**Minutes of Expert Mission**

Recorded by A. Dutta Ray

**Title:** TC Expert Mission on Assessment of the RPV neutron irradiation embrittlement, analysis of RPV surveillance specimens mechanical tests and Strength of Reactor Coolant Systems

**Date of Mission:** September 14 to 18, 2019

**Location:** TAVANA Offices, Tehran, Iran

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**IAEA Experts:** Viktor Kravets, Oleksander Trygubenko, Eduard Chalyi, and Heikki Keinaenen

**Highlighted discussion points:**

1. It is necessary to pay attention to the RPV passport data such as Tk0 values for WM and BM. In the passport for the value of Tk0 commonly indicated the value "no worse than the value required by the TU (standard for the manufacture of the reactor vessel)". It can be written as as “<25°C” or “<-10°C”, etc, which is not the test results number. For such cases the experience to use reference SS sets to determine the Tk0 (or “Tk\_initial”) is exist.

2. The issuer of archival material storage after surveillance specimens been tested should be considered in the technical specifications for SS testing.

3. Reconstruction of SS is a proven technology. When using it, attention should be paid to the technology of welding samples so that temperature overheating of the test material does not occur.

4. In the case of postulated defects less than 0.25S, the qualification of non-destructive testing systems to confirm the reliability of the applied non-destructive testing technologies. “Methodology for Qualification of In-Service Inspection Systems for WWER Nuclear Power Plants” IAEA-EBP-WWER-11 and ENIQ “European methodology for qualification of non-destructive testing” are applicable and could be used.

5. The NDT personnel qualification system based on international standards and recommendations of international NDT organizations (ICNDT; EFNDT) regarding third party certification can be used to build confidence in the results of non-destructive testing of equipment important to safety.

**Support that was requested in the near future but requires approval from NPPD, NLO and IAEA PMO:**

1.)    Agency may be requested to organize the Scientific Visit for Iranian specialists to one or two countries to familiarize themselves with SS programs with modern SS handling technologies and see Hot labs in use. Ukraine site maybe preferably for both distance and access to site, while Czech Republic or France may also have similar programs. The objective is to:

1. Learn the processes and procedures for conducting the testing
2. How to analyse the results
3. How to apply the results
4. Visit and see the equipment used
5. Speak to and learn from the people who conduct the analysis

2.)    Visit to see modern mechanized metal inspection equipment at NPP inspection facility or NPP site. Ukraine site would be preferable as it could be done at the same time as request above. The objective is to see:

1. The equipment used
2. What methods are used
3. How  NDT systems qualifications are conducted
4. How NDT inspections are conducted.

3.)    Request a workshop after the data is obtained from the SS testing in either Vienna or in Iran. Preference is in Iran due to results maybe confidential. The objective is to:

1. Review the results and procedures used
2. How to analyse the main data so that they can learn how to do it on their own
3. How to use the results and apply to changes in operating procedures.

4.)    Workshop on how to increase the inspection intervals from 4 to 8 years.

1. Experts from possible Czech Republic, France or the USA
2. Experts from possible CANDU countries in regards to Steam Generators
3. How to analyse the main data so that they can learn how to do it on their own
4. How to use the results and apply to changes in operating procedures.

5.)    Corrosion Management Workshop – Already requested by NPPD and waiting for response from IAEA TO. This is an important topic for NPPD as BNPP site climate can create high general local corrosion.