

## Final Set of AGR Experiments Inserted for Irradiation Testing in Idaho National Laboratory's Advanced Test Reactor

The Advanced Gas Reactor (AGR)-5/6/7 tristructural isotropic (TRISO) fuels experiment test train, which represents the final set of AGR experiments at Idaho National Laboratory (INL), began irradiation in the Advanced Test Reactor (ATR) on February 16, 2018. The AGR TRISO Fuels Program irradiation experiment series will provide important data to support fuel qualification and fuel performance margin tests, leading to subsequent licensing of fuel for high-temperature gas reactors (HTGRs).

This experiment consists of both a fuel qualification test (AGR-5/6) and a fuel performance margin test (AGR-7) for industrially produced uranium oxycarbide (UCO) TRISO coated particle fuel developed by the AGR program. The UCO TRISO fuel was fabricated by a commercial vendor (BWX Technologies) and is considered to be the reference fuel design for qualification. Variations in capsule conditions (i.e., burnup, fast fluence, and temperatures) will provide both fuel performance qualification data and margin test data (i.e., beyond operating temperature envelope).



Test Train being installed in the ATR at INL.

The objective of this experiment will be to establish the performance of UCO TRISO fuel fabricated using engineering-scale equipment in a production environment under normal and beyond normal operating conditions. Specifically, the goals of the AGR-5/6/7 experiment are to irradiate reference design fuel containing low-enriched UCO TRISO fuel particles to support fuel qualification, establish the operating margins for the fuel beyond normal operating conditions, provide irradiated fuel performance data, and generate irradiated fuel samples for post-irradiation examination and safety testing. To achieve these goals, the AGR-5/6/7 experiment will be irradiated in the northeast flux trap position of the ATR for approximately 500 effective full-power days. This is the last of the planned AGR TRISO Fuels Program irradiation experiments.



Assembly of AGR-5/6/7 in the test train assembly facility.