AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 3

2. AMENDMENT/MODIFICATION NO.: P00002

3. EFFECTIVE DATE: See Block 16C

4. REQUISITION/PURCHASE REQ. NO.: ZEROREQ-RES-21-0033

5. PROJECT NO. *(If applicable)*:

6. ISSUED BY CODE NRCHQ

US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

ENGINEERING MECHANICS CORPORATION OF COLUMBUS
ATTN GARY HATTERY
3518 RIVERSIDE DRIVE
SUITE 202
COLUMBUS OH 432211735

CODE 014083161 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED *(SEE ITEM 11)*

x 10A. MODIFICATION OF CONTRACT/ORDER NO. 31310020D0003
31310020F0101

10B. DATED *(SEE ITEM 13)* 08/11/2020

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)*
N/A

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 date, 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: 52.243-2 CHANGES - COST-REIMBURSEMENT. (AUG 1987) - ALTERNATE I (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.)*

The purpose of this modification is to: (1) increase the ceiling by $12,017.00, from $1,901,430.00 to $1,913,447.00, to allow for the purchase of an additional GoldSim License and (2) to add the NRC Form 187 as an attachment to the task order. See continuation pages for specific changes to the task order.

Total Obligated Amount: $330,000.00 (unchanged)
Total Task Order Ceiling: $1,913,447.00 (changed)

Period of Performance: 09/29/2020 to 09/30/2024

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)*
MONIQUE B. WILLIAMS
TEL: 301-415-6971 EMAIL: Monique.Williams@nrc.gov

15B. CONTRACTOR/OFFEROR
(Signature of person authorized to sign)

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA
Monique B. Williams
(Signature of Contracting Officer)

16C. DATE SIGNED 12/26/2020

Section B - Supplies or Services/Prices was revised as follows.

Summary of Clause Changes:

Clause titled **CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I** is incorporated as follows:

CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I

(a) The total estimated cost to the Government for full performance of this contract is $1,913,447 of which the sum of $1,793,001 represents the estimated reimbursable costs, and of which $120,446 represents the fixed-fee.

(b) There shall be no adjustment in the amount of the Contractor's fixed fee.

(c) The amount currently obligated by the Government with respect to this contract is $330,000, of which the sum of $308,000 represents the estimated reimbursable costs, and of which $22,000 represents the fixed-fee.

(d) It is estimated that the amount currently obligated will cover performance through 01/31/2021.

(e) This is an incrementally-funded contract and FAR 52.232-22 - “Limitation of Funds” applies.

(f) In accordance with FAR 52.216-8 - Fixed Fee, it is the policy of the NRC to withhold payment of fee after payment of 85 percent of the fee has been paid in order to protect the Government’s interest. The amount of fixed-fee withheld from the contractor will not exceed 15 percent of the total fee or $100,000, whichever is less. Accordingly, the maximum amount of fixed-fee that may be held in reserve is $18,067.

Clause titled **PRICE/COST SCHEDULE** is incorporated as follows:

PRICE/COST SCHEDULE

CLIN	DESCRIPTION OF SERVICE/SUPPLY	ESTIMATED COST
0001	Labor	(b)(4)
0002	Subcontractor Costs	
0003	Travel	
0004	ODC	
SUBTOTAL		
0005	Indirect Cost Pool (includes Fringe, Overhead and G&A)	
SUBTOTAL		$1,793,001
0006	Fixed Fee	$120,446
	TOTAL	$1,913,447

Section J - List of Documents, Exhibits and Other Attachments was revised as follows.

1 - List of Documents, Exhibits and Other Attachments was added and reads as follows.

Attachment Number	Title	Date
1	NRC FORM 187	12/21/2020

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)*
P00003	See Block 16C	RES-21-0162	

6. ISSUED BY CODE NRCHQ

US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

ENGINEERING MECHANICS CORPORATION OF COLUMBUS
ATTN GARY HATTERY
3518 RIVERSIDE DRIVE
SUITE 202
COLUMBUS OH 432211735

CODE 014083161 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED *(SEE ITEM 11)*

x 10A. MODIFICATION OF CONTRACT/ORDER NO. 31310020D0003
31310020F0101

10B. DATED *(SEE ITEM 13)* 08/11/2020

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)* Net Increase: $100,000.00
2021-X0200-FEEBASED-60-60D001-60B101-1032-11-6-154-251A-11-6-154-1032

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 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:
X	D. OTHER *(Specify type of modification and authority)* FAR 52.232-22 LIMITATION OF FUNDS (APR 1984)

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

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

The purpose of this task order modification is to provide incremental funding in the amount of $100.000.00, thereby increasing the total obligation amount from $330,000.00 to $430,000.00.

Total Obligated Amount: $430,000.00 (changed)
Total Task Order Ceiling: $1,913,447.00 (unchanged)
Period of Performance: 09/29/2020 to 09/30/2024

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)* Margo Katzper TEL: 301-415-3364 EMAIL: margo.katzper@nrc.gov	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA Margo L Katzper *(Signature of Contracting Officer)*	16C. DATE SIGNED 02/03/2021

Section B - Supplies or Services/Prices was revised as follows.

Summary of Clause Changes:

Clause titled **CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I** is incorporated as follows:

CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I

(a) The total estimated cost to the Government for full performance of this contract is $1,913,447 of which the sum of $1,793,001 represents the estimated reimbursable costs, and of which $120,446 represents the fixed-fee.

(b) There shall be no adjustment in the amount of the Contractor's fixed fee.

(c) The amount currently obligated by the Government with respect to this contract is $430,000, of which the sum of $402,000 represents the estimated reimbursable costs, and of which $28,000 represents the fixed-fee.

(d) It is estimated that the amount currently obligated will cover performance through 03/25/2021.

(e) This is an incrementally-funded contract and FAR 52.232-22 - “Limitation of Funds” applies.

(f) In accordance with FAR 52.216-8 - Fixed Fee, it is the policy of the NRC to withhold payment of fee after payment of 85 percent of the fee has been paid in order to protect the Government’s interest. The amount of fixed-fee withheld from the contractor will not exceed 15 percent of the total fee or $100,000, whichever is less. Accordingly, the maximum amount of fixed-fee that may be held in reserve is $18,067.

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)*
P00004	See Block 16C	RES-21-0215	

6. ISSUED BY CODE NRCHQ

US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

ENGINEERING MECHANICS CORPORATION OF COLUMBUS
ATTN GARY HATTERY
3518 RIVERSIDE DRIVE
SUITE 202
COLUMBUS OH 432211735

CODE 014083161 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED *(SEE ITEM 11)*

x 10A. MODIFICATION OF CONTRACT/ORDER NO. 31310020D0003
31310020F0101

10B. DATED *(SEE ITEM 13)* 08/11/2020

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)* Net Increase: $274,279.03
2021-C0200-FEEBASED-60-60D001-60B101-1032-11-6-154-252A-11-6-154-1032

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).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER *(Specify type of modification and authority)* FAR 52.232-22 LIMITATION OF FUNDS (APR 1984)

E. IMPORTANT: Contractor ☒ is not ☐ is required to sign this document and return _____ copies to the issuing office.

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

The purpose of this task order modification is to provide incremental funding in the amount of $274,279.03, thereby increasing the total obligation amount from $430,000.00 to $704,279.03.

Total Obligated Amount: $704,279.03.00 (changed)
Total Task Order Ceiling: $1,913,447.00 (unchanged)
Period of Performance: 09/29/2020 to 09/30/2024

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)*	
		Margo Katzper	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA Margo L Katzper *(Signature of Contracting Officer)*	16C. DATE SIGNED 03/09/2021

Section B - Supplies or Services/Prices was revised as follows.

Summary of Clause Changes:

Clause titled **CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I** is incorporated as follows:

CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I

(a) The total estimated cost to the Government for full performance of this contract is $1,913,447 of which the sum of $1,793,001 represents the estimated reimbursable costs, and of which $120,446 represents the fixed-fee.

(b) There shall be no adjustment in the amount of the Contractor's fixed fee.

(c) The amount currently obligated by the Government with respect to this contract is $704,279.03, of which the sum of $658,200.03 represents the estimated reimbursable costs, and of which $46,079.00 represents the fixed-fee.

(d) It is estimated that the amount currently obligated will cover performance through 09/30/2021.

(e) This is an incrementally-funded contract and FAR 52.232-22 - “Limitation of Funds” applies.

(f) In accordance with FAR 52.216-8 - Fixed Fee, it is the policy of the NRC to withhold payment of fee after payment of 85 percent of the fee has been paid in order to protect the Government’s interest. The amount of fixed-fee withheld from the contractor will not exceed 15 percent of the total fee or $100,000, whichever is less. Accordingly, the maximum amount of fixed-fee that may be held in reserve is $18,067.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE 1 OF PAGES 23

2. AMENDMENT/MODIFICATION NO. P00005

3. EFFECTIVE DATE See Block 16C

4. REQUISITION/PURCHASE REQ. NO. RES-21-0369

5. PROJECT NO. *(If applicable)*

6. ISSUED BY CODE NRCHQ

US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

ENGINEERING MECHANICS CORPORATION OF COLUMBUS
ATTN GARY HATTERY
3518 RIVERSIDE DRIVE
SUITE 202
COLUMBUS OH 432211735

CODE 014083161 FACILITY CODE

(x) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED *(SEE ITEM 11)*

x 10A. MODIFICATION OF CONTRACT/ORDER NO. 31310020D0003
31310020F0101

10B. DATED *(SEE ITEM 13)* 08/11/2020

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)* Net Increase: $130,730.35
2021-X0200-FEEBASED-60-60D001-60B107-1032-11-6-154-251A-11-6-154-1032

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: 52.243-2 CHANGES - COST-REIMBURSEMENT.-ALTERNATE I AND FAR 52.232-22 LIMITATION OF FUNDS
	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.)*

The purpose of this modification is to: (1) change the statement of work to require Task 1 Interim Technical Letter Report (TLR) updates in response to NRC staff review comments weekly and to revise the due date for Task 1 Final TLR to September 10, 2021; (2) provide incremental funding in the amount of $130,730.35, thereby increasing the total obligation amount from $704,279.03 to $835,009.38; and (3) change the Contracting Officer's Representative (COR) to Matthew Homiack and the Alternate COR to Bruce Lin. See continuation pages for specific changes to the task order

Contractor's Statement of Release
In consideration of the modification herein marked complete. The Contractor hereby releases the Government from any and all liability under this contract for further equitable
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)*
MONIQUE B. WILLIAMS

15B. CONTRACTOR/OFFEROR
(Signature of person authorized to sign)

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA
Monique B. Williams
(Signature of Contracting Officer)

16C. DATE SIGNED 08/30/2021

NAME OF OFFEROR OR CONTRACTOR
ENGINEERING MECHANICS CORPORATION OF COLUMBUS

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	adjustments attributable to such factors or circumstances giving rise to the "Revised Statement of Work". Total Obligated Amount: $835,009.38 (changed) Total Task Order Ceiling: $1,913,447.00 (unchanged) All other terms and conditions of the task order remain the same. Period of Performance: 09/29/2020 to 09/30/2024				

Section B - Supplies or Services/Prices was revised as follows.

Summary of Clause Changes:

Clause titled **CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I** is incorporated as follows:

CONSIDERATION AND OBLIGATION—COST-PLUS-FIXED-FEE ALTERNATE I

(a) The total estimated cost to the Government for full performance of this contract is $1,913,447 of which the sum of $1,793,001 represents the estimated reimbursable costs, and of which $120,446 represents the fixed-fee.

(b) There shall be no adjustment in the amount of the Contractor's fixed fee.

(c) The amount currently obligated by the Government with respect to this contract is $835,009.38, of which the sum of $780,500.38 represents the estimated reimbursable costs, and of which $54,509.00 represents the fixed-fee.

(d) It is estimated that the amount currently obligated will cover performance through 01/31/2022.

(e) This is an incrementally-funded contract and FAR 52.232-22 - “Limitation of Funds” applies.

(f) In accordance with FAR 52.216-8 - Fixed Fee, it is the policy of the NRC to withhold payment of fee after payment of 85 percent of the fee has been paid in order to protect the Government’s interest. The amount of fixed-fee withheld from the contractor will not exceed 15 percent of the total fee or $100,000, whichever is less. Accordingly, the maximum amount of fixed-fee that may be held in reserve is $18,067.

Section C - Description/Specifications was revised as follows.

Summary of Clause Changes:

Clause titled **STATEMENT OF WORK** is incorporated as follows:

STATEMENT OF WORK

1. EWC TASK ORDER TITLE

Technical Support for Component Integrity Assessments

2. BACKGROUND

The NRC’s Office of Nuclear Regulatory Research (RES) provides data, standards, tools, and methods to the NRC’s regulatory offices to support their reviews of material performance-related licensing submittals and safety issues. The confirmatory research on materials performance focuses on both the development of methodologies needed to support regulatory actions and the work supporting the technical bases for codes and standards development. A common theme in this work is a proactive approach to the management of age-related

degradation due to mechanisms such as fatigue and stress-corrosion cracking. For example, to better understand how nuclear power plant components are influenced by the phenomenon of primary water stress-corrosion cracking (PWSCC), the NRC is focusing research efforts on continued development of analysis methods and computational tools. The NRC also is assessing the impacts of PWSCC on the leak-before-break behavior of nuclear power plant piping systems.

Criterion 4, "Environmental and Dynamic Effects Design Bases," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the Code of Federal Regulations (10 CFR), Part 50, "Domestic Licensing of Production and Utilization Facilities," states, in part, that the dynamic effects associated with postulated reactor coolant system pipe ruptures may be excluded from the design basis when analyses that the NRC has reviewed and approved demonstrate that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping. Licensees typically have demonstrated compliance with this probabilistic criterion through deterministic and highly conservative leak-before-break analyses.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 3.6.3 [1] provides guidance for the NRC staff's review of licensee analyses submitted in accordance with 10 CFR Part 50, Appendix A, Criterion 4. NUREG-0800 Section 3.6.3 precludes the assessment of piping systems with active degradation mechanisms. However, it is known that PWSCC is occurring in systems that have been granted prior NRC approval under 10 CFR Part 50, Appendix A, Criterion 4 to exclude dynamic effects associated with postulated reactor coolant system pipe ruptures from the design basis. Given advances in probabilistic methodologies, the NRC staff and industry concluded that it was more appropriate to perform probabilistic analyses of postulated reactor coolant system pipe ruptures to fully address and quantify uncertainties and directly demonstrate compliance with the probabilistic requirements of 10 CFR Part 50, Appendix A, Criterion 4.

