

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE	PAGE OF PAGES 1   1
2. AMENDMENT/MODIFICATION NO. 0280	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
6. ISSUED BY Idaho Operations Office Idaho Operations U.S. Department of Energy Idaho Operations Idaho Falls ID 89415	CODE 892432	7. ADMINISTERED BY (If other than Item 6) Idaho Operations U.S. Department of Energy Idaho Operations 1955 Fremont Avenue MS 1221 Idaho Falls ID 83415	CODE 00701
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) FLUOR IDAHO, LLC Attn: AMANDA JORDAN 1070 RIVERWALK DRIVE, SUITE 201 IDAHO FALLS ID 83402		(x)	9A. AMENDMENT OF SOLICITATION NO.
CODE 968795604			9B. DATED (SEE ITEM 11)
FACILITY CODE		x	10A. MODIFICATION OF CONTRACT/ORDER NO. DE-EM0004083
			10B. DATED (SEE ITEM 13) 02/04/2016

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended.  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Section I.100 Changes - Cost Reimbursement (AUG 1987) Alternate II and III (APR 1984)
	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor  is not  is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: 968795604

The purpose of this modification is to revise scope at Section C.6.1 and incorporate the FY 2022 Small Business Subcontracting Plan. Please refer to the attached Continuation Pages incorporated as part of this modification.

Payment:

OR for Idaho

U.S. Department of Energy

Oak Ridge Financial Service Center

P.O. Box 6017

Oak Ridge TN 37831

Period of Performance: 06/01/2016 to 12/31/2021

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Thomas M. Williams/Director, Prime Contract		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Jennifer K. Cate	
15B. CONTRACTOR/OFFEROR <i>Thomas M Williams</i> (Signature of person authorized to sign)	15C. DATE SIGNED 11/02/2021	16B. UNITED STATES OF AMERICA JENNIFER CATE <small>Digitally signed by JENNIFER CATE Date: 2021.11.02 12:58:09 -08'00'</small> (Signature of Contracting Officer)	16C. DATE SIGNED 11/2/2021

Previous edition unusable

This modification is being made under the authority of contract clause Section I.100, *Changes – Cost Reimbursement (AUG 1987) - Alternate II and III (APR 1984)*. This bilateral contract modification revises the work scope under sections C.6.1 Integrated Waste Treatment Unit Operations and Turnover as detailed below (in track changes) and incorporates the Contractor's FY 2022 Small Business Subcontracting Plan at Section J, Attachment J-10.

The following changes are hereby made to the contract:

**1. SECTION C.6.1.1 Integrated Waste Treatment Unit (IWTU) Phase One, Process Assessment** is revised as follows:

The Contractor's Project Plan of IWTU Resolution and Technical Issues, Revision 1, dated June 29, 2016, is incorporated herein and may be implemented as appropriate. It is attached hereto (Attachment A).

**2. SECTION C.6.1.2 Integrated Waste Treatment Unit (IWTU) Phase Two, Facility Modifications and Pilot-Scale Testing** is revised as follows:

The Contractor's IWTU Technical Issues Resolution Phase 2 Project Plan, dated October 20, 2016, is incorporated herein and may be implemented as appropriate. It is attached hereto (Attachment B).

The Contractor shall execute the IWTU Phase 2 project plan delivered to DOE-ID on October 21, 2016. The IWTU Phase 2 Project Plan will incorporate the results of the IWTU Phase 1 Testing Program. This scope of work shall include the modifications required by the Phase 2 project plan to support making the IWTU facility ready for Phase 3 (IWTU Confirmatory Simulant Runs) and Phase 4 (IWTU Readiness and Radioactive Operations).

The Contractor shall continue with LOE activities related to the PGF filter discovery efforts.

*Contract modification 253 mitigates the schedule impacts realized due to the Process Gas Filter (PGF) issues, Carbon Reduction Reformer (CRR), Refractory and Denitration Mineralization Reformer (DMR) redesign, removing and cleaning the uncoated elements on the PGF, and an unplanned power outage. Phase 2 scope did not include any effort to understand and resolve the legacy PGF filter problems.*

**3. SECTION C.6.1.10 – Integrated Waste Treatment Unit (IWTU) Phase 3/4, Facility Modifications, Confirmatory Demonstration Run, System Performance Tests, and the Startup of Radioactive Operations** is revised as follows:

Overall Phase 3/4 scope of work:

The Contractor shall continue progress towards achieving the startup of radiological operations (processing sodium bearing waste). This includes facility modifications and a confirmatory demonstration run.

