AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT	1. CONTRACT ID CODE	PAGE OF PAGES
		1 2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
0051	See Block 16C		

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE
Idaho Operations U.S. Department of Energy Idaho Operations 1955 Fremont Avenue Idaho Falls ID 83415	00701	Idaho Operations U.S. Department of Energy Idaho Operations 1955 Fremont Avenue MS 1221 Idaho Falls ID 83415	00701

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)		9A. AMENDMENT OF SOLICITATION NO.
FLUOR IDAHO, LLC Attn: AMANDA JORDAN 1070 RIVERWALK DRIVE, SUITE 201 IDAHO FALLS ID 83402	(x)	9B. DATED (SEE ITEM 11)
	X	10A. MODIFICATION OF CONTRACT/ORDER NO. DE-EM0004083
		10B. DATED (SEE ITEM 13) 02/04/2016

CODE 968795604	FACILITY CODE

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 telegram 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 telegram or letter, provided each telegram or letter 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	
X	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. Section I.100 Changes - Cost Reimbursement (AUG 1987) Alternates II and III (APR 1984)
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	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.)

Tax ID Number: 45-2724914
DUNS Number: 968795604
Please refer to the Continuation Pages incorporated as part of this modification. The Contractor is directed to continue operations in accordance with contract Section B.2.
Payment:
OR for Idaho
U.S. Department of Energy
Oak Ridge Financial Service Center
P.O. Box 6017
Oak Ridge TN 37831
FOB: Destination
Continued ...

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)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
THOMAS M. WILLIAMS DIRECTOR, PRIME CONTRACT	Jennifer K. Cate

15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)	8/30/17	(Signature of Contracting Officer)	8/31/17

NAME OF OFFEROR OR CONTRACTOR
FLUOR IDAHO, LLC

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Period of Performance: 06/01/2016 to 05/31/2021 Change Item 00003 to read as follows(amount shown is the total amount):				
00003	Non-Target ICP-Core Work Scope Line item value is:: $26,311,203.00 Incrementally Funded Amount: $25,920,758.79 This modification includes a net deduction to the estimated cost of CLIN-3 by $203,767.00. The corresponding decrease to the fixed fee is $2,991 for a total decrease of $206,758 to CLIN-3. See continuation pages for a description of these changes.				26,311,203.00

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 modification incorporates work scope under Section C.7.5 Reactor Fuel Selection, Inspection, Packing. This modification also increases the estimated cost under CLIN-3 for a DOE-ID requested cost estimate (Castor V/21) that is not being incorporated at this time, per section B.19 – Cost Estimates. In addition, this modification incorporates an adjustment regarding the Navy Replan (Mod 32, dated March 16, 2017) that was agreed to between the parties after negotiations had been finalized.

The following changes are hereby made to the contract:

1. SECTION B.2 (c) CONTRACT COST AND FEE SCHEDULE is revised as follows:

CLIN-3: Non-Target ICP Core Work Scope is revised to incorporate a net adjustment (defined on the following continuation pages):

The estimated direct cost is decreased by $203,767 from $25,166,911 to $24,963,144.

The fixed fee is decreased by $2,991 from $1,351,050 to $1,348,059.

Summary:
The Total Contract Value, including options, is decreased by $206,758 (estimated cost and fixed fee for CLIN-3) from $1,666,100,113 to $1,665,893,355.

The B.2(c) Fee Model has been updated to reflect the adjustment to CLIN-3.