To develop the capability to perform the necessary probabilistic analyses, RES worked in collaboration with the Electric Power Research Institute to develop a new computer code called “Extremely Low Probability of Rupture” (xLPR). xLPR is a state-of-the-art probabilistic fracture mechanics code for piping applications. Code development was a multi-year effort that built on the results of a successful pilot study. The code was designed, built, and tested under a rigorous software quality assurance program and provides regulators, industry, researchers, and the public with new quantitative capabilities to analyze the risks associated with nuclear power plant piping systems subject to degradation mechanisms. Core capabilities of the code include modeling fatigue, stress-corrosion cracking, inservice inspection, chemical and mechanical mitigation, leak rates, and seismic effects.

As the initial regulatory application of xLPR Version 2.0 (V2.0), RES has used the code to study the impacts of PWSCC in systems that have been granted prior NRC leak-before-break approval under 10 CFR Part 50, Appendix A, Criterion 4. These activities included sensitivity studies to identify which models, sub-models, and types of input variables contribute most significantly to uncertainty in the results from the code. RES also used xLPR V2.0 to re-evaluate previous leak-before-break analyses for a subset of the current fleet of plants. The re-evaluations considered

the impacts of PWSCC, fatigue, inservice inspection, and mitigation to determine the trend in rupture frequencies and other metrics. With the completion of these activities, RES needs to complete re-evaluations of previous of leak-before-break analyses for the remaining plants in the fleet. In addition, RES needs to consider the results and assess current leak-before-break regulations and guidance and, if applicable, make recommendations for enhancement.

Beyond leak-before-break studies, the xLPR code supports broader NRC efforts to further the use of probabilistic fracture mechanics analyses using state-of-the-art computational tools. To this end, RES has begun publicly distributing the xLPR code with the goal of establishing a user group. Public availability of xLPR V2.1 was announced in [2] and details about the code have been presented in various NRC public meetings [3] and [4]. Public distribution and user group participation benefits the NRC in several respects. For example, the broader user base: (a) exercises the code more thoroughly than would be possible if use were limited to only NRC applications, (b) increases confidence in the code's capability to accurately model individual phenomena and system behavior over the required range of conditions, (c) reduces the level of effort required by RES to ensure the validity of the code's results, and (d) leverages expertise of the users as they identify code deficiencies and errors and propose fixes. Public distribution is further expected to increase use of the xLPR code to support licensing actions and codes and standards development, and RES needs to maintain the necessary capabilities to support the related regulatory reviews. In concert with these activities, support for continued maintenance and development of the xLPR code is necessary to ensure its long-term usability.

List of References:

[1] NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 3.6.3, "Leak-Before-Break Evaluation Procedures," Revision 1, March 2007, NRC Agency wide Documents Access and Management System (ADAMS) Accession No. ML063600396

[2] Extremely Low Probability of Rupture (xLPR) Probabilistic Fracture Mechanics Code Version 2.1 Public Release Announcement, NRC ADAMS Accession No. ML20157A120

[3] Summary of the April 23, 2020, RES Category 3 Public Meeting with EPRI and Stakeholders to Discuss Public Release of the xLPR Probabilistic Fracture Mechanics Code, NRC ADAMS Accession No. ML20142A303

[4] Summary of the June 3, 2020, RES Category 3 Public Meeting with EPRI and Stakeholders to Discuss Models in the xLPR Probabilistic Fracture Mechanics Code, NRC ADAMS Accession No. ML20182A086

3. OBJECTIVE(S)

The objective of this task order is to obtain expert technical assistance services from the Contractor to support component integrity assessments. Support is needed in areas such as the application, maintenance, and development of computational tools and methodologies for

performing component integrity assessments. Support is also needed to analyze emerging issues and evaluate and develop codes and standards and other aspects of NRC's regulatory framework related to component integrity.

This requirement falls under Technical Support Service Area (TSSA) 3.4, entitled "Component Integrity and Materials Performance."

4. STATEMENT OF WORK TASKS

Task 1: Generalization Study

The Contractor shall use the xLPR code to study the impacts of PWSCC for the entire fleet of U.S. pressurized-water reactors (PWRs) to determine whether any changes are needed to current regulatory requirements and guidance related to leak-before-break. The use of other computational tools may be needed to develop inputs for or otherwise support the analyses performed using the xLPR code. Specific activities include, but are not limited to, the following:

A. The Contractor shall review and categorize all PWR piping systems previously approved for leak-before break. The goal of this review and categorization is to reduce, to the extent practical, the number of analyses that will need to be performed.

B. The Contractor shall define the specific analyses necessary to bound each category of piping system. Factors present in the PWR fleet, such as PWSCC mitigation techniques and inservice inspection, shall be considered. Definition of the analyses may be an iterative process, and the results from prior studies should be used to inform this effort.

C. The Contractor shall determine and develop the inputs necessary to perform each of the analyses. Sources for inputs could include the open literature, xLPR-related documentation, prior studies and analyses, and docketed correspondence available from both internal and external NRC ADAMS. The Contractor may also need to perform finite element analyses to develop weld residual stress profile inputs. The Contractor shall promptly communicate any input gaps that it cannot fill to the COR.

D. The Contractor shall execute the analyses using the xLPR code. The Contractor shall compare the results of these analyses against acceptance criteria identified by the COR.

E. Based on the results of the analyses, the Contractor shall prepare an assessment of current regulatory requirements and guidance related to leak-before-break. Recommendations for enhancing these regulations and guidance shall be provided as appropriate.

<u>Task 1 Completion Date</u>: The task shall be completed by **September 10, 2021**.

<u>Task 1 Anticipated Travel</u>: One trip for up to 3 Contactor personnel of up to 3 days duration to NRC Headquarters from the Contractor's office(s). (Total of 1 Trip)

Task 1 Deliverables: The Contractor shall prepare an Analysis Plan for completion of this task. The Analysis Plan shall, at minimum, include the categories of piping systems, analyses that will be performed to bound each category, completion schedule and status of each analysis, and any potential input gaps. The Contractor shall submit the Initial Analysis Plan to the COR no later than 30 days after award of the task order. Thereafter, the Contractor shall maintain and update the Analysis Plan as needed until the task is complete. The Analysis Plan Updates shall be provided to the COR biweekly until the analyses are complete and incorporate any comments provided by the COR.

The Contractor shall submit information (e.g., code input and output files) from the analyses executed per the Analysis Plan (as updated) as they are completed.

In addition, the Contractor shall prepare a Technical Letter Report (TLR) covering all work performed under this task. The Contractor shall prepare the TLR in parallel with performing the analyses executed per the Analysis Plan (as updated). In-progress drafts of the TLR shall be submitted to the COR monthly. The in-progress TLR drafts shall incorporate any comments provided by the COR on the previous submission. The Contractor shall complete the TLR after executing all the analyses in the Analysis Plan (as updated). The Contractor's completed TLR shall be submitted by March 01, 2021.

Thereafter, the Contractor shall support the NRC staff's review of the TLR. The review will be completed in several stages and may take up 5 months to complete. The COR will communicate comments generated as a result of this review process to the Contractor. The Contractor shall address all comments and prepare interim updates to the TLR as necessary. Some comments may require the Contractor to perform additional analyses to address. Interim updates to the TLR shall be provided to the COR **weekly** during the review process through **September 10, 2021.** The Contractor shall finalize and submit the TLR in a form ready for NRC publication by **September 10, 2021.**

Task 2: xLPR Code Maintenance, Development, and Technical Support

Task 2a – xLPR Code Maintenance and Development

As directed by the COR, the Contractor shall provide technical assistance to support xLPR code maintenance and development needs. Maintenance activities include, but are not limited to: developing modifications to code-related products, such as the source and executable code, user manual, data libraries, configuration control documents, and other reference files and documents, to correct identified problems, improve performance or maintainability, keep the products usable in a changed or changing environment, and detect and correct latent faults. Maintenance activities also include, but are not limited to: (a) configuration management, (b) documenting, tracking, and processing maintenance requests, (d) performing testing necessary to ensure proper functionality of the code following maintenance-related changes, and (e) electronic storage of files. Development activities include modifications that significantly expand the functional capabilities of the xLPR code.

All maintenance and development activities shall be performed in accordance with the xLPR Software Maintenance Plan, as may be revised from time-to-time, and any implementing procedures as directed by the COR. In addition, all Contractor personnel involved in maintaining or developing the xLPR code shall receive training as specified in the xLPR Software Maintenance Plan and participate in any other supplemental training as directed by the COR. The Contractor shall coordinate its maintenance and development activities with other code maintainers as directed by the COR. It also may be necessary or advantageous for the Contractor to prepare, deliver, and maintain electronic systems to support the effective and efficient performance of the maintenance and development activities. Such systems shall be implemented as approved by the COR.

Task 2b – xLPR Code Technical Support

Under this task, the Contractor shall provide a broad range of technical assistance support related to the xLPR code and its various applications. It includes support for the NRC staff, general analysis and technical support, and support to build the community of public xLPR code users.

Upon request, the Contractor shall assist users from the NRC staff with proper use of the code. Support may include, but is not limited to, areas such as:

- assisting with code installation
- preparing, optimizing, and troubleshooting issues with inputs
- investigating, interpreting, and resolving code errors and warnings
- extracting, aggregating, and interpreting results
- responding to questions about operation of the code and the models contained therein

The Contractor shall respond to all NRC staff user support requests within 2 business days. Support shall be provided via phone, email, or both as appropriate to facilitate the most expeditious resolution. When the total time required to respond to a request is anticipated to or exceeds 3 hours, the Contractor shall notify the COR. Thereafter, any further technical assistance related to the request shall be limited to the time authorized by the COR.

In addition, as directed by the COR, the contractor shall provide general analysis and technical support, including but not limited to:

- developing inputs
- performing analyses using the code and analyzing and interpreting the results
- conducting sensitivity studies and other statistical analyses
- investigating and implementing custom changes to the code to accommodate analysis needs
- assisting with resolution of technical review comments on documents
- developing and delivering training
- providing support for resolution of emergent issues

The Contractor shall also assist with activities to support and build the community of public users of the code. This will primarily include support for holding up to 3 meetings or workshops per year. These events will generally serve as a venue for sharing information about the code

and to provide a means for code users to interface with each other. Contractor support could include, but is not limited to, preparing and delivering guidance and training, conducting studies pertaining to the code and presenting the results, and other engagement activities, The events may be held either in-person or virtually; however, only one event per year may be held in-person.

Task 2 Completion Date: Expiration date of the Task Order.

Task 2 Anticipated Travel: One trip per year for up to 2 Contactor personnel of up to 3 days duration to locations at distances similar to NRC Headquarters from the Contractor's office(s) (Total of 4 Trips)

Task 2 Deliverables: Task 2a deliverables are as required by the xLPR Software Maintenance Plan depending on the scope of the particular maintenance activities assigned by the COR.

Task 2b deliverables are the draft materials presented at the user group meetings, which shall be submitted no later than 15 days before the meeting is scheduled to be held. The Contractor shall incorporate any comments on the draft presentation materials from the COR. The contractor shall provide the final presentation materials no later than 5 days before the meeting is scheduled to be held.

Task 3: Codes and Standards Technical Support

This task requires the contractor to participate in American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code committees within Section XI, Section III, and other appropriate code groups, as instructed by the COR. Some of the issues of importance presented at the committee meetings pertain to aging effects and component integrity issues. In addition, it is anticipated that new developments and results obtained using the xLPR code (e.g., new code cases) will be introduced to the ASME B&PV committees. Technical support is needed so that the NRC staff may adequately understand the technical and regulatory issues associated with related code actions so that it may vote appropriately. Accordingly, the Contractor shall prepare for, attend, and prepare a summary of the topics, discussions, and any presentations given at the regular ASME B&PV code meetings. As directed by the COR, the Contractor shall also provide support outside of the regular code meetings. This may include assisting the NRC staff with preparing its own code actions or with reviewing code cases or other proposed code actions.

Task 3 Completion Date: Expiration date of the Task Order.

Task 3 Anticipated Travel: Four trips per year for up to 2 Contactor personnel of up to 3 days duration to locations at distances similar to NRC Headquarters from the Contractor's office(s) (Total of 4 Trips)

Task 3 Deliverables: For any Contractor presentations given at the ASME B&PV Code meetings, the draft presentation materials shall be submitted no later than 2 weeks before each

meeting. The final presentation materials incorporating any comments from the COR shall be submitted no later than 1 week before each meeting. The Contractor shall prepare and submit a letter report summarizing the meeting minutes and the presentations made at the ASME meetings no later than 2 weeks after each meeting.

Task 4: Ad-Hoc Technical Support
The Contractor shall provide ad-hoc technical assistance to the NRC as directed by the COR. This technical assistance may include, but is not limited to, the following topics:

I. Benchmarking studies.
II. Providing training to NRC staff on component integrity topics.
III. Support for emerging needs on component integrity issues.
IV. Severe accident considerations on piping issues. Severe accidents, such as seismic damage or high temperature faulted conditions may occur that require help from the contractor to investigate.
V. Confirmatory analyses on an as-needed basis.
VI. Emergency needs for rapid assistance on piping related technical issues as they arise.
VII. Testing to enhance computational tool models and databases. This may include:
a. material testing, such as fracture testing, cyclic testing for mixed hardening WRS fields, creep test update for post-weld heat treatment improvements
b. leakage rate testing

Task 4 Completion Date: Expiration date of the Task Order.

Task 4 Anticipated Travel: None.

Task 4 Deliverables: For each technical assistance request from the COR, the contractor shall prepare and submit a Draft TLR covering all work performed no later than 30 days of completion of the work. Each Draft TLR shall summarize the efforts completed, propose conclusions, and identify recommendations for any issues identified. If the contractor performs material testing, the Draft TLR shall also include thorough descriptions of any material testing performed under this task, including test procedures and matrices, and all test results. The contractor shall also provide any test results in their raw data form and in Excel. The contractor shall prepare a Final TLR incorporating any comments on the Draft TLR from the COR. The contractor shall provide the Final TLR no later than 30 days after the receipt of comments from the COR.

5. APPLICABLE DOCUMENTS AND STANDARDS

The following documents and standards are applicable to the Task Order:
- ASME BPV Code, Sections III and XI
- xLPR Software Maintenance Plan

6. DELIVERABLES/MILESTONE SCHEDULE AND REPORTING REQUIREMENTS

The contractor shall provide the deliverables stated in the table below in electronic format unless

otherwise directed by the COR. The electronic format shall be provided using a Microsoft-based product, (e.g., Outlook, Word, Excel, PowerPoint) unless the COR and the contractor specifically agree on another format. All deliverables, with the exception of the Monthly Letter Status Report (MLSR) shall be in the format of draft version, revision version with redline/strikeout with a change-control appendix, and a revised version which shall become the final version. The contractor shall maintain appropriate version control in an electronic format. The contractor shall explicitly state in its submittal(s) that the product provided is the deliverable for Task/Subtask XX, as further described below.

The Contractor shall submit the following deliverables to the Task Order COR. Unless otherwise directed by the COR or the Contracting Officer (CO), the Contractor must provide all deliverables except the MLSR as draft products. The COR will review all draft deliverables (and coordinate any internal NRC staff review, if needed) and provide comments back to the contractor. The Contractor shall revise the draft deliverable based on the comments provided by the COR and then deliver a revised version of the deliverable, which will then be considered the Final Version. When mutually-agreed upon between the Contractor and the COR, the Contractor may submit preliminary or partial drafts to help gauge the Contractor's understanding of the particular work requirement. More than one round of drafts may be needed if the Contractor does not successfully incorporate the COR's comments on the previous draft.

The Contractor shall develop, maintain, and control data, files, information, and deliverables pursuant to this Task Order.

DELIVERABLE/MILESTONE SCHEDULE

Task No.	Description	Due Date
1	Initial Analysis Plan	30 days after award of the task order
1	Analysis Plan Updates	Biweekly until the Contractor completes all the analyses
1	Analysis information (e.g., code input and output files)	Submitted as the analyses are completed
1	In-progress TLR drafts	Submitted monthly
1	Completed TLR	March 01, 2021
1	Interim TLR updates in response to NRC staff review comments	Submitted weekly during the review process through September 10, 2021
1	Final TLR	September 10, 2021
2a	Deliverables are as required by the xLPR Software Maintenance Plan depending on the scope of the particular maintenance activities assigned by the COR.	As directed by the COR
2b	Draft xLPR User Group presentation materials	No later than 15 days before the meeting is scheduled to be held
2b	Final xLPR User Group presentation	No later than 5 days before the meeting

	materials incorporating any comments from the COR	is scheduled to be held
3	Draft ASME B&PV Code meeting presentation materials	No later than 2 weeks before each meeting
3	Final ASME B&PV Code meeting presentation materials incorporating any comments from the COR	No later than 1 week before each meeting
3	Letter report summarizing the topics, discussions, and any presentations given at the ASME B&PV code meetings	No later than 2 weeks after each of the meetings
4	Draft TLR covering all work performed in response to each technical assistance request from the COR. Each draft TLR shall summarize the efforts completed, propose conclusions, and identify recommendations for any issues identified.	Duration for support in response to each technical assistance request is to be agreed-upon with the COR. Draft TLRs are due no later than 30 days after of completion of the work.
4	Final TLR incorporating any comments from the COR.	30 days after contractor receipt of COR comments. If applicable, revisions are due 30 days after COR request for a revision.
All	MLSRs of the IDIQ contract. The MLSRs shall include detailed summary of the work effort carried out and the labor hours expended on each labor category for the tasks.	20th calendar day of the following month

The contractor shall submit the raw and processed data and worksheet and/or input files used in analyses with the Draft TLRs, upon request by the COR and with the Final TLRs, in a tabulated Excel format or other format as directed by the COR.

7. REQUIRED LABOR CATEGORIES

Labor Category	Minimum Qualification Requirement

Project Manager (PM)	1)B.S. in Engineering, Science, or similar technical field, And, 2)Minimum 10 years of regulatory research project management and oversight experience Education and Skillsets that are not Required, but Desired for this Task Order Requirement: ·M.S. in Engineering, Science, or similar technical field, or equivalent research and/or academic experience ·Demonstrated experience in working with/ managing with NRC regulatory research projects ·Demonstrated experience in materials science research ·Demonstrated experience managing computer code maintenance and development activities ·Knowledge of piping fracture issues in light- water reactor nuclear powerplants ·Knowledge of NRC regulations and guidance as they pertain to leak-before-break ·Knowledge of nuclear power plant component integrity issues, such as corrosion, fatigue, stress-corrosion cracking, thermal and mechanical loadings and resulting stresses ·Knowledge of American Society of Mechanical Engineers (ASME) codes and standards pertinent to nuclear powerplant design and inservice inspection

Subject Matter Expert (SME)	1.Ph.D. in Engineering, Science, or similar technical field, And, 2.Minimum combined 20 years' experience covering all the following key technical areas: ·Expertise in probabilistic fracture mechanics computer code maintenance, development, and applications ·Expertise in the use of finite element methods with specialized knowledge of user defined subroutines using the ABAQUS computer code (https://www.3ds.com/products-services/simulia/products/abaqus/) ·Detailed knowledge of probabilistic risk assessment methods ·Expertise performing sensitivity analyses, sensitivity studies, stability analyses, uncertainty analyses, and other statistical analyses ·Detailed knowledge of piping fracture issues in light-water reactor nuclear power plants ·Detailed knowledge of NRC regulations and guidance as they pertain to leak-before-break ·Detailed knowledge of nuclear power plant component integrity issues, such as corrosion, fatigue, stress-corrosion cracking, thermal and mechanical loadings and resulting stresses Detailed knowledge of ASME codes and standards pertinent to nuclear power plant design and inservice inspection

Senior Technical Reviewer/ Researcher	1.Ph.D. in Engineering, Science or similar technical field, And, 2.Minimum combined 10 years' experience covering all the following key technical areas: ·Expertise in probabilistic fracture mechanics computer code maintenance, development, and applications ·Expertise in the use of the GoldSim (http://www/goldsim.com)Monte Carlo simulation software ·Expertise in the development and use of the Extremely Low Probability of Rupture (xLPR) probabilistic fracture mechanics code, Version 2.0 or later (https://www.nrc.gov/about-nrc/regulatory/research/safetycodes.html) ·Expertise performing sensitivity analyses, sensitivity studies, stability analyses, uncertainty analyses, and other statistical analyses ·Detailed knowledge of piping fracture issues in light-water reactor nuclear powerplants ·Detailed knowledge of NRC regulations and guidance as they pertain to leak- before-break ·Detailed knowledge of nuclear power plant component integrity issues, such as corrosion, fatigue, stress-corrosion cracking, thermal and mechanical loadings and resulting stresses ·Detailed knowledge of ASME codes and standards pertinent to nuclear power plant design and inservice inspection

Technical Reviewer	1.M.S. in Engineering, Science or similar technical field, And, 2.Minimum combine 10 years' experience covering all of the following key technical areas: ·Expertise in probabilistic fracture mechanics computer code maintenance, development, and applications ·Expertise in the use of finite element methods with specialized knowledge of user defined subroutines using the ABAQUS computer code (https://www.3ds.com/products-services/simulia/products/abaqus/) ·Expertise in the use of the GoldSim (http://www/goldsim.com)Monte Carlo simulationsoftware ·Expertise in the development and use of the Extremely Low Probability of Rupture (xLPR) probabilistic fracture mechanics code,Version 2.0 or later (https://www.nrc.gov/about-nrc/regulatory/research/safetycodes.html) ·Knowledge of piping fracture issues in light- water reactor nuclear power plants ·Knowledge of NRC regulations and guidance as they pertain to leak-before-break ·Knowledge of nuclear power plant component integrity issues, such as corrosion, fatigue, stress-corrosion cracking, thermal and mechanical loadings and resulting stresses Knowledge of ASME codes and standards pertinent to nuclear power plant design and inservice inspection

8. GOVERNMENT-FURNISHED PROPERTY

The NRC shall furnish to the following property for the performance of this task order:

· Access to all results from previous NRC task orders, as needed for this project per the COR's determination, including all past data, analyses, and reports.
· Access to NRC's internal ADAMS shall be provided to the Contractor's personnel for the search and retrieval of proprietary information.
· Access to EPRI technical reports and data obtained through applicable NRC-EPRI Memoranda of Understanding, as needed for this project per the COR's determination.
· Access to xLPR source and executable code, user manual, data libraries, configuration control documents, and other reference files and documents pertinent to development and maintenance of the xLPR code, as needed for this project per the COR's determination.

9. PERIOD OF PERFORMANCE

Refer to Section F.2 TASK/DELIVERY ORDER PERIOD OF PERFORMANCE

10. PLACE OF PERFORMANCE

The work to be performed under this task order shall be performed at the Contractor's facility except for the travel described in Section 11.1 of this statement of work.

11. SPECIAL CONSIDERATIONS

11.1 TRAVEL/MEETINGS

The following travel* may occur under this Task Order:

*Attendance at meeting may be in person or virtually, as approved by the COR.

Travel Description	Task(s)	Location	Date	Days	Attendees
Months 1 -12					
Program Review at NRC	Various	Rockville, MD	TBD	2	Up to 3
Task Planning or Results Presentation	1	Rockville, MD	TBD	3	Up to 3
xLPR Code Maintenance, Development and Support	2	TBD	TBD	3	Up to 2
ASME B&PV Code Meeting	3	TBD	11/2020	3	Up to 2
ASME B&PV Code Meeting	3	TBD	02/2021	3	Up to 2
ASME B&PV Code Meeting	3	TBD	05/2021	3	Up to 2
ASME B&PV Code Meeting	3	TBD	08/2021	3	Up to 2
Months 13-24					
Program Review at NRC	Various	Rockville, MD	TBD	2	Up to 3
xLPR Code Maintenance,	2	TBD	TBD	3	Up to 2

Development and Support					
ASME B&PV Code Meeting	3	TBD	11/2021	3	Up to 2
ASME B&PV Code Meeting	3	TBD	02/2022	3	Up to 2
ASME B&PV Code Meeting	3	TBD	05/2022	3	Up to 2
ASME B&PV Code Meeting	3	TBD	08/2022	3	Up to 2
Months 25-36					
Program Review at NRC	Various	Rockville, MD	TBD	2	Up to 3
xLPR Code Maintenance, Development and Support	2	TBD	TBD	3	Up to 2
ASME B&PV Code Meeting	3	TBD	11/2022	3	Up to 2
ASME B&PV Code Meeting	3	TBD	02/2023	3	Up to 2
ASME B&PV Code Meeting	3	TBD	05/2023	3	Up to 2
ASME B&PV Code Meeting	3	TBD	08/2023	3	Up to 2
Months 37-48					
Program Review at NRC	Various	Rockville, MD	TBD	2	Up to 3
xLPR Code Maintenance, Development and Support	2	TBD	TBD	3	Up to 2
ASME B&PV Code Meeting	3	TBD	11/2023	3	Up to 2
ASME B&PV Code Meeting	3	TBD	02/2024	3	Up to 2
ASME B&PV Code Meeting	3	TBD	05/2024	3	Up to 2
ASME B&PV Code	3	TBD	08/2024	3	Up to 2

Meeting					

Travel Notes-

a. All Contractor travel requires prior written approval from the COR.
b. The number of trips, number of contractor personnel, duration, location, may be modified based on meeting circumstances and COR's need for contractor support. Contractor shall implement travel cost-sharing measures (e.g., sharing rental car) if possible.
c. At the discretion of the COR, meetings may be conducted via telephone, video conference, or at the Contractor's office(s).
d. All travel conducted pursuant to this task order is billable at Federal per diem rates, in accordance with Federal Travel Regulations.

11.2 SECURITY

The work will be UNCLASSIFIED; but requires an IT Security Level II Access.

Work on this task order may involve the handling of documents that contain proprietary information. The contractor shall safeguard documents containing proprietary information against unauthorized disclosure. After completion of work, the contractor shall either destroy the documents or return them to the NRC. If they are destroyed, please confirm this in an e-mail to the COR with a copy to the CO and include the date and manner in which the documents were destroyed.

11.3 KEY PERSONNEL

Refer to Section H.5 KEY PERSONNEL for Name and Labor Category/ Position of Key Personnel.

Contractor personnel performing this work shall have experience and/or education -- at a minimum a bachelor's degree in engineering/science or equivalent experience and at least 20 years of related experience (combined of all staff) in one or more of the following key technical areas:

· Expertise in probabilistic fracture mechanics computer code maintenance and development
· Expertise in finite element method with specialized knowledge of user defined subroutines using ABAQUS computer code (https://www.3ds.com/products-services/simulia/products/abaqus/)
· Expertise in the use of GoldSim (http://www/goldsim.com) probabilistic risk assessment suite of software
· Expertise in the use of the xLPR probabilistic fracture mechanics code, Version 2.0 or later (https://www.nrc.gov/about-nrc/regulatory/research/safetycodes.html)
· Detailed knowledge of probabilistic risk assessment
· Detailed knowledge of uncertainty characterization methodologies
· Detailed knowledge of primary system piping fracture issues in light-water reactor nuclear

power plants
· Detailed knowledge of NRC regulations and guidance as they pertain to leak-before-break in primary system piping in PWRs
· Detailed knowledge of corrosion, PWSCC, thermal and mechanical loadings and resulting stresses
· Detailed knowledge of ASME codes and standards pertinent to nuclear power plant design and inservice inspection

11.4 KEY EQUIPEMENT, CERTIFICATIONS, and ANALYSIS TOOLS

The following analysis tools shall be required to perform the research described in this statement of work:

· Finite element analysis capabilities with specialized user-defined subroutines using the ABAQUS commercial off-the-shelf software.
· Commercial off-the-shelf software required in order to run the xLPR code, including, but not limited to, Microsoft Windows, Microsoft Excel, and GoldSim. Specific versions to be identified by the COR.

11.5 SPEECHES, PRESENTATIONS, PAPERS, AND JOURNAL ARTICLES

The Contractor's investigator(s) may publish the results of this work in the open literature or may present papers at public or association meetings at interim stages of the work if the article or paper has been reviewed by the COR in draft form and agreement has been reached on the content. Submit the work in final form to the COR, accompanied by NRC Form 390A, "Release to Publish Unclassified NRC Contractor Speeches, Presentations, Papers, and Journal Articles."

If agreement on the content has not been reached, NRC may also require that the paper include, in addition to the standard statement "Work Supported by the U.S. Nuclear Regulatory Commission," any caveats necessary to cover NRC objections. If NRC objections cannot be covered in this manner, NRC can refuse to authorize publication in the open literature and/or presentation of papers.

The Contractor shall place the following disclaimer on all published papers and articles:

This report was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product, or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights. The views expressed in this paper are not necessarily those of the U.S. Nuclear Regulatory Commission.

For additional information, see NRC Management Directive 3.9, "NRC Staff and Contractor Speeches, Presentations, Papers, and Journal Articles on Regulatory and Technical Subjects."

Section H - Special Contract Requirements was revised as follows.

