

Training of Nuclear Power Plant Personnel in Canada

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All of the utilities, Ontario Hydro, Hydro Quebec and New Brunswick Power, operating Nuclear Power Plants in Canada have Training Centres which provide training for all of their plant personnel whose job activities could affect plant and personnel safety.

The methods used for training, by all three utilities, generally conform to that described by the IAEA as a Systematic Approach to Training (SAT).

Training Centres

All the utilities have modern, well equipped, training centres (Ontario Hydro has two to service its 20 operating reactors). Each variant of the current CANDU reactors operating has its own Full Scope Simulator backed up by a full maintenance capability which includes software and modelling support. All simulator Instructors are currently licensed, or have been licensed, and training is performed to support the initial and continuing training requirements for both Reactor Operators and Shift Supervisors.

With the exception of the Hydro Quebec facility, all training centres have workshop and laboratory facilities for the training of maintenance staff, both I&C and electrical maintainers as well as Mechanics.

Training Activities

Shift Supervisor Training

Entry to the SS training programme usually requires the possession of an engineering degree (note there are SS,s, relatively few, who were formerly Reactor Operators). The training programme leading to authorization typically takes some 3 years following at least a similar period in a technical position in the station. The training is a mix of classroom, on-the-job and simulator training. Authorization, granted after the successful completion of AECB set examinations, is valid for a period of 3 years. The requalification process is totally administered and run by the utility using AECB approved training programmes. The AECB monitors the process closely. There is also an annual requirement to undertake retraining on the simulator.

Operator Training

A new entrant to the Operator job family is typically a high school graduate.. After a period of structured training, both on and off the job and a suitable period of plant experience, typically 5-6 years, the operator becomes fully qualified as a "field" operator and can be selected as a candidate for authorization. The training programme is very similar to that for the SS as are the refresher and requalification requirements.

Maintenance Training

All maintenance personnel receive training in nuclear power plant principles and skills and knowledge related to their job functions. The extent of this training varies from utility to utility and is dependent, to a large extent, on the entry level capabilities of the trainee. In general Ontario

Hydro has the capability to train maintenance personnel with lower entry level skills and less external experience than the other two utilities. Special training and qualification requirements exist for personnel who work on safety systems or, as examples, are required to perform specialised welding or testing of safety and relief valves. Retraining and requalification is also required in these specialised areas.

Radiation Protection Training

All Canadian NPP workers are trained in Radiation Protection with the intention

of providing each worker with the skills and knowledge to look after their own radiation protection. The levels of radiation qualification are as follows:

ORANGE

Limited working rights in radioactive areas. Must be supervised by a qualified worker. This is the entry level qualification and training provided for contractor staff

YELLOW

Qualified to provide own protection while carrying out radioactive work. Includes the ability to do all required work planning and dose measurements as required.

GREEN

Qualified to provide own and other's protection e.g. to contractor's staff

The training is a combination of classroom, laboratory and on-the-job. The Yellow and Green qualifications are valid for 3 years before re-qualification is necessary. The Orange qualification lapses if not used for a period of more than 6 months

Industrial Safety Training

All plant workers receive training, both initial and continuing, on "conventional" hazards (equipment isolation, compressed gasses, fire-fighting, first aid etc) A higher level of training in fire-fighting, first aid and search and rescue is given to search and rescue is given to selected persons on each shift crew.

External Training Services

Ontario Hydro and New Brunswick Power are currently active, and have been for a long period, in providing training to external organisations. Current activities, by all three utilities, are focussed in supporting the Romanian activities to build and operate 5 CANDU reactors at Cernavoda. OH is in the process of providing Maintenance training programmes to Korea. Naturally, most external assistance has been in support of the CANDU programme world wide but from time to time assistance has been provided outside of this area. The utilities are set up to consider requests for training from external organisations on an ongoing basis.

Activities of the Regulator

The activities of the Canadian regulatory authority, AECB, past, present and future, are described in the attached paper by R. Thomas, "The training and qualification of Nuclear Power Plant Operations Personnel in Canada- A Regulatory Overview" which was presented at the IAEA Review Meeting on Training held in Vienna 22-26 February 1993.