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## Australian Centre for Neutron Scattering 2024 Long Shutdown Activities

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ANSTO completed a six-month shutdown in 2024 to replace the cold neutron source (CNS) within the OPAL reactor pool. During this time and over the preceding year, ACNS also undertook a number of key improvements to the suite of neutron beam instruments.

The new CNS MkII in-pile assembly has a 70mm taller moderator chamber as well as several other design changes to accommodate the additional heat load and the connections to reactor pipework. A key metric of the success of the replacement was in the characterisation of the new CNS, through measurements of the neutron flux and spectrum via a combination of new and existing instrumentation. This included the temporary installation of a time-of-flight spectrometer close to the reactor face. The results demonstrated an actual gain of 5-10% more flux at wavelengths greater than 5 angstroms, which is consistent with the theoretical predictions.

Also presented are a combination of repairs and upgrades to our neutron beam instruments, including installation of new guides and monochromators. These were complemented by control systems upgrades of the safety interlocks, choppers and velocity selectors, as well as refurbishments to detectors and data acquisition electronics. Throughout the planned program of works, several technical and safety challenges were encountered. Navigating these challenges required the need to address competing priorities and constraints, with some key lessons learnt.

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