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B.2(c) Table				
CLIN 00001- TARGET ICP-CORE DOE MISSION WORK (BASE)				
	Target Cost	Max Fee	Target Fee	Total Price
Direct Target Cost w/ ID Spt (No Options Included)	793,874,596	140,973,586		1,229,572,702
Indirect Target Cost w/o ID Spt (Total Pool, PWS C.8)	294,724,520			
	1,088,599,116			
Target Fee			53,885,656	
Subtotal Milestone-Shedule & Performance Fee (B.3(d))		89,567,351		
Subtotal Incremental Cost Incentive Fee		51,406,235		
Cost Incentive Breakout				
Cost Incentive (Max)		51,406,235		12.95%
Cost Incentive (Target)			19,649,488	4.95%
CLIN 00002 - TARGET ICP CORE NNPP PPF WORK SCOPE				
	Target Cost	Max Fee	Target Fee	Total Price
Navy (Pieces, Parts and Fines - 102 Cans)	61,020,192	7,902,115	3,020,500	68,922,307
Milestone-Shedule & Performance		5,136,375	1,963,325	65.00%
Cost Incentive (Max)		2,765,740	1,057,175	35.00%
CLIN 00003 - NON-TARGET ICP CORE WORK SCOPE				
	Estimated Cost	Fee		Total Price
Total Non-Target Work Scope (See Contracting Officer for Breakout)	24,963,144	1,348,059		26,311,203
CLIN 00004- CONTRACT TRANSITION PERIOD				
Transition	6,811,889	0		6,811,889
CLIN 00005 - DEFINED BENEFIT PENSION PLAN COSTS				
Pension	70,900,000	0		70,900,000
CLIN 00006 INTEGRATED WASTE TREATMENT UNIT (IWTU) OPERATIONS AND TURNOVER				
	Estimated Cost	Max Fee	Fee Gal	Total Price
IWTU Ops (C.6.1)	44,307,931	5,538,491	$ 6.53	$ 49,846,422
	Estimated Cost	Fee		
IWTU Phase 1 - Process Assessment (C.6.1.1) (Fixed Fee)	19,331,848	956,926		$ 20,288,774
IWTU Phase 2 - Technical Issue Resolution (C.6.1.2) (Milestone Fee)	66,553,245	5,523,919		$ 72,077,164
Total (Excluding C.6.1 IWTU Ops)	**$ 85,885,093**	**$ 6,480,845**		**$ 92,365,938**
Total Contract Cost (Excluding Options)				
	Contract Cost	Max Fee	Target Fee	Total Price
	1,382,487,365	162,243,096	56,906,156	1,544,730,461
Total Contract Cost (Includes Options)				
Priced Options	Target Cost	Max Fee	Target Fee	Total Price
00001a - GrndWtr Monitoring Wells / CFA Landfill	773,962	100,228	38,311	874,190
00001b - GrdWtr Monitoring Wells/TAN Rem	676,966	87,667	33,510	764,633
00001c - Legacy Excess Radioactive/Haz Materials	24,747,535	3,204,806	1,225,003	27,952,341
00001d - RCRA Closure of AMWTP Facilities	30,476,158	3,946,662	1,508,570	34,422,820
00001e - Additional Temporary Storage	6,548,465	848,026	324,149	7,396,491
00001f - RH TRU Lot 11 Option Work (Definitized by Modification 048)	-	-	-	-
00001g - RH TRU Lot 12 Option Work	12,341,796	1,598,263	610,919	13,940,059
00001h - RH TRU Lot 11 GFY 2020 Option Work	19,099,074	2,473,330	945,404	21,572,404
00001i - RH TRU Lot 11 GFY 2021 Option Work	12,607,309	1,632,647	624,062	14,239,956
Total Options	107,271,265	13,891,629	5,309,928	121,162,894
Total Contract Cost (Includes Options) and Max Fee	1,489,758,630	176,134,725	62,216,083	1,665,893,355
Contract Performance Ceiling (B.6)				
Contract Performance Ceiling	1,330,270,042			
NOTE: Fixed Fee values from CLIN-3 and CLIN-6 are included in the max fee value for the total contract cost and total contract cost including options.				

No other changes to Section B.2(c).

2. **SECTION B.6 (a)(2) CONTRACT PERFORMANCE CEILING**, is revised as follows:

The current Contract Performance Ceiling (CPC) is decreased by $203,767 from $1,330,473,809 to $1,330,270,042. This includes the work scope incorporated with this contract modification.

