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| | | 1. CONTRACT ID CODE | PAGE 1 | OF 7 | PAGES |
| AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT | | | | | |

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| 2. AMENDMENT/MODIFICATION NO. M1110 | 3. EFFECTIVE DATE (M/D/Y) (See Block 16C) | 4. REQUISITION/PURCHASE REQ. NO. N/A | 5. PROJECT NO. (If applicable) |
| 6. ISSUED BY CODE U.S. Department of Energy Pacific Northwest Site Office Post Office Box 350 Richland, WA 99352 | | 7. ADMINISTERED BY (If other than Item 6) CODE | |

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| 8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code) Battelle Memorial Institute Pacific Northwest Division Richland, Benton County, WA 99352 DUNS # 032987476 | | <input type="checkbox"/> | 9A. AMENDMENT OF SOLICITATION NO. |
| | | <input type="checkbox"/> | 9B. DATED (SEE ITEM 11) |
| | | <input checked="" type="checkbox"/> | 10A. MODIFICATION OF CONTRACT/ ORDER NO. DE-AC05-76RL01830 |
| CODE | | | 10B. DATED (SEE ITEM 13) December 30, 1964 |
| FACILITY CODE | | | |

11. THIS ITEM 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 DATE AND HOUR 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 amendment and is received prior to the opening hour and date specified.

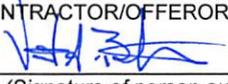
12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS SET FORTH IN ITEM 14.

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| CHECK | A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE |
| <input type="checkbox"/> | |
| <input type="checkbox"/> | B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO AUTHORITY OF FAR 43.103(b). |
| <input checked="" type="checkbox"/> | C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO THE AUTHORITY OF: The mutual agreement of the parties for work within the scope of the contract |
| <input type="checkbox"/> | D. OTHER (Specify type of modification and authority) |

E. IMPORTANT: Contractor is not, is required to sign this document and return 2 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
This bilateral contract modification incorporates changes to Section H and J. (See Continuation Pages for the purpose of this modification).

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| 15A. NAME AND TITLE OF SIGNER (Type or print) Vincent A. Branton General Counsel | | 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Ryan M. Kilbury Contracting Officer | |
| 15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign) | 15C. DATE SIGNED 6/22/2017 | 16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer) | 16C. DATE SIGNED 6-23-17 |

1.0 Purpose of Modification:

The Department of Energy (DOE), Office of Science (SC), Pacific Northwest Site Office (PNSO) is modifying the Contract to provide for changes in Sections H and J.

2.0 Description of Modification:

1. Revise Part I, Section H, Special Contract Requirements, Table of Contents to add Clause H-43 “Real Property Asset Management”.
2. Revise Part I, Section H, Special Contract Requirements, Clause H-10 “Protection of Human Subjects” to read as follows:

Before undertaking the performance of any research involving the use of human subjects, the provisions of 10 CFR 745, 45 CFR Part 46, and the applicable DOE requirements regarding Protection of Human Subjects as incorporated into this Contract in Section J, Appendix D, must be complied with. This requirement applies to research undertaken with DOE support, strategic partnership projects, and collaborations with other institutions. Intelligence-related projects with potential human subjects research (HSR) and/or Human Terrain Mapping (HTM) tasks, will be reviewed by the Central DOE Institutional Review Board - Classified (IRB-C), regardless of the classification level. The DOE Institutional Official's approval is required following IRB-C approval, and prior to initiation, of any HSR and/or HTM projects that are classified in whole or in part, regardless of whether they can be reviewed by the IRB-C in an unclassified manner. [M1110]

3. Revise Part I, Section H, Special Contract Requirements, Clause H-21 “Advance Understandings on Allowable Costs” to update Item 12) Extended Domestic Travel to read as follows:
 - 12) Extended Domestic Travel – For any assignment of Contractor personnel to a domestic location expected to exceed 30 consecutive calendar days, the contractor will be reimbursed the lessor of temporary relocation costs or a reduced per diem. The Contractor shall cap Meals and Incidental Expenses (M&IE) and lodging at 55% of per diem if utilizing Federal Travel Regulation (FTR) stipulated per diems. In no case shall actual expenditures exceed 55% of FTR per diem rates. Per diem will not be reimbursed for any extended domestic travel which exceeds three (3) years. Per diem costs will not be reimbursed for any extended domestic travel unless the contractor employee maintains a residence at the permanent duty station. [M1110]
4. Revise Part I, Section H, Special Contract Requirements, H-29 “Non-Federal Agreements for Commercializing Technology (Pilot)” to add Paragraph 15. “*Use of Federal Funds*” to read as follows:

The following paragraph applies for the period starting from the date of modification incorporating this clause and terminates in accordance with Paragraph 12.

“Termination of ACT Authority”:

15. *Use of Federal Funds.* Notwithstanding the prohibition set forth in this clause related to the use of federal funds to fund an ACT Agreement, the Contractor is permitted to negotiate and execute, subject to DOE approval as described in Paragraph 4 above and as set forth herein, up to three (3) ACT Agreements with sponsoring third parties which fall within the scope of a Federally funded contract or award. The following additional requirements apply:
- a. The Contractor agrees, prior to executing such agreements, to submit to DOE for approval a modified procedure for implementing the execution of such federally funded agreements.
 - b. If the Contractor is charging the third party additional compensation beyond the direct costs of the work at the Laboratory, the ACT Agreement will not be approved unless DOE or the Contractor obtains a written a certification from the Federal Agency funding the third party that such additional compensation using federal funds is permissible under the Federal award. In order to maximize the transparency of the transaction to the funding agency, the written certification shall be in the form of a standard template approved by DOE. Such template shall include at a minimum:
 - i. The amount of and explanation for the cost difference between performing the work as an ACT Agreement v. an SPP or CRADA; and
 - ii. A detailed description of the risk and/or consideration offered the participant by the Contractor in exchange for charging beyond full cost recovery. This information shall also be included in the statement of consideration contained in the ACT proposal package submitted to the CO.
 - c. The Contractor may not agree to any terms and conditions of the Federal award that conflict with this Contract.
 - d. Notwithstanding the order of precedence set forth in Paragraph 8.g above, rights to ACT inventions and copyrights arising from work conducted under this paragraph made by the Contractor shall be governed by the terms of the Patent and Data Rights Clauses of this Contract, as well as H-6, “Other Intellectual Property Matters.” The ACT Class Waiver does not apply to any ACT agreement funded with federal funds.

- e. The Contractor may not elect to retain private ownership of ACT IP arising under any ACT Agreement funded with federal funds as set forth in Paragraph 8.f.
- f. DOE's approval to negotiate and execute a federally funded ACT Agreement under this paragraph is for the sole purpose of evaluating and considering the Contractor and DOE's processes and procedures for implementing such ACT Agreements and does not in any way provide the Contractor authority beyond the scope of this paragraph or imply that such authority shall be forthcoming under this PILOT. On a case by case basis and upon request of the Contractor, DOE may consider approving additional ACT Agreements beyond the three (3) agreement limