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Statement of Work

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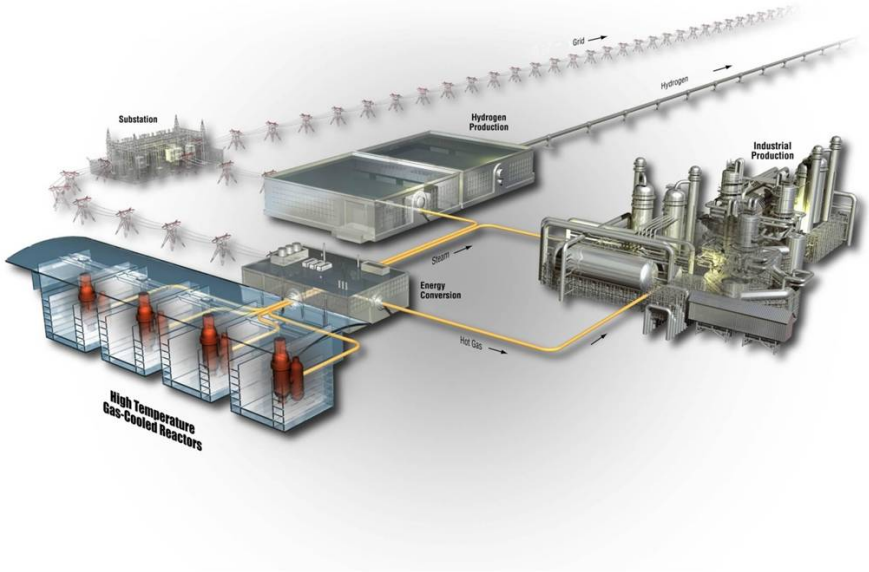
AGR-3/4 PIE at Oak Ridge National Laboratory



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A For Approval: This is for non-owner approvals that may be required as directed by a given program or project.
C For documented review and concurrence.
Note Quality Level 3 (QL3)

REVISION LOG

Rev.	Date	Affected Pages	Revision Description
0	02/12/2015	All	New document
1	03/10/2016	5-6	Updated to include editorial changes and delete reference to Part II, Subpart 2.7 of NQA-1 2008/1a 2009
2	10/24/2016	5	Updated Purpose and Anticipated Benefits
3	11/06/2017	All	Updated for FY18.
4	09/27/2018	All	Updated for FY19.

CONTENTS

1. INTRODUCTION

1.1 Background

The Idaho National Laboratory (INL) Advanced Reactor Technologies (ART) is currently supporting a tristructural isotropic (TRISO) fuel development and qualification program, which includes fuel fabrication, test irradiations, and post-irradiation examination (PIE) and safety testing to assess fuel performance during normal irradiation and under accident conditions. PIE work on fuel from the third and fourth test irradiations, Advanced Gas Reactor-3/4 (AGR-3/4), began at INL in April 2015. The work scope in this memorandum purchase order (MPO) includes Oak Ridge National Laboratory (ORNL) providing technical input, preparations for PIE testing and analysis, and contributing general expertise to this effort.

1.2 Purpose/Objectives

The planned AGR-3/4 PIE work at ORNL includes:

- Providing project management, technical support, planning, and reporting.
- Receiving in-cell radial deconsolidation equipment from INL and making preparations to install it at ORNL.
- Making preparations for and performing compact receipt, offloading, initial inspection, and planning.
- Providing technical support for development of equipment and techniques for planned PIE evolutions.

1.3 Anticipated Benefits

The primary objective of this work scope is to provide project management and technical oversight and to develop radial deconsolidation capabilities at ORNL to support further PIE for AGR-3/4. ORNL developed techniques and equipment that could accomplish the radial deconsolidation of unirradiated AGR-3/4 compacts. INL adapted these techniques and equipment for application to irradiated compacts in a hot cell environment. Knowledge gained from operation of the INL equipment in cell will be utilized to build and install a similar radial deconsolidation piece of equipment at ORNL for future deconsolidation efforts

2. APPLICABLE CODES AND REFERENCES

ASME NQA-1 2008/1a 2009, “Quality Assurance Requirements for Nuclear Facility Applications,” Part I, American Society of Mechanical Engineers, 2008 and 2009.

PLN-2690, Revision 18, August 2018, “INL ART Quality Assurance Program Plan”.

PLN-3636, Revision 7, June 2018, “Technical Program Plan for INL ART Advanced Gas Reactor Fuel Development and Qualification Program”.

PLN-5382, May 2017, "AGR-3-4 Phase 2 Post-Irradiation Examination Plan".

3. SCOPE

3.1 Work to Be Performed

3.1.1 Performance Oversight and Technical Support

ORNL will support the INL ART TRISO Fuels AGR-3/4 PIE effort by providing technical input, analysis, and expertise; evaluating new PIE methods and preparing evaluation reports as needed; performing PIE work scope as identified below; and participating in PIE activities as requested. This work scope includes the general oversight of the ORNL PIE activities identified below, reporting on a bi-weekly and monthly basis as requested, and attending technical program meetings to present and discuss AGR-3/4 PIE data.

3.1.2 Compact Receipt and Inspection

This task includes receipt and unloading of one (1) planned compact shipment. Up to eight irradiated compacts will be sent from INL to ORNL per shipment, packaged in DOT Type A transportation packages. After receipt and unloading, the compacts will be visually inspected, decontaminated as necessary, and the shipping packages will be returned to INL.

3.1.3 Preparations for Radial Deconsolidation

This task includes ORNL receipt of the radial deconsolidation apparatus from INL. ORNL will evaluate, modify (if necessary) and install the equipment in preparation for radial deconsolidation activities in FY-20.

3.2 Work Excluded

All other work scope other than AGR-3/4 PIE-related work scope is excluded under this SOW.

3.3 Requirements

3.3.1 Environmental

Work will be performed in accordance with applicable ORNL requirements.

3.3.2 Safety and Health

Work will be performed in accordance with applicable ORNL requirements.

3.3.3 Quality Assurance

ORNL will perform this work in accordance with its approved quality assurance program in compliance with ASME NQA-1-2008/1a-2009

criteria. INL ART Quality Assurance may elect to perform work inspections of selected processes. The INL and ORNL technical leads will identify the selected processes for inspection. INL will supply the inspection checklist to ORNL approximately three weeks prior to the inspection.

3.4 Place of Performance

Work will be performed at ORNL by ORNL staff. The respective ORNL and INL technical leads will coordinate other work locations if necessary.

3.5 Interfaces

Interfaces will be between INL and ORNL technical representatives.

3.6 Miscellaneous

Preparations of presentations and reports, and travel will be included within this work scope in order to share information. This is expected and will be charged to the appropriate activity being supported.

4. DELIVERABLES

Activity Description	Completion Date	Deliverable	Associated INL Milestone
ORNL to provide routine updates on progress made	As needed	Input on progress to INL ART technical reports as needed	None

ORNL will provide input to INL for ART monthly and quarterly technical progress reports as needed, and participate in bi-monthly AGR program teleconferences to discuss the latest progress and report any issues.

5. SCHEDULE AND MILESTONES

There are no specific deliverables or objectives that will result from the currently identified and planned work scope so no schedule or milestones are needed at this time.

6. COMPLETION CRITERIA AND FINAL ACCEPTANCE

There are no specific deliverables or objectives that will result from the currently identified and planned work scope so no completion or acceptance criteria are needed at this time

7. APPENDICES

None

8. ATTACHMENTS

None