

EBP-ASIA-208

LIMITED DISTRIBUTION

NOVEMBER 2005

PROGRESS REPORT

(November 2004 – October 2005)

**EXTRABUDGETARY PROGRAMME
ON THE SAFETY OF NUCLEAR INSTALLATIONS
IN THE SOUTH EAST ASIA, PACIFIC AND FAR EAST COUNTRIES**

INTERNATIONAL ATOMIC ENERGY AGENCY

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International Atomic Energy Agency
Extrabudgetary Programme (EBP) on the Safety of Nuclear Installations
in the South East Asia, Pacific and Far East Countries

PROGRESS REPORT

November 2005

I. INTRODUCTION

This report describes the activities implemented from November 2004 until October 2005 and those further planned for 2005. Activities implemented from November 2003 to October 2004 were presented earlier in the PROGRESS REPORT, EBP-ASIA-169, which was distributed to all participating countries in November 2004.

II. ACTIVITIES IMPLEMENTED FROM NOV. 2004 TO OCT. 2005

II.1. PROGRAMME MANAGEMENT

II.1.1. Technical Meeting

A Technical Meeting (TM) was convened by the IAEA to review progress and further activities of EBP. The plenary meeting was held from 7 to 9 December 2004 and attended by 30 representatives from 12 countries.

Bilateral consultation meetings between the IAEA and representatives from the 6 countries in the region were held on 6 December to discuss national activities for 2005.

At the plenary meeting, the following agenda items were presented and followed by discussion:

- Review of the EBP Activities;
- Progress report on Integrated Safety Evaluation (ISE) and Future Assistance Needs;
- Review of ANSN Activities;
- Work Plan for 2005.

II.1.2. Asian Nuclear Safety Network (ANSN)

(i) ANSN Consultancy Meeting

The Consultancy Meeting on ANSN was convened on December 9, 2004 after the EBP TM with the participants from China, Japan, Korea, the United States and IAEA. The Meeting was focused on the work plans for 2005 and beyond of the Topical Groups (TGs) and the IT Support Group. The work plans proposed by coordinating countries were discussed.

(ii) Coordination of EBP Implementation in China

Coordination Meeting between the IAEA and Chinese counterparts for EBP Implementation in China was held from 16 to 18 March 2005 at Beijing, China. The main purpose of this meeting was to explain new strategy of EBP to the Chinese institutions involved in EBP activities. For the future EBP activities, it has been agreed to put in place a mechanism to get maximum benefit of the knowledge accumulated during the past by requesting the institution(s) receiving any EBP assistance to prepare in advance background material based on the existing safety knowledge. It was also agreed to implement several test activities within 2005. At the meeting new trends and the policy of the Asian Nuclear Safety Network (ANSN) was introduced to Chinese counterparts.

(iii) Introduction of ANSN and Discussions on Education & Training

A mission for Introduction of ANSN and discussions on Education and Training, so called "Pre-Caravan" Mission to Vietnam was conducted from 21 to 23 March 2005 at Hanoi, Vietnam. The concept of "Caravan", for promoting ANSN activities, has been mentioned several times since the beginning of the ANSN project. The purpose of the mission was to apply the concept for the first time, and was called "Pre-Caravan" for that reason. This mission was planned and carried out by Japan (Japan Nuclear Energy Safety Organization (JNES) and Japan Atomic Energy Research Institute (JAERI)) to promote ANSN in Vietnam. The Vietnam Atomic Energy Commission (VAEC) was the counterpart in Vietnam.

The presentations were considered quite important for various organizations in Vietnam to get a better understanding of the ANSN. The feedback from the counterpart in Vietnam will be very useful for improving the Network and to promote it through the region.

(iv) Topical Group Meeting on Safety Analysis

The ANSN Topical Group Meeting on Safety Analysis was held from 26 to 29 April 2005 at Daejeon, Korea. The main purpose of this meeting was to provide a forum for an exchange of experience in the area of safety analysis and to discuss how to maintain and improve the knowledge acquired during the workshops on Safety Analysis Methodology and Use of Computer Codes held in 2001 and 2002, respectively onto the Asian Nuclear Safety Network (ANSN).

Information and experience in the safety analysis of research reactors have been continuously exchanged among the topical group. The discussion of the RELAP5 based safety assessment of the member countries' research reactors and special lectures at the meeting provided further insights on how to perform safety analysis for the research reactors.

(v) *IT Support Group Meeting*

A meeting of the ANSN Information Technology Support Group (ITSG) was held from 27 to 29 April 2005 at Beijing, China. The purposes of this meeting were to discuss pending and new requirements for the ANSN project; to agree on software development priorities and timeframes; to decide on the implementation methodology; to provide detailed technical insight on specific software issues; and to establish a closer relationship between the ITSG and ANSN management. Moreover, the meeting defined the technical assistance required by the National Centres for developing their systems.

(vi) *Steering Committee*

The second meeting of the Steering Committee of ANSN was held from 18 to 20 May 2005 at Seoul, Korea. The purpose of this meeting was to ensure efficient and effective planning and implementation of ANSN activities and the sustainability of the ANSN system, in particular to co-ordinate the utilization of the ANSN as a tool for the implementation of EBP work plan. ANSN is being pursued as a pioneer regional safety network to pool, analyse, share and create knowledge to further improve the safety of nuclear installations in Asia.

The Korea Institute of Nuclear Safety (KINS), which operates the ANSN Korea Hub, hosted the meeting. Twenty-four participants from 10 member states attended the meeting.

The agreed basic policies of the access policy and the visual identity are clearly showing the directions of further works by the ANSN IT Support Group before 2005 EBP TM. Following technical outputs are expected.

- 2-level protection of documents
- Criteria and procedure for delivering password
- Measures for visual identity of the ANSN (portal design and common basic information)

(vii) *Topical Group Meeting on Operational Safety*

A meeting of the Operational Safety Topical Group (TGOS) of ANSN was held from 14 to 16 June 2005 at Wuhan, China.

The purpose of this meeting was to launch the TGOS, to discuss work scope and plans, and to establish a work plan and communication network for the TGOS, since this is the first meeting of TGOS.

The major purposes of the ANSN Topical Groups (TGs) are to elicit information and relevant knowledge and to ensure the technical quality of the material for sharing in the ANSN in the designated area. This TGOS is expected to implement those activities in the area of operational safety of nuclear power plants.

The Research Institute of Nuclear Power Operation (RINPO) hosted the meeting. Nineteen participants from three member states of the Region (China, Japan and

Korea), one from a supporting country (France) and three staff member of the Agency participated in the meeting.

The roles and expected activities of TGOS were discussed based on the proposal from the Coordinator.

(viii) ANSN Promotional Meeting, "Caravan"

ANSN Promotional Meeting was carried out from 12 to 13 September 2005 at Jakarta, Indonesia. The main purpose of the meeting was to promote ANSN activities in Indonesia and to review the use of ANSN when implementing the activities of the IAEA's EBP Programme in this country. The meeting was one of several promotional activities referred to as "Caravan".

Three external experts, who represented three Topical Groups respectively, and three IAEA staff member participated in the lecturer team. The meeting took place in the premises of the Nuclear Energy Regulatory Agency of Indonesia (BAPETEN). About 20 persons from the National Nuclear Energy Agency (BATAN) and BAPETEN attended the meeting.

Discussions was held on a number of topics and the meeting participants provided useful feedback for further development of the ANSN. Participants confirmed that the duration for such type of the meetings (one day and a half) is appropriate and allows senior managers to attend.

Similar Caravan meetings should be planned for other countries participating in the ANSN project. It was fully appreciated that Indonesia indicated its intention to organise a "national Caravan" to disseminate the information received during the meeting among other institutions and people, especially students.

(ix) Follow-up of Coordination of EBP Implementation in China

A follow-up meeting on Coordination of EBP Implementation between the IAEA and Chinese counterparts was conducted from 10 to 11 October 2005 at Qinshan, China. Two IAEA staff members participated in the annual meeting of the Chinese coordinators for preparing EBP requests for next year. During this meeting, the Agency's strategy for sharing knowledge through ANSN and for selecting 2006 EBP activities was also introduced and discussed.

This meeting was organized by the China National Nuclear Corporation (CNNC). Sixteen participants from CNNC, National Nuclear Safety Administration (NNSA, a regulatory body in China), the Research Institute of Nuclear Power Operation (RINPO) and all NPP operators in mainland of China, which are Qinshan phase I to III, Daya Bay/Lingao and Tianwan, attended the meeting. Each participant is in charge of coordination work for international cooperation programmes including EBP and TC activities of the Agency in his/her organization.

