

# LOI MEETING

**Minutes of meeting, held on 1st May 2003 at ISIS**

## **Present:**

Adrian Morris  
Ian Gardner  
John Hirst  
Mike Glover  
Robin Bendall  
Steve Stoneham  
Yoshiro Irie

## **Agenda**

09:00 General discussion  
Aims, Time scales  
09:03 LPRF  
10:00 coffee  
11:00 Interlocks, electrical power requirements  
12:30 Lunch  
13:30 Water/oil  
14:00 LOI preparations  
15:00 coffee  
15:30 Visit Equipment in R40  
16:30 End of meeting

## **Documents**

drawing: LOI HPD (Apr/17/03)  
excel file: LOI power and water requirements

## **ISIS SCHEDULE**

1. 2nd target funded, completion in 2007.
2. 2 sets of 2nd harmonic system will be installed at latest by October/03 shutdown.
3. Full sets(4 sets) will be complete in 2004 long-shutdown (March/25-August/25).
4. Commissioning with 4 sets will start in September 2004.
5. LOI test will be started at Xmas 2004 at the earliest case, which continue for 2-3 physics runs.

(MICE schedule: If approved, evacuation of the 15MeV linac hall will start in July 2003.)

Note: 15MeV linac hall is expressed as MICE hall hereafter.

## **LPRF**

1. LOI—>ISIS : cavity input current, grid voltage.
2. LOI<—ISIS: RF-law, cavity gap voltage, cavity input current, grid voltage, bias supply ON/OFF status, realtime bias-supply waveform.
3. Realtime bias-supply waveform can be seen through CT or current shunt.
4. Cavity gap voltage monitor comprises a capacitive divider (Comet 50pF+370nF) output through 47ohms.
5. List up all signals LOI needs to monitor, eg bunch shape, phases, etc.

## **INTERLOCK, DIO, DISPLAY**

1. LOI—>ISIS
  - 4648 anode supply ON/OFF status,
  - 1643J2 anode supply ON/OFF status,
  - LOI ready for accepting RF-law from ISIS (?).
2. LOI<—ISIS
  - ISIS operation mode (preinjector/linac/synchrotron/utility),
  - ISIS synchrotron beam ON/OFF status.
3. Excessive beam loss interlocks the beam at the ion source.
4. ISIS vacuum does not interlock the beam or equipments: only alerts.
5. Emergency button attached to the LOI HPD chassis to switch off HV
6. Castel key attached to the LOI HPD chassis to switch off HV.
7. ON/OFF light attached to the LOI HPD chassis for display.

## **ELECTRICITY**

1. 1.25MVA is available in the MICE hall: however it needs to share with MICE.
2. Depending upon the total cable size, a cable hole should be drilled through 7m shielding wall from MICE hall to synchrotron vault. If not so much big size, a water-drain hole at the corner of

the trench can be usable.

3. Since earth potential may be different, earth plane in the vault is extended into MICE hall: whether to connect or not depends upon experiments.
4. List up all power requirements including oscilloscopes, network analyser, etc.
5. 1 $\phi$  105-110Vac not available at RAL.

## **WATER**

1. 270 l/min is available at SP8, although 458 l/min is required at LOI.
  - > Just operate LOI at base rate (50/32Hz).
  - > Is'nt this a problem to operate at very low flow-rate?
2. Water for buck regulator (less than 38 l/min) is available in the MICE hall.

## **OIL**

1. Specify the characteristic of the Exxon 'Univolt' or Shell 'Diala' for T/R set and buck regulator.

## **VOLTAGE DIFFERENCES**

1. Show which LOI equipments can be operated with RAL rating. Transformers should be prepared otherwise.

## **LOI PREPARATIONS**

1. 1643 (& 4648) grid switching circuit
  - > *ANL can provide the switching circuit?*
2. Re-assemble 4648 anode choke for operation at 40amps current
3. Re-assemble 1643 anode input choke
4. New water-hose connection
5. 4648 filament-ground terminal
6. Low-pass-filter ( $f_{co}=7.5\text{MHz}$ )
7. Over-current, over-voltage of ANL anode supply to interlock step-start
8. Grid voltage divider
9. LOI HPD chassis panel should be equipped with RF finger for tight RF shield.
10. Test before installation at SP8 that LOI HPD chassis and water distribution unit can sit on the rail.

## **GENERAL**

1. Can stay and prepare LOI in the MICE hall in parallel with routine ISIS operation.
2. Floor arrangements in the MICE hall is important so as not to interfere with the MICE preparations.

**NEXT MEETING**

July 4, 2003 at ISIS

*AFTERTHOUGHT*

*How long can LOI be tested with load (2nd harmonic cavity) before Xmas in 2004? Probably, two months are necessary for tuning at least. Otherwise, dummy load is needed at MICE hall.*