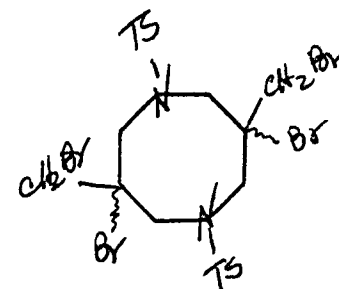
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SI 16384
TD 16384
SW 17241.379
HZ/PT 2.105

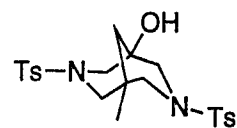
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RG 400
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DP 14L BB

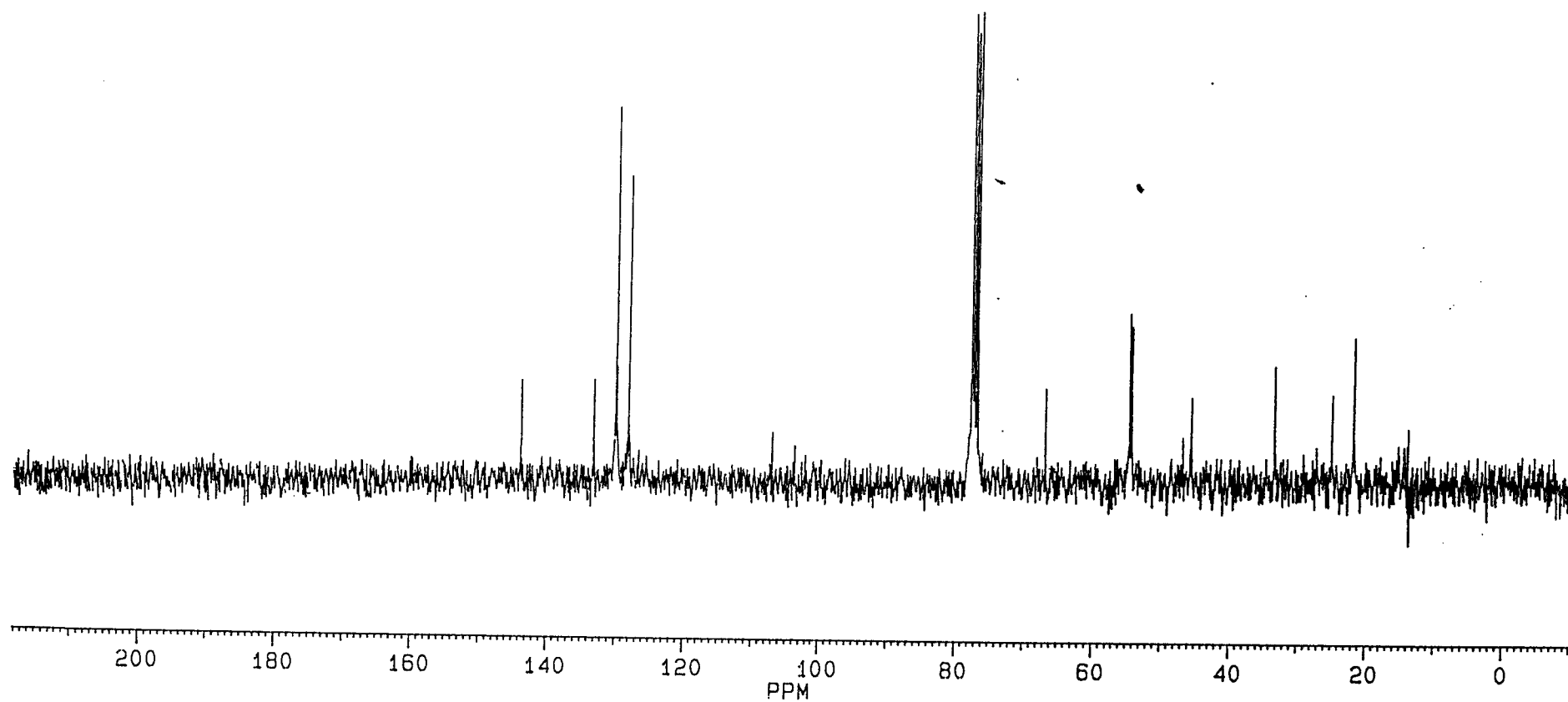
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PPM/CM 9.128
SR 595.30