Summary of Clause Changes:

Clause 2052.215-71 is incorporated as follows:

2052.215-71 CONTRACTING OFFICER REPRESENTATIVE AUTHORITY. (OCT 1999)

(a) The contracting officer's authorized representative (hereinafter referred to as the COR) for this contract is:

Name: Matthew Homiack
Address: U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington, DC 20555

Phone: 301-415-2427
E-mail: Matthew.Homiack@nrc.gov

Alternate COR:

Name: Bruce Lin
Address: U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington, DC 20555

Phone: 301-415-2446
E-mail: Bruce.Lin@nrc.gov

(b) Performance of the work under this contract is subject to the technical direction of the NRC COR. The term "technical direction" is defined to include the following:

(1) Technical direction to the contractor which shifts work emphasis between areas of work or tasks, authorizes travel which was unanticipated in the Schedule (i.e., travel not contemplated in the Statement of Work (SOW) or changes to specific travel identified in the SOW), fills in details, or otherwise serves to accomplish the contractual SOW.

(2) Provide advice and guidance to the contractor in the preparation of drawings, specifications, or technical portions of the work description.

(3) Review and, where required by the contract, approval of technical reports, drawings, specifications, and technical information to be delivered by the contractor to the Government under the contract.

(c) Technical direction must be within the general statement of work stated in the contract. The COR does not have the authority to and may not issue any technical direction which:

(1) Constitutes an assignment of work outside the general scope of the contract.

(2) Constitutes a change as defined in the "Changes" clause of this contract.

(3) In any way causes an increase or decrease in the total estimated contract cost, the fixed fee, if any, or the time required for contract performance.

(4) Changes any of the expressed terms, conditions, or specifications of the contract.

(5) Terminates the contract, settles any claim or dispute arising under the contract, or issues any unilateral directive whatever.

(d) All technical directions must be issued in writing by the COR or must be confirmed by the COR in writing within ten (10) working days after verbal issuance. A copy of the written direction must be furnished to the contracting officer. A copy of NRC Form 445, Request for Approval of Official Foreign Travel, which has received final approval from the NRC must be furnished to the contracting officer.

(e) The contractor shall proceed promptly with the performance of technical directions duly issued by the COR in the manner prescribed by this clause and within the COR's authority under the provisions of this clause.

(f) If, in the opinion of the contractor, any instruction or direction issued by the COR is within one of the categories as defined in paragraph (c) of this section, the contractor may not proceed but shall notify the contracting officer in writing within five (5) working days after the receipt of any instruction or direction and shall request the contracting officer to modify the contract accordingly. Upon receiving the notification from the contractor, the contracting officer shall issue an appropriate contract modification or advise the contractor in writing that, in the contracting officer's opinion, the technical direction is within the scope of this article and does not constitute a change under the "Changes" clause.

(g) Any unauthorized commitment or direction issued by the COR may result in an unnecessary delay in the contractor's performance and may even result in the contractor expending funds for unallowable costs under the contract.

(h) A failure of the parties to agree upon the nature of the instruction or direction or upon the contract action to be taken with respect thereto is subject to 52.233-1 - Disputes.

(i) In addition to providing technical direction as defined in paragraph (b) of the section, the COR shall:

(1) Monitor the contractor's technical progress, including surveillance and assessment of performance, and recommend to the contracting officer changes in requirements.

(2) Assist the contractor in the resolution of technical problems encountered during performance.

(3) Review all costs requested for reimbursement by the contractor and submit to the contracting officer recommendations for approval, disapproval, or suspension of payment for supplies and services required under this contract.

(4) Assist the contractor in obtaining the badges for the contractor personnel.

(5) Immediately notify the Security Branch, Division of Facilities and Security (SB/DFS) (via e-mail) when a contractor employee no longer requires access authorization and return of any NRC issued badge to SB/DFS within three days after their termination.

(6) Ensure that all contractor employees that require access to classified Restricted Data or National Security Information or matter, access to sensitive unclassified information (Safeguards, Official Use Only, and Proprietary information) access to sensitive IT systems or data, unescorted access to NRC controlled buildings/space, or unescorted access to protected and vital areas of nuclear power plants receive approval of SB/DFS prior to access in accordance with Management Directive and Handbook 12.3.

(7) For contracts for the design, development, maintenance or operation of Privacy Act Systems of Records, obtain from the contractor as part of closeout procedures, written certification that the contractor has returned to NRC, transferred to the successor contractor, or destroyed at the end of the contract in accordance with instructions provided by the NRC Systems Manager for Privacy Act Systems of Records, all records (electronic or paper) which were created, compiled, obtained or maintained under the contract.

(End of Clause)

ORDER FOR SUPPLIES OR SERVICES

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER: 07/21/2021

2. CONTRACT NO. *(If any)*: 31310020D0003

3. ORDER NO.: 31310021F0071

4. REQUISITION/REFERENCE NO.: RES-21-0268

5. ISSUING OFFICE *(Address correspondence to)*:
US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

6. SHIP TO:
a. NAME OF CONSIGNEE: NUCLEAR REGULATORY COMMISSION
b. STREET ADDRESS: NUCLEAR REGULATORY COMMISSION
c. CITY: WASHINGTON
d. STATE: DC
e. ZIP CODE: 20555-0001

7. TO: GARY HATTERY
a. NAME OF CONTRACTOR: ENGINEERING MECHANICS CORPORATION OF COLUMBUS
b. COMPANY NAME:
c. STREET ADDRESS: 3518 RIVERSIDE DRIVE
SUITE 202
d. CITY: COLUMBUS
e. STATE: OH
f. ZIP CODE: 432211735

f. SHIP VIA:

8. TYPE OF ORDER
[ ] a. PURCHASE
REFERENCE YOUR:
Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.
[X] b. DELIVERY
Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.

9. ACCOUNTING AND APPROPRIATION DATA: See Schedule

10. REQUISITIONING OFFICE: OFF OF NUCLEAR REG RESEARCH

11. BUSINESS CLASSIFICATION *(Check appropriate box(es))*
[X] a. SMALL [ ] b. OTHER THAN SMALL [ ] c. DISADVANTAGED [ ] d. WOMEN-OWNED [ ] e. HUBZone
[ ] f. SERVICE-DISABLED VETERAN-OWNED [ ] g. WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOSB PROGRAM [ ] h. EDWOSB

12. F.O.B. POINT:

13. PLACE OF
a. INSPECTION: Destination
b. ACCEPTANCE: Destination

14. GOVERNMENT B/L NO.:

15. DELIVER TO F.O.B. POINT ON OR BEFORE *(Date)*:

16. DISCOUNT TERMS: 30

17. SCHEDULE ***(See reverse for Rejections)***

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	TECHNICAL SUPPORT FOR COMPONENT INTEGRITY ASSESSMENTS Accounting Info: 2021-X0200-FEEBASED-60-60D001-60B101-1032-17-6-161-252A-17-6-161-1032 Period of Performance: 07/21/2021 to Continued ...					

18. SHIPPING POINT:

19. GROSS SHIPPING WEIGHT:

20. INVOICE NO.:

17(h) TOTAL *(Cont. pages)*: $0.00

21. MAIL INVOICE TO:
a. NAME: FISCAL ACCOUNTING PROGRAM
b. STREET ADDRESS (or P.O. Box): ADMIN TRAINING GROUP AVERY STREET A3-G
BUREAU OF THE FISCAL SERVICE
PO BOX 1328
c. CITY: PARKERSBURG
d. STATE: WV
e. ZIP CODE: 26106-1328

SEE BILLING INSTRUCTIONS ON REVERSE

17(i) GRAND TOTAL: $255,212.08

22. UNITED STATES OF AMERICA BY *(Signature)*: 07/21/2021 Margo L Katzper

23. NAME *(Typed)*: Margo Katzper
TITLE: CONTRACTING/ORDERING OFFICER

ORDER FOR SUPPLIES OR SERVICES
SCHEDULE - CONTINUATION

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER	CONTRACT NO.	ORDER NO.
07/21/2021	31310020D0003	31310021F0071

ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	08/31/2024					
	TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))				$0.00	

B - Supplies or Services/Prices....3
C - Description/Specifications....4
D - Packaging and Marking....10
E - Inspection and Acceptance....10
F - Deliveries or Performance....10
G - Contract Administration Data....11
H - Special Contract Requirements....13
I - Contract Clauses....20
J - List of Documents, Exhibits and Other Attachments....22

B - Supplies or Services/Prices

BRIEF PROJECT TITLE AND WORK DESCRIPTION

(a) The title of this project is: Technical support for component integrity.

(b) Summary work description: To obtain expert technical assistance services from the Contractor to apply in performing analyses for postulating pipe ruptures in fluid system piping at nuclear power plants.

CONSIDERATION AND OBLIGATION- LABOR-HOUR CONTRACT

(a) The ceiling price to the Government for full performance under this contract is $ 255,212.08

(b) The contract includes direct labor hours at specified fixed hourly rates, inclusive of wages, fringe, overhead, general and administrative expenses, and profit.

(c) It is estimated that the amount currently obligated will cover performance through September 15, 2021.

(d) This is an incrementally-funded contract and FAR 52.232-22 – "Limitation of Funds" applies.

PRICE/COST SCHEDULE

Base Period:

FY 2021 - TASKS 1 & 2

Labor Category	Contract Type	QTY	Unit	Unit Price	Amount
Project Manager (PM)/ Sr. Tech Reviewer (STR)	Labor Hour	24/240	HOUR	(b)(4)	
Subject Matter Expert (SME)	Labor Hour	120	HOUR		
Sr. Tech Reviewer (STR)	Labor Hour	40	HOUR		
Technical Reviewer (TR)	Labor Hour	96	HOUR		
Administrative Support (ADMIN)	Labor Hour	12	HOUR		
NOT TO EXCEED SUBTOTAL:					

FY 2022 - TASKS 1 & 2

Labor Category	Contract Type	QTY	Unit	Unit Price	Amount
Project Manager (PM)/ Sr. Tech Reviewer (STR)	Labor Hour	12/120	HOUR	(b)(4)	
Subject Matter Expert (SME)	Labor Hour	80	HOUR		
Sr. Tech Reviewer (STR)	Labor Hour	40	HOUR		

					(b)(4)
Technical Reviewer (TR)	Labor Hour	64	HOUR	(b)(4)	
Administrative Support (ADMIN)	Labor Hour	12	HOUR		
NOT TO EXCEED SUBTOTAL:					

FY 2023 - TASKS 1 & 2

Labor Category	Contract Type	QTY	Unit	Unit Price	Amount
Project Manager (PM)/ Sr. Tech Reviewer (STR)	Labor Hour	12/80	HOUR		(b)(4)
Subject Matter Expert (SME)	Labor Hour	40	HOUR		
Sr. Tech Reviewer (STR)	Labor Hour	40	HOUR		
Technical Reviewer (TR)	Labor Hour	32	HOUR		
Administrative Support (ADMIN)	Labor Hour	12	HOUR		
NOT TO EXCEED SUBTOTAL:					(b)(4)

TOTAL BASE NOT TO EXCEED AMOUNT: $ 211,812.39

OPTIONAL TASK: TASK 3
FY 2024

Labor Category	Contract Type	QTY	Unit	Unit Price	Amount
Project Manager (PM)/ Sr. Tech Reviewer (STR)	Labor Hour	12/60	HOUR		(b)(4)
Subject Matter Expert (SME)	Labor Hour	40	HOUR		
Sr. Tech Reviewer (STR)	Labor Hour	40	HOUR		
Technical Reviewer (TR)	Labor Hour	32	HOUR		
Administrative Support (ADMIN)	Labor Hour	12	HOUR		
NOT TO EXCEED SUBTOTAL:					(b)(4)

TOTAL TASK ORDER CEILING FOR BASE AND OPTIONAL TASK (NOT-TO-EXCEED):
$255,212.08

C - Description/Specifications

STATEMENT OF WORK

1. PROJECT TITLE

Technical Support for Component Integrity Assessments

2. BACKGROUND

Regulatory guidance on postulating pipe ruptures is located in Standard Review Plan (SRP, NUREG-0800), Section 3.6.2, "Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping," [1] and its related Branch Technical Position (BTP) 3-4, "Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment." [2]

Additional background is provided in Generic Letter 87-11, "Relaxation in Arbitrary Intermediate Pipe Rupture Requirements," [3] which included an earlier version of BTP 3-4. These documents collectively provide the current NRC staff position on an acceptable means of determining where pipe rupture should be considered to comply with the requirements of GDC 4.

Finally, Table 4.1-3 of NUREG-1800, Revision 2, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants" [4] (SRP-LR) and Table 4.1-2 of NUREG-2192, "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants," [5] (SRP-SLR) identify cumulative usage factor (CUF) analyses as potential plant-specific time limited aging analyses that applicants must address in both license renewal and subsequent license renewal applications.

These current guidelines are conservative and are meant to identify limiting piping locations that experience higher relative stress and fatigue than the remainder of the piping. In addition, the more conservative stress limit provides an additional, unquantified stress margin to address unforeseen causes such as fabrication and installation errors. With respect to CUF, the NRC guidelines use 0.1 as the limit. The larger margin adopted on CUF is to ensure a conservative margin to account for unanticipated conditions as well as uncertainties in the quality level of piping systems, uncertainty in vibratory loads, and the lack of explicit consideration of environmental effects which can decrease fatigue life.

A quantitative technical basis for the current stress and CUF acceptance criteria is not documented in SRP Section 3.6.2 and BTP 3-4. However, most observed pipe ruptures have typically been at the unanalyzed locations and caused by corrosion and thermal fatigue issues that have been addressed through other programs (e.g., chemistry control, wall thickness monitoring, fatigue monitoring). These conservative stress and CUF acceptance criteria must be maintained throughout long-term operation and are evaluated by licensees in both license renewal and subsequent license renewal applications. Further work is needed to provide alternative acceptance criteria that will reduce excessive conservative margin for the analyzed locations while precluding potential pipe ruptures at the unanalyzed locations.

To address stakeholder feedback on the overly conservative nature of current BTP 3-4 staff guidelines as described above, NRC staff has continued exploring the possibility of updating the BTP 3-4 guidelines. In June 2019, the NRC conducted a public meeting [6] to discuss BTP 3-4 and some proposed alternative approaches for postulating pipe rupture locations. At this meeting, the industry expressed interest in revising BTP 3-4 and presented some of the design costs associated with the current BTP 3-4. As a result, NRC agreed to more thoroughly assess the viability of updating the BTP 3-4 criteria. In August 2019, a working group (comprised of staff from NRO, NRR, and RES) was formed to develop alternative criteria for postulating pipe rupture locations. The working group recommended that a proposed alternative framework for postulating pipe rupture locations in SRP Section 3.6.2 and BTP 3-4 be investigated further in this Work Request. The focus of this investigation will develop the technical basis for ensuring the alternative framework and associated criteria satisfies GDC 4. This proposed alternative acceptance criteria revises the environmentally adjusted CUF criteria to less than or equal to 1.0 and removes the stress range and max stress criteria. The updated staff guidelines will also address lessons learned from new reactor design (e.g., bolted connections). As a part of this alternative acceptance criteria, new reactor applicants and licensees would be required to address potential piping failures due to various failure/degradation mechanisms (e.g., vibration, erosion, flow-induced vibration, intergranular stress corrosion cracking) to ensure that the probability of potential pipe failure resulting from those failure/degradation mechanisms is extremely low.