The test activity, proposed at the previous activity (ii), for utilizing the ANSN and APMD for the workshop on RPV head replacement at Qinshan-I NPP on August 2005, was successfully implemented. For 2006 EBP national activities, this results can be a good reference.

For selecting new national EBP activities to China, high priority should be given to support programmes for NNSA to strengthen their regulatory effectiveness and independence, as well as programmes for NPPs through which implementation knowledge accumulation and sharing are expected.

(x) *Special IT Meeting*

A Special IT Meeting on ANSN was held from 11 to 14 October 2005 at Tokyo, Japan. The first purpose of the meeting was to share technical developments with Japan including development of special features required for the Japan web site, discuss pending and new requirements for the ANSN in particular the implementation of a new visual identity and to agree on software development priorities and timeframes.

The second purpose was to have effective communication between the ANSN ITSG and the end users of ANSN on issues such as the new ANSN portal, visual identity and action plan.

The new web design, along with other decisions have been approved. An action plan that contains 23 decisions and/or actions with deadlines was created and agreed upon.

(xi) *ANSN Newsletter*

The ANSN Newsletter was initiated and firstly issued in March 2005. The purpose of the newsletter is to provide short and concise overview of the safety activities underway in the participating countries under the framework of EBP or ANSN and to increase the outreach of the network.

The newsletter is published bi-weekly and widely circulated internationally. Fifteen newsletters have been published by 15 November 2005.

II.1.3. Database

The new web version of the EBP Knowledge base (renamed APMD = Asian Programme Management Database) was released in February 2004 to registered users. The new features are a complete new page design consistent with the Asian Nuclear Safety Network, a full text search and a direct link to the IAEA Technical Co-operation database TC-PRIDE. The APMD continues to present the basic information on activities supported by the extrabudgetary programme (titles, dates, venues, objectives, status, technical officers, outside experts, national counterparts and results) as well as bilateral agreements, summary and mission reports, training material, Country Nuclear Safety Profiles (CNSPs) and Nuclear Safety Action Plans (NSAPs).

It is continuously being updated and available for registered users via internet. Current numbers of outside users are around 120.

II.1.4. Integrated Safety Evaluation (ISE)

The ISE is a self-assessment process by which Member States can evaluate their safety practices against IAEA nuclear safety standards. It was agreed at the Technical Meeting (TM) of November 2002 that the ISE report would be the main tool for the member states and the IAEA to prioritise activities and assistance requests.

(i) Regional Meeting on Integrated Safety Evaluation

The regional meeting on the application of the ISE was held from 19 to 21 September 2005 at Vienna and attended by 13 participants from 6 countries. The purpose of the meeting was to review the nuclear safety profile of each country as described in the ISE reports submitted to the IAEA in December 2004. The review focused on the three main topics of ISE: Legal and Governmental Infrastructure, Safety of Research (Power) Reactors, and Education and Training in Nuclear Safety. The meeting also discussed the use of ANSN to capture knowledge from past EBP activities and update the profiles.

All participants recognized the usefulness of the ISE as a self-assessment and self-improvement process for nuclear safety. During the discussion on the progress report of each country, all participants were updated on the status of the safety developments of the other countries.

The ANSN and the APMD database are recognized as useful tools as reference of the accomplishments in the framework of the EBP Asia. All participants were also encouraged to use the ANSN to share knowledge between countries, within the country, and for self assessment.

All countries were requested to develop their revised ISE reports, based on objective back data, for the Technical Meeting 5-8 December 2005, and were informed that future requests for assistance should be justified based on the ISE reports.

II.2. REGIONAL ACTIVITIES

II.2.1. WS on Training Needs Assessment, Networking and Materials for Training Courses in Nuclear Safety

Workshop on Training Needs Assessment, Networking and Materials for Training Courses in Nuclear Safety was held at the Institut National des Sciences et Techniques Nucléaires (INSTN), CEA Saclay, France from 10 to 21 October 2005.

The course had four major parts: 1) Discussion of existing training programmes in the participating organizations; 2) Assessment of training needs; 3) Networking and use of IT technology; and 4) Training materials and other resources available from the IAEA. The primary purpose of this course was to familiarize the participants with the content and nature of the materials that are available, ways in which the materials can be used, and ways in which the available materials can be augmented using national resources.

This course was organized by the IAEA's technical cooperation programme (TC RER/9/061). Seven participants from China, Indonesia, Malaysia, Philippines, Thailand and Vietnam have been supported by the EBP to attend the course.

II.2.2 Translation and Utilization of the Materials for Training

The participating countries, which organize the national training activities, can be supported to translate and distribute the relevant materials at the training activities.

After the successful completion of the National Training Course on Nuclear Safety Level II: Research Reactor in Indonesia, from 18 to 29 July 2005, six course reports translated into the Indonesian language have been uploaded into BAPETEN's ANSN national web page for further utilization by Indonesian professionals.

The 2nd National Basic Professional Training Course on Nuclear Safety was implemented from 21 November -02 December 2005 by VAEC, Vietnam. Five IAEA safety documents related to the course topics were translated into the Vietnamese language by the national trainers in Vietnam and distributed to the course participants. The translated materials in electronic file format will be uploaded on VAEC web page for further utilization in Vietnam.

II.3. NATIONAL ACTIVITIES

II.3.1. China

(i) *Qinshan CANDU Living PSA and Risk Monitor Development, PSA Application Case Study*

Date: 8 - 12 November 2004

Place: Qinshan Phase III NPP, Haiyan, China

The purposes of this expert mission : (1) to provide the participants with the contemporary information on the full-scope PSA methodologies and applications with emphasis on treatment of common cause failure (CCF) and component reliability data in a Level-1 internal events PSA, and (2) to discuss the existing design PSA for Qinshan Phase III NPP (TQNPP) and elaborate on high-level recommendations for upgrading the PSA to make it "living" and suitable for PSA applications.

Three external experts and one IAEA staff member provided the lectures. Twenty-five participants from the Chinese side (mainly TQNPP staff members) participated in the technical sessions.

The expert mission was designed to focus on the full-scope PSA methodologies and technical discussions on the TQNPP plant-specific PSA tasks and important aspects of the future work. Practical examples of the development of a PSA for a CANDU NPP were covered on the basis of the PSA study and Risk Monitor for Cernavoda Unit 1 NPP in Romania.

The expert mission provided for the state-of-the-art knowledge and experience transfer in the area of full-scope PSA methodologies and enhanced the participants' knowledge.

The Chinese counterpart recognized the importance of upgrading the TQNPP PSA before implementing the PSA applications. The counterpart requested to consider the possibility to conduct a Pre-IPSART mission for the TQNPP Level-1 internal events PSA to get more detailed review comments on the adequacy of the existing models

and specific practical advices on upgrading the design PSA to the level of a plant-specific “living” PSA.

(ii) Assess Implementation of Past IRRT Recommendations

Date: 23 November - 03 December 2004

Place: SEPA/NNSA, Beijing, China

The purpose of the mission was to conduct, at the request of the Chinese Governmental Authorities, an International Regulatory Review Team (IRRT) follow-up mission to peer review the regulatory system of the People’s Republic of China for nuclear installations against the IAEA Safety Standards and to exchange information and experience. The mission covered all areas related to the nuclear safety of nuclear installations.

At the beginning of 2004, the Chinese Governmental Authorities requested a follow-up mission to review the measures undertaken by the State Environmental Protection Administration/National Nuclear Safety Administration (SEPA/NNSA) following the recommendations and suggestions presented in the report of the October 2000 IRRT mission.

During the review the team recognized that SEPA/NNSA has taken several initiatives to improve its effectiveness and efficiency and that it faces a number of new challenges. These include additional responsibilities in the regulation of the use of radiation sources and those resulting from the construction, and the planning for the construction, of a number of new nuclear installations.

In the opinion of the review team, the SEPA/NNSA initiatives have resulted in the successful implementation of a fair amount of the recommendations and suggestions presented in the previous report and the preparation of plans to address some of the remaining ones. Good practices have also been identified. Taking into account the limited resources of SEPA/NNSA, these results are encouraging. Progress has been identified in particular in:

- the legislative basis for the SEPA/NNSA responsibilities;
- the establishment of a direct reporting line with the highest level in the Government;
- the organization of SEPA/NNSA and in particular the development of a quality management system;
- the development of draft regulations and guides;
- the emergency preparedness and response arrangements; and
- the establishment of a registration/examination procedure for Nuclear Safety Engineers.