IWTU Control of Contaminated Canisters - The scope of work specific to this modification, includes:

- Modifying the Canister Fill Cells 0 & 1 HVAC systems
- Modifying the Canister Fill tube shroud design
- Designing, prototype fabrication and preliminary testing of a Fill Tube Cleaning Tool
- Evaluating and optimizing can fill tree purges and procedures Engineering and Operational evaluations of the timing and extent of Can Fill Tree purges and associated procedures.
- Modifying the Vault Loading Cell HVAC system
- Modifying the Vault Loading Cell; and
- TPR and ALARA reviews

The overall scope of work is broken down into three parts. Part A was scope that could be well defined and accurately estimated early on. Part A has been definitized as modification 131. Part B was scope that was known early on but could not be definitively estimated at the time of Part A proposal submission. Part B has been definitized as modification 152. Part C items (above) were items that could not be known at the beginning of phase 3/4 due to the complexity of this work. However, as they became known they were addressed appropriately in accordance with Section B.15 Advance Understanding – Changes to Cost and Fee.

The scope added with this modification was included in Part C, but only as a ROM. The details at the time of the part C submission were not understood sufficiently to be able to estimate accurately.

Part A - The scope of work specific to this modification, which supports the overall scope of work, includes:

1. Early engineering, procurement, planning, and execution of accelerated Outage J work into the PGF outage, including installation of new (coated, sintered-metal filter) PGF elements prior to Run 3.
  - Outage J, Part A plant modifications items as specified in Fluor’s proposal (CCN 323109) except the following:
  - Additive Feed Modifications (A.3.06.13.11.b) - The temporary guardrail to support the hoppers was evaluated and it was determined that no further action was warranted.
2. Fiscal Year (FY) 2019 level of effort (LOE)
3. FY 2019 Hazen Research Inc. (Hazen) scope
4. FY 2019 external laboratory and consultant support identified to date (e.g., Particulate Solids Research, Inc., Battelle Energy Alliance, LLC, Studsvik AB, Savannah River National Laboratory, Fluor Corporate Support, Dominion Engineering, etc.)
5. Confirmatory run consumables that will be needed for this contract period FY 2020 and FY 2021 LOE through September 30, 2021.

Part B – The scope of work specific to this modification, which supports the overall scope of work includes:

1. Canister decontamination system (engineering, procurement, installation).
2. Cell decontamination system (engineering, procurement, installation).
3. Progress, as budget permits, purchase of spare parts as specified in the Part B proposal (CCN 324109).

4. FY 2020 Hazen, external laboratory, and consultant support.
5. FY 2020 Plant Operations (LOE).
6. The contractor will continue to progress planning for the following:
  - Phase 4 System Performance Test (SPT); TI-103 Parts 1 and 2
  - SPT Hazen, external laboratory, and consultant support

The overall scope of work for Phase 3/4 includes three specific sections. Part A was scope that could be well defined and accurately estimated early on. Part A was definitized with contract Modification 131, dated July 17, 2019. Part B (above) is scope that was known but could not be definitively estimated at the time of Part A proposal submission; however, Part B is included in this scope as the schedule allows. Part C items recognizes that due to the complexity of this work, there may be additional items that cannot be known at this time. However, as they arise, they will be addressed appropriately in accordance with Section B.15 Advance Understanding – Changes to Cost and Fee. The Part C scope of work will be estimated at a later date.

Part C – The scope of work specific to this modification, which supports the overall scope of work includes:

1. PGF filter selection, procurement, vessel modification (tube sheet blow back), installation, and analytical testing.
2. Modifications to the Hazen PGF mockup to support testing of the new filters.
3. The Contractor will continue to progress in planning for the following:
  - A PGF inspection outage following the Confirmatory Run.
  - Data Analysis, preparation and submittal of the System Performance Test (SPT) completion report.

The overall scope of work is broken down into three parts. Part A was scope that could be well defined and accurately estimated early on. Part A has been definitized as modification 131. Part B was scope that was known early on but could not be definitively estimated at the time of Part A proposal submission. Part B has been definitized as modification 152. Part C items (above) are scope items that could not be known at the beginning of phase 3/4 due to the complexity of this work. However, as the scope became known, it was addressed appropriately in accordance with Section B.15 Advance Understanding – Changes to Cost and Fee.