^{13}C NMR (CDCl_3) of **10**



10



¹H NMR (DMSO-d₆) of anti 11

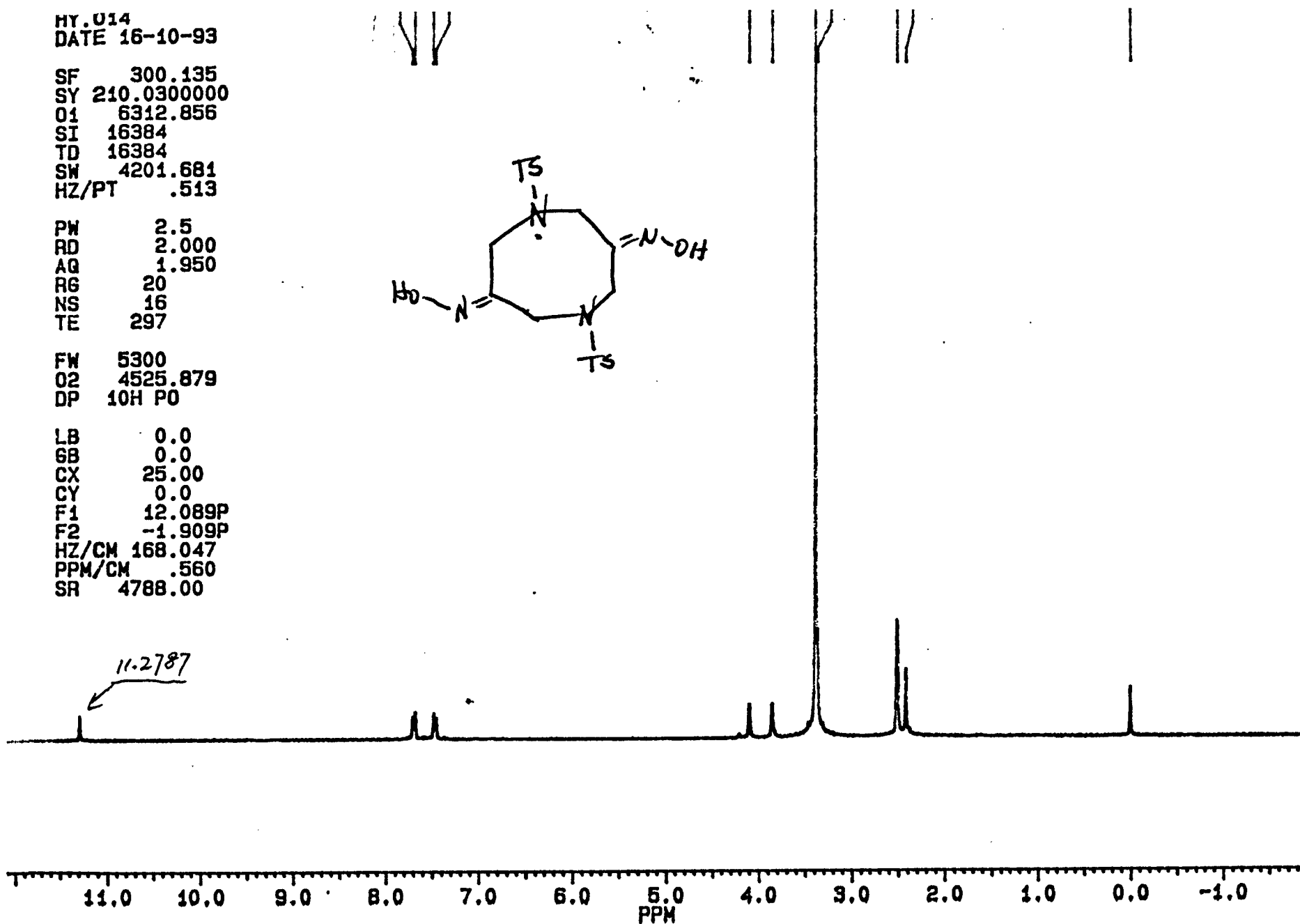
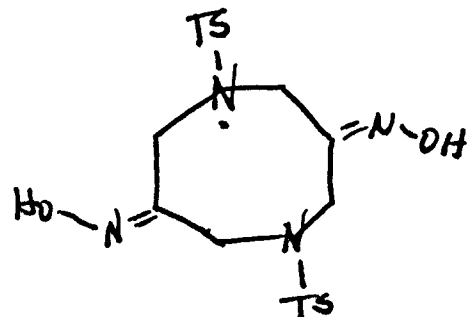
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O1 6312.856
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TD 16384
SW 4201.681
HZ/PT .513