No other changes to B.6.

3. **SECTION B.19 - Cost Estimates:** DOE-ID requested a cost estimate pertaining to the Castor V/21 cask, which ultimately was not incorporated. Per section B.19 – Cost Estimates, the B.2(c) table is adjusted accordingly.

The estimated direct cost under CLIN-3 is increased by $15,000 with a fixed fee of $743.

4. **SECTION C.7.3 – Navy Nuclear Propulsion Program (NNPP) Replan** is adjusted as follows:

Per agreement between DOE-ID and Fluor Idaho, a reconciliation to the total CLIN-3 estimated cost and corresponding fixed fee is warranted based on Mod 32, dated March 16, 2017 (Navy Replan).

The estimated direct cost under CLIN-3 is decreased by $508,376 and fixed fee is decreased by $25,165.

5. **SECTION C.7.5 - Reactor Fuel Selection, Inspection, Packing** is incorporated in its entirety as follows:

See Attachment A for Performance Work Statement.

The negotiated estimated direct cost under CLIN-3 is $289,609 with a fixed fee of $21,431.

6. **CONTRACTOR'S STATEMENT OF RELEASE:** In consideration of the modification agreed to herein as a complete equitable adjustment for the directed change to incorporate the work scope identified in this modification, and in accordance with contract Section I.100 52.243-2 Changes—Cost Reimbursement Alt II and III, the Contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributable to such facts or circumstances giving rise to the proposal for adjustment. The total price of the equitable adjustment for CLIN-3 is $(206,758) (estimated cost and fixed fee).

No other changes to the terms and conditions.

PERFORMANCE-BASED WORK STATEMENT

Reactor Fuel Selection, Inspection, Packing, and Loading

BACKGROUND

The Department of the Interior (DOI) U.S. Geological Survey (USGS) operates a low-enriched uranium-fueled, pool-type reactor located at the Federal Center in Denver, Colorado. The mission of the Geological Survey TRIGA® Reactor (GSTR) is to support USGS science by providing information on geologic, plant, and animal specimens to advance methods and techniques unique to nuclear reactors. The reactor facility is supported by programs across the USGS and is organizationally under the Associate Director for Energy and Minerals. Samples from around the world are submitted to the USGS for analysis using the reactor facility. Qualitative and quantitative elemental analyses, spatial elemental analyses, and geochronology are performed . Few research reactor facilities in the United States are equipped to handle the large number of samples processed at the GSTR. Historically; more than 475,000 sample irradiations have been performed at the USGS facility. Providing impartial scientific information to resource managers, planners, and other interested parties throughout the world is an integral part of the research effort of the USGS.

The USGS TRIGA® reactor has been in operation since the late 1960s in support of nuclear-based research for the USGS and a number of universities across the nation. It is the only research reactor in the Department of the Interior and the only research reactor within a 350-mile radius of Denver, Colo. The reactor design is similar to research and training reactors at universities throughout the United States. The reactor provides an intense neutron source for experiments and is capable of continuous steady-state operation at 1,000 kilowatts (thermal). Also, it may be pulsed to a peak power of approximately 1,600 megawatts.

These routine operations at the GSTR involve the irradiation of samples to produce nuclear changes in the samp les . This change or "transmutation" of the original elements in the sample is accomplished when neutrons from the reactor strike the sample and change its nuclear composit io n. This technique, where the specimen is "activated" and then analyzed to determine its elemental composition, is called neutron activation analysis (NAA). Most elements can be detected at a level of a few nanograms or less. An advantage ofNAA is that the samples can be analyzed without any chemical processing before or after the activation . This composition information is useful in determining geological sources and origins and in discovering mineral deposits.

The reactor is also used to produce nuclear changes in rock and mineral samples to determine their ages. Elemental analyses using other methods often result in data of less precision and/or less accuracy. The GSTR provides high-quality data on rock and mineral elemental composition using state-of-the-art techniques while providing the research tools needed to develop new and improved analytical techniques .

