

Sectioning of NBG-17 Graphite Billet

Michael E Davenport

August 2020



The INL is a U.S. Department of Energy National Laboratory
operated by Battelle Energy Alliance

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**Idaho National Laboratory
Idaho Falls, Idaho 83415**

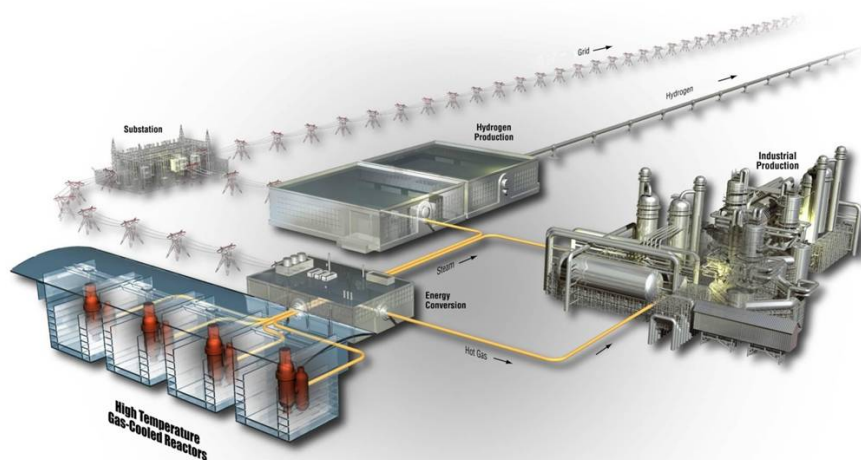
<http://www.inl.gov>

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U.S. Department of Energy
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Contract DE-AC07-05ID14517**

Statement of Work

Project No: 23747

Sectioning of NBG-17 Graphite Billet



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Idaho National Laboratory

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ART Program	Statement of Work
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Signatures			
Signature and Typed or Printed Name	Signature Code	Date (mm/dd/yyyy)	Organization/Discipline
Per email	P	8/17/20	ART Graphite R&D
David T. Rohrbaugh			
Per email	A	8/17/20	ART Graphite R&D Manager
Michael E. Davenport			
Per email	C	8/17/20	ART Quality Assurance Lead
Michelle T. Sharp			

- P** For Preparer of the document.
 - A** For Approval: This is for non-owner approvals that may be required as directed by a given program or project. This signature may not be applicable for all uses of this form.
 - C** For documented review and concurrence.
- Note:** Quality Level: QL3

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1. INTRODUCTION

1.1 Background

The Advanced Reactor Technologies (ART) Baseline Graphite Characterization program at the Idaho National Laboratory (INL) is performing a comprehensive evaluation of inter-billet variations in as-produced nuclear-grade graphite. Before graphite test specimens are machined, the full-size billets must be pre-sectioned into sub-blocks that can be more easily handled and shipped. As manufactured, NBG-17 billets are rectangular in shape, nearly 6 feet in length, and may exceed 1,500 pounds in weight. Sectioning of these billets must be accomplished via a supplier that is capable of handling and cutting the billets into individual slabs and quartering these slabs into sub-blocks. Billets will be pre-labeled by the Purchaser prior to leaving controlled storage such that traceability of any individual sub-block is never lost during sectioning operations.

1.2 Purpose/Objectives

The Supplier will section the applicable full-size billet of NBG-17 into slabs and sub-blocks that can subsequently be marked with identification markings and reference/datum surfaces with respect to the original billet. This assures that positions and orientations of test specimens removed from the sub-blocks are accurately traceable to the full-size, as-manufactured billet.

1.3 Anticipated Benefits

Properly marked sub-blocks from full-size billets of nuclear-grade graphite can be handled relatively easily, facilitating the subsequent selection and markup of individual blocks for the extraction of mechanical test specimens. Maintaining accurate position/location information for each graphite specimen that will be evaluated is a critical component of the Baseline Graphite Characterization program.

2. APPLICABLE CODES AND REFERENCES

INL Drawing 780553 Rev. 1 "NBG-17 – Billet Plan 1: Baseline Graphite Characterization."

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3. SCOPE

3.1 Work to be Performed

The supplier is required to:

1. Complete sectioning of Purchaser-supplied NBG-17 graphite billet per Drawing 780553 Rev. 1 "NBG-17 – Billet Plan 1: Baseline Graphite Characterization."
2. Ensure that the billets are pre-labeled by the purchaser, and that all labels that are associated with billet and section traceability are legible.
3. Carefully handle billet during all operations, ensuring that existing labels/markings identifying billet, slab, and sub-block numbers and Quality Assurance numbers are not removed or rendered unreadable.

