

**APT on the QE-300
(Attached Proton Test)**

Macro #3 will obtain a ^1H , ^{13}C and APT spectrum (type >XM to execute a macro.) An APT spectrum may be obtained in command mode using the following procedure.

1. Lock and shim on the sample as usual. Obtain a ^{13}C spectrum using default parameters from menu mode in order to obtain correct phase parameters for the APT spectrum. Since signal-to-noise isn't important here, use a small >NA. Process the ^{13}C FID with >BC, >EM, >FT, >AP.
2. Type >EX to list the current experiment then type APT <return> to change it to APT (>EXPERIMENT=XXX APT <return>). The APT parameters may then be entered as follows:

```
P1 = nn.nn msec 18ØD
P2 = nn.nn msec 3ØD
P3 = nn.nn msec 9ØD
D5 = n.nn sec 1S
D6 = nn.nn msec 1ØU
D1 VALUES:
#1 = n.nn Msec 7M
#2 = n.nn Msec Ø <return>
```

The letter "D" stands for degrees and causes the computer to refer to a default value and then calculate the milliseconds needed. Typing >EX again and returning through the parameter will show them to be in μ seconds.

3. To be certain that the decoupler is working, type >L1 <return>, >DN2 <return>, >3593 <return>.
4. Acquire the APT FID in command mode, using a sufficiently large >NA, save it immediately with >SA, and call it back with >GA.
5. Process the FID using >PS, not >AP, to phase it with the previously acquired ^{13}C spectrum's phase parameters (>BC, >EM, >FT, >PS).
6. The spectrum should represent the CH_2 's as positive peaks and the CH and CH_3 's as negative peaks (because D1 was set to 7 msec).
7. If the D1 value is set to about 4 msec, all of the protonated carbons will be suppressed relative to the quaternary carbons.