In March 2021, the NRC held another public meeting [7] for the NRC staff to discuss strategies to develop alternative criteria and associated guidance for postulating pipe break locations in piping systems and the corresponding technical basis. At this meeting, the NRC staff engaged in active discussions with external

stakeholders on the NRC strategies and received feedback and insights related to operating and new light-water reactors.

List of References:

[1] NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 3.6.2, "Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping," Revision 3, December 2016, NRC Agencywide Documents Access and Management System (ADAMS) Accession No. ML16088A041
[2] NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Branch Technical Position 3-4, "Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment," Revision 3, December 2016, NRC ADAMS Accession No. ML16085A315
[3] Generic Letter 87-11, "Relaxation in Arbitrary Intermediate Pipe Rupture Requirements," June 19, 1987, NRC ADAMS Accession No. ML19137A335
[4] NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 2, December 2010, NRC ADAMS Accession No. ML103490036
[5] NUREG-2912, "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants," July 2017, NRC ADAMS Accession No. ML17188A158
[6] Summary of June 11, 2019 NRC Category 2 Public Meeting on Branch Technical Position 3-4, NRC ADAMS Accession No. ML19214A095
[7] Summary of March 1, 2021 NRC Category 2 Public Meeting on Alternative Criteria for Postulating High-Energy Pipe Break Locations, NRC ADAMS Accession No. ML21089A005.

3. PROJECT DESCRIPTION AND OBJECTIVE(S)

The objective of this task order is to obtain expert technical assistance services from the Contractor to apply in performing analyses for postulating pipe ruptures in fluid system piping at nuclear power plants.

This requirement falls under EWC IDIQ # 31310020R0004, entitled "Technical Assistance in Support of NRC Nuclear Regulatory Research for Materials, Waste, and Reactor Programs," in Technical Support Service Area (TSSA) 3.4, entitled "Component Integrity and Materials Performance."

4. STATEMENT OF WORK TASKS

Task 1 -Alternative Framework

Task 1.1: The contractor shall perform analyses of fluid piping systems based upon pipe break postulation acceptance criteria that are alternative to BTP 3-4. This alternative acceptance criteria revises the environmentally adjusted CUF criteria to less than or equal to 1.0 and removes the stress range and max stress criteria. Specifically, using computational tools, the contractor shall conduct the activities listed below:

- Fatigue crack growth analyses and crack stability analyses based upon an assumed flaw and specified piping system parameters, including a discussion of applicable uncertainties.
- Determination of time and margin for simulated flaw to become critical for specified piping system parameters.

These activities will be conducted for 3-6 configurations (including multiple analyses per configuration) that vary in light-water reactor environment (e.g., current operating reactors, NuScale) piping system parameters. These parameters may include thermal and pressure transients that contribute to fatigue, flaw geometry (e.g., axial, circumferential), component geometry (e.g., radius/thickness ratio), and material (e.g., piping, weld). Specific piping system parameters will be provided to the contractor. Any proposal should indicate what computational tools will be used to conduct the analyses and what their capabilities are.

Deliverable for Task 1.1

· Draft Technical Letter Report (TLR) covering all work performed under this task within 60 days of completion of the task. The Draft TLR prepared by the contactor shall summarize the efforts completed, propose conclusions, and identify recommendations for any issues identified.

· Final TLR incorporating any comments on the Draft TLR from the COR. The Final TLR shall be provided no later than 45 days after the COR provides comments to the contractor.

Task 1.2:

The contractor shall submit a draft report that documents the alternative framework and associated acceptance criteria for postulating pipe break locations for operating and new light water reactors. The elements of the framework will be developed by NRC staff and provided to the contractor. Based upon this initial NRC staff input, recommendations, and guidance, as well as discussions with the contractor, the contractor shall document this alternative framework and associated acceptance criteria in a draft report using a format provided by the NRC staff. This alternative framework will incorporate the TLR developed for Task 1.1.

Deliverable for Task 1.2

· Draft report documenting the alternative framework and associated acceptance criteria.

Task 2 - Technical Basis NUREG

The contractor shall provide technical assistance to the NRC staff in the development of a NUREG that documents the technical basis of the alternative framework and associated acceptance criteria. This NUREG will be based upon work completed under Task 1.1 and follow the alternative framework documented under Task 1.2. Technical assistance may include services such as providing technical advice, operating experience, and other related activities.

Deliverable for Task 2

· Technical assistance, as requested, to develop the NRC-generated NUREG.

OPTIONAL Task: Task 3 - Regulatory Guidance

The contractor shall provide technical assistance to the NRC staff in the development of draft regulatory guidance that documents the staff position on postulated pipe break and crack location selection. This draft regulatory guidance will be based upon work completed under Task 1.2 and be supported by the work completed under Tasks 1.1 and 2. Technical assistance may include providing advice, operating experience, conducting regulatory analysis, and other related activities.

Deliverable for Optional Task: Task 3

· Technical assistance, as requested, to develop the NRC-generated draft regulatory guidance.

5. APPLICABLE DOCUMENTS AND STANDARDS

ASME Boiler & Pressure Vessel Code, Section III and Section XI.

6. DELIVERABLES AND DELIVERY SCHEDULE/REPORTING REQUIREMENTS

The contractor shall provide the deliverables stated in the table below in electronic format unless otherwise directed by the COR. The electronic format shall be provided using a Microsoft-based product, (e.g., Outlook, Word, Excel, PowerPoint) unless the COR and the contractor specifically agree on another format. All deliverables, with the exception of the Monthly Letter Status Report (MLSR) shall be in the format of draft version, revision version with redline/strikeout with a change-control appendix, and a revised version which shall become the final version. The contractor shall maintain appropriate version control in an electronic format. The contractor shall explicitly state in its submittal(s) that the product provided is the deliverable for Task/Subtask "XX"0, as further described below.

The Contractor shall submit the following deliverables to the task order COR. Unless otherwise directed

by the COR or the Contracting Officer (CO), the contractor must provide all deliverables except the MLSR as draft products. The COR will review all draft deliverables (and coordinate any internal NRC staff review, if needed) and provide comments back to the contractor. The contractor shall revise the draft deliverable based on the comments provided by the COR and then deliver a revised version of the deliverable, which will then be considered the Final Version. When mutually-agreed upon between the contractor and the COR, the contractor may submit preliminary or partial drafts to help gauge the contractor's understanding of the particular work requirement. More than one round of drafts may be needed if the contractor does not successfully incorporate the COR's comments on the previous draft.

The contractor shall develop, maintain, and control data, files, information, and deliverables pursuant to this task order.

Deliverable Schedule

Task No.	Description	Completion Date
1.1	Draft TLR covering all work performed for Task 1. The Draft TLR shall summarize the efforts completed, propose conclusions, and identify recommendations for any issues identified.	November 2021
1.1	Final TLR incorporating any comments from the COR.	January 2022
1.2	Draft report on the alternative framework and associated acceptance criteria.	April 2022
2	Technical assistance to develop NRC staff-generated NUREG on the technical basis of the alternative framework.	August 2023
3	Technical assistance to develop NRC staff-generated Regulatory Guide on the alternative framework.	August 2024

Acceptance Criteria for Deliverables: The above deliverables shall be submitted to the task order COR. Unless otherwise directed by the COR or the CO, the contractor must provide all deliverables except the Monthly Letter Status Reports (MLSR) as draft products. The COR will review all draft deliverables (and coordinate any internal NRC staff review, if needed) and provide comments back to the contractor. The contractor shall revise the draft deliverable based on the comments provided by the COR and then deliver a revised version of the deliverable, which will then be considered the Final Version. When mutually-agreed upon between the contractor and the COR, the contractor may submit preliminary or partial drafts to help gauge the contractor's understanding of the particular work requirement./ More than one round of drafts may be needed if the contractor does not successfully incorporate the COR's comments on the previous draft.

The contractor shall submit the raw and processed data and worksheet and/or input files used in analyses with the Draft TLRs, upon request by the COR and with the Final TLRs, in a tabulated Excel format or other format as directed by the COR.

Note: This delivery schedule may be modified after task order award via Technical Direction from the COR, and CO concurrence.

Technical Directions

The COR may issue Technical Directions (TDs) from time to time throughout the duration of the task order. These TDs must be within scope of the task order SOW and shall not constitute new assignments of work or changes of such a nature as to constitute a change to the task order cost or period of performance.

Any modifications to the scope of work, cost, or period of performance of this task order must be issued by the task order Contracting Officer (CO) and shall be coordinated with the task order Contracting Officer's Representative (COR). The COR may issue TDs for the purpose of making adjustments or clarifications to the timing and performance of the tasks/sub-tasks (if applicable) and/or the milestone schedule/delivery schedule of the documents within this task order.

In the event that the contractor believes that a TD issued against this task order has an impact in terms of changing the scope, cost, or period of performance of the task order, the contractor shall immediately inform the task order CO and request appropriate guidance prior to taking action on the TD in question.

7. GOVERNMENT-FURNISHED PROPERTY

None

8. PLACE OF PERFORMANCE

The work to be performed under this task order shall be performed at the Contractor's facility except for the travel described in Section 9 of this statement of work.

9. SPECIAL CONSIDERATIONS

TRAVEL/MEETINGS

Travel is not anticipated on this Task Order. In the event travel is needed, the COR and CO shall be notified as a modification will be required.

No travel is expected under this task order. If a need arises, the COR will approve travel as per the conditions below:

a. All contractor travel requires prior written approval from the COR.

b. Number of trips, number of contractor personnel, duration, location, may be modified based on meeting circumstances and COR's need for contractor support. Contractor shall implement travel cost-sharing measures (for example sharing rental car) if possible.

c. At the discretion of the COR, meetings may be conducted via telephone, video conference, or at the contractor site.

d. Contractor will be authorized travel expenses consistent with the substantive provisions of the Federal Travel Regulation (FTR) and the limitation of funds specified in this contract/order. All travel requires written Government approval from the CO, unless otherwise delegated to the COR.

e. Travel will be reimbursed in accordance with FAR 31.205-46, "Travel costs" and the General Services Administration's Federal Travel Regulations at: http://www.gsa.gov/portal/content/104790. At a minimum, for each known trip/meeting, include the following:

f. All travel requires prior written approval from the COR.

SECURITY

The work will be UNCLASSIFIED.

Work on this task order may involve the handling of documents that contain proprietary information. The contractor shall safeguard documents containing proprietary information against unauthorized disclosure. After completion of work, the contractor shall either destroy the documents or return them to the NRC. If they are destroyed, please confirm this in an e-mail to the COR with a copy to the CO and include the date and manner in which the documents were destroyed.

KEY EQUIPMENT, CERTIFICATIONS, and ANALYSIS TOOLS

The following analysis tools shall be required to perform the research described in this statement of work:

Analysis Capabilities/Tools:

Computational or analytical tool capabilities (e.g., finite element software) with specialized knowledge of

crack behavior.

LICENSE FEE RECOVERY
All work under this task order is not license fee recoverable.

DATA RIGHTS
The NRC shall have unlimited rights to and ownership of all deliverables provided under this contract/order, including reports, recommendations, briefings, work plans and all other deliverables. All documents and materials, to include the source codes of any software, produced under this contract/order are the property of the Government with all rights and privileges of ownership/copyright belonging exclusively to the Government. These documents and materials may not be used or sold by the contractor without written authorization from the CO. All materials supplied to the Government shall be the sole property of the Government and may not be used for any other purpose. This right does not abrogate any other Government rights. The definition of "unlimited rights" is contained in Federal Acquisition Regulation (FAR) 27.401, "Definitions." FAR clause at FAR 52.227-14, "Rights in Data-General," is hereby incorporated by reference and made a part of this contract/order.

D - Packaging and Marking

PACKAGING AND MARKING

(a) The Contractor shall package material for shipment to the NRC in such a manner that will ensure acceptance by common carrier and safe delivery at destination. Containers and closures shall comply with the Surface Transportation Board, Uniform Freight Classification Rules, or regulations of other carriers as applicable to the mode of transportation.

(b) On the front of the package, the Contractor shall clearly identify the contract number under which the product is being provided.

(c) Additional packaging and/or marking requirements are as follows: N/A.

BRANDING

The Contractor is required to use the statement below in any publications, presentations, articles, products, or materials funded under this contract/order, to the extent practical, in order to provide NRC with recognition for its involvement in and contribution to the project. If the work performed is funded entirely with NRC funds, then the contractor must acknowledge that information in its documentation/presentation.

Work Supported by the U.S. Nuclear Regulatory Commission (NRC), Office of Nuclear Regulatory Research, under Contract/order number 31310020D0003_31310021F0071.

E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE BY THE NRC (SEP 2013)

Inspection and acceptance of the deliverable items to be furnished hereunder shall be made by the NRC Contracting Officer's Representative (COR) at the destination, accordance with FAR 52.247-34 - F.o.b. Destination.

Contract Deliverables:

Refer to Section C Statement of Work, Subsection 6.

F - Deliveries or Performance

PLACE OF DELIVERY-REPORTS

The items to be furnished hereunder shall be delivered, with all charges paid by the Contractor, to:

a. Contracting Officer's Representative (COR):
Refer to Section G.1 2052.215-71 CONTRACTING OFFICER REPRESENTATIVE AUTHORITY. (OCT 1999)

b. Contracting Officer (1 electronic copy)

End of Clause

TASK/DELIVERY ORDER PERIOD OF PERFORMANCE (SEP 2013)

The period of performance for this project is from 7/21/2021 to 08/31/2023, with the option to exercise Optional Task: Task 3 with a period of performance of 09/01/2023 - 08/31/2021.

G - Contract Administration Data

NRC Local Clauses Incorporated by Full Text

ELECTRONIC PAYMENT (DEC 2017)

The Debt Collection Improvement Act of 1996 requires that all payments except IRS tax refunds be made by Electronic Funds Transfer. Payment shall be made in accordance with FAR 52.232-33, entitled "Payment by Electronic Funds Transfer-System for Award Management."

To receive payment, the contractor shall prepare invoices in accordance with NRC's Billing Instructions. Claims shall be submitted through the Invoice Processing Platform (IPP) (https://www.ipp.gov/). Back up documentation shall be included as required by the NRC's Billing Instructions.