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AQ 1.950
RG 20
NS 16
TE 297

FW 5300
O2 4525.879
DP 10H P0

LB 0.0
GB 0.0
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CY 0.0
F1 12.089P
F2 -1.909P
HZ/CM 168.047
PPM/CM .560
SR 4788.00



~~BRUKER~~

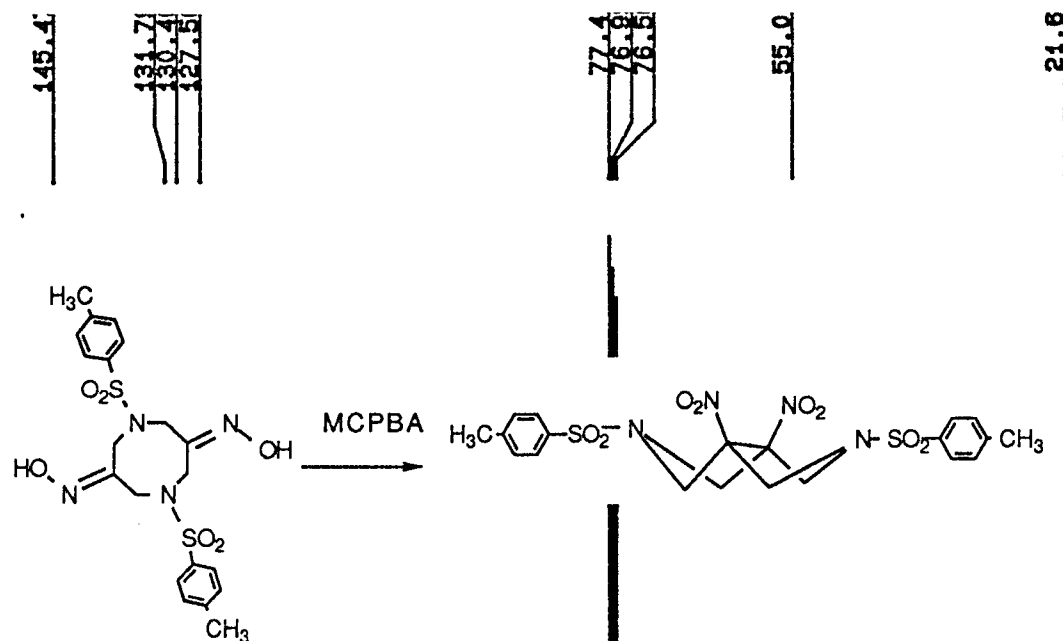
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DATE 11-11-93

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HZ/PT 2.105

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RD 4.000
AQ .475
RG 320
NS 1816
TE 297

FW 21600
O2 4525.879
DP 14L BB

LB 3.500
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CX 25.00
CY 0.0
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SR 597.40

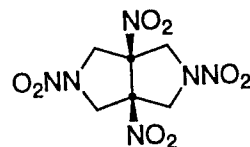


¹H NMR (CDCl₃): δ 2.47, 3.87, 3.91, 3.98, 4.02 (J(AB)=11.5 Hz), 7.38, 7.41, 7.68, 7.71