The Contractor shall continue with LOE activities related to the PGF filter technical resolution and discovery efforts.

*Contract Modification 253 mitigates the schedule impacts realized due to the Process Gas Filter (PGF) issues, Carbon Reduction Reformer (CRR), Refractory and Denitration Mineralization Reformer (DMR) redesign, removing and cleaning the uncoated elements on the PGF, and an unplanned power outage.*

**Distributed Control System (DCS)** – the Contractor shall upgrade two (2) DCS engineering station's hardware, software, licensing and support contract. This scope includes conversion of the database, a top-down compilation requiring one plant outage, installation of the upgraded engineering stations, and system testing and training.

The DCS engineering stations upgrade shall be performed during Outage J prior to the Confirmatory run to allow thorough testing of the system prior to moving to radiological operations. The Contractor shall:

- A. Procure two ABB Windows AdvaBuild v3.7 SP2 engineering stations, licensing, support contract and spare equipment.
- B. Procure support vendor services to convert main and simulator databases, migrate custom programs and perform other conversion services in preparation for upgraded engineering station install at the IWTU/ Idaho Nuclear Technology and Engineering Center (INTEC) facilities. Support services will also include a site visit to oversee installation and perform on-site engineer training.
- C. (IWTU and INTEC staff) Install upgraded engineering stations under one outage, perform formal test of simulator and production and provide final results for acceptance.
- D. (IWTU and INTEC staff) Update the DCS system drawings and software management plan.

The Contractor shall:

- Procure as much of the needed 2,826,000 pounds (lbs.) of calcined coal as possible for an additional 30 days of radioactive System Performance Testing (SPT) and completion of SBW processing (excludes quantities needed for processing Tank Farm rinsates).
- Procure 1,125,600 lbs. of Petcoke to complete SBW processing (excludes quantities needed for processing Tank Farm rinsates).
- Conduct sample analysis of the Calcined Coal for the purpose of certification to meet quality requirements.

If any of the shipments for the calcined coal will be received outside the current contract period of performance, the Contractor shall novate the applicable subcontract(s) to the follow-on ICP Core prime contractor to manage any remaining receipts.

The Contractor shall complete the following:

Installation of Permanent Simulant Tanks

- A. Engineering configuration management and design of permanent tanks.
- B. Procurement of tanks, valves, piping, and controls equipment for permanent simulant tanks.
- C. Installation of a support pad for tanks
- D. Installation of permanent simulant tanks, valves, piping and controls.
- E. Testing of permanent tanks and transfer system.
- F. Document close out of permanent tank installation.

Replacement of Waste Feed Valves

- A. Project Management
- B. Estimation
- C. Engineering Design to include evaluation of flow to mitigate cavitation
- D. Procurement (new flow control valves and spares)
- E. Mockup Testing of new waste feed valves to ensure they will pass larger wet decon particles while being able to maintain the correct flow rates.

- F. Work Package Planning
- G. Field Installation, post maintenance testing and document close out

The Contractor shall continue progress to complete the scope items as detailed in CCN 325592 Transmittal of Integrated Waste Treatment Unit Additional Outage J Extended Scope, Cost and Schedule Estimate, dated August 12, 2020. These scope items include: East Cyclone Cleanout (reduction); Cord Plug and Transfer Switch for Control Power to IWTU Sub 12; PRC Plugging and PRC Acid Decontamination; and Canister Prep and Fab (refurbish welds on 120 canisters, order 12 racks and anticipate 4-8 racks by contract completion).

The Contractor shall complete the scope items as detailed in CCN 326032 Cost and Schedule Estimate for the IWTU DMR Seismic Analysis, dated November 11, 2020. This scope includes:

- A. Performing a new structural analysis on IWTU's Denitration Mineralization Reformed (DMR) vessel. This analysis will require building a new model in Abaqus that analyzes the whole DMR vessel.
- B. Performing an extent of conditions on other IWTU vessels. The scope of the extent of conditions is a review of IWTU's other process vessel's original structural analysis to determine if the analysis required spacers and if the spacers were installed. This extent of conditions has been completed and only the Process Gas Filter (PGF) vessel has been identified as having the same structural issue as the DMR.
- C. Once the Abaqus model is completed and the structural analysis has identified the required repairs, an engineering design will be completed.
- D. A Work Order (WO) will be prepared, and materials procured, prior to construction performance. Once the WO and materials are ready to work, it is anticipated that these modifications will be performed after the re-insulation of the PGF and DMR following the previous Outage J modifications. This field work will require scaffolding access, existing paint removal, carbon steel plate/block water jetting and machining and field fit fabrication, spacer fit-up, welding, weld inspection, the repainting of the structure, minor repairs to the vessel insulation cladding, and removal of scaffolding. Upon completion of the field modifications and approval, the work control documents will be closed out and as-builts completed to then complete the facility change forms, design forms, and final modeling.