NRCAR Clauses Incorporated By Full Text

2052.215-71 Contracting Officer Representative authority. (OCT 1999)

(a) The contracting officer's authorized representative (hereinafter referred to as the COR) for this contract is:

Mark Yoo
mark.yoo@nrc.gov

(b) Performance of the work under this contract is subject to the technical direction of the NRC COR. The term "technical direction" is defined to include the following:

(1) Technical direction to the contractor which shifts work emphasis between areas of work or tasks, authorizes travel which was unanticipated in the Schedule (i.e., travel not contemplated in the Statement of Work (SOW) or changes to specific travel identified in the SOW), fills in details, or otherwise serves to accomplish the contractual SOW.

(2) Provide advice and guidance to the contractor in the preparation of drawings, specifications, or technical portions of the work description.

(3) Review and, where required by the contract, approval of technical reports, drawings, specifications, and technical information to be delivered by the contractor to the Government under the contract.

(c) Technical direction must be within the general statement of work stated in the contract. The COR does not have the authority to and may not issue any technical direction which:

(1) Constitutes an assignment of work outside the general scope of the contract.

(2) Constitutes a change as defined in the "Changes" clause of this contract.

(3) In any way causes an increase or decrease in the total estimated contract cost, the fixed fee, if any, or the time required for contract performance.

(4) Changes any of the expressed terms, conditions, or specifications of the contract.

(5) Terminates the contract, settles any claim or dispute arising under the contract, or issues any unilateral directive whatever.

(d) All technical directions must be issued in writing by the COR or must be confirmed by the COR in writing within ten (10) working days after verbal issuance. A copy of the written direction must be furnished to the contracting officer. A copy of NRC Form 445, Request for Approval of Official Foreign Travel, which has received final approval from the NRC must be furnished to the contracting officer.

(e) The contractor shall proceed promptly with the performance of technical directions duly issued by the COR in the manner prescribed by this clause and within the COR's authority under the provisions of this clause.

(f) If, in the opinion of the contractor, any instruction or direction issued by the COR is within one of the categories as defined in paragraph (c) of this section, the contractor may not proceed but shall notify the contracting officer in writing within five (5) working days after the receipt of any instruction or direction and shall request the contracting officer to modify the contract accordingly. Upon receiving the notification from the contractor, the contracting officer shall issue an appropriate contract modification or advise the contractor in writing that, in the contracting officer's opinion, the technical direction is within the scope of this article and does not constitute a change under the "Changes" clause.

(g) Any unauthorized commitment or direction issued by the COR may result in an unnecessary delay in the contractor's performance and may even result in the contractor expending funds for unallowable costs under the contract.

(h) A failure of the parties to agree upon the nature of the instruction or direction or upon the contract action to be taken with respect thereto is subject to 52.233-1 - Disputes.

(i) In addition to providing technical direction as defined in paragraph (b) of the section, the COR shall:

(1) Monitor the contractor's technical progress, including surveillance and assessment of performance, and recommend to the contracting officer changes in requirements.

(2) Assist the contractor in the resolution of technical problems encountered during performance.

(3) Review all costs requested for reimbursement by the contractor and submit to the contracting officer recommendations for approval, disapproval, or suspension of payment for supplies and services required under this contract.

(4) Assist the contractor in obtaining the badges for the contractor personnel.

(5) Immediately notify the Security Branch, Division of Facilities and Security (SB/DFS) (via e-mail) when a contractor employee no longer requires access authorization and return of any NRC issued badge to SB/DFS within three days after their termination.

(6) Ensure that all contractor employees that require access to classified Restricted Data or National Security Information or matter, access to sensitive unclassified information (Safeguards, Official Use Only, and Proprietary information) access to sensitive IT systems or data, unescorted access to NRC controlled buildings/space, or unescorted

access to protected and vital areas of nuclear power plants receive approval of SB/DFS prior to access in accordance with Management Directive and Handbook 12.3.

(7) For contracts for the design, development, maintenance or operation of Privacy Act Systems of Records, obtain from the contractor as part of closeout procedures, written certification that the contractor has returned to NRC, transferred to the successor contractor, or destroyed at the end of the contract in accordance with instructions provided by the NRC Systems Manager for Privacy Act Systems of Records, all records (electronic or paper) which were created, compiled, obtained or maintained under the contract.

(End of Clause)

H - Special Contract Requirements

NRC Local Clauses Incorporated by Full Text

SECURITY REQUIREMENTS FOR INFORMATION TECHNOLOGY LEVEL I OR LEVEL II ACCESS APPROVAL (JUL 2016)

The contractor must identify all individuals selected to work under this contract. The NRC Contracting Officer's Representative (COR) shall make the final determination of the level, if any, of IT access approval required for all individuals working under this contract/order using the following guidance. The Government shall have full and complete control and discretion over granting, denying, withholding, or terminating IT access approvals for contractor personnel performing work under this contract/order.

The contractor shall conduct a preliminary security interview or review for each employee requiring IT level I or II access and submit to the Government only the names of candidates that have a reasonable probability of obtaining the level of IT access approval for which the employee has been proposed. The contractor shall pre-screen its applicants for the following:

(a) felony arrest in the last seven (7) years; (b) alcohol related arrest within the last five (5) years; (c) record of any military courts-martial convictions in the past ten (10) years; (d) illegal use of narcotics or other controlled substances possession in the past year, or illegal purchase, production, transfer, or distribution of narcotics or other controlled substances in the last seven (7) years; and (e) delinquency on any federal debts or bankruptcy in the last seven (7) years.

The contractor shall make a written record of its pre-screening interview or review (including any information to mitigate the responses to items listed in (a) - (e)), and have the employee verify the pre-screening record or review, sign and date it. The contractor shall supply two (2) copies of the signed contractor's pre-screening record or review to the NRC Contracting Officer's Representative (COR), who will then provide them to the NRC Office of Administration, Division of Facilities and Security, Personnel Security Branch with the employee's completed IT access application package.

The contractor shall further ensure that its personnel complete all IT access approval security applications required by this clause within fourteen (14) calendar days of notification by the NRC Contracting Officer's Representative (COR) of initiation of the application process. Timely receipt of properly completed records of the pre-screening record and IT access approval applications (submitted for candidates that have a reasonable probability of obtaining the level of security assurance necessary for access to NRC's IT systems/data) is a requirement of this contract/order. Failure of the contractor to comply with this requirement may be a basis to terminate the contract/order for cause, or to offset from the contract's invoiced cost or price the NRC's incurred costs or delays as a result of inadequate pre-screening by the contractor.

SECURITY REQUIREMENTS FOR IT LEVEL I

Performance under this contract/order will involve contractor personnel who perform services requiring direct access to or operation of agency sensitive information technology systems or data (IT Level I). The IT Level I involves responsibility for: (a) the planning, direction, and implementation of a computer security program; (b) major responsibility for the direction, planning, and design of a computer system, including hardware and software; (c) the capability to access a computer system during its operation or maintenance in such a way that could cause or that has a relatively high risk of causing grave damage; or (d) the capability to realize a significant personal gain from computer access.

Contractor personnel shall not have access to sensitive information technology systems or data until they are approved by DFS/PSB and they have been so informed in writing by the NRC Contracting Officer's Representative (COR). Temporary IT access may be approved by DFS/PSB based on a favorable review or adjudication of their security forms and checks. Final IT access may be approved by DFS/PSB based on a favorably review or adjudication of a completed background investigation. However, temporary access authorization approval will be revoked and the employee may subsequently be denied IT access in the event the employee's investigation cannot be favorably adjudicated. Such an employee will not be authorized to work under any NRC contract/order requiring IT access without the approval of DFS/PSB, as communicated in writing to the contractor by the NRC Contracting Officer's Representative (COR). Where temporary access authorization has been revoked or denied by DFS/PSB, the contractor shall assign another contractor employee to perform the necessary work under this contract/order without delay to the contract/order performance schedule, or without adverse impact to any other terms or conditions of the contract/order. When an individual receives final IT access approval from DFS/PSB, the individual will be subject to a reinvestigation every ten (10) years thereafter (assuming continuous performance under contracts/orders at NRC) or more frequently in the event of noncontinuous performance under contracts/orders at NRC.

CORs are responsible for submitting the completed access/clearance request package as well as other documentation that is necessary to DFS/PSB. The contractor shall submit a completed security forms packet, including the OPM Standard Form (SF) 86 (online Questionnaire for National Security Positions), two (2) copies of the Contractor's signed pre-screening record, and two (2) FD 258 fingerprint charts, to DFS/PSB for review and adjudication, prior to the individual being authorized to perform work under this contract/order requiring access to sensitive information technology systems or data. Non-U.S. citizens must provide official documentation to the DFS/PSB, as proof of their legal residency. This documentation can be a Permanent Resident Card, Temporary Work Visa, Employment Authorization Card, or other official documentation issued by the U.S. Citizenship and Immigration Services. Any applicant with less than seven (7) years residency in the U.S. will not be approved for IT Level I access. The Contractor shall submit the documents to the NRC Contracting Officer's Representative (COR) who will give them to DFS/PSB. The contractor shall ensure that all forms are accurate, complete, and legible. Based on DFS/PSB review of the contractor employee's security forms and/or the receipt of adverse information by NRC, the contractor individual may be denied access to NRC facilities and sensitive information technology systems or data until a final determination is made by DFS/PSB. The contractor individual's clearance status will thereafter be communicated to the contractor by the NRC Contracting Officer's Representative (COR) regarding the contractor person's eligibility.

In accordance with NRCAR 2052.204-70 "Security," IT Level I contractors shall be subject to the attached NRC Form 187 and SF-86. Together, these furnish the basis for providing security requirements to contractors that have or may have an NRC contractual relationship which requires access to or operation of agency sensitive information technology systems, remote development and/or analysis of sensitive information technology systems or data, or other access to such systems and data; access on a continuing basis (in excess more than 30 calendar days) to NRC buildings; or otherwise requires issuance of an unescorted NRC badge.

SECURITY REQUIREMENTS FOR IT LEVEL II

Performance under this contract/order will involve contractor personnel that develop and/or analyze sensitive information technology systems or data or otherwise have access to such systems or data (IT Level II).

The IT Level II involves responsibility for the planning, design, operation, or maintenance of a computer system and all other computer or IT positions.

Contractor personnel shall not have access to sensitive information technology systems or data until they are approved by DFS/PSB and they have been so informed in writing by the NRC Contracting Officer's Representative (COR). Temporary access may be approved by DFS/PSB based on a favorable review of their security forms and checks. Final IT access may be approved by DFS/PSB based on a favorably adjudication. However, temporary access authorization approval will be revoked and the contractor employee may subsequently be denied IT access in the event the employee's investigation cannot be favorably adjudicated. Such an employee will not be authorized to work under any NRC contract/order requiring IT access without the approval of DFS/PSB, as communicated in writing to the contractor by the NRC Contracting Officer's Representative (COR). Where temporary access authorization has been revoked or denied by DFS/PSB, the contractor is responsible for assigning another contractor employee to perform the necessary work under this contract/order without delay to the contract/order performance schedule, or without adverse impact to any other terms or conditions of the contract/order. When a contractor employee receives final IT access approval from DFS/PSB, the individual will be subject to a review or reinvestigation every ten (10) years (assuming continuous performance under contract/order at NRC) or more frequently in the event of noncontinuous performance under contract/order at NRC.

CORs are responsible for submitting the completed access/clearance request package as well as other documentation that is necessary to DFS/PSB. The contractor shall submit a completed security forms packet, including the OPM Standard Form (SF) 86 (online Questionnaire for National Security Positions), two (2) copies of the Contractor's signed pre-screening record and two (2) FD 258 fingerprint charts, to DFS/PSB for review and adjudication, prior to the contractor employee being authorized to perform work under this contract/order. Non-U.S. citizens must provide official documentation to the DFS/PSB, as proof of their legal residency. This documentation can be a Permanent Resident Card, Temporary Work Visa, Employment Authorization Card, or other official documentation issued by the U.S. Citizenship and Immigration Services. Any applicant with less than seven (7) years residency in the U.S. will not be approved for IT Level II access. The Contractor shall submit the documents to the NRC Contracting Officer's Representative (COR) who will give them to DFS/PSB. The contractor shall ensure that all forms are accurate, complete, and legible. Based on DFS/PSB review of the contractor employee's security forms and/or the receipt of adverse information by NRC, the contractor employee may be denied access to NRC facilities, sensitive information technology systems or data until a final determination is made by DFS/PSB regarding the contractor person's eligibility.

In accordance with NRCAR 2052.204-70 "Security," IT Level II contractors shall be subject to the attached NRC Form 187, SF-86, and contractor's record of the pre-screening. Together, these furnish the basis for providing security requirements to contractors that have or may have an NRC contractual relationship which requires access to or operation of agency sensitive information technology systems, remote development and/or analysis of sensitive information technology systems or data, or other access to such systems or data; access on a continuing basis (in excess of more than 30 calendar days) to NRC buildings; or otherwise requires issuance of an unescorted NRC badge.

CANCELLATION OR TERMINATION OF IT ACCESS/REQUEST

When a request for IT access is to be withdrawn or canceled, the contractor shall immediately notify the NRC Contracting Officer's Representative (COR) by telephone so that the access review may be promptly discontinued. The notification shall contain the full name of the contractor employee and the date of the request. Telephone notifications must be promptly confirmed by the contractor in writing to the NRC Contracting Officer's Representative (COR), who will forward the confirmation to DFS/PSB. Additionally, the contractor shall immediately notify the NRC Contracting Officer's Representative (COR) in writing, who will in turn notify DFS/PSB, when a contractor employee no longer requires access to NRC sensitive automated information technology systems or data, including the voluntary or involuntary separation of employment of a contractor employee who has been approved for or is being processed for IT access.

The contractor shall flow the requirements of this clause down into all subcontracts and agreements with consultants for work that requires them to access NRC IT resources.

SECURITY REQUIREMENTS RELATING TO THE PRODUCTION OF REPORTS OR THE PUBLICATION OF RESULTS UNDER CONTRACTS, AGREEMENTS, AND GRANTS (JUL 2016)

Review and Approval of Reports

(a) Reporting Requirements. The contractor/grantee shall comply with the terms and conditions of the contract/grant regarding the contents of the draft and final report, summaries, data, and related documents, to include correcting, deleting, editing, revising, modifying, formatting, and supplementing any of the information contained therein, at no additional cost to the NRC. Performance under the contract/grant will not be deemed accepted or completed until it complies with the NRC's directions, as applicable. The reports, summaries, data, and related documents will be considered draft until approved by the NRC. The contractor/grantee agrees that the direction, determinations, and decisions on approval or disapproval of reports, summaries, data, and related documents created under this contract/grant remain solely within the discretion of the NRC.