¹³C NMR (CDCl₃): δ 21.65, 55.08, 93.97, 127.50, 130.40, 131.79, 145.47



¹H NMR (CD₃COCD₃) of 13



GE NMR
QE PLUS

FF 1.500
17JUL96

ACT, TETRA02

OPERATOR. ARDEC

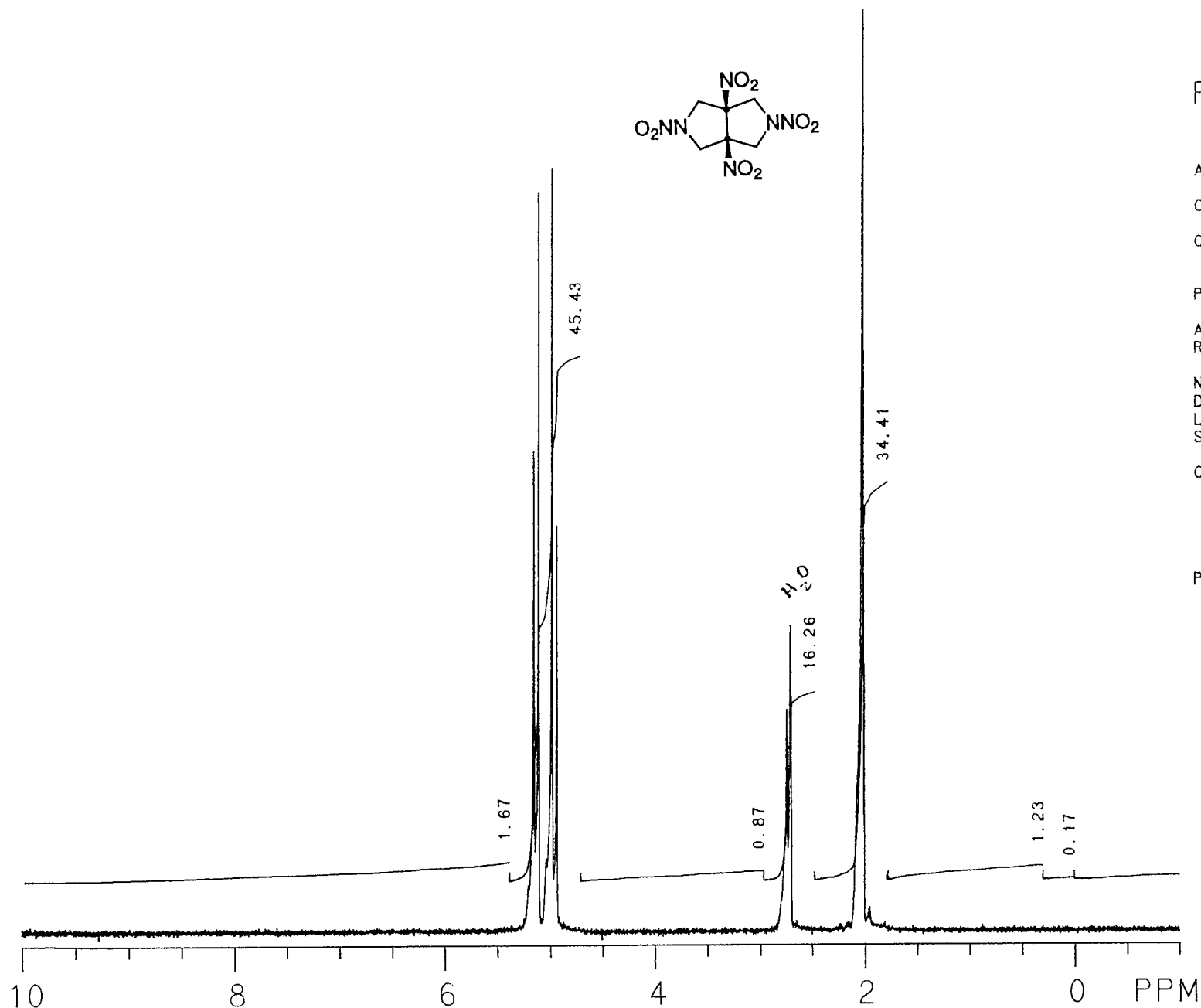
ONE PULSE SEQUENCE

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= 22 DEGREES
ACQ. TIME = 2.72 SEC
RECYCLE TIME = 3.71 SEC