The recommendations and suggestions made in the technical notes distributed at the end of the mission indicate where improvements are necessary or desirable to further strengthen the legal and governmental infrastructure for nuclear safety in the People’s Republic of China.

(iii) Important Items Surveillance Management and Results Evaluation

Date: 17-21 January 2005

Place:

Qinshan II NPP, Haiyan, China

The purpose of this workshop was to enhance operational safety focused in the surveillance management programme and activities at Qinshan II NPP, to provide assistance in establishing methodologies to evaluate surveillance results and to assess the effectiveness of the surveillance programme.

Three external experts from France (EDF), Spain (Tecnatom), USA (Exelon) and one IAEA staff member, provided lectures and guided the discussions. A total of twenty-nine participants from the Chinese host organization including members from other sites at Qinshan and a representative of the Beijing Institute of Machinery and Science attended the meeting and actively participated in the discussions.

The workshop was organized and structured on the basis of the following specific topics:

- Overview of the IAEA Safety Standards for surveillance in NPP's;
- Management and organization of the surveillance programme;
- How to select and monitor the important items;
- How to assess the health status of these important items;
- How to establish indicators and trending for the surveillance programme;
- How to present the results of surveillances in the management reports; and
- How to assess the overall effectiveness of the surveillance programme

Throughout the workshop the experts presented their experience on the items discussed. In addition, the IAEA staff member presented recent events from operating experience where ineffective surveillance was one of the major root causes, mainly the Davis Besse pressure vessel head degradation and the Mihama erosion-corrosion incident.

(iv) Workshop on Engineering Managers Professional Development

Date: 24 –28 January 2005

Place: Qinshan III NPP, Haiyan, China

The purpose of this workshop was to deliver presentations on aspects of a sound management of safety programme and its relation with the engineering organization. Pitfalls and flaws, causers of recent important and costly safety significant events were presented.

The workshop was conducted in the installations of the Qinshan Nuclear Training Center, and was attended by twenty six participants, being most of them from Qinshan III, two from Qinshan II, two from Qinshan I and two from Tianwan Project.

Two external experts, from Brazil and USA and one IAEA staff member conducted the presentations. The workshop consisted of aspects related to the management of safety, with the presentation of the recent events and their root causes and contributing factors; the process of low-level events and near misses and their direct relation with the enhancement of safety and operational performance. Experience

from Exelon in USA and Eletronuclear in Brazil with similar program and their relation with the utility engineering organizations enriched the presentations. To motivate even further, participants were divided into three smaller groups where they should develop their challenges, related to the theme of the workshop, to be faced when they returned to the respective working places.

This part of the workshop was considered very interesting and productive, because there was consensus on most of the challenges presented, and the managers that were there fully agreed with them. One of the challenges presented was related to the existing Operating Experience Process in China, which was considered not sufficiently effective. As examples, four of the participants never heard about the TMI accident, only two knew about the Davis Besse event and only one knew about the Paks fuel event. Similar number – only three, knew about the TEPCO event in Japan.

Most of the participants hardly knew or even were aware of most important events/incidents of the last three years. Therefore, the Agency should re-emphasise and re-discuss the importance of the operational experience feedback programmes when conducting and leading seminars, conferences and steering/advisory group meetings.

(v) Workshop on Improvement of Accreditation System and Method for NPP Licensed Operators' Training and Qualification

Date: 28 February – 04 March 2005

Place: RINPO, Wuhan, China

The purposes of this workshop were to exchange the experience and techniques of license examination of NPP operators in nuclear advanced countries and to give lectures on specified topics such as a medical/psychology requirements and an accreditation system.

The mission was organized and hosted by the Research Institute of Nuclear Power Operation (RINPO), Wuhan, China. A team of two external experts, who were from USA and the Russian Federation and one Agency staff conducted the workshop during a period of five days. The workshop was attended by twenty-one participants, thirteen of whom were the personnel of RINPO, four from Qinshan NPP, three from Daya Bay NPP and one from Tianwan NPP.

An Agency staff member delivered the introductory lecture on the authorization of NPP personnel based on the new IAEA Safety Guide NS-G-2.8: 'Recruitment, Qualification and Training of Personnel for Nuclear Power Plants'. A Presentation on an overview of the methods and approaches used in different Member States to license the operating personnel of nuclear power plants followed. The presentations by the external experts were focussed on the national approaches for the authorization of NPP operators and accreditation of training programmes in the USA and Russian Federation. Specific lectures were delivered on the medical and psychological requirements for the NPP personnel, development and conduct of the licensing examinations and task analysis in training programmes for NPP operating personnel. Each lecture was followed by discussions whereby participants openly discussed the problems they were facing.

(vi) IT support for the ANSN China Hub

Date: 25 - 29 April 2005

Place: BINE, Beijing, China

The purpose of this mission was to assess and plan technical assistance to China's ANSN Hub in developing their IT systems, especially for providing technical and advisory assistance to the IT staff in Beijing. This mission was conducted during the Meeting of the ANSN Information Technology Support Group (ITSG) and was jointly supported by the IAEA's TC project RAS/9/028.

During the first 2 days prior to the ITSG meeting (see II.1.2.(v)), discussions were held with the IT staff from the Beijing Institute of Nuclear Engineering (BINE) on the required work on the Chinese ANSN Hub, as well as consultation between the representatives of Argonne National Laboratory (ANL), BINE and IAEA.

(vii) Workshop on Reliability-Centered Maintenance (RCM)

Date: 9 - 13 May 2005

Place: Qinshan phase I NPP, Zhejiang, China

The purpose of this workshop was to provide presentations on the IAEA Safety Standards, Technical Documents on RCM/Maintenance Optimization issues, and Probabilistic Safety Assessment applications. The Workshop was organized in cooperation with the Department of Nuclear Energy, Division of Nuclear Power.

Twenty-seven participants from five NPPs in China and the Research Institute of Nuclear Power Operation (RINPO), including specialists from maintenance departments and plant engineers attended the workshop. Two external experts supported technical programme of the workshop. The latter comprised presentations by the experts and the counterpart, followed by discussions, an exercise, a plant visit and a panel discussion.

The presentations were aimed to provide contemporary information on RCM methodologies and processes/procedures including practical examples of RCM, as well as approaches for consistent use of PSA for identification of critical components. The presentations from the counterpart were aimed at providing an overview of the current status in relation to the PSA and procedures/systems for equipment performance data collection and processing existing at Qinshan-I NPP. An additional presentation on the RCM project implemented at Daya Bay NPP in China was accommodated.

The exercise performed during the workshop was based on the plant-specific PSA model for Qinshan-I made available by the counterpart and was aimed at calculating Fussell-Vesely and Risk Achievement Worth importance measures; the estimates obtained were used to demonstrate how the components ranking could be performed for the purpose of significant components identification.

(viii) Workshop on Replacement of Reactor Pressure Vessel Head and Related Equipment

Date: 9 - 12 August 2005

Place: Qinshan Phase I NPP, Haiyan, China

The purpose of the workshop was to support Chinese NPPs, especially Qinshan Phase I, in performing a head replacement project for the reactor pressure vessel by providing existing practices of PWR RPV head replacement in France, Japan and the USA.

Lectures were provided by three external experts from France, Japan and the USA, and one IAEA staff. Twenty-two people from Qinshan Phase I NPP and the Shanghai Nuclear Engineering Research & Design Institute (SNERDI) attended the workshop.

Along with the above-mentioned objectives, the experts made presentations about the following subjects:

- Overview and project management of the RPVH replacement projects;
- Quality Control during manufacturing of a new RPVH;
- Key factors to systematically implement on-site replacement work;
- ALARA Plan and Risk Management for the RPVH replacement project; and
- Technical features of new vessel head and relevant R&D programme.

On the second day, a counterpart in Qinshan Phase I NPP, explained the current status of the project. A lively discussion on the project among experts and participants took also place. Afterwards experts made some suggestions for assisting the future work of the RPV head replacement project.

Since approaches of three countries were different, the participants understood the benefits and challenges of each approach. A number of technical suggestions were provided by the experts.

This workshop was selected as the first pilot activity of a new EBP Asia concept, which facilitates the use of the Asian Nuclear Safety Network (ANSN) and Asian Programme Management Database (APMD) database. The counterparts of the workshop created a summary report on three past relevant EBP Asia activities and distributed it among the participants. The counterparts mentioned that the information obtained from the APMD has been quite useful in the preparation for their RPV head replacement project as well as for the workshop itself.