(b) Publication of Results. Prior to any dissemination, display, publication, or release of articles, reports, summaries, data, or related documents developed under the contract/grant, the contractor/grantee shall submit them to the NRC for review and approval. The contractor/ grantee shall not release, disseminate, display or publish articles, reports, summaries, data, and related documents, or the contents therein, that have not been reviewed and approved by the NRC for release, display, dissemination or publication. The contractor/grantee agrees to conspicuously place any disclaimers, markings or notices, directed by the NRC, on any articles, reports, summaries, data, and related documents that the contractor/grantee intends to release, display, disseminate or publish to other persons, the public, or any other entities. The contractor/grantee agrees, and grants, a royalty-free, nonexclusive, irrevocable worldwide license to the government, to use, reproduce, modify, distribute, prepare derivative works, release, display or disclose the articles, reports, summaries, data, and related documents developed under the contract/grant, for any governmental purpose and to have or authorize others to do so.

(c) Identification/Marking of Sensitive Unclassified Non-Safeguards Information (SUNSI) and Safeguards Information (SGI). The decision, determination, or direction by the NRC that information possessed, formulated or produced by the contractor/grantee constitutes SUNSI or SGI is solely within the authority and discretion of the NRC. In performing the contract/grant, the contractor/grantee shall clearly mark SUNSI and SGI, to include for example, OUO-Allegation Information or OUO-Security Related Information on any reports, documents, designs, data, materials, and written information, as directed by the NRC. In addition to marking the information as directed by the NRC, the contractor shall use the applicable NRC cover sheet (e.g., NRC Form 461 Safeguards Information) in maintaining these records and documents. The contractor/grantee shall ensure that SUNSI and SGI is handled, maintained and protected from unauthorized disclosure, consistent with NRC policies and directions. The contractor/grantee shall comply with the requirements to mark, maintain, and protect all information, including documents, summaries, reports, data, designs, and materials in accordance with the provisions of Section 147 of the Atomic Energy Act of 1954 as amended, its implementing regulations (10 CFR 73.21), Sensitive Unclassified Non-Safeguards and Safeguards Information policies, and NRC Management Directives and Handbooks 12.5, 12.6 and 12.7.

(d) Remedies. In addition to any civil, criminal, and contractual remedies available under the applicable laws and regulations, failure to comply with the above provisions, and/or NRC directions, may result in suspension, withholding, or offsetting of any payments invoiced or claimed by the contractor/grantee.

(e) Flowdown. If the contractor/grantee intends to enter into any subcontracts or other agreements to perform this contract/grant, the contractor/grantee shall include all of the above provisions in any subcontracts or agreements.

WHISTLEBLOWER PROTECTION FOR NRC CONTRACTOR AND SUBCONTRACTOR EMPLOYEES

(a) The U.S. Nuclear Regulatory Commission (NRC) contractor and its subcontractor are subject to the Whistleblower Employee Protection public law provisions as codified at 42 U.S.C. 5851. NRC contractor(s) and subcontractor(s) shall comply with the requirements of this Whistleblower Employee Protection law, and the implementing regulations of the NRC and the Department of Labor (DOL). See, for example, DOL Procedures on Handling Complaints at 29 C.F.R. Part 24 concerning the employer obligations, prohibited acts, DOL procedures and the requirement for prominent posting of notice of Employee Rights at Appendix A to Part 24 entitled: "Your Rights Under the Energy Reorganization Act".

(b) Under this Whistleblower Employee Protection law, as implemented by regulations, NRC contractor and subcontractor employees are protected from discharge, reprisal, threats, intimidation, coercion, blacklisting or other employment discrimination practices with respect to compensation, terms, conditions or privileges of their employment because the contractor or subcontractor employee(s) has provided notice to the employer, refused to engage in unlawful practices, assisted in proceedings or testified on activities concerning alleged violations of the Atomic Energy Act of 1954 (as amended) and the Energy Reorganization Act of 1974 (as amended).

(c) The contractor shall insert this or the substance of this clause in any subcontracts involving work performed under this contract.

GREEN PURCHASING (SEP 2015)

(a) In furtherance of the sustainable acquisition goals of Executive Order (EO) 13693, "Planning for Federal Sustainability in the Next Decade," products and services provided under this contract/order shall be energy efficient (EnergyStar® or Federal Energy Management Program - FEMP-designated products), water efficient, biobased, environmentally preferable (excluding EPEAT®-registered products), non-ozone depleting, contain recycled content, or are non- or low toxic alternatives or hazardous constituents (e.g., non-VOC paint), where such products and services meet agency performance requirements. See: Executive Order (EO) 13693, "Planning for Federal Sustainability in the Next Decade."

(b) The NRC and contractor may negotiate during the contract term to permit the substitution or addition of designated recycled content products (i.e., Comprehensive Procurement Guidelines - CPG), EPEAT®-registered products, EnergyStar®- and FEMP designated energy efficient products and appliances, USDA designated biobased products (Biopreferred® program), environmentally preferable products, WaterSense and other water efficient products, products containing non- or lower-ozone depleting substances (i.e., SNAP), and products containing non- or low-toxic or hazardous constituents (e.g., non-VOC paint), when such products and services are readily available at a competitive cost and satisfy the NRC's performance needs.

(c) The contractor shall flow down this clause into all subcontracts and other agreements that relate to performance of this contract/order.

USE OF AUTOMATED CLEARING HOUSE (ACH) ELECTRONIC PAYMENT/REMITTANCE ADDRESS

The Debt Collection Improvement Act of 1996 requires that all Federal payments except IRS tax refunds be made by Electronic Funds Transfer. lt is the policy of the Nuclear Regulatory Commission to pay government vendors by the Automated Clearing House (ACH) electronic funds transfer payment system. Item 15C of the Standard Form 33 may be disregarded.

Key personnel. (JAN 1993)

(a) The following individuals are considered to be essential to the successful performance of the work hereunder:

(b)(4) Subject Matter Expert - [redacted] Senior Technical Reviewer - [redacted] (b)(4)

*The contractor agrees that personnel may not be removed from the contract work or replaced without compliance with paragraphs (b) and (c) of this section.

(b) If one or more of the key personnel, for whatever reason, becomes, or is expected to become, unavailable for work under this contract for a continuous period exceeding 30 work days, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the contractor shall immediately notify the contracting officer and shall, subject to the concurrence of the contracting officer, promptly replace the personnel with personnel of at least substantially equal ability and qualifications.

(c) Each request for approval of substitutions must be in writing and contain a detailed explanation of the circumstances necessitating the proposed substitutions. The request must also contain a complete resume for the proposed substitute and other information requested or needed by the contracting officer to evaluate the proposed substitution. The contracting officer and the project officer shall evaluate the contractor's request and the contracting officer shall promptly notify the contractor of his or her decision in writing.

(d) If the contracting officer determines that suitable and timely replacement of key personnel who have been reassigned, terminated, or have otherwise become unavailable for the contract work is not reasonably forthcoming, or that the resultant reduction of productive effort would be so substantial as to impair the successful completion of the contract or the service order, the contract may be terminated by the contracting officer for default or for the convenience of the Government, as appropriate. If the contracting officer finds the contractor at fault for the condition, the contract price or fixed fee may be equitably adjusted downward to compensate the Government for any resultant delay, loss, or damage.

NRCAR Clauses Incorporated By Full Text

2052.204-70 Security. (OCT 1999)

(a) Security/Classification Requirements Form. The attached NRC Form 187 (See List of Attachments) furnishes the basis for providing security and classification requirements to prime contractors, subcontractors, or others (e.g., bidders) who have or may have an NRC contractual relationship that requires access to classified information or matter, access on a continuing basis (in excess of 90 or more days) to NRC Headquarters controlled buildings, or otherwise requires NRC photo identification or card-key badges.

(b) It is the contractor's duty to safeguard National Security Information, Restricted Data, and Formerly Restricted Data. The contractor shall, in accordance with the Commission's security regulations and requirements, be responsible for safeguarding National Security Information, Restricted Data, and Formerly Restricted Data, and for protecting against sabotage, espionage, loss, and theft, the classified documents and material in the contractor's possession in connection with the performance of work under this contract. Except as otherwise expressly provided in this contract, the contractor shall transmit to the Commission any classified matter in the possession of the contractor or any person under the contractor's control in connection with performance of this contract upon completion or termination of this contract.

(1) The contractor shall complete a certificate of possession to be furnished to the Commission specifying the classified matter to be retained if the retention is:

(i) Required after the completion or termination of the contract; and

(ii) Approved by the contracting officer.

(2) The certification must identify the items and types or categories of matter retained, the conditions governing the retention of the matter and their period of retention, if known. If the retention is approved by the contracting officer, the security provisions of the contract continue to be applicable to the matter retained.

(c) In connection with the performance of the work under this contract, the contractor may be furnished, or may develop or acquire, proprietary data (trade secrets) or confidential or privileged technical, business, or financial information, including Commission plans, policies, reports, financial plans, internal data protected by the Privacy Act of 1974 (Pub. L. 93-579), or other information which has not been released to the public or has been determined by the Commission to be otherwise exempt from disclosure to the public. The contractor agrees to hold the information in confidence and not to directly or indirectly duplicate, disseminate, or disclose the information, in whole or in part, to any other person or organization except as necessary to perform the work under this contract. The contractor agrees to return the information to the Commission or otherwise dispose of it at the direction of the contracting officer. Failure to comply with this clause is grounds for termination of this contract.

(d) Regulations. The contractor agrees to conform to all security regulations and requirements of the Commission which are subject to change as directed by the NRC Division of Facilities and Security and the Contracting Officer. These changes will be under the authority of the FAR Changes clause referenced in Section I of this document.

(e) Definition of National Security Information. As used in this clause, the term National Security Information means information that has been determined pursuant to Executive Order 12958 or any predecessor order to require protection against unauthorized disclosure and that is so designated.

(f) Definition of Restricted Data. As used in this clause, the term Restricted Data means all data concerning design, manufacture, or utilization of atomic weapons; the production of special nuclear material; or the use of special nuclear material in the production of energy, but does not include data declassified or removed from the Restricted Data category under to Section 142 of the Atomic Energy Act of 1954, as amended.

(g) Definition of Formerly Restricted Data. As used in this clause the term Formerly Restricted Data means all data removed from the Restricted Data category under Section 142-d of the Atomic Energy Act of 1954, as amended.

(h) Security clearance personnel. The contractor may not permit any individual to have access to Restricted Data, Formerly Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements applicable to the particular type or category of classified information to which access is required. The contractor shall also execute a Standard Form 312, Classified Information Nondisclosure Agreement, when access to classified information is required.

(i) Criminal liabilities. Disclosure of National Security Information, Restricted Data, and Formerly Restricted Data relating to the work or services ordered hereunder to any person not entitled to receive it, or failure to safeguard any Restricted Data, Formerly Restricted Data, or any other classified matter that may come to the contractor or any person under the contractor's control in connection with work under this contract, may subject the contractor, its agents, employees, or subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq.; 18 U.S.C. 793 and 794; and Executive Order 12958.)

(j) Subcontracts and purchase orders. Except as otherwise authorized, in writing, by the contracting officer, the contractor shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this contract.

(k) In performing contract work, the contractor shall classify all documents, material, and equipment originated or generated by the contractor in accordance with guidance issued by the Commission. Every subcontract and purchase order issued under the contract that involves originating or generating classified documents, material, and equipment must provide that the

subcontractor or supplier assign the proper classification to all documents, material, and equipment in accordance with guidance furnished by the contractor.

(End of Clause)

I - Contract Clauses

2052.209-72 Contractor organizational conflicts of interest. (JAN 1993)

(a) Purpose. The primary purpose of this clause is to aid in ensuring that the contractor:

(1) Is not placed in a conflicting role because of current or planned interests (financial, contractual, organizational, or otherwise) which relate to the work under this contract; and

(2) Does not obtain an unfair competitive advantage over other parties by virtue of its performance of this contract.

(b) Scope. The restrictions described apply to performance or participation by the contractor, as defined in 48 CFR 2009.570-2 in the activities covered by this clause.

(c) Work for others.

(1) Notwithstanding any other provision of this contract, during the term of this contract, the contractor agrees to forego entering into consulting or other contractual arrangements with any firm or organization the result of which may give rise to a conflict of interest with respect to the work being performed under this contract. The contractor shall ensure that all employees under this contract abide by the provision of this clause. If the contractor has reason to believe, with respect to itself or any employee, that any proposed consultant or other contractual arrangement with any firm or organization may involve a potential conflict of interest, the contractor shall obtain the written approval of the contracting officer before the execution of such contractual arrangement.

(2) The contractor may not represent, assist, or otherwise support an NRC licensee or applicant undergoing an NRC audit, inspection, or review where the activities that are the subject of the audit, inspection, or review are the same as or substantially similar to the services within the scope of this contract (or task order as appropriate) except where the NRC licensee or applicant requires the contractor's support to explain or defend the contractor's prior work for the utility or other entity which NRC questions.

(3) When the contractor performs work for the NRC under this contract at any NRC licensee or applicant site, the contractor shall neither solicit nor perform work in the same or similar technical area for that licensee or applicant organization for a period commencing with the award of the task order or beginning of work on the site (if not a task order contract) and ending one year after completion of all work under the associated task order, or last time at the site (if not a task order contract).

(4) When the contractor performs work for the NRC under this contract at any NRC licensee or applicant site,

(i) The contractor may not solicit work at that site for that licensee or applicant during the period of performance of the task order or the contract, as appropriate.

(ii) The contractor may not perform work at that site for that licensee or applicant during the period of performance of the task order or the contract, as appropriate, and for one year thereafter.

(iii) Notwithstanding the foregoing, the contracting officer may authorize the contractor to solicit or perform this type of work (except work in the same or similar technical area) if the contracting officer determines that the situation will not pose a potential for technical bias or unfair competitive advantage.

(d) Disclosure after award.

(1) The contractor warrants that to the best of its knowledge and belief, and except as otherwise set forth in this contract, that it does not have any organizational conflicts of interest as defined in 48 CFR 2009.570-2.

(2) The contractor agrees that if, after award, it discovers organizational conflicts of interest with respect to this contract, it shall make an immediate and full disclosure in writing to the contracting officer. This statement must include a description of the action which the contractor has taken or proposes to take to avoid or mitigate such conflicts. The NRC may, however, terminate the contract if termination is in the best interest of the Government.

