OSART Good Practices
RADIATION PROTECTION
Organization and functions

St. Laurent, France

Mission Date; 27 Nov.-14 Dec., 2006

The plant doctor has additional responsibilities as a research, educational and advisory role. He is involved in studies regarding body stress conditions, for example, due to ventilated suits. Based on these studies, he gives advice at the national level. He is also a member of the stakeholders committee regarding high risk work planning and contributes to work safety.

The doctor carries out risk mapping for each post and for each employee. He also takes part in debriefings after incident situations. He participates in annual colloquiums at national and international level and is a member of a steering committee of national professionals in this field. The doctor prepares educative courses for medical personnel in the region who do not directly deal with radiological incidents. The doctor represents the plant to the public and local community to explain the medical aspects of injuries or exposures of personnel in case of radiological incidents.

Beyond normal health care, the plant medical center has developed preparedness - including equipment, personnel, procedures and training & drills to handle up to 50 patients with radioactive contamination.

Neckerwestheim, Germany

Mission Date; 8-24 Oct., 2007

Reduction of exposure and emission discharges during reactor pressure vessel (RPV) head opening.

In the past, flooding of the reactor cavity caused an increase of aerosol concentration within the containment building. In particular in the initial flooding phase of the reactor cavity, the air volume from the loop lines passes the dried top of the core support structure, carrying over radioactivity. The discharged activity led to higher ambient air activity, and thus, to higher contaminations in the entire reactor building.

The corrective action taken was a temporary coverage of the reactor cavity, which encloses the activity volume discharged in the reactor cavity. The radioactivity underneath the cover is extracted by a suction system equipped with aerosol and iodine filters. The cleaned exhaust air is discharged.

For the purpose of opening the primary circuit, the loop lines are pre-filled, and the reactor pressure vessel head is lifted. It is placed on its designated parking position, and the cover is pulled over the reactor room and utility room on a substructure. Once the reactor cavity is completely covered and the suction system is operational, the shift supervisor is informed that he may start flooding the reactor cavity.

Continuous radioactivity monitoring of ambient air in the operating rooms is used to check and to help decide whether personnel protective equipment (PPE) should be worn including, among other things, masks and respirators. Activity surveys are also conducted underneath the cover; in some areas, they show higher activity concentrations. A comparison of activity levels inside and outside the reactor cavity cover provides evidence on the effectiveness of the cover.

The benefits of this process are prevention of an increase in ambient air aerosol concentrations and associated higher contamination of the operating rooms by opening the primary circuit and flooding of the reactor cavity (maximum contamination in this area is 10 Bq/cm² under the travel path of the reactor pressure vessel (RPV) head), reducing the subsequent cleaning required and resulting in a reduced dose. The operators who need to be present on the site to open the primary circuit are less exposed as a result of the reduction of ambient air activity. The iodine and aerosol emissions during the first week of an outage are reduced as a result of this practice.

Khmelnitzky, Ukraine

Mission Date; 29 Oct.-14 Nov., 2007

Motivation of RP personnel to improve their qualification.

KhNPP organizes workmanship competitions among the radiation protection personnel of Radiation Safety Department on a yearly basis. Participation is voluntary through a written request of the volunteer to the head of Radiation Safety Department. Competition is conducted in line with Workmanship Competition Programme and consists of two phases: theoretical and practical. Theoretical phase includes evaluation of participants' theoretical knowledge. A participant is offered to answer 10 questions selecting one of the four options against each question. Practical phase is an activity related to preparation of a workplace for implementation activities indicated in radiation work permit. Evaluation of competition results is done by a committee. The winner of KhNPP competition participates in further competition organized by NAEK Energoatom together with the winners from the other NPPs.

Rewarding is executed in line with Provision for Workmanship Competitions among NAEK Energoatom Personnel.

Oskarshamn, Sweden

Mission Date; 16 Feb.-5 Mar., 2009

The plant has a unique and exclusive system to improve and ensure the competency levels of Radiation Protection technicians

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The job classification for Radiation Protection technicians and contractors is a very effective and efficient evaluation system for NPP radiation protection control.

The plant started to apply this system for its own Radiation Protection technician last year. The reason was that RP man-power quality did not follow the demand of NPP and had further decreased.

The quality of RP technician is categorized into three levels A, B and C according to the job performance ability considering several evaluation factors. The competence is evaluated and classified by consolidating the qualification examination, training, social behavior, skill, knowledge and experience, etc. The categories and conditions are standardized and described in the plant instructions.

Personal aptitude meeting is annually held by heads of all RP section and subsection for judgment of suitability for RP work. Competency information is used by line managers to determine upcoming training development needs for RP personnel.

The plant's Radiation Protection managers evaluate RP technicians' classification every year. There are about 150 man-power resources to work at all NPP RP area.

It is very instructive that this evaluation system results in improving RP worker's quality and ultimately approaching the goal of both NPP and contractor sides in satisfactory level.