The first pilot activity of a new EBP Asia concept was successfully implemented. The Agency should continue with this new policy for subsequent activities and get feedback from counterparts for further improvement.

(ix) Workshop on Self-Assessment Methodologies

Date: 15 – 19 August 2005

Place: Qinshan Phase III Nuclear Power Plant, Haiyan, China

The purpose of this workshop was to deliver presentations on the different approaches to conduct Self-Assessment activities at different organizational units within Qinshan Phase III utility. This workshop was a follow-up activity of the Engineering Managers Professional Development Seminar held on January 2005.

The workshop was conducted at the installations of the Qinshan Nuclear Training Center, and was attended by twenty-five participants from Qinshan Phase III NPP. One external expert from Brazil and one IAEA officer conducted the workshop. The workshop consisted of practical views and exercises on how to execute a comprehensive self-assessment procedure. The existing process of Qinshan Phase III NPP was candidly reviewed, with its pitfalls, weaknesses and strengths.

After a demonstration of the different approaches and strategies related to the self-assessment strategy around the nuclear industry, PROSPER approach, which is a proposed procedure by IAEA, was also discussed. The trainees were divided into two groups. The first group dedicated to practical self-assessment techniques in the field, observing plant activities. The second group dedicated to apply self-assessment techniques as suggested by PROSPER guidelines in the area of external operating experience feedback and abnormal events reporting criteria.

On Thursday and Friday, the groups produced several recommended actions to revise the existing Qinshan III self-assessment procedures and the entire process related to this thematic.

Most of the participants hardly knew or even were aware of most important events/incidents of the last three years. Therefore, the Agency should re-emphasise and re-discuss the importance of the operational experience feedback programmes when conducting and leading seminars, conferences and steering/advisory group meetings. Perhaps the actual modus operandi of the international worldwide operating experience feedback programmes, deserved be challenged and probably revised.

(x) Workshop on Safety Analysis and Technical Support for Increasing the Rated Power of the Nuclear Reactor

Date: 26 – 30 September 2005

Place: Qinshan I NPP, Haiyan, China

The purpose of the workshop was to address the safety analysis and technical support, which is needed when considering the reactor power up-rates and to provide the Qinshan staff with the experience from utilities that have increased the power of their reactors. Qinshan Nuclear Power Plant (QNPP) plans to increase the rated electric power from 310 MWe to 330 MWe.

The Workshop was attended by specialists from all three Qinshan phases, the majority coming from Phase 1. All together 22 participants attended the workshop. Three invited experts (from Germany, Slovenia, and Switzerland) supported the workshop by presentations and extensive panel discussions. The first part of the workshop addressed safety margins and analytical tools utilized when considering power up-rates. margins, between physical or licensing limitations and the real operational parameters, built into the design of the existing NPPs assure their safe behaviour and response in all postulated design conditions. To properly assess and address such existing margins and to be able to take advantage of unnecessary conservatism advanced analytical tools for safety assessment are being used.

(xi) Workshop on Level 1 PSA Developing

Date: 10 – 14 October 2005

Place: Qinshan II NPP, Haiyan, China

The objectives of this mission were to provide the participants with information on contemporary approaches for development of Level-1 internal events PSA for full power and shutdown conditions, and to discuss with the counterpart on the current status and plans on implementation of the Qinshan-II PSA project and elaborate on high-level recommendations aiming at efficient development of the PSA.

Twenty-three participants from Qinshan II NPP, Beijing Institute of Nuclear Engineering (BINE), Nuclear Power Institute of China (NPIC), Qinshan I and III NPPs participated in the technical sessions. The following specific presentations were delivered by the IAEA staff :

- Overview of the IAEA Safety Standards and Services,
- Risk Considerations in IAEA Safety Standards and Publications on PSA
- PSA Review, and
- Overview of PSA Applications.

Two external experts, from Russia and USA, elaborated on high-level recommendations aimed to promote the efficient implementation of Qinshan II PSA. Two plant managers attended the exit meeting and mentioned that Qinshan-II NPP would consider inviting an IAEA IPSART mission in the future to review the Qinshan II PSA.

(xii) Workshop on the Effect of Electronic Components Aging or Radiation on the Reliability of I&C System

Date: 10 – 13 October 2005

Place: Qinshan I NPP, Haiyan, China

The purpose of the workshop was to transfer experiences on ageing management and I&C modernization regarding with following topics:

- Ageing and obsolescence processes,
- Relationship between ageing, life cycle management and maintenance,
- Digital I&C modernization in NPPs of Hungary and Japan, and
- Calculation of remaining life time of instruments.

Four external experts, who were from Hungary, Japan, Korea and Switzerland, and one IAEA staff participated in the mission. A total of twenty three engineers from Qinshan Phase I to III and Shanghai Nuclear Engineering Research and Development Institute (SNERDI) participated in the workshop. The following activities were done during the workshop:

- Presentation of the IAEA Activity in NPP I&C, Human Machine Interface of Main Control Room and Effective management of I&C modernization,
- Presentation of the I&C ageing management, and
- Facilitating topical discussions.

(xiii) Workshop on the Practical Aspects of Risk Informed ISI - the Relationship between ISI Qualification and RIISI

Date: 17 – 21 October 2005

Place: Qinshan II NPP, Haiyan, China

The objective of this workshop was to provide specific information on the practical implementation of a Risk Informed In-service Inspection (RIISI) programme. This workshop reinforced the rationale for developing and conducting ISI qualification and illustrated some of advantages of developing an integrated approach to qualification and RIISI.

Two external experts, from Czech and USA, and one IAEA staff participated in the mission.

II.3.2. Indonesia

(i) Review of the Reactor Building Structure Assessment

Date: 01 - 05 November 2004

Place: Bandung and Jakarta, Indonesia

The purpose of this mission was to conduct a follow up review of the seismic hazard evaluation and review of the seismic capacity of structures systems and components for the Bandung research reactor and Muria site. This was a follow-up visit for recommendations provided by two previous follow-up INSARR missions, namely: the TRIGA-II (Bandung) and Kartini (Yogyakarta) research reactors, carried out in March 11-15, 2002; the RSG-GAS (Serpong) research reactor, carried out in June 10-14, 2002; and the Muria site status review, carried out in March 11, 2002.

The IAEA team was composed by one IAEA staff member and one external expert from Bulgaria. The mission carried out a thorough review of both the seismic hazard developed for the Bandung research reactor and the structural assessment in relation to seismic events. A final progress status on the Muria site hazard assessment was also carried out.

The review mission represented the third follow-up of a complex task initiated in 2002 on the seismic re-evaluation of the research reactor in Bandung. The team in charge of the seismic re-evaluation program almost completed the site-specific hazard analysis and started the seismic capacity evaluation of selected structures, following the previous IAEA recommendations. A very detailed program for the recovery of the “as-is” configuration also was successfully completed. The team made good use of the training provided during the past reviews.

The conclusions were presented at two separate exit meetings, in Bandung and Jakarta respectively, and conveyed to the Deputy Chairman of BATAN, Dr. Hastowo and the Chairman of the Regulatory Body of Indonesia (BAPETEN), Dr. Djaloeis.

(ii) *Regional Workshop on Reactor Thermal Hydraulics Safety Analyses of TRIGA 2000 Reactor (ANSN Topical Group)*

Date: 29 November – 10 December 2004

Place: Bandung, Indonesia

The purpose of this workshop was to deal with the fundamentals of safety analysis. Practical exercises have been conducted, to provide training on the use of computer codes for safety analysis as well as to exchange information on thermal-hydraulic safety analysis for research reactors. The aim was to obtaining a common understanding of the different approaches used in different countries.

The Centre for Research and Development of Nuclear Techniques of the National Nuclear Energy Agency (BATAN) hosted the workshop. An IAEA staff member and five external experts joined the mission, and provided lectures. In all, twenty-two participants from six countries attended the workshop.

The following areas were covered by the workshop:

- Fundamentals of Safety Analysis;
- Fundamentals of Thermal Hydraulics;
- The RELAP5 and MARS/ViSA computer codes: structure, models/correlations, input decks and simulation, validation and verification;
- Code assessment and evaluation of analysis results; and
- Introduction to the Asian Nuclear Safety Network (ANSN) and the Topical Group on Safety Analysis.

Besides the workshop, a special meeting for ANSN Topical Group members took place to discuss current and future activities related to safety analysis, to serve as a forum for information exchange among experts and to strengthen closer co-ordination among Hubs and national centres.

