The G_{E}^{n} Polarized Target
Anneal of Ammonia Target Material

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1. Turn off the microwaves and the NMR.

2. Close the run valve completely (0.007) and increase the separator flow to about 30 SLPM.

3. Stop the Roots blowers beginning with the largest one, RB3. Wait for 2 minutes and turn off RB2. After another three minutes turn off RB1. Keep the mechanical Alcatel pumps running.

4. Monitor with a camera the ^{4}He pressure and the reading on AVS resistance bridge, displaying the resistance of an ruthenium oxide chip of 1 kΩ.

5. Start the Anneal Programme on the slow controls monitor computer. It is called ITC4 Anneal. The default values are set for sensor 1. The temperature is preset to 90 K, the maximum heater output to 20 V. The PID values are 20, 2, and 0. The programme is started by pressing the arrow on the top left corner of the programme window. The data logging starts, visible by the updating history plot of the temperatures of the sensors 1 and 2. The time axis can be changed by clicking into the start time on the left and typing in the new value. The same holds for changing the temperature axis. To start the actual anneal process, press the **Anneal** button. The two light bars to the right are lighting up, indicating the output. The liquid helium will boil off. Remember, that the LHe level is measured only from above the target cell. A sudden decrease in *main flow* indicates, that no more liquid is left.

6. Monitor the ^{4}He pressure and stop the Alcatel mechanical pumps when the pressure has dropped to about 10 torr.

7. When the temperature sensor 2 has reached 80 K, adjust the settings of the desired temperature so, that the temperature is kept at 80 K for about 20 minutes.

8. Stop the anneal programme by pressing the **Stop** button.

9. Start the cool-down of the refrigerator by adjusting the separator valve to a flow of 50 SLPM. Start the mechanical Alcatel pumps and open the run valve to a setting of about 1.5 to 2.0. Monitor the AVS resistance. It will be around 1.1 for a long time, slowly increasing, that is cooling. When the first liquid is reaching the target chamber, the ^{3}He pressure will begin to oscillate in the

lower range of about 60 torr. The ^{4}He pressure will go up, as well as the main flow, and the AVS reading go to 1.5 to 1.6. Close the run valve immediately to 0.7 and as soon as LHe is shown in the level meter, close the run valve to about 0.07.

10. Reduce the separator flow to about 20 SLPM. You can do a TE now. If not, continue with the next step described in the operations manual.