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Australian Nuclear Science and Technology Organisation

BACKGROUND INFORMATION

OPAL reactor to shutdown for about eight weeks

Why has the shutdown occurred?

The shutdown initially commenced as a regular maintenance shutdown for OPAL. However it was noticed that a single fuel plate in each of three fuel elements most recently inserted into OPAL's 16-element core as part of the monthly fuel change, were found to have partially dislodged. ANSTO will be undertaking a series of tests to fully determine the cause of that. It is anticipated it could take up to eight weeks to rectify the problem and identify what has occurred and get relevant approvals from the independent nuclear regulator.

Since OPAL commenced operation 11 months ago there has been one other significant equipment-related issue that also needs rectification. This is a dilution of heavy water reported in February this year, where a small amount of light water from the reactor pool was seeping into heavy water contained in the reflector vessel surrounding the core. Whilst this does not affect safety or operation, if left un-repaired it will ultimately affect the performance of the reactor. Discussions have been taking place with INVAP, the reactor's designers and builders about how to fix the problem and it is anticipated that during this shutdown period they will take necessary action.

What are fuel assemblies?

Fuel assemblies hold 21 aluminium-laminated plates of uranium in place within the reactor core which contains 16 of these assemblies. In OPAL the fuel assemblies are 8cm square and just under a metre long. The 16 assemblies sit in a square array of four by four. These assemblies make up the reactor core which is in the middle of the reflector vessel which is designed to 'reflect' neutrons produced back to the core so they do not escape into the environment.

Who makes the fuel?

The fuel currently in the reactor is manufactured in Argentina by CNEA however there are other producers in France and the USA that can also supply ANSTO with fuel. The manufacturer prepares the fuel plates which they then assemble into an assembly or fuel element.

How will the water dilution problem be rectified?

To solve the dilution problem, further pressure testing is required followed by approval of the INVAP-recommended remedy by ANSTO, and if necessary by ARPANSA – the independent nuclear industry regulator. Whilst the issue does not affect safety or operation, if left un-repaired it would ultimately affect the performance of the reactor.

Are there any safety issues for ANSTO staff or the public?

No. The problems are purely operational and, although inconvenient, there are no current safety or radiation issues involved.

Who is responsible for safety?

ANSTO has strict safety regulations and all operational staff has initial responsibility which is overseen by ANSTO's Radiation and Safety Services. The independent regulator ARPANSA also routinely checks that safety standards are being applied.

What are the implications?

This will result in disruption to silicon irradiation services and some research programmed using the reactor.

For more information and to arrange interviews please call Sharon Kelly, ANSTO Media Relations Manager on or 0400 394 085 or Andrew Humpherson, General Manager Public Affairs on 0419 241 587