(iii) *INSARR Mission to Kartini Research Reactor*

Date: 12-17 June 2005

Place: Yogyakarta, Indonesia

The general purposes of the mission were to conduct a comprehensive safety review of the safety of the research reactor, to detect problems and to provide advice to improve the safety. Based on the IAEA Guideline for the safety review of the research reactor safety, the assessment covered all safety aspects of operation.

The INSARR team was composed of two IAEA staff and three external experts from Argentina, Australia and Egypt.

A training and team up session was held on Sunday 12 June 2005 with all members of the team. On Monday morning after the entry meeting, the team and the local counterparts, as a whole, conducted a walkthrough to the entire reactor associated facilities. Several staff from BAPETEN participated as observers during the mission.

Before the exit meeting, the team leader presented the IAEA Program on the Safety of Research Reactors, including the Code of Conduct and the Safety Requirements on Safety of Research Reactors.

As conclusions of the INSARR safety mission, the review team identified four generic safety issues in relation to Kartini design and operation.

(iv) National Training Course on Nuclear Safety Level II: Research Reactor

Date: 18-29 July 2005

Place: Jakarta, Indonesia

The Education and Training Center of the National Nuclear Energy Agency (BATAN) and the Nuclear Energy Control Board (BAPETEN) of Indonesia organized this course jointly. It was held at the BATAN Education and Training Center, Pasar Jumat, Jakarta.

There were 19 participants, 15 from BATAN and 4 from BAPETEN. Indonesian lecturers conducted the course entirely in the Indonesian language, based on IAEA Safety Standards and other technical documents. In preparation for the course, the Agency supported translation of six documents into Indonesian language, including the Code of Conduct on the Safety of Research Reactors and the new Safety Requirements NS-R-4 (DS272), Safety of Research Reactors. These documents, together with the documents translated in 2004 for the 2004 Basic Professional Training Course, provide a valuable resource of guidance on nuclear safety topics in the Indonesian language. The current course covered 23 different topics, organized into those needed for Basic Competency, Specific Competency, and Regulation and Administrative Competency. There were 81 sessions of 45 minutes each.

Based on the pre- and post-test results the participants improved their knowledge of the subjects covered by an average of ca. 20%. Participant evaluation suggested that there is need for more training on utilization of computer programs for safety analysis, such as PARET, RELAP and ORIGEN. Exercises using PC versions of these codes were part of the course. In addition, topics on safety culture and human performance should be further elaborated. Finally, Level II PSA courses for other types of facility, such as fuel fabrication and waste management facilities, would be a valuable addition.

(v) Review Mission on the Assessment of Competency and Nuclear Safety Related Training Needs

Date: 26 – 30 September 2005

Place: Pasar Jumat, Jakarta, Indonesia

The purpose of the mission was to assist Indonesia to develop and maintain a sustainable and adequate education and training programme in nuclear safety, consistent with IAEA safety standards and good international practices with due recognition to national conditions.

Discussions were held with the senior management and staff of the above BATAN and BAPETEN. In conducting their review, the team considered the current situation regarding nuclear safety in Indonesia with three operating research reactors and the option to construct a nuclear power plant. The review team also assessed the progress made on the recommendations and suggestions made by the earlier advisory review

mission on education and training from 15-19 July 2002. The review team concluded that the Education and Training Center (ETC) of BATAN and its role as a facilitator to other BATAN organizations in performing systematic self-assessment training needs, as recommended in the IAEA guidelines services, is now well established.

Two days of discussions and presentations were held at the BAPETEN office. It was concluded that although BAPETEN has started a systematic training need assessment but unlike BATAN has not completed it. The team is of the opinion that BAPETEN was not yet prepared to carry out the systematic training need assessment independently. However, the conduct of the case study will help to clarify the basic steps and methodology for the systematic training need assessment.

Though BAPETEN understands the need to perform a comprehensive self-assessment of education and training needs, little progress was visible in this area. The Agency will request by April 2006 a report on the results of the training needs assessment and the status of the implementation of a training programme based on the needs identified.

II.3.3. Malaysia

(i) *Expert Mission on Safety Analysis (ANSN Topical Group related activity)*

Date: 01 - 05 November 2004

Place: Bangi, Selangor Darul Ehsan, Malaysia

The purpose of the mission was to review the revised version of Chapter 16 (on Safety Analysis) of the Safety Analysis Report for the PUSPATI TRIGA MARK II reactor facility in Bangi, Selangor Darul Ehsan, Malaysia.

In accordance with the INSARR recommendations of 1997, the Atomic Energy Licensing Board (AELB) requested the Malaysian Institute for Nuclear Technology Research (MINT) to prepare, update and complete the Safety Analysis Report (SAR) and to submit it to AELB for verification and endorsement within a two-year period as of the date of licensing (September 2004).

One IAEA staff member and two external experts from Austria and Indonesia participated in the mission. Representatives of AELB and MINT were present during the presentations and discussions.

During this mission, the format and contents of Chapter 16 were reviewed to ensure that they were in accordance with the IAEA guidance on the preparation of the SAR. The review also included verifying that the effects of anticipated process disturbances and postulated component failures and human errors (postulated initiating events), including their consequences, were described in Chapter 16 of the SAR to permit the evaluation of the capability of the reactor to control or accommodate such situations and failures.

The basic principles and procedure for revising and updating the chapter on safety analysis in the SAR were discussed with the staff of MINT and the plan for the review of the revised SAR was discussed with the AELB staff.

AELB and MINT will make all the information on Chapter 16 of the SAR available to the website of the ANSN Topical Group on Safety Analysis. The ANSN Topical

Group on Safety Analysis will assist and support MINT in completing the RELAP5 input deck for the assessment and analysis of the postulated accidents in the PUSPATI TRIGA MARK II.

(ii) Establishment of a Management System (QA Programme for the Operating Organization and the Research Reactor)

Date: 29 November – 3 December 2004

Place: Kuala Lumpur, Malaysia

The objective of this mission was to identify needs and develop an action plan for improvement of the management system of the Malaysian Institute for Nuclear Technology Research (MINT), the operating organization of the PUSPATI TRIGA (RTP) research reactor.

The mission provided lectures and practical examples, conducted exercises and discussed an example Action Plan for the development of an integrated Management System for the Operating Organization of Research Reactors. Explanations and exercises were directed to understand how the RPT operation activities are interrelated with and affected by the activities of other Divisions/Organizational Units within MINT. The experts provided several documents including requirements, guidance and practical implementation of Management Systems.

At the exit meeting two MINT Senior Managers were briefed on the mission results and advised to transmit to the Director General and Top Managers the approach and suggestions for the establishment of the integrated Management System for the MINT.

(iii) National Training Course on Requalification Course for Operating Personnel

Date: 29 November - 10 December 2004

Place: Bangi, Malaysia

This training course intended to cover the most important subjects for retraining of the research reactors operators, following the recommendation from the Draft Safety Standard 325 “Safety Guide on the Operating Organization and the Recruitment, Training and Qualification of Personnel for Research Reactors”.

The training course was conducted jointly between Atomic Energy Licensing Board (AELB) Bangi, Malaysia. The training course was hosted by AELB at the head quarters during the first week, and then, for the second week by Malaysian Institute for Nuclear Technology Research (MINT) at the research reactor site, at Bangi, Malaysia.

Nineteen participants attended the entire training course. Local experts from Malaysia presented some of the lectures.

During the first week, an IAEA staff member provided lectures on:

- The IAEA’s Safety Standards and documents applicable for research reactors;
- Code of Conduct on the Safety of Research Reactors;

- Incident Reporting System for Research Reactors (IRSRR) and events analysis techniques: precursor analysis, common cause analysis, task analyses and barrier analysis;
- Water quality parameters;
- Corrosion mechanism for structural materials: aluminium, stainless steel and carbon steel; and
- Water chemistry control to prevent degradation of reactor systems.

The session on IRSRR was followed by a top table exercise to which all trainees participated. They were split into groups. Each group received a case study to investigate, using event analysis techniques.

On 3 December, two external experts provided half-day lectures on Management System. During the afternoon session the IAEA staff member provide advice and comments to AELB on the content of the Draft Guideline on Licensing of Research Reactors Operators.

