NPP Operations Support

Background

ISR employs a cadre of highly experienced operational nuclear power plant (NPP) staff, including former shift supervisors, licensing managers, operations managers, and safety analysis and health physics specialists. This team currently supports the nuclear industry to extend the life of current reactors, improve the performance of operations personnel, improve the operational safety of NPPs, and analyze the safety and regulatory compliance for plant configuration changes.

ISR also plays an integral role in developing management systems that improve overall operational effectiveness and safety. To do so, ISR employs a systematic and integrated approach to safety management; this approach requires implementing strategies that allow for continuous improvement, while simultaneously promoting an effective safety culture. The safety management expertise that ISR has amassed is regularly sought by both regulators and operators alike, including defense organizations and high risk industries such as the nuclear, oil and gas, and aviation industries.

NPP Operations Support

ISR can provide the following support services:

- Development and delivery of operator training packages and courses, including Severe Accident Management Guidance (SAMG) training;
- Process and protocol development;
- Operational process and procedure review;
- Plant condition assessment services, such as life extension;
- Safe operating envelope analysis such as performance improvement; and
- Material Life Cycle Management consulting.

Emergency Exercises

ISR has prepared and executed several full scale exercises at the Borselle NPP in The Netherlands, as well as at several Canadian nuclear power plants. These exercises tested both the emergency response procedures and the capabilities of the emergency response personnel involved. Accident scenarios typically verify up to a dozen exercise objectives, and these objectives are defined to test various elements of the simulated accident response. In Canada, exercise objectives are based on the RD-353 guidance document from the Canadian Nuclear Safety Commission (CNSC); similarly, in The Netherlands, these objectives are selected with the Government organization tasked with preparing the exercise.
Safe Operating Envelope

ISR is currently assessing the safe operating envelope (SOE) for the Gentilly-2 NPP of Hydro Québec. The SOE assessment of any NPP in Canada is based on the Canadian Standards Association (CSA) standard N290.15-10: Requirements for the Safe Operating Envelope of Nuclear Power Plants (2010). In brevity, creating an SOE requires: detailed analysis of all systems within the plant; defining the limitations any one of these systems can reach during operation; and establishing the extent to which these systems can be monitored and controlled by plant staff to remain within their limitations. Ultimately, the goal of the SOE is to provide definite margins that allow for safe and effective plant operation.

Condition Assessment

ISR is also preparing a condition assessment for the Gentilly-2 NPP. A condition assessment analyzes the wear on systems at the plant that could impact plant integrity. This type of analysis helps to identify systems (or their components) that would require maintenance or replacement in the near future to maintain their safe operation. Frequently, this analysis is based on plant specific documents, such as work requests, operations documents, OPEX reports, previous condition assessments, chemistry reports and other study reports (e.g. corrosion or seismic studies).

Production Team Training

ISR has trained both shift supervisors and operators at various NPPs. ISR has also trained production teams on standard operating procedures and plant specific systems (e.g. emergency core cooling system, confinement system, water system). Each training course is appropriately tailored to its intended audience and based on plant specific documents, such as the chemical control manual, operations manual, operating experience (OPEX) documents and existing training manuals.