NO. OF ACQS. = 16
DATA SIZE = 32768
LINE BROADNG = .00 HZ
SPIN RATE = 20 RPS

OBSERVE:
FREQUENCY = 300.154856 MHZ
SPEC WIDTH = 6024 HZ
GAIN = 57 *1

PLOT SCALE:
165.10 HZ/CM
.5500 PPM/CM
FROM 10.00
TO -1.00 PPM



^{13}C NMR (CD_3COCD_3) of 13



GE NMR
QE PLUS

FF.000
16JUL96

ACT, TETRAN02

OPERATOR: ARDEC

ONE PULSE SEQUENCE

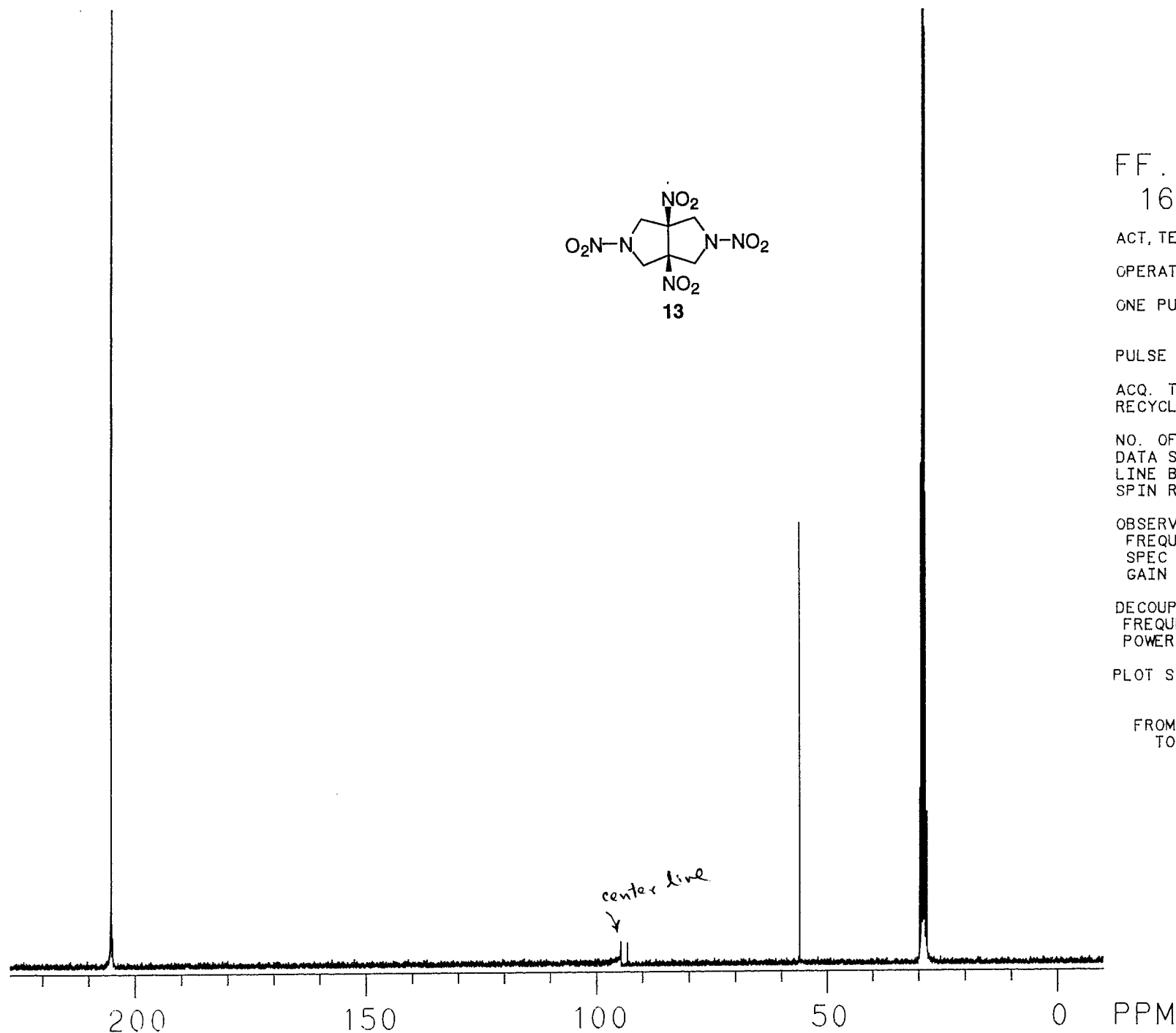
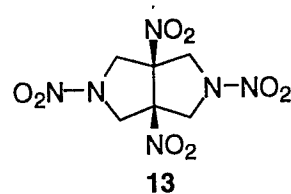
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= 30 DEGREES
ACQ. TIME = 819.20 MSEC
RECYCLE TIME = 1.00 SEC