(iv) Expert Mission to Review the Draft Atomic Law

Date: 15 - 19 August 2005

Place: Kuala Lumpur, Malaysia

The purpose of the mission was to assist authorities of the Malaysian Atomic Energy Licensing Board (AELB) in reviewing the legislative framework for the present and future programme for the peaceful uses of nuclear energy in Malaysia. The specific objective of the mission was to review the existing Act 304, the Atomic Energy Licensing Act 1984, and to make recommendations for enhancing legal arrangements for nuclear and radiation safety and nuclear security consistent with IAEA safety standards and current international practice.

This mission was conducted jointly with the IAEA Office of Legal Affairs within the framework of the TC Project RAS/9/023 "Legislation for Safe and Peaceful Nuclear Applications".

The IAEA team consisted of one external expert from USA and one IAEA staff member. The mission was conducted at the headquarters of the AELB. The programme consisted of presentations, a seminar and discussions both on the Atomic Energy Licensing Act (Act 304, 1984) and a document entitled "Amendments and additions made to Principal Act". This second document was prepared by AELB and sent to the IAEA team prior to the mission.

AELB has indicated that further Agency assistance could be requested, possibly in 2006, with respect to a review of an amended nuclear law. This could be discussed at the next TM on EBP Asia in December 2005.

(v) Expert Mission on Licensing and Inspection of Research Reactor

Date: 3 – 7 October 2005

Place: Kuala Lumpur, Malaysia

The main purpose of this mission was to provide advice and assistance to the AELB and to assess the licensing documentation, especially the safety analysis report and to inspect the research reactor, based on the requirements from the IAEA Safety Standards and Guidelines.

The mission was undertaken by one IAEA staff member and one external expert from Canadian Nuclear Safety Commission.

The mission provided presentations on the IAEA Safety Standards with emphasis on the Safety Standard NS-R-4 “Safety Requirements on the Safety of Research Reactors”; Code of Conduct on the Safety of Research Reactors; the IAEA Services Series No.1, Guidelines for the Review of Research Reactor Safety and the Incident Reporting System for Research Reactors (IRSRR).

The AELB staff participated in several sessions’ on-the-job training. The counterpart divided the participating personnel into two groups.

For safety assessment session, each group evaluated one chapter from the SAR - Chapter 17, Operational Limits and Conditions, and Chapter 5 Reactor – applying the Safety Guide 35 – G1 Safety Assessment of Research Reactors and Preparation of the Safety Analysis Report. Each group developed acceptance criteria and issued an evaluation form containing comments and requirements for completion of chapters reviewed.

The reviewed areas for inspection were the maintenance, periodic testing and inspection, and operational limits and conditions. Each group prepared an inspection plan, performed in a field inspection, interviewed the reactor staff and wrote an inspection report using the provisions from the IAEA Services Series No. 1, Guidelines for the Review of Research Reactor Safety.

II.3.4. Philippines

(i) Expert Mission to Assist in the Preparation and Development of an IT based National Center

Date: 4 - 7 April 2005

Place: Manila, Philippines

The main purposes of this mission were to introduce concepts of practical knowledge management and to assist in the preparation and development of a ANSN National Center in the Philippines, which will serve as the national portal and repository for the national nuclear safety knowledge.

This mission consisted of one external expert from Argonne National Laboratory, USA and one IAEA staff member, and visited on the Philippines Nuclear Research Institute (PNRI) for four days.

A half-day Seminar on Knowledge Management was held for 72 attendees from 10 different scientific organizations in Manila, which PNRI is working closely with. The IAEA staff member gave several presentations and provided information and advice on development of portals and knowledge management in general. The presentations focused on fundamental knowledge management concepts and IAEA experiences and various ANSN topics, including a live demonstration of the IAEA ANSN web site.

The ANSN software and database were installed and configured at PNRI and the IT staff were trained and guided in how to further develop the ANSN web site.

Closing discussions were held with management and IT staff to assess the work required to complete the National Center and to provide advice and guidance for the future activities and possible assistance.

(ii) Workshop on Radiological Characterization for PRR-1 Decommissioning Plan

Date: 19 - 23 September 2005

Place: The Philippine Nuclear Research Institute (PNRI), Manila, Philip

The purposes of this workshop were to conduct the training of PRR-1 personnel, regulatory and radiation protection personnel on the PRR-1 radiological characterization, to review and evaluate PRR-1 existing records and to identify and establish aspects and activities involved in the PRR-1 decommissioning plans.

Two external experts from Serbia and Montenegro and Canada, and one IAEA staff member participated in the mission. The workshop was a mixture of lectures, technical tours of the facilities and practical exercises. Participants were from the PNRI regulatory body, the reactor management, radioactive waste management and health physics.

Forty percent of the workshop involved practical application of the information that was presented during the lectures. This allowed the participants to have hands-on experience with their own equipment in actual rooms within the reactor building. This reinforced the presented concepts and illustrated some of the problems that may be encountered during the performance of the characterization survey.

A discussion was held with the senior staff of the PNRI concerning the Research Reactor Decommissioning Project (R2D2P). There was considerable interest and a decision will be made before the end of the year indicating if the PRR-1 will be the selected site. The results of this project will be incorporated into the Asian Nuclear Safety Network that provides lessons learned for Member States throughout the region.

(iii) Expert Mission to Review the Draft Atomic Law

Date: 17 - 21 October 2005

Place: Manila, Philippines

The purpose of the mission was to assist authorities of the Philippines Nuclear Research Institute (PNRI) in reviewing the legislative framework for the present and future programme for the peaceful uses of nuclear energy in the Philippines. The specific objective of the mission was to review two drafts of revised legislation developed by Philippine officials, and to make recommendations for enhancing legal arrangements for nuclear and radiation safety and nuclear security consistent with IAEA safety standards and current international practice.

The IAEA team consisted of one external expert from USA and one IAEA staff member. The mission was conducted within the framework of EBP, and it was

conducted jointly with the IAEA Office of Legal Affairs within the framework of the TC Project RAS/9/023 “Legislation for Safe and Peaceful Nuclear Applications”.

The mission was conducted at the headquarters of the PNRI. The programme consisted of presentations, a seminar and discussions on the draft documents and the relevant existing Acts and Executive Orders.

The assessment of the Philippines’ nuclear legislation, including the review and analysis of the draft revisions to nuclear legislation, and the conclusions and recommendations of the IAEA team are based on internationally recognized guidance documents, especially the IAEA safety standards in the thematic area of Legal and Governmental Infrastructure (LGI), the Handbook on Nuclear Law, and those which reflect the obligations of relevant international legal instruments.

II.3.5. Thailand

(i) Refreshment Workshop for Reactor Operators on Radiation Protection, Operational Limits and Condition, and Safe Utilization of Research Reactors (combined with National Training on Fire Protection for Research Reactors)

Date: 22 - 26 November 2004

Place: Office of Atoms for Peace , Bangkok, Thailand

The purposes of this workshop were: to review the radiation protection programme that should be applied in research reactors (RRs); to review the definition of the operational limits and condition (OLCs) for RRs with emphasis on the surveillance and administrative requirements; to review of the SS 35 G1 and G2; to provide the essential fire safety knowledge to be applied by RR operators; and to perform fire hazard analysis. All the subjects were identified during the Mission held in 2003 and consolidated in the Integrated Safety Evaluation (ISE) presented by the national counterparts.

Two IAEA staff members and two external experts from Germany and Slovenia provided lectures. Forty-two people attended the workshop. The background experience of the trainees ranged from reactor operation, waste management and radiation protection to fire protection design.

The workshop covered the following topics:

- Radiation protection;
- OLCs;
- Safety analysis; and
- Fire hazard analysis, design of fire protection systems, fire PSA.

The workshop had the first two days dedicated to the introductory general part on RR safety, while the last three days were covered by separate sessions on fire and radiation protection, OLC and utilization issues respectively.

The workshop made continuous reference to the IAEA documents available on RR design and operation. The Participants presented their national experience in the operation of the RR, receiving comments and recommendations by the experts. The daily round tables were dedicated to the clarification of the main safety issues, to technical discussions on the reactor safety upgrading projects and to a review of the

working plan for the next tasks in order to comply with all the IAEA recommendations.

(ii) IT support for establishment of ANSN National Center

Date: 14 - 17 June 2005

Place: Bangkok, Thailand

The main purposes of this mission were to introduce concepts of practical knowledge management and to assist in the preparation and development of a National Center in Thailand, which will serve as the national portal for the Asian Nuclear Safety Network (ANSN) and repository for the national nuclear safety knowledge.

This mission was jointly conducted with the TC project RAS/9/028.

One external expert from USA and one Agency staff member participated in the mission. The mission visited the Office for Atoms for Peace (OAP) 4 days.

