

## 2.2. The IREN Project

In spite of serious problems with funding in year 2001 some progress in implementation of the IREN project has been achieved. The time-tables of two JINR laboratories FLNP and PPL responsible for this activity which have been approved in February and corrected by August were realized for many items.

First of all it was the activity connected with creation of elements of the electron linear accelerator (linac) LUE-200 carried out in new linear accelerator division of the PPL and the design bureaus of the FLNP and PPL. As result it was completed construction of all elements of the electron gun and it was mounted at the stand. The full set of general working drawings of the linac assembly was prepared by the end of August. It allows one to fix precisely a position and sizes of all linac elements in accelerator halls of Bld. 43 of FLNP. It was completed also a geodesic survey of the axis of the old linac dismantling since August. The results of this survey will be necessary during mounting of the new linac which beam should be directed to the center of the multiplying target with high precision. The problem is that a mounting of elements of LUE-200 should start in bld. 43 FLNP before a completion of IBR-30 reactor dismantling. A technological design of the magnetic focusing system was completed, the materials necessary for its construction was partly obtained and technological line for its mounting is installing now in PPL. A large work was carried out on full scale RF stand. During summer the vacuum system was installed and tested, the pressure of  $2 \times 10^{-8}$  Torr was achieved. After a completion of some auxiliary systems the modulator M-350 together with the klystron 5045 SLAC was tested at the regime of enhancing of RF power. The power as much as 70% of the planned one was really obtained at the repetition rate 50Hz. Last test experiments with long (210 ns) electron pulse and at high level (50 Mw) of the RF power have been successfully carried out at linac prototype in BINP, Novosibirsk with participation of Dubna experts. An electron beam (1.3 A) was transported throughout three accelerating tubes similar to the LUE-200 ones with minimal losses at the repetition rate 2Hz. It was confirmed a possibility to achieve the planned parameters of LUE-200.

Very important stage of the IREN project was got after final shut-down of IBR-30+LUE-40 neutron source on 15 June. At that moment the technical project of decommissioning of the IBR-30 reactor was completed by GSPI and after preparation of many other necessary documents by FLNP experts the license of Russian Gosatomnadzor for start up process of decommissioning has been obtained by the end of August. Since this moment JINR got the rights to begin technical preparation for dismantling of IBR-30. In October a construction of the new building #117/6 for storing of activated elements of IBR-30 has started. The technological regulation of IBR-30 dismantling and a design of necessary equipment has started to work out in November and should be completed and approved by Gosatomnadzor in third quarter of year 2002. After that JINR will get the right to start real work for dismantling of the IBR-30 reactor. In accordance with the IREN project time-table this work should start in last quarter of year 2002.

Large progress was achieved in working out of the modernized technical project of the multiplying target by NIKIET, Moscow in tight collaboration with JINR. As it is planned the project was completed in general by the end of 2001. Its formal approval in Russian authorities and delivery to JINR will be completed in the first quarter of year 2002 with delay of three months. With much lower rate a preparation of the general technical project of the IREN source was being carried out by GSPI, Moscow during this year. So a completion of the partial project necessary for official approval is shifted now at least by two quarters.

Taking into account large delay in implementation of the JINR budget of year 2001 (first funds were provided only by the end of August) and respective shift of many items of the IREN time-table JINR directorate approved the proposal of the project management to realize in next two years a reduced variant of the IREN source. This first stage includes full scale multiplying target and electron linac based on one 5045 SLAC klystron instead of previously planned two ones. This stage envisages also only one modulator and reduced (up to 50Hz) repetition rate. The time-table for years 2001-2003 has been approved by JINR directorate in September. It foresees the start up of

the first stage of the IREN source by the end of 2003. At the same time a corrected plan of financing for year 2001 was confirmed too. But due to the limited period for payments charging and the shifts of time-tables of some contracts this plan was realized only in part. The total investments in year 2001 consisted of about 270K\$ including a delivery of equipment from Bulgaria and Czech Republic which will be made really in year 2002.