some of research reactors and after the departure of some of research reactors abroad.

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THE REACTOR WWR-M AT PRESENT AND PROJECT

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The Present (February 1995)

The reactor WWR-M that was stopped on scheduled preventive maintenance (SPM) in July 1994 was started again only at December 20 past year. From the beginning of 1995 it stable operates on the physical experiment in conformity new conditions which are formed to this time. A stability and regularity of the operation aren't yet signify that all problems of the reactor and its operating personnel were settled at the rather long (five and half monthes) period of the shutdown.

The term of the passport of GOSATOMENERGONADZOR (the permit for operation) expires at November 1, 1995. It was known long ago. So at the Scientific Counsil of NRD (Nuclear Research Department) at May 1994 the question of the reactor WWR-M future was discussed. At this time it was take a decision about the expediency to prolong the reactor operation term to next year and it was made the first financial support for the development of the activity for the extending of the reactor operation term. It was alloted 200 million roubles for the summer SPM and 200 million roubles for the overhaul. This direction of activity was named by "Bringing systems and the reactor eguipment into accordance with the safety reguirements of Regulatory Instruction Manuals (RIM)" with replacement of the old and amortization assemblies in the end by the new equipment that will meet to the physical experiment requirements. This activity will be provided till 2000. State Design Organizations such as VNIPIET (the Chief Designer), NIKIET (the Chief Construction Architect) and CNII KM "Prometey" (the Chief Material Science Organization) are involved in this activity too. It's provided to realize this activity stage by stage during the reactor operation and SPM shutdowns. The first shutdown of this year plans at March 20 for two weeks term. It will be realized general preventive inspections testings, installation works, and also a careful inspection and a testing of non-standard welds which have the bounded term of operation. It was occured the one request for the installation of the new experimental equipment in the tangential experimental channel No. 10-10'. It must shed light on the possibility for the creation of a new generation of high-effective cold and ultracold neutron sources with the using of the frozen deuterium as the neutron thermalyzator.

But how it can be realize the plans of the operation term of the reactor which was on power operated for 35 years? (This anniversary slipped away at December 29 last year only one and half monthes ago). It will need only speedy completion of inspections that projected in current year, by the implementation of design works and its realization and also as primary request by the receiving of "The Temporary Permit" for the reactor operation. It is the new

legitimated form of the interaction with GOSATOMENERGONADZOR of Russia. But it needs a special purpose financing besides the time. We have no synonymous decision now though we accosted to Russian Academy of Science that will finance the reactor WWR-M overhaul. The first claim of the receipt "The Temporary Permit" was gave at 1994 but it wasn't accepted because the absence of information about the statement of the reactor building constructions and its concomitants and the possibility of its operation in future. It's need the inspection. From the middle of April it will be started three monthes term of the reactor operation and then it will be long pause for SPM.

From August 28 the Commission of GOSATOMENERGONADZOR will carry out the regular all-round inspection of the reactor. And it will be in spite of that St.-Petersburg Inspection for RNR (Research nuclear reactors) of Central region of GOSATOMENERGONADZOR of Russia are "accredited" at PNPI of RAS which duty is permanent monitoring of the WWR-M reactor operation, the PIK reactor mockup operation, PIK Complex development and the operation with radioactive sources.

Considerable difficulties for us is the shortage of the personnel and the personnel payment.

So 1995 is the year of hopes and anxieties. We would like God help us to find a worthy way out of this situation.

The Project

Summing up the results of 1995 it's possible to notice with satisfaction that all planned works of year were carried out and carried out in planned period. The reactor which was stopped July, 18 on preventive maintenance (PM) was put into operation again 9-th of October 1995 and worked out during the whole year 1800 MWt-days of energy. It wasn't easy. No numerated all that was done I mention only that works which were nontrivial for us. The receiving of the conclusion for further exploitation of reactor vessel and its internal constuctions demanded for the calculations technical characteristics knowledges CAB-1 alloy that is the main structural material which was irradiated to large value of neutron fluence. Russian specialists haven't such data in their disposal. This information was obtained literally from the depths of the reactor. The samples for investigations were cutted out from SPC channels tubes which were placed in active core and had an advanced neutron fluence in comparison with another constructions.Investigations were carried out in laboratories of CNII KM "Prometey". It was shown that reactor vessel from this metal have working capacity till 2000.

Under the audit of aluminium part of MCC pipes by means of visual inspection, radiography and colour testing methods in welds metal there were found defectes in the form of separate pores, chain pores and crackes which weren't allowed by means standards and formed more likely during the production and the mounting for 35 years exploitation (relic defectes) or appeared in the process of exploitation. Single-valued answer on it will be given in summer 1996 by comparison of radio graphes which were made with the interval of one year. Mentioned pipes are situated in the subreactor box in the zone of significant gamma back ground and it's impossible to carry out its mauntenance in our conditions. (Let us remember that for changing of one gasket on the flange under reactor vessel more than 100 person were attracted with permissible dose 3 rem of person). The substantiation of this welds working capacity seemed problematical. The way out of this situation was found by drowing for MCC repaires the Chief Material Science organization CNII KM "Prometey"

which using the new for the reactor technology approach to substantiation of safe exploitation period for pipes from tenacous materials "Leak before failure" determined exploitaion conditions and permissible number of thermal cycles for pipes loading (start-up and shut-down of reactor) whcih is equal to 200. This number of cycles is enough for reactor work till 2000 year; but incidentally a new kind of the checking (dropwise leak) along all welds of Al pipes and technique suitable for this checking appeared.

All obtained permissions ordered an annual comparative control of metal structures state with prolongation amount of use.

Combined GAN commission that worked at the reactor from September 25 to October 3 may force everybody to become agitated but to their honour worked objectively and without any quibbles. The number of essential comments was made but total conclusion was positive. One of such comments was the state of reactor physical protection which satisfies to not all international and federal demands of nuclear dangerous objects protection. What is why at present time at the reactor the demands to control-pass regime are made more rigid and additional lines of defence as the fence from concrit signalization and another means which decreased the probability of non sanction penetration and influence on protected object are built. Of course, all this cause a number of the additional difficulties and inconveniences for reactor personnel but this is time dictates and we can reconcile ourself to that situation.

On the strength of the work carried out the results of reactor checking by GAN commission and the conclusions presented by specialized organization owing to results of reactor equipment and its systems investigations and testing GAN passport for WWR-M reactor was reregisrated on two year period and it was gave a permission for its operation. Materials for application on receiving of temporary permission are supplemented and in February 1996 it will be again sent to GAN.

Financial problems of the reactor are yet not solved.

THE PIK REACTOR

K. A. Konoplev

The foundation of the Petersburg Nuclear Physics Institute in 1971 year concided in time with understanding by the scientific community the necessity of construction the high neutron flux research reactor and for our credit of construction such reactor exactly in Gatchina. There were more a dozen of the research reactors in the USSR at that time where the experiments on neutron beams were carrying out or could be carried out. In fact the real experimental research in fundamental physics were carried out only in some centers as ITEP, JINR, IAE and of couse, in Gatchina and results obtained in Gatchina looked as very essential. It is possible to speak about importance of Gatchina results very confidently as every two years the comparisons and analysies of obtained results were holded at the advisory meeting headed by academician A.P. Alexandrov.

For the time of PNPI foundation the main fundamental issues of the PIK reactor construction were solved. The question of the discussing were, apart from choosing of the reactor name, the type of the reactor, its power and obtaining the permission of the USSR Government for the reactor construction in Gatchina. It should be mentioned that the choice of the reactor type as a reactor with active core cooling by light water placed in the heavy