A one-day Seminar on Knowledge Management and ANSN was held for around 20 attendees from OAP and a local university. The Agency staff gave several presentations and provided information and advice on development of portals and knowledge management in general. The presentations focused on fundamental knowledge management concepts and IAEA experiences and various ANSN topics, including a live demonstration of the IAEA ANSN web site.

The ANSN software and database were installed and configured at OAP and the IT staff were trained and guided in how to further develop the ANSN web site. Web site modifications were made to meet some of the specific requirements of the OAP.

Closing discussions were held with management and IT staff to assess the work required to complete the National Center and to provide advice and guidance for the future activities and possible assistance.

(iii) Workshop on Training Needs Assessment (TNA)

Date: 22 – 25 August 2005

Place: Bangkok, Thailand

The objective of the workshop was to give hands-on training on methodology and application of conducting a systematic training need assessment so that Atom for Peace (OAP) of Thailand can later on perform a systematic training need assessment and formulate its training policy, strategy and programme based on its real needs.

One external expert from Pakistan and one IAEA staff member joined the mission. A total of twelve participants from all divisions of OAP, including operators as well as regulators, participated in the workshop. There were also some participants from University.

The first day was devoted to explaining the methodology to be used for TNA and the next two days were devoted to case study and hands-on exercises. Three groups each representing one or two divisions of OAP made for hands-on exercise. The groups were asked to define their function and task/duties/job descriptions as close to as

possible and based on this job description they were asked to perform TNA using questionnaire provided by experts in EXCEL format.

It is expected that OAP is now in a position to conduct a systematic training need assessment based on its actual need which will help in better utilization of its training effort and support in training through Education and Training Services of the IAEA.

It is expected that OAP will submit a systematic training need assessment of its staff member within six months after this workshop.

II.3.6. Vietnam

(i) National Basic Professional Training Course on Nuclear Safety

Date: 08 - 19 November 2004

Place: Nuclear Research Institute, Dalat, Vietnam

The purpose of this course was to provide instruction in the basic topics of nuclear safety for members of the research reactor operating organization and other components of the Nuclear Research Institute (NRI) Dalat.

Vietnam is the third member state of the EBP-Asia, which followed Indonesia and Thailand, to conduct the National Basic Professional Training Course.

This two-week course was organized by personnel of the NRI Dalat and the Vietnam Atomic Energy Commission (VAEC). An IAEA staff member and an external expert from Korea provided lectures at the first week of this course. National lecturers covered lectures of the second week.

Sixteen participants representing the Research Reactor Center (8), the Department for Nuclear Physics and Techniques (6), the Center for Analytical Techniques and Environmental Research (1) and the Department for Radiation Protection (1) attended this course. Several observers attended some of the sessions, including some senior members of the Institute staff.

The IAEA staff member delivered 10 hours of lectures and accompanying discussion in the first week. The first two of these lectures covered the IAEA Nuclear Safety Programme, Safety Standards and the Code of Conduct on the Safety of Research Reactors. The next lecture covered Basic Principles of Nuclear Safety, including safety-related characteristics of nuclear reactors, nuclear safety objectives, the principles in SS No. 110, and the concept of defence-in-depth. A third lecture covered Requirements for Research Reactor Design and Site Evaluation. The final lecture covered IAEA Assistance in Applying the Code of Conduct, including information collection and dissemination, safety review services, expert missions, training materials and training events.

Most of the participants were young people in the early stages of their careers. Unfortunately, English comprehension was a problem for some of the participants, so discussion was frequently limited. Except for the lectures given by the external expert and the IAEA staff member the course was conducted in Vietnamese.

III. WORK PROGRAMME FOR NOV. – DEC. 2005

III.1. PROGRAMME MANAGEMENT

III.1.1. Technical Meeting

The next Technical Meeting (TM) will take place in Vienna on 05 - 08 December 2005. The objective of the meeting is to evaluate EBP achievements to date and to agree on the strategy and scope of work for 2006 and beyond. ANSN activities will be also evaluated.

Each recipient country is to present a progress report on the Integrated Safety Evaluation (ISE) and future assistance needs.

III.1.2. Asian Nuclear Safety Network (ANSN)

(i) ANSN Promotional Meeting in France

ANSN Promotional Meeting in France took place on 07 Nov 2005 in Paris. The purpose of this meeting was to introduce ANSN to French nuclear industry participants.

The Asia-Pacific Group of the French Nuclear Society (SFEN) hosted this meeting. About twenty participants from the French nuclear industry (EDF, COGEMA, Framatome), the CEA, the Ministry of Industry, the SFEN and from KHNP Paris Office participated in the meeting.

The interest shown by the participants — most of them were not especially aware of the exact content of the project — will conduct to more support from France in the future.

Some documents provided by EDF and posted in ANSN in html language were considered more user-friendly than the original ones. More generally, it has been agreed that the ANSN would also be useful in France on a domestic basis.

The Asia-Pacific Group of the SFEN decided to follow-up ANSN activities in its bimonthly meeting, and to be the counterpart of the IAEA for making suggestions for the France ANSN pages, documents to be uploaded, etc.

(ii) Steering Committee

The third meeting of the Steering Committee on ANSN is scheduled from 01 to 02 December 2005 in Vienna, in the previous week of the EBP Technical Meeting.

The objective of the meeting is to ensure efficient and effective planning and implementation of the ANSN activities and the sustainability of the ANSN system, in particular to co-ordinate the full utilization of the ANSN.

SC member will be invited to discuss about several practical and strategic issues such as contents of Hubs and National Centres, Access Policy, Search Process, Visual Identity and expected activities of future Topical Groups.

III.2. REGIONAL ACTIVITIES

III.2.1. Meeting to Promote the Ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste

The objective of this meeting is to give China, Indonesia, Malaysia, Philippines, Thailand and Vietnam a broader understanding of the Joint Convention and to inform them of the advantages of becoming a Contracting Party. This meeting will be hosted by Vietnam and held from 14 to 16 December 2005 at Hanoi, Vietnam.

III.3. NATIONAL ACTIVITIES

III.3.1. China

(i) OSART Follow-up Mission

Date: 7 – 11 November 2005

Place: Tianwan NPP, Lianyungang, China

The objective of this mission is to conduct a comprehensive review of the present status of the plant's actions to the recommendations and suggestions made during the Pre OSART Mission implemented from 26 January to 11 February 2004.

(ii) Workshop on Quality Assurance of Regulatory Body

Date: 21 - 25 November 2005

Place: NNSA, Beijing, China

The objective of this mission is to give Chinese Regulatory Body, the National Nuclear Safety Administration (NNSA), lectures about how to develop the quality assurance (QA) programme for the regulatory body, through out all stages of nuclear facilities: siting, construction, commissioning, operation and decommissioning, how to implement QA programme continuously, effectively. Since NNSA is facing many challenges in regulating the different type of reactors due to the limited resources, it is necessary to fully and efficiently use of their actual resources to do the surveillance and inspection work.

(iii) Improvement of Conditional Based Maintenance of Safety Related Valves

Date: 28 November – 2 December 2005

Place: RINPO, Wuhan, China

The objectives of this mission is to provide following lectures on recent experiences and analysis techniques of safety related valves diagnostics, and on new developments of the experience and techniques of CBM for valves. The targets of the activity should be: (1) to form technical framework (theory, tooling, procedure, etc.), (2) application in NPPs (work out a list in terms of importance and performance), (3) correlations of inspection, diagnostics and maintenance, (4) data analysis techniques

of valve diagnostics, and (5) discussion and application of valve inspection & diagnostics code (standards).

The Research Institute of Nuclear Power Operations (RINPO) is a host organization of this mission.

(iv) Review of Technical Specifications for Tianwan NPP

Date: December 2005

Place: Tianwan NPP, Lianyungang, China

The objective is to review a draft technical specifications for the Tianwan NPP, which is under commission.

III.3.2. Indonesia

(i) Follow-up on the SAR of RSG-GAS Serpong

Date: 20 – 25 November 2005

Place: Serpong, Indonesia

(ii) Expert Mission on the Water Quality Surveillance Programme for RSG-GAS Serpong

Date: 20 – 25 November 2005

Place: PUSPIPTEK, Serpong, Indonesia

The objectives of the mission are to:

- 1) Review the current water chemistry control program;
- 2) Review and assess general conditions of the reactor, in particular, the effect of water chemistry, such as corrosion on reactor components;
- 3) Identify areas for improvement or corrective actions; and
- 4) Assist BATAN engineers to develop appropriate surveillance and in-service inspection programs.

