1. How many Oxford power supplies in all does HDIce have?

Six units

Five old Oxford units and one new Oxford IPS unit - all in working condition

1. Where are these power supplies used?

|  |  |  |
| --- | --- | --- |
| Location | Quantity | Comments |
| NMR rack #1 | 1 |  |
| NMR rack #2 | 1 |  |
| NMR rack #3 | 1 |  |
| Dilution fridge | 1 |  |
| For IBC | 1 | Located under stairs |
| DSG control room | 1 | Spare Oxford IPS |
| **Total** | 6 |  |

1. Are there any spares for these power supplies?

Yes- new one in DSG control room

1. Why does the RF Attenuation and Distribution Box switch to the RF Amplifier?

RF Amplifier is used during polarization transfer between H and D. More power is needed for this polarization transfer (100 W). Hydrogen is polarized antiparallel to deuterium to ascertain detector influences. This polarization transfer is done in the AFP mode, which is similar to the RTP program.

1. What is the purpose of AFP mode?

For polarization transfer.

1. Has HDIce ever run AFP mode?

Yes

1. How is AFP mode different from NMR mode?

AFP mode requires more power to transfer polarization, hence the RF amplifier. Both are used to confirm that the magnetic field is where it should be.

1. What is AFS mode? (NMR, AFP, and AFS)

A mistake. There is no AFS mode.

1. How often does HDIce change the polarization of the target?

Repolarization may have to be done when the target is transferred from DF to PD. After that it depends on the experiment.

1. How long does it take to change the polarization?

About 20 minutes at ~1 G/s.

1. When the target is exposed to the electron beam, how long does it take for the polarization to decay?

That is what HDIce wants to find out with their tests. It depends on initial polarization.

1. What is the present field range used for the NMR program?

Depends on location. DF field requires 600 MHz for deuterium, IBC requires 42 MHz at 1T for deuterium, UITF requires 10 MHz for hydrogen. The Larmor frequency depends on the applied field.

1. Why was the change in field range for the NMR program requested (from its original 300 G value)?

The request was for time variance. Original program was set for water-cooled power supply.

1. Why is a current measurement of <0.01% accuracy needed for the NMR program?

Field operation is 1-2T (20,000G). High accuracy is needed to make window smaller because the larger the window, the more time it takes to find the signal.

1. Why did HDIce originally need the Mathematica program?

For data analysis. HDIce still needs the program but will worry about that after getting the data.

1. When does the machine shop expect to finish the magnet winding?

Machine shop has not even started yet.

1. When will HDIce be done with the present CT-Box analysis so work can begin on a second CT-Box?

Not sure. Computer update still hasn’t gone through. HDIce wants to get the computer updated first.