



INSPECTION REPORT

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| Licence Holder: Australian Nuclear Science and Technology Organisation (ANSTO) | Licence Number: F0157 |
| Location inspected: OPAL Reactor at Lucas Heights Science and Technology Centre, Sydney | Date of inspection: 8 December 2011 |
| | Report No: R11/14686 |

This is the record of an inspection conducted under Part 7 of the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act). The purpose of the inspection was to assess compliance with the Act, the Australian Radiation Protection and Nuclear Safety Regulations 1999 (the Regulations) and licence conditions.

The scope of this inspection was to observe an exercise that tested ANSTO's Emergency Preparedness capability to respond to an incident at the 20MW OPAL Reactor. The purpose of an exercise is to demonstrate that safety and effective control of the reactor can be maintained during abnormal situations. ANSTO is required to formally exercise its emergency arrangements for OPAL every two years. Although outside the scope of this inspection, ANSTO additionally undertake various other activities that maintain their emergency preparedness capability.

Two ARPANSA inspectors attended the exercise and observed it from various locations including the OPAL Main Control Room (MCR), the OPAL Emergency Control Centre (ECC) and an instrumentation control room within the reactor building. The inspection consisted of selective examination of procedures and instructions, discussions with personnel and inspector observations.

ANSTO had previously provided an exercise plan to explain the basic scenario to be tested and how the exercise would be managed without degrading safety of the reactor, which would remain operating throughout the exercise. ANSTO had brought in a relief Operating Shift Team to manage reactor operations whilst the rostered duty shift team took part in the exercise. Inspectors were told that a Safe Work Method Statement and risk assessment had been undertaken to ensure that the exercise did not impact on normal operations. There were also arrangements in place to terminate the exercise safely should an actual event occur with the reactor.

The exercise scenario comprised of three simultaneous events each of which have occurred individually at OPAL or that have a reasonable likelihood of occurring during the life of the reactor. These were:

- A breakdown of the Safety Category 2 Reactor Control and Monitoring System
- A failure of the building telephone system
- A personnel injury (collapsed maintenance technician)

The simultaneous occurrence of these events was considered by ANSTO to provide a demanding set of problems for the shift team to overcome.

Prior to the exercise being run a meeting was held for exercise controllers and observers. A hot de-brief meeting was held immediately after the exercise.

The following observations and conclusions and recommendations are based on an analysis of information and evidence obtained during the inspection.

Observations:

- Preliminary Meeting: The meeting showed that a high degree of forward planning had been applied to the exercise. Roles and responsibilities had been well defined for the controllers and observers. The operations team taking part was unaware of the scenario that would be exercised.

- Respective roles of the OPAL Shift Manager and two Reactor Operators were conducted well. The Shift Manager showed effective leadership during the exercise. There was effective monitoring of the reactor status and decisions made throughout the exercise were considered and sensible.
- It was observed that although there was some difficulty with wireless communications between the MCR and the instrumentation control room where the technician had fainted, effective communication was quickly established by other means, using the intercom and by verbal reports from the Duty Operator in the field.
- The evacuation of the reactor containment area, whilst strictly not necessary, was an example of conservative decision making.
- The effectiveness of radio communications and audibility of PA announcements in some parts of the reactor was poor. Despite this, the exercise staff managed to work around the difficulty to remain informed and responsive.
- The evacuation of the casualty from the reactor building was managed adequately despite a number of difficulties with communication in that location.
- The Hot De-brief was conducted well. Everyone had an opportunity to discuss their observations, what had gone well and what needed to be improved. One of the main issues identified was the communications difficulty. Another issue identified was familiarity with the building layout for ANSTO responders who were not within the OPAL division.

Conclusion: At the time of inspection, there was no evidence of non-compliance.

Recommendations: The following improvements to enhance best practice were discussed with licence holder representatives during the inspection:

- Inspectors noted a good number of issues and recommendations were identified at de-brief. Inspectors recommended that ANSTO undertake a review of the frequency of facility wide emergency exercises to optimise organisational learning and emergency preparedness.
- The exercise of concurrent scenarios was considered useful. In consideration of the apparent success of this exercise, inspectors recommend that ANSTO should provide an even tougher test in future exercises that includes the failure of Safety Category 1 systems.

Good Practices: The following good radiation/nuclear safety practices were identified during the inspection:

- The preparation was good, the exercise was treated seriously and the de-brief afterwards was an open and constructive forum to provide the basis for effective learning.