NO. OF ACQS. = 48264
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LINE BROADNG = 1.00 HZ
SPIN RATE = 17 RPS

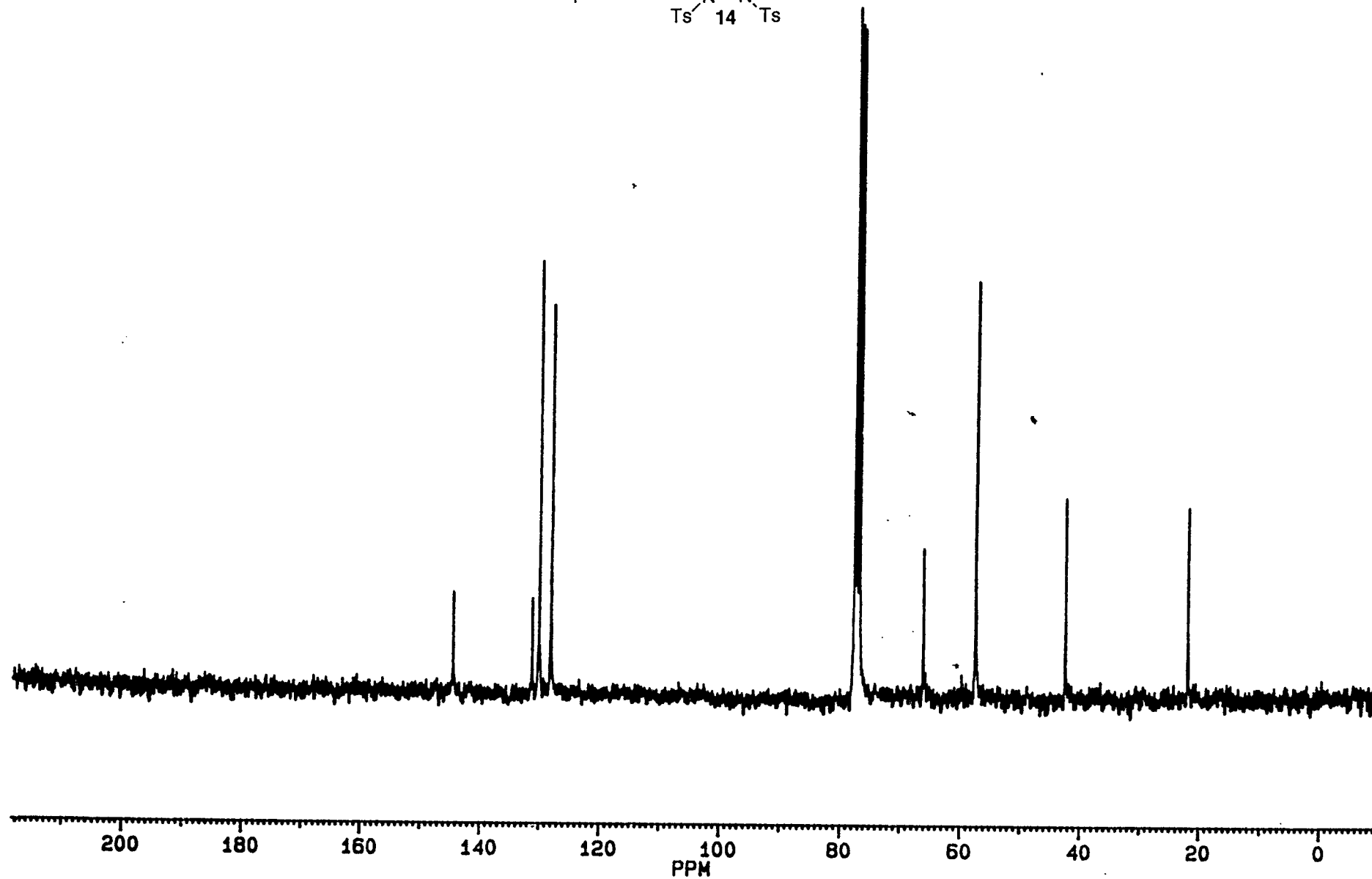
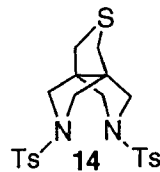
OBSERVE:
FREQUENCY = 75.480796 MHZ
SPEC WIDTH = 20000 HZ
GAIN = 60 *1

