

# OSART Good Practices

## OPERATIONS

### Management of accident conditions

#### Doel, Belgium

Mission Date; 8-25 Mar., 2010

Custom Emergency Operating Procedure (EOP) for monitoring support functions.

The plant staff has created an EOP in addition to those specified in the standard Westinghouse Owners Group (WOG) network. During accident conditions the control staff responds to the event utilizing a standard matrix of procedures. The processing of these procedures fully occupies the control room staff. In order to reduce this burden, and prevent a low level problem from escalating to a large issue, the plant supplements the monitoring function outside the control room through the use of a custom EOP known as ES 0.5.

The procedure is utilized by an extra operator located outside the Control Room. This operator assists the crew by monitoring electrical power sources, water supply, ventilation, radiological release paths, containment isolation and many other items. This prevention based strategy will detect and mitigate a concern early in the event and eases the burden on the Control Room Crew.

#### Doel, Belgium

Mission Date; 8-25 Mar., 2010

Computerised method for monitoring Emergency Operating Procedure (EOP) continuous actions.

The plant has a computerised monitoring system for tracking the status of continuous actions in emergency conditions.

Most Emergency Response Guidelines (ERG's) have continuous and permanent actions which the operators have to take care of. Entering a new ERG procedure, the operator monitors the fold out page (with all applicable continuous actions). The operator has to act immediately performing the actions written in the fold out page

The monitoring of these actions at the plant is carried out by a computerised monitoring system.

The benefit of this "active" status light/screen is that the operator sees more rapidly when he has to take action. When the screen is passive he has to check every parameter on the fold out page. With the "active" screen he only reacts when he sees a red light / sign.

This is the same method as the status light (red/orange/yellow/green) in the status trees of the critical safety functions.

The plant has developed a specific and comprehensive system supported by procedure to mitigate the consequences of a station black-out.

The plant has developed an additional system (system "DAR") which is designed to provide power to systems and components necessary for cooling the reactor in emergency conditions in a station black-out situation (6 kV and 0,4 kV buses de-energized and no possibility to supply power from emergency diesel generators).

The functions of the system are to take power from the grid (a specific hydropower plant is dedicated to the nuclear power plant) or from an additional diesel and supply consumers through specific cables. All the 6 kV and 0, 4 kV cables of system DAR can be connected to the components needed for emergency cooling of the reactor. These cables can be easily phased with components due to specific colours and labels (which reduces the time necessary for connection and prevents human errors). The system is periodically tested in the frame of the surveillance programme. Operation personnel are regularly trained to use this system in order to reinforce their capability to put it in operation during the accident. After the Fukushima event, the plant promptly organised additional training on similar scenarios for all operational staff and decided to improve the scope and realism of the tests performed. This test will be implemented by the end of 2011.

System DAR makes it also possible to cool the additional diesel from two alternate sources (essential service water pumps or diesel driven pump).

The team acknowledged this system as a good practice as it improves significantly the capability of the plant to mitigate the consequences of a station black-out event.