



F) Video Conferencing Setup Utilization:

Six promotion interviews were successfully conducted in RRCAT, using the Inter DAE video conferencing setup. Large number of video conferences have been successfully conducted with various national and international research centres like CERN, FNAL, BARC and TIFR.

G) Expansion of Communication Network:

Telecommunication facilities were extended to Chemical Treatment Facility (CTF) Lab and Laser Photo Cathode buildings. Mobile access facilities were enabled on 19 extensions, 30 telephone connections were shifted and 17 new telephone connections were installed in RRCAT campus. MDF of the lab area exchange was further upgraded to support 100 more telephone connections. The RRCAT internal telephone directory containing the up to date information was published, data for which was drawn directly from the centralized HR database of RRCAT.

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I.4: Modification in power distribution helps in Indus-2 performance improvement

Commissioning activities for the synchrotron radiation source Indus-2 have been in progress. During these operations, the beam used to get killed very frequently. On many occasions, the reason was voltage variation on the input side. Such variations are unpredictable and their range also keeps varying according to the seasons of the year.

The electric power to the Indus complex, including all the subsystems of Indus-1 and Indus-2, is distributed through a dedicated 11 kV/ 433 V substation. There are eight transformers in the substation including a three winding transformer TR-7 for the Indus-2 Dipole power supply. Transformer no. 1 (TR-1) feeds the Magnet Power Supply system and TR-4 feeds Radio Frequency Power Supply system of Indus-2. Power Control Centres (PCCs) have been provided separately for these sub-systems. All other loads such as LCW system, Ultra High vacuum system, HVAC system etc. are on different PCC, fed by a pair of transformers viz., TR-5 and TR-6. TR-2 feeds Indus-1 loads through power conditioners. TR-8 feeds the Booster Power Supply. TR-3 is a Stand-by transformer for all the two-winding transformers

Two major power supply systems of Indus-2 viz., Magnet Power Supply (MPS) and RF Power Supply (RFS) need more stable input mains for achieving the energy level

of 2.5 GeV. For estimating power requirements of the MPS and RFS, simulation trials were carried out at 2 GeV and 2.5 GeV respectively. Results of one of the trials are given below:

Sr. #	Beam Energy	RF Station #1	RF Station # 2	MPS
1	2.0 GeV	425 A	350 A	744 A
2	2.25 GeV	425 A	350 A	831 A
3	2.3 GeV	425 A	350 A	849 A
4	2.4 GeV	425 A	350 A	891 A
5	2.5 GeV	425 A	350 A	930 A

It is to be noted that each RF Station feeds two RF cavities. RFS-1 was fed unconditioned power, whereas RFS-2 was fed conditioned power. Auxiliaries for RF were connected to RFS-3. As the load was not comparable to the cavities, it was not recorded.

From the trials, it was concluded that conditioned power to the tune of around 1500 kVA might be required at this stage, if all the loads of both the MPS system and RF System are to be fed conditioned power. Looking at the urgency of commissioning activities of Indus-2, an immediate solution was required in this regard, as the procurement of power conditioning system for Indus-2 may take some more time.

The Indus-1 Power Conditioning System (PCS) having a rated capacity of 2 x 1100 kVA has been performing well. After the isolation of Booster Power Supply from this PCS, some capacity margin had become available.

Accordingly it was decided to connect all the loads of Indus-2 MPS, two Indus-2 RF cavities and their auxiliaries to Indus-1 PCS. The available capacity margin imposed a restriction, thus only two RF cavities and their auxiliaries could be connected. Remaining two RF cavities were not connected. A load ceiling has been imposed through the respective air circuit breakers on both the MPS as well as RFS to the tune of 800 A each, to restrict overall loading on the Indus-1 PCS. Additional cabling and relevant modifications in the connections at the PCCs in the Indus substation have been carried out.

After these modifications, a notable improvement in the Indus-2 performance vis-à-vis the input power quality has been observed.

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