(iii) In-service Inspection for Components of Cooling System of RSG-GAS

Date: 20 – 25 November 2005

Place: PUSPIPTEK, Serpong, Indonesia

In-Service Inspection (ISI) study on RSG-GAS Serpong was started in early 2003. The study consists of identification and categorization of systems and components for ISI, and material degradation of research reactor components. IAEA National Training Course on Ageing Management for Research Reactor was conducted in July 2003, IAEA-EBP National Training Course on the In-Service Inspection of Research Reactor in July 2004. In order to get a clear view of the performance of the cooling

system components, it is proposed to have an expert on ISI from IAEA to assist in conducting ISI for components of cooling system of RSG-GAS.

III.3.3. Malaysia

There are no work programmes scheduled in November and December 2005.

III.3.4. Philippines

There are no work programmes scheduled in November and December 2005.

III.3.5. Thailand

(i) *Workshop on Quality Assurance Programme Establishment for Operating Organization*

Date: 14 – 25 November 2005

Place: Bangkok, Thailand

The objective of this workshop is to establish and implement the Quality Assurance Program for research reactor operating organization.

III.3.6. Vietnam

(i) *2nd National Basic Professional Training Course on Nuclear Safety*

Date: 21 November – 2 December 2005

Place: Hanoi, Vietnam

The objective of this training course is to strengthen fundamental knowledge and to enhance technical capability and competency for Regulatory Body and Managers on Nuclear Safety.

IV. CONTRIBUTIONS 2005

Country	Contributions
China	1 information technology expert
France	1 cost-free expert
Germany	1 cost-free expert
Japan	1,346,481 US\$ (*)
Korea	in kind (**)
USA	95,000 US\$ 1 cost-free expert (until May 2005)

* includes 2 cost-free experts from Japan

** hosting training events in Korea

TABLE OF WORK PROGRAMME FOR 2005

IAEA Management

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ANSN														
Summary Reports	Vienna	Sanada	01-											-31
Coordination of EBP Implementation in China	Beijing	Lemoine/Sanada			16-18									
Introduction of ANSN and discussions on Education and Training	Hanoi	Lemoine/Sanada			21-23									
ANSN Topical Group Meeting on Safety Analysis, 26-29 April 2005, Daejeon, Korea	Daejeon	S. Lee				26-29								
ANSN IT Support Group	Beijing	Ulfkjaer/Lemoine				27-29								
2nd ANSN Steering Committee	Seoul	Lemoine					18-20							
Operational Safety TG meeting	Wuhan	Nichols/Lemoine						14-16						
ANSN Promotional Meeting - "Caravan"	Jakarta	Lemoine/Ulfkjaer								12-13				
Follow-up on Coordination of EBP Implementation in China	Qinshan	Lemoine/Sanada										10-11		
Special IT Meeting	Japan	Ulfkjaer/Lemoine										11-14		
ANSN promotional meeting in France	Paris	Lemoine											07	
Symposium on the Framework for Regional Cooperation on Nuclear Safety in the Northeast Asia	Tokyo	Sanada											28-29	
3rd meeting of the Steering Committee on the ANSN 1-2 Dec Vienna	Vienna	Lemoine												01-02
Coordination														
Progress Report	Vienna	Sanada											15	
Technical Meeting	Vienna	Lederman												05-08
Database														
Updating of database	Vienna	Bjerre												05-08
ISE														
ISE improvement of guideline														
Meeting on Integrated Safety Evaluation - ISE	Vienna	Tsunoda/Lemoine									19-21			

Work Programme for 2005

Regional

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Coordination														
Meeting to promote the ratification of the Joint Convention on the Safety of Spent fuel Management and on the Safety of Radioactive Waste	Hanoi	Hioki												14-16
Training														
Development of education and training materials	Vienna	Bastos/Viktorsson	01-											-31
Translation and utilization of training materials	Vienna	Tsunoda	01-											-31
WS on Training needs Assessment, Networking and Materials for Training Courses in Nuclear Safety (TC RER/9/061)	Saclay	Tsunoda										10-21		

Work Programme for 2005

China

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ANSN														
IT support for China hub (TC)	Beijing	L. Ulfkjaer/P. Lemoine				27-29								
Expert Missions														
OSART Follow-up Mission	Tianwan NPP	Lange										07-11		
Review of technical specifications for Tianwan Nuclear Power Station	TNPP	C. Toth												xx
Training														
WS on Important items surveillance management and results evaluation (postponed from 2004)	Q2 NPP	Perramon	17-21											
WS - Engineering Managers Professional Development Seminar (postponed from 2004)	Q3 NPP	Werdine	24-28											
WS - Improvement of accreditation system and method for NPP licensed operators' training and qualification in China (postponed from 2004)	Wuhan	Vaishnys		28-	-04									
WS - Reliability-centered maintenance (RCM)	Q1 NPP	Kouzmina					09-13							
WS - Modification of reactor pressure vessel head (RPVH) and related equipment for QNPP	Q1 NPP	Inagaki								09-12				
Workshop on Self Assessment (EBP)	Qinshan III	Werdine								15-19				
WS - Safety analysis and technical support for increasing the rated power of reactor	Q1 NPP	Dusic									26-30			
WS - Level 1 PSA developing	Q2 NPP	Kouzmina										10-14		
WS - The effect of electronic components aging or radiation on the reliability of I&C system	Q1 NPP	Inagaki/Kang										10-13		
WS on the practical aspects of risk informed ISI - the relationship between ISI qualification and RIISI (postponed from 2004)	Q2 NPP	Havel										17-21		
WS - Quality assurance (QA) of regulatory body (postponed from 2004)	Beijing	Giersch/Guo											21-25	
Improvement of conditional based based maintenance (CBM) of safety related valves for NPP in China	Wuhan	Inagaki											28-	-02



Work Programme for 2005

Indonesia

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ANSN														
IT support for Indonesia NC (TC)		L. Ulfkjaer												
Expert Missions														
Preparation for and observation of a RDD exercise	Jakarta	Mc Kenna									21-23			
Review mission on the assessment of competency and nuclear safety related training needs	Pasar Jumat, Jakarta	Giersch									26-30			
Meeting on Enhancing Safety and Performance of NPPs and RRs (original title: Review mission on integrated strategy programme on ageing management for research reactors)	Vienna	Boado Magan											08-10	
Expert mission on the water quality surveillance programme for RSG-GAS Serpong	PUSPIPTEK, Serpong	Ciuculescu											20-25	
Follow-up on the SAR of RSG-GAS Serpong	Serpong	Ciuculescu											20-25	
In-service inspection for components of cooling system of RSG-GAS Serpong	PUSPIPTEK, Serpong	Ciuculescu											20-25	
Safety Missions														
INSARR Mission to Kartini Research Reactor, 12-17 June 2005, Yogyakarta, Indonesia, Task No. 5, Review of the Kartini Reactor Natural Hazard and Structural Analysis, EBP Task No. 4 and pipe analysis for Bandung RR EBP Task No. 6	Yogyakarta	Ciuculescu/Contri						12-17						
Training														
National training course on nuclear safety level II: research reactor	Pasar Jumat, Jakarta	Deitrich							18-29					
Training course on First Responder guidelines	Jakarta	Zombori/Berkey								27-	-05			

Work Programme for 2005

Malaysia

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Expert Missions														
Expert mission to review the draft atomic law (postponed from 2004)	Kuala Lumpur	Philip								15-19				
Expert mission on licensing and inspection of research reactor	Kuala Lumpur	Ciuculescu										03-07		

Work Programme for 2005

Philippines

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ANSN														
IT support for Philippines NC (TC)	Quezon City	L. Ulfkjaer				04-07								
Expert Missions														
Expert mission to review a draft of a nuclear law (with TC and OLA)	Manila	Philip										17-21		
Training														
Radiological characterization for PRR-1 decommissioning plan (workshop/training course)	Quezon City	Boado Magan/Reisenweaver									19-23			

Work Programme for 2005

Thailand

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ANSN														
IT support for establishment of ANSN National Center (under TC)	Bangkok	Ulfkjaer						14-17						
Training														
Workshop on training needs assessment	Bangkok	Giersch								22-25				
WS - Quality assurance programme establishment for operating organization (postponed from 2004)	Bangkok	Boado Magan/Vincze											14-25	

Work Programme for 2005

Vietnam

Activity	Location	Officer	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Training														
2nd national basic professional training course on nuclear safety	Hanoi	Deitrich											21-	-02