
WAYS TO PRESERVATION AND MANAGEMENT OF NUCLEAR KNOWLEDGE ON WWER REACTOR PRESSURE VESSELS

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Nuclear knowledge preservation activities are ongoing in the EC-JRC Institute of Energy with the intention to collect all available information about reactor pressure vessels of WWER type reactors as well as to analyze and summarize the most important items and issues. This activity is in line of the European Community FP6 projects PERFECT (Prediction of irradiation damage effects on reactor components) and mainly COVERS (Coordinated action on WWER safety) in which all WWER operating countries also take part. Actually, the electronic database was created and is accessible for young or expired researchers in this area. The access is recommended via ODIN (Online Data and Information Network) <https://odin.jrc.nl/doma>. After registration you can enter the WWER DoMa-db: "Database of references for knowledge management and Preservation on WWER reactor pressure vessel". For the access to confidential information you have to ask an indicated administrator.

For the project, more than twenty precise selected specialists, mainly from WWER operating countries, have been asked to help with the collection of such mostly rare publications. It is clear that a large number of publications, since the very beginning of the research studies and from the first years of reactors operation, were published in Russian as well as in other national languages (Czech, Slovak, Hungarian, Finish etc.). This makes the situation complicated for most of foreign experts, and today, also for most of WWER reactor operators in individual countries. A large number of publications was prepared also in other languages and were sent not only to international, but also to some national journals as well as presented in many national conferences/workshops etc. proceedings which are now very complicated to find from abroad.

Authors have been asked via national experts for their full lists of publications dealing with material properties of WWER reactor pressure vessels, and as a first step, it is the intention to concentrate on studies and results related to the irradiation damage and testing for these type of steels as this practically determines reactor pressure vessel lifetime and it is the reason of most vessel problems. As a second step, full texts of the relevant publications have to be required when not be possible to find them in standard libraries. The material and further knowledge has been discussed in the leading group in JRC-Petten and of course, this database of the bibliographies (supported by full text of all included publications with abstracts in English and in electronic format) will be served and will be available to all authors immediately, thus it will also help the authors for current work and studies. Further, these materials will serve as a basis for elaboration of a state-of-the-art report on radiation damage in WWER reactor pressure vessels steels that will be prepared with an active participation of all active authors. The structure and content of the reports will be prepared in the workshop where the participating authors will be invited.

In the field of reactor pressure vessel (RPV) embrittlement, a generational gap is slowly appearing with regard to in depth knowledge of materials behavior and related neutron embrittlement issues. This is due mainly to the fact that the experts who took part in the design, construction and commissioning of the nuclear reactors are now approaching retirement, if not already retired, and/or changed job for different reasons. In addition, for the

Russian design RPVs a significant fragmentation of the knowledge took place with the dissolution of the USSR and the dislocation of the various WWERs into several Member States; including: Hungary, Slovakia, Check Republic, Bulgaria and Ukraine. Significant knowledge on WWER-440 is also available in Finland and of course in Russia. In the previous decades, many of national experts were involved into following international projects.

The nuclear knowledge management is realized not only via database creation or education process during undergraduate (Bc.), graduate (MSc.) and postgraduate (PhD.) study but also via specialised training courses in a frame of continuous education system, research activities and projects, workshops seminars, ect. For illustration of the actual status and possibilities, the Slovak nuclear knowledge model is used. Unfortunately, decrease of number of employees in nuclear and "human ageing" of experts seems to be a serious problem not only on world but also in Slovakia.