DECOUPLER: STANDARD-64 MODULATION
FREQUENCY = 4.000 PPM
POWER = 2900/ 3000

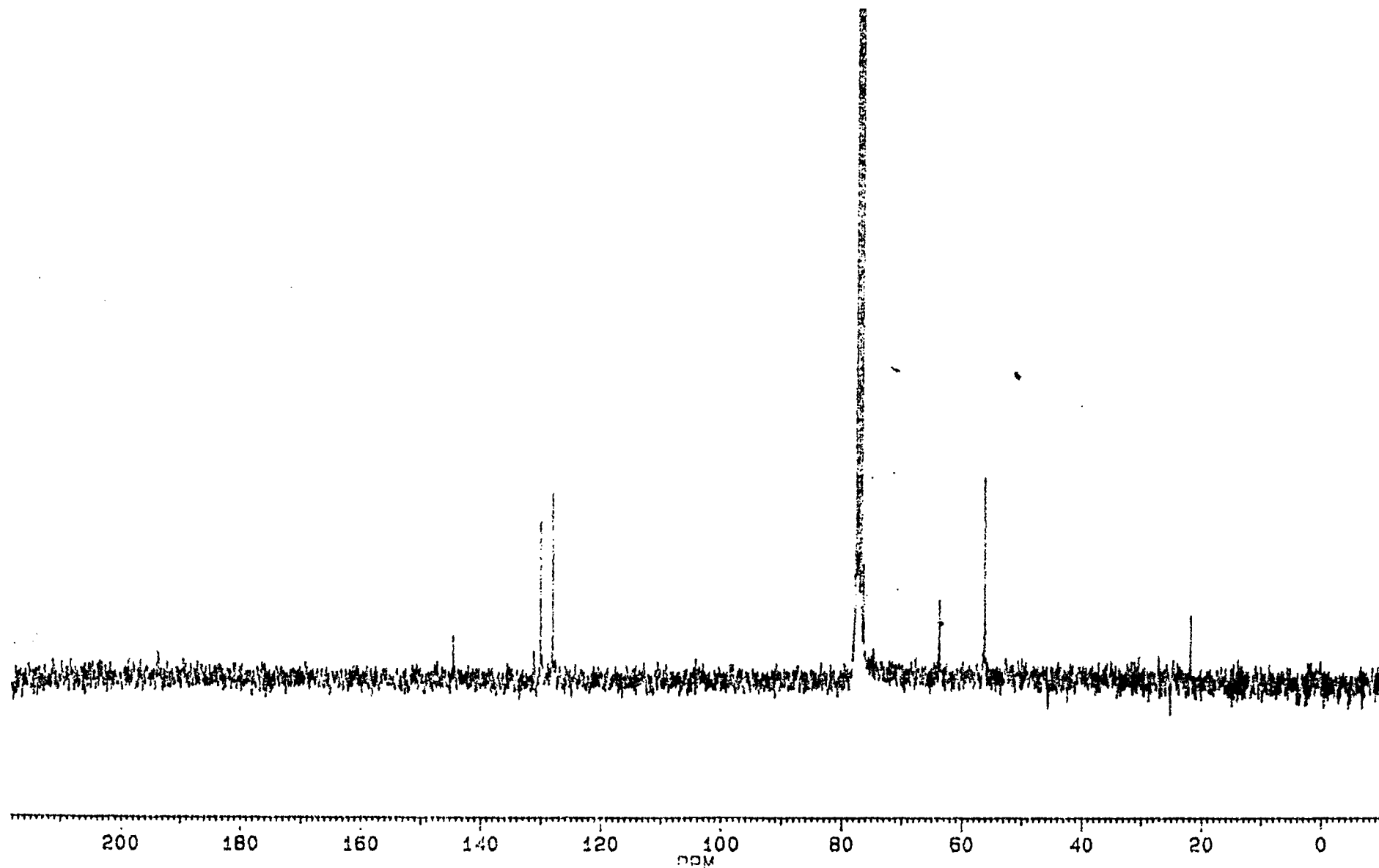
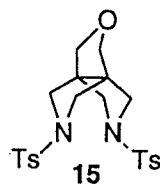
PLOT SCALE:
894.65 HZ/CM
11.8527 PPM/CM
FROM 227.04
TO -9.99 PPM