The GSTR must add low-enriched uranium fuel to its fuel supply at the Denver Federal Center, Lakewood, CO USA to continue services for scientific studies. The GSTR uses stainless-steel clad cylinders of uranium mixed with zirconium hydride (U-ZrH) for fuel. These cylinders are specifically made for TRIGA nuclear research reactors such as the GSTR and are referred to as TRIGA fuel elements.

The U.S. Department of Energy (DOE) CPP-603 Irradiated Fuel Storage Facility (IFSF) in Idaho, USA is a shielded cell containing vertical tube storage positions. The IFSF has been used to store domestic and foreign research reactor fuels and to support consolidation of other Idaho National Laboratory (!NL) fuels into dry storage. The IFSF has a supply of lightly-irradiated TRIGA fuel elements which can be used at the USGS National Reactor Facility. These fuel cylinders are owned by DOE, located at the IFSF in Idaho, and need to be selected, inspected, and shipped from !NL to Denver Federal Center, Lakewood CO USA.

SCOPE

The USGS requires services, non-personal, to provide all plant equipment, labor, travel, and materials (unless otherwise provided herein) necessary for on-site (IFSF) fuel selection, inspection, packing, and loading of 19 stainless-steel clad cylinders of 8.5 wt% uranium mixed with zirconium hydride (U-ZrH) to be used as sources of fissile material to operate the USGS National Reactor Facility. These fuel cylinders are owned by DOE and located at the IFSF facility in Idaho and need to be selected, inspected, and shipped from !NL to the Denver Federal Center, Lakewood CO USA.

WORK REQUIREMENTS

The contractor shall:

1. Formalize a strategy for selecting TRIGA elements for shipment to GSTR, and communicate the fuel bumup information for the selected elements to the USGS for approval within 30 days of their selection.
2. Retrieve the nineteen selected TRIGA fuel elements from the storage vault (IFSF) and perform an inspection of the selected TRIGA elements. The inspection date(s) shall be coordinated with USGS Technical Liaison (TL). These elements shall meet the USGS requirements so as not to be considered damaged. The fuel parameters for damaged fuel are detailed in NRC Facility License R-113 for the United States Geological Survey TRIGA Research Reactor Technical Specifications 4.1.3, Specification 2.
3. Support leak testing of the BEA Research Reactor (BRR) cask prior to loading the cask onto the trailer and load the BRR cask on the trailer in accordance with the BRR Safety Analysis Report (SAR). Ensure the BRR cask is ready for shipment in accordance with Department of Transportation (DOT) and NRC regulations.

Work requirements 2 and 3 shall be completed in an appropriate timeframe to support the project schedule.

REFERENCES & ESTABLISHED STANDARDS

1. Title I 0, Code of Federal Regulations, Part 71 (10 CFR 71), *Packaging and Transportation of Radioactive Material,* 01-01-08 Edition.
2. Title 49, Code of Federal Regulations, Part 173 (49 CFR 173), *Shippers-General Requirements for Shipments and Packagings,* 10-01-08 Edition
3. Title 49, Code of Federal Regulations, Part 172 (49 CFR 172), *Hazardous Materials Tables and Hazardous Communications Regulations,* 10-01-08 Edition.
4. AREYA Federal Services LLC, *BEA Research Reactor Package Safety Analysis Report,* Revision 6, October 2013.

QUALITY ASSURANCE/SURVEILLANCE PLAN

The contractor shall be responsible for quality control throughout the performance of this contract.
The Government will be responsible for quality assurance of the services performed by the contractor as required in this work statement.
The USGS TL or COR will review data, including fuel inspection information, on selected fuel elements and confirm their acceptability for receipt at the USGS facility.

Note: Flour depends on the other parties to have completed their respective scopes prior to being able to deliver the fuel. As a result, the schedule is flexible to permit this interaction. DOE-ID recognizes that fact as an operating condition.