It is assumed that the carbon steel plates will be machined and welded into each of the four I-Beam connectors on the DMR and PGF vessel lateral structural supports to perform the function of the missing mica spacers. Engineering has already determined that the thermal insulation feature of the mica is not required; however, removing most of the gap between the lateral support and the structural steel is essential.

The IWTU uses Sulphur Impregnated Granular Activated Carbon (GAC) beds to remove mercury from process off-gas. Recent sampling results of the GAC bed material indicate the bed's sulfur content is depleted. In order to maximize the duration, the plant may run until the next GAC change out, the GAC should be replaced before commencing radiological operations. This includes the following scope of work:

- 1. Procurement of:
  - a. New GAC bed material for a single GAC vessel

- b. Filters for vacuum equipment
- c. PPE required for the effort; and
- d. Tools and other expendables required to execute the effort
2. On-Site handling/storage
3. Development of work control planning/development
4. Engineering/safety/environment support
5. Post-maintenance testing and disposal of old bed material.

The Contractor shall continue Phase 3 LOE plant operations and labor including the following:

- IWTU Facility Operations
- IWTU Technical Management Support. This includes:
  - o Project Management
  - o ESH&Q
  - o Training
  - o QA
  - o Facilities Management
  - o Project Planning
- IWTU Facility Maintenance
- IWTU Construction Support (Force Account)
- IWTU Radiation Control
- IWTU Engineering Support. This Includes:
  - o System and Process Engineers
  - o Safety Analysis Engineering
  - o Minor Design Engineering
  - o Testing and Commissioning

The Contractor shall complete and document the preliminary design basis, specifications, technical and functional requirements, and rough order of magnitude pricing and schedule for the IWTU product storage building expansion.

The Contractor shall complete the following scope as part of the FY 2022 first quarter work plan:

#### Existing Scope

- Complete removal of temporary simulant tanks
- Perform and initiate documentation on the Phase 3 Confirmatory Run
- Gather objective evidence documenting readiness to begin hot (radiological) operations at IWTU
- Perform and document the Confirmatory Run MSA, CRA and DOE RA Contractor Readiness Assessment
- Perform and document the RadOps CRA and DOE RA Contractor Readiness Assessment

#### New Scope

- FY 2022 LOE through December 31, 2021
- Facilitate dry runs to practice conduct of operations for evolutions simulating radiological routine and upset conditions.
- Procure PRF Vent Valve spare parts
- Complete CPP-1666 Fire Damage Repair
- Hazen Run and Studsvik Support to Test Alternate US Sources for Coal

- Advance Product Storage Building Expansion Design, planning for New Vault Construction and Preliminary Design for Vault Construction Pad
- Procure Wet Decon System Spare Parts
- Evaluate and document alternative GAC Bed changeout equipment and potential subcontractors
- Purchase Spare Canister Pintle Lifting Device
- Initiate Design to Convert OCG Cooling from Potable Water to Raw Water
- Procure Remote Camera Inspection Tools
- Develop a statement of work, schedule and gather document requirements for migration to a new FDCSHIST2 server
- Procure Material for Modification of 205 HVAC Ducting
- Procure Cart and Lift Table Assembly - long lead time (procure now, pay during next contract)
- Schedule Manipulator Training and Procure Tool Kit Items and Manipulator Spare Parts
- Procure Spare Model F Manipulator for Sample Cell - long lead time (procure now, pay during next contract)
- Expedite shipping (with concurrence of Fluor Supply Chain and DOE Technical Representative) for US vendor and shippers of calcined coal from China

Due to schedule constraints, the PGF inspection outage as described in Part C will not be included in the scope of this contract.

No other changes to Section C.6.1.

4. **SECTION J, ATTACHMENT J-10, Contractor's FY 2022 Small Business Subcontracting Plan** (dated October 20, 2021) replaces the previous Small Business Subcontracting Plan and is incorporated by reference.

No other changes to the contract terms and conditions.