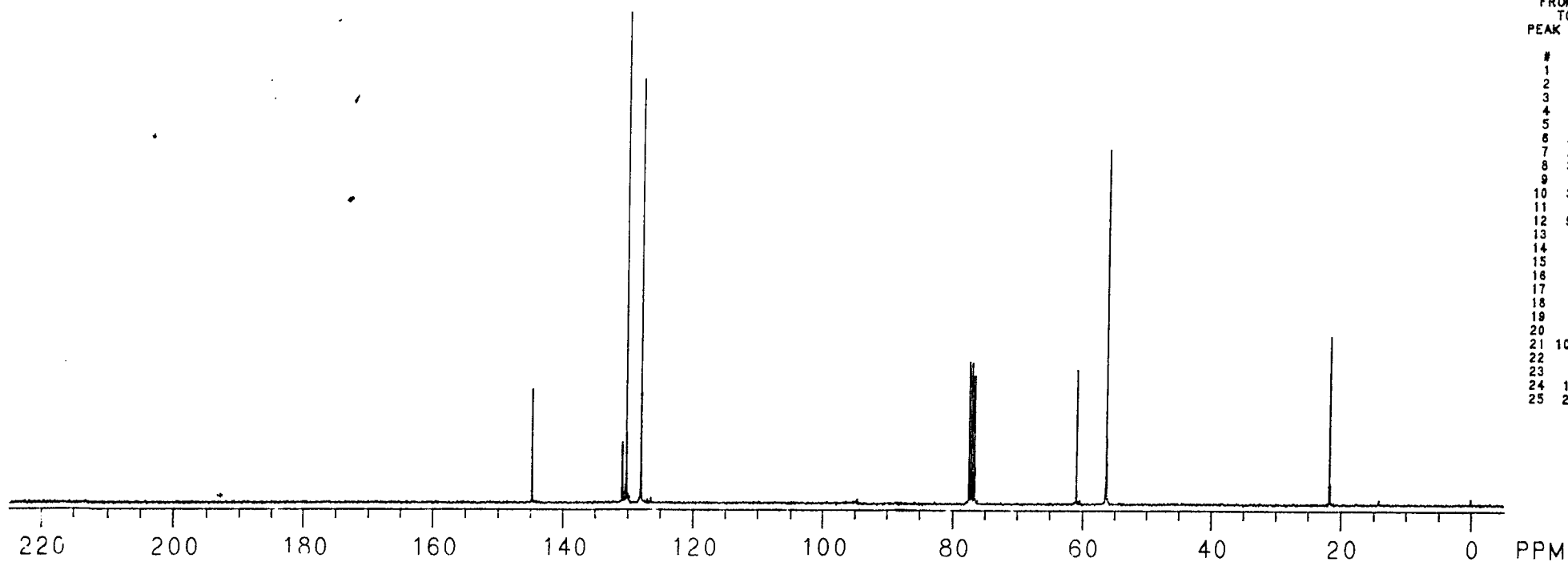
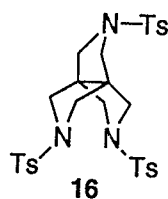
^{13}C NMR (CDCl_3) of **14**



^{13}C NMR (CDCl_3) of **15**



^{13}C NMR (CDCl_3) of **16**



PRD. 0
040C

CHCL3

OPERATOR.

ONE PULSE :

PULSE WIDTH

ACQ. TIME

RECYCLE TIM

NO. OF ACQS

DATA SIZE

LINE BROAD

SPIN RATE

OBSERVE:

FREQUENCY

SPEC WIDTH

GAIN

DECOUPLER:

FREQUENCY

POWER

PLOT SCALE:

510.8

6.7

FROM 2

TO

PEAK LISTIN

#	HT
1	1
2	37
3	1
4	78
5	1
6	29
7	28
8	31
9	1
10	31
11	1
12	94
13	1
14	1
15	1
16	1
17	0
18	0
19	2
20	1
21	109
22	1
23	0
24	13
25	25