(3) It is recognized that the scope of work of a task-order-type contract necessarily encompasses a broad spectrum of activities. Consequently, if this is a task-order-type contract, the contractor agrees that it will disclose all proposed new work involving NRC licensees or applicants which comes within the scope of work of the underlying contract. Further, if this contract involves work at a licensee or applicant site, the contractor agrees to exercise diligence to discover and disclose any new work at that licensee or applicant site. This disclosure must be made before the submission of a bid or proposal to the utility or other regulated entity and must be received by the NRC at least 15 days before the proposed award date in any event, unless a written justification demonstrating urgency and due diligence to discover and disclose is provided by the contractor and approved by the contracting officer. The disclosure must include the statement of work, the dollar value of the proposed contract, and any other documents that are needed to fully describe the proposed work for the regulated utility or other regulated entity. NRC may deny approval of the disclosed work only when the NRC has issued a task order which includes the technical area and, if site-specific, the site, or has plans to issue a task order which includes the technical area and, if site-specific, the site, or when the work violates paragraphs (c)(2), (c)(3) or (c)(4) of this section.

(e) Access to and use of information.

(1) If, in the performance of this contract, the contractor obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (5 U.S.C. Section 552a (1988)), or the Freedom of Information Act (5 U.S.C. Section 552 (1986)), the contractor agrees not to:

(i) Use this information for any private purpose until the information has been released to the public;

(ii) Compete for work for the Commission based on the information for a period of six months after either the completion of this contract or the release of the information to the public, whichever is first;

(iii) Submit an unsolicited proposal to the Government based on the information until one year after the release of the information to the public; or

(iv) Release the information without prior written approval by the contracting officer unless the information has previously been released to the public by the NRC.

(2) In addition, the contractor agrees that, to the extent it receives or is given access to proprietary data, data protected by the Privacy Act of 1974 (5 U.S.C. Section 552a (1988)), or the Freedom of Information Act (5 U.S.C. Section 552 (1986)), or other confidential or privileged technical, business, or financial information under this contract, the contractor shall treat the information in accordance with restrictions placed on use of the information.

(3) Subject to patent and security provisions of this contract, the contractor shall have the right to use technical data it produces under this contract for private purposes provided that all requirements of this contract have been met.

(f) Subcontracts. Except as provided in 48 CFR 2009.570-2, the contractor shall include this clause, including this paragraph, in subcontracts of any tier. The terms contract, contractor, and contracting officer, must be appropriately modified to preserve the Government's rights.

(g) Remedies. For breach of any of the above restrictions, or for intentional nondisclosure or misrepresentation of any relevant interest required to be disclosed concerning this contract or for such erroneous representations that necessarily imply bad faith, the Government may terminate the contract for default, disqualify the contractor from subsequent contractual efforts, and pursue other remedies permitted by law or this contract.

(h) Waiver. A request for waiver under this clause must be directed in writing to the contracting officer in accordance with the procedures outlined in 48 CFR 2009.570-9.

(i) Follow-on effort. The contractor shall be ineligible to participate in NRC contracts, subcontracts, or proposals therefor (solicited or unsolicited) which stem directly from the contractor's performance of work under this contract. Furthermore, unless so directed in writing by the contracting officer, the contractor may not perform any technical consulting or management support services work or evaluation activities under this contract on any of its products or services or the products or services of another firm if the contractor has been substantially involved in the development or marketing of the products or services.

(1) If the contractor under this contract, prepares a complete or essentially complete statement of work or specifications, the contractor is not eligible to perform or participate in the initial contractual effort which is based on the statement of work or specifications. The contractor may not incorporate its products or services in the statement of work or specifications unless so directed in writing by the contracting officer, in which case the restrictions in this paragraph do not apply.

(2) Nothing in this paragraph precludes the contractor from offering or selling its standard commercial items to the Government.

(End of Clause)

J - List of Documents, Exhibits and Other Attachments

Attachment Number	Title	Date	Number of Pages
1	Attachment 1- Instructions_ IPP Billing Instructions for Labor-Hour or Time-and-Materials Contracts	07/14/2021	7

Version Control Date: August 16, 2017

ATTACHMENT 1

BILLING INSTRUCTIONS FOR
TIME-AND-MATERIALS/LABOR-HOUR TYPE CONTRACTS (AUG 2017)

General: During performance and through final payment of this contract, the contractor is responsible for the accuracy and completeness of data within the System for Award Management (SAM) database and the Invoice Processing Platform (IPP) system and for any liability resulting from the Government's reliance on inaccurate or incomplete SAM and/or IPP data.

The contractor shall prepare invoices/vouchers for payment of deliverables identified in the contract, in the manner described herein. FAILURE TO SUBMIT INVOICES/VOUCHERS IN ACCORDANCE WITH THESE INSTRUCTIONS MAY RESULT IN REJECTION OF THE INVOICE/VOUCHER AS IMPROPER.

Electronic Invoice/Voucher Submissions: Invoices/vouchers shall be submitted electronically to the U.S. Nuclear Regulatory Commission (NRC) is through the Invoice Processing Platform (IPP) at www.ipp.gov.

Purchase of Capital Property: *($50,000 or more with life of one year or longer)*

Contractors must report to the Contracting Officer, electronically, any capital property acquired with contract funds having an initial cost of $50,000 or more, in accordance with procedures set forth in NRC Management Directive (MD) 11.1, NRC Acquisition of Supplies and Services.

Agency Payment Office: Payment will be made by the office designated in the contract in Block 12 of the Standard Form 26, or Block 25 of the Standard Form 33, whichever is applicable.

Frequency: The contractor shall submit claims for reimbursement once each month, unless otherwise authorized by the Contracting Officer.

Supporting Documentation: Any supporting documentation required to substantiate the amount billed shall be included as an attachment to the invoice created in IPP. If the necessary supporting documentation is not included, the invoice will be rejected.

Task Order Contracts: The contractor must submit a separate invoice/voucher for each individual task order with detailed cost information included as Supporting Documentation. This includes all applicable cost elements and other items discussed in paragraphs (a) through (j) of the attached instructions.

Billing of Costs after Expiration of Contract: If costs are incurred during the contract period and claimed after the contract has expired, you must cite the period during which these costs were incurred. To be considered a proper expiration invoice/voucher, the contractor shall clearly mark it "EXPIRATION INVOICE" or "EXPIRATION VOUCHER".

Final invoices/vouchers shall be marked "FINAL INVOICE" or "FINAL VOUCHER".

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

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ATTACHMENT 1

BILLING INSTRUCTIONS FOR
TIME-AND-MATERIALS/LABOR-HOUR TYPE CONTRACTS (AUG 2017)

Currency: Invoices/Vouchers must be expressed in U.S. Dollars.

Supersession: These instructions supersede previous Billing Instructions for Time-and-Materials/Labor-Hour Type Contracts (JAN 2015).

Does my company need to register in IPP?

If your company is currently registered in IPP and doing business with other Federal Agencies in IPP, you will not be required to re-register.

If your company is not currently registered in IPP, please note the following:

- You will be receiving an invitation to register for IPP from IPP Customer Support, STLS.IPPHELPDESK@stls.frb.org.
- IPP Customer Support will send you two emails: the first email will contain the initial administrative IPP User ID and the second email, sent within 24 hours of receipt of the first email, will contain a temporary password.
- Please add the Customer Support email address (STLS.IPPHELPDESK@stls.frb.org) to your address book so you do not disregard these emails or mistake them for spam.
- During registration, one initial administrative user account will be created for your company and this user will be responsible for setting up all other user accounts including other administrators.
- Registration is complete when the initial administrative user logs into the IPP web site with the User ID and password provided by Treasury and accepts the rules of behavior.

What type of is training provided?

Vendor training materials, including a first time login tutorial, user guides, a quick reference guide, and frequently asked questions are available on Treasury's IPP website. **Individuals within your company responsible for submitting invoices should review these materials before work begins on the contract.**

How do I receive assistance with IPP?

Treasury's IPP Customer Support team provides vendor assistance related to the IPP application, and is also available to assist IPP users and to answer any questions related to accessing IPP or completing the registration process. IPP application support is also available via phone at (866) 973-3131, Monday through Friday from 8:00 am to 6:00 pm ET, and via email at IPPCustomerSupport@fiscal.treasury.gov.

Specific questions regarding your contract or task order should be directed to the appropriate NRC Contracting Officer.

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ATTACHMENT 1

BILLING INSTRUCTIONS FOR
TIME-AND-MATERIALS/LABOR-HOUR TYPE CONTRACTS (AUG 2017)

INVOICE/VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL (SAMPLE FORMAT – INVOICE ATTACHMENT)

a. Billing period. Insert the beginning and ending dates (day, month, year) of the period during which costs were incurred and for which reimbursement is requested.

b. Labor Hours Expended. Provide a general summary description of the services performed and associated labor hours utilized during the invoice period. Specify the Contract Line Item Number (CLIN) or SubCLIN, as applicable, and information pertaining to the contract's labor categories/positions, and corresponding authorized hours.

c. Property. For contractor acquired property, list each item with an initial acquisition cost of $50,000 or more and provide: (1) an item description, (2) manufacturer, (3) model number, (4) serial number, (5) acquisition cost, (6) date of purchase, and (7) a copy of the purchasing document.

d. Shipping. Insert weight and zone of shipment, if shipped by parcel post.

e. Charges for freight or express shipments. Attach prepaid bill if shipped by freight or express.

f. Instructions. Include instructions to consignee to notify the Contracting Officer of receipt of shipment.

g. Direct Costs. Insert the amount billed for the following cost elements, adjustments, suspensions, and total amounts, for both the current billing period and for the cumulative period (from contract inception to end date of this billing period).

1. Direct (Burdened) Labor. This consists of salaries and wages paid (or accrued) for direct performance of the contract itemized, including a burden (or load) for indirect costs (i.e., fringe, overhead, General and Administrative, as applicable), and profit component, as follows:

Labor Category	Hours Billed	Burdened Hourly Rate	Total	Cumulative Hours Billed

2. Contractor-acquired property ($50,000 or more). List each item costing $50,000 or more and having a life expectancy of more than one year. List only those items of equipment

for which reimbursement is requested. For each such item, list the following (as applicable): (a) an item description, (b) manufacturer, (c) model number, (d) serial number, (e) acquisition cost, (f) date of purchase, and (g) a copy of the purchasing document.

3. Contractor-acquired property (under $50,000), Materials, and Supplies. These are equipment other than that described in (2) above, plus consumable materials and supplies. List by category. List items valued at $1,000 or more separately. Provide the item number for each piece of equipment valued at $1,000 or more.

4. Materials Handling Fee. Indirect costs allocated to direct materials in accordance the contractor's usual accounting procedures.

5. Consultant Fee. The supporting information must include the name, hourly or daily rate of the consultant, and reference the NRC approval (if not specifically approved in the original contract).

6. Travel. Total costs associated with each trip must be shown in the following format:

Start Date		Destination		Costs
From	To	From	To	$

(Must include separate detailed costs for airfare, per diem, and other transportation expenses. All costs must be adequately supported by copies of receipts or other documentation.)

7. Subcontracts. Include separate detailed breakdown of all costs paid to approved subcontractors during the billing period.

h. Total Amount Billed. Insert columns for total amounts for the current and cumulative periods.

i. Adjustments. Insert columns for any adjustments, including outstanding suspensions for unsupported or unauthorized hours or costs, for the current and cumulative periods.

j. Grand Totals.

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ATTACHMENT 1

BILLING INSTRUCTIONS FOR
TIME-AND-MATERIALS/LABOR-HOUR TYPE CONTRACTS (AUG 2017)

3. Sample Invoice/Voucher Information (to be included as an attachment)

Sample Invoice/Voucher Information (Supporting Documentation must be attached)

This invoice/voucher represents reimbursable costs for the billing period from____through____.

			Amount Billed	
			Current Period	Cumulative
(a)	**Direct Costs**			
	(1)	Direct burdened labor	$_____	$_____
	(2)	Government property ($50,000 or more)	$_____	$_____
	(3)	Government property, Materials, and Supplies (under $50,000 per item)	$_____	$_____
	(4)	Materials Handling Fee	$_____	$_____
	(5)	Consultants Fee	$_____	$_____
	(6)	Travel	$_____	$_____
	(7)	Subcontracts	$_____	$_____
		Total Direct Costs:	**$_____**	**$_____**
(b)	**Total Amount Billed**		**$_____**	**$_____**
(c)	**Adjustments** (+/-)		**$_____**	**$_____**
(d)	**Grand Total**		**$_____**	**$_____**

(The invoice/voucher format provided above must include information similar to that included below in the following to ensure accuracy and completeness.)

SAMPLE SUPPORTING INFORMATION

The budget information provided below is for format purposes only and is illustrative.

Cost Elements:

1) Direct Burdened Labor - $4,800

Labor Category	Hours Billed	Burdened Rate	Total	Cumulative Hours Billed
Senior Engineer I	100	$28.00	$2,800	975
Engineer	50	$20.00	$1,000	465

ATTACHMENT 1

BILLING INSTRUCTIONS FOR
TIME-AND-MATERIALS/LABOR-HOUR TYPE CONTRACTS (AUG 2017)

Computer Analyst	100	$10.00	$1,000	320
			$4,800	1,760 hrs.

Burdened labor rates must come directly from the contract.

2) Government-furnished and contractor-acquired property ($50,000 or more) - $60,000

Prototype Spectrometer - item number 1000-01 = $60,000

3) Government-furnished and contractor-acquired property (under $50,000), Materials, and Supplies - $2,000

10 Radon tubes @ $110.00	=	$1,100
6 Pairs Electrostatic gloves @ $150.00	=	$ 900
		$2,000

4) Materials Handling Fee - $40

(2% of $2,000 in item #3)

5) Consultants' Fee - $100

Dr. Carney - 1 hour fully-burdened @ $100 = $100

6) Travel - $2,640

(i) Airfare: (2 Roundtrip trips for 1 person @ $300 per r/t ticket)

Start Date	End Date	Days	From	To	Cost
4/1/2011	4/7/2011	7	Philadelphia, PA	Wash, D.C.	$300
7/1/2011	7/8/2011	8	Philadelphia, PA	Wash, D.C.	$300

(ii) Per Diem: $136/day x 15 days = $2,040

7) Subcontracting - $30,000

Company A	= $10,000
Company B	= $20,000
	$30,000

(EX: Subcontracts for Companies A & B were consented to by the Contracting Officer by letter dated 6/15/2011.)

Total Amount Billed $99,580

Adjustments (+/-)	- 0
Grand Total	$99,580

4. Definitions

Material handling costs. When included as part of material costs, material handling costs shall include only costs clearly excluded from the labor-hour rate. Material handling costs may include all appropriate indirect costs allocated to direct materials in accordance with the contractor's usual accounting procedures.