Label at least one additional unmarked face from each sub-block following sectioning operations to reflect billet, grade, slab, sub-block ID, and QA number. ***Do not transfer any existing datum markings.***

3.2 Work Excluded

The supplier will not be required to:

- Pre-label the billet with production number, slab and sub-block identification as reflected in the applicable portions of Drawing 780553 Rev.1, and appropriate QA number.
- Ship billet to Supplier and/or provide for return shipment of sub-blocks to Purchaser.

3.3 Requirements

N/A

3.4 Place of Performance

General Products Machine Shop, Pocatello, ID.
3661 Pole Line Road - Pocatello, ID 83201
Phone: 208-237-2390 Fax: 208-237-2392 Email: office@gpms.net

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3.5 Interfaces

The Purchaser will provide for the delivery of the NBG-17 billet to the Supplier upon execution of the contract.

The Purchaser will ship/transport sub-blocks back to the INL.

The Supplier shall report sub-blocks that are damaged during handling or sectioning or otherwise do not meet the dimensional requirements of this SOW.

3.6 Miscellaneous

1. The Supplier shall implement the following important graphite cutting and machining requirements:
 - Graphite is inherently brittle and shall be supported to the extent necessary utilizing blocks, straps, and/or plates where applicable, particularly during the initial sectioning of full-sized billets.
 - The graphite shall not be subjected to any foreign material or cutting fluids during the entire sequence of the machining processes.
 - Cutting and machining surfaces that directly contact the graphite shall be cleaned before a new grade of graphite, or similar grade from a different job, is machined or cut. All surfaces shall be free of cutting fluids, oils, or other foreign material that may contaminate the graphite surfaces.
 - There shall be careful and minimal handling of machined graphite blocks to prevent degradation or foreign material contamination of sample surfaces.
2. Supplier responsibilities:
 - The Supplier shall be responsible for receiving, properly storing, and securing the government-supplied graphite.
 - The Supplier shall be responsible for packaging or palletizing each machined sub-block to prevent damage during shipping.

4. DELIVERABLES

The Supplier shall provide the following items as deliverables:

1. Complete sectioning of the Purchaser-supplied billet of NBG-17 graphite into 44 labeled sub-blocks.

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2. Copy existing labels/markings as applicable per Section 3.1 onto at least one exposed face of each sub-block following sectioning.

5. SCHEDULE AND MILESTONES

Per contract.

6. COMPLETION CRITERIA AND FINAL ACCEPTANCE

Any invoices generated by the supplier shall be based on the number of specimens successfully fabricated and inspected to the required size called out on the applicable reference drawing, subject to written disposition by the INL Technical Point of Contact (TPOC) via an Information/Change Request (I/CR). The invoice will be paid upon Purchaser's acknowledgement of the receipt of the specimens and internal inspection by a project technical representative.

7. APPENDICES

None.

8. ATTACHMENTS

None.

Re: SOW's



David T. Rohrbaugh
To Michael E. Davenport

I concur

From: Michael E. Davenport <michael.davenport@inl.gov>

Sent: Monday, August 17, 2020 11:57 AM

To: David T. Rohrbaugh <david.rohrbaugh@inl.gov>; Michelle T. Sharp <michelle.sharp@inl.gov>

Cc: W D. Swank <w.swank@inl.gov>

Subject: SOW's

Dave and Michelle, please send me an email stating that you concur with these documents. Thanks


Idaho National Laboratory

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Re: SOW's



Michelle T. Sharp
To: Michael E. Davenport

 You replied to this message on 8/17/2020 12:16 PM.

Mike -

I've reviewed and concur with SOW-17716 and SOW-17715.

Thanks

Michelle Sharp

ART Quality Engineer

NFCSC QA Lead Point of Contact

Cell: 208-757-9266 (working remotely)

From: Michael E. Davenport <michael.davenport@inl.gov>

Sent: Monday, August 17, 2020 11:57 AM

To: David T. Rohrbaugh <david.rohrbaugh@inl.gov>; Michelle T. Sharp <michelle.sharp@inl.gov>

Cc: W D. Swank <w.swank@inl.gov>

Subject: SOW's

Dave and Michelle, please send me an email stating that you concur with these documents. Thanks