Dear Mr….

Subject: Ws on Thermal hydraulic analysis for safe operation of BNPP-1

Based on the meeting between you and our collages regarding the Ws on Thermal hydraulic analysis for safe operation of BNPP-1 (item no.1.23.1 of IRA/02/011: action plan for implementation of work plan activities in 2012-2012and 2014-2015), Please be informed you that from 2000 to 2011 the following workshops have been held by the IAEA and the staff members of the NPPD have been participated in these workshops:

* Workshop on Thermal Hydraulic and Fission Product Release Codes for Accident Conditions in WWER Reactors (8-17 May 2000)
* Workshop on Thermal hydraulic analysis principles (6-10 Sep. 2003)
* Review of identified Thermal hydraulic problems (13-17 Dec 2003)
* Workshop on improvement in Thermal hydraulic modeling (19-23 Jun 2004)
* Workshop on Thermal hydraulic analyses for Bushehr NPP (21-25 Nov 2005)
* Workshop on Thermal hydraulic analyses for Bushehr NPP (03-07 Dec 2006)
* workshop on start-up experiments of the BNPP for the completion of NPP data base and validation of models for accident analysis (11-14 July 2010)
* Workshop on deterministic safety assessment applications (28-30 Nov 2011)

During these workshops, lectures on different aspect of the safety analysis of the BNPP-1 in the following main area were presented by the IAEA expert:

* Development of the database and engineering handbook for BNPP-1 safety analysis,
* Applicability of CFD codes for nuclear safety,
* Use of design information for preparation of input data for safety analysis,
* Analysis of radioactivity releases and transport during design basis and severe accidents,
* Technical description of Russian codes used in BNPP accident analyses,
* Exchange of experience in preparation of selected input data,
* Review of preliminary results of accident analyses performed by Iranian experts (LB & SB LOCA, MSLB, FWLB, etc),
* Use of design information for preparation of input data for safety analysis,
* Exchange of experience in preparation of selected input data,
* Discussion of future short term and long term activities of the AEOI in the accident analysis area and of relevant IAEA assistance to be requested by Iranian counterpart in this area.
* Recommendation on participation of accident analysts in development/review of relevant start-up tests (as well as the evaluation of the test results).
* Application of deterministic safety analysis
* …

In addition, the IAEA expert were reviewed activity of the NPPD in the area of thermal hydraulic analysis of the BNPP-1 (e.g. development of the BNPP database and engineering handbook, developing analytical models and independent computer codes, preliminary testing of use of the CFD code, preliminary results of accident analyses performed for BNPP such as: LBLOCA,SBLOCA, FWLB) and gave recommendation for improvement of the results.

At now, based on the previous workshops and lectures which were presented in the a.m workshops, and taking into account that TAVANA Company is responsible for Technical Support of the BNPP-1, we propose to plan the next workshop on thermal hydraulic analysis of the BNPP-1 in the area of supporting the plant operation and control. In this respect, we proposed the following issues be addressed during the next workshop:

* Updating of the Databases and Engineering handbook based on commissioning and start-up test results for validation of models in order to investigate the most realistic plant parameters,
* Qualification of plant nodalization using available experimental data,
* Development of Integral Plant Model, Qualification process in Plant Modeling using Bushehr NPP Commissioning tests for validation of accident analysis input data and models.
* Transferring the measured values obtained from the start-up tests to the input deck,
* General aspects and of implementation of practical methodologies for best estimate and uncertainty analysis
* Specific aspects of TH analysis task related to the operational and control
* Analysis of hypothetical transient for operation support
* Example of an EOP/PSA transient analysis, analysis of operating experiences, actual transient analysis, Improvement of plant availability, Design modification, Periodic safety reviews etc.
* Integrated Process between PSA and Deterministic Approaches
* Design and construction the test facilities for validation of computational tools developed and/or used for safety analyses.
* Application of TH model (using some practical examples ) in technical support of the BNPP-1 during design changes and systems/equipments modernizations.
* Application of TH model in modification of operation instructions/procedures as well as accident management programs.
* Practical examples of deterministic safety analysis to assess the equipment qualification with ageing considerations.
* Thermal hydraulic transients analysis in supporting the BNPP-1 during operation such as : pressurized thermal shock, thermal stratification transients, flow mixing analysis, …
* Beyond design basis accidents, including severe accident (selection of representative BDBAs, studying the phenomenology, mastering and application of relevant codes, elaboration of possible prevention and mitigation strategies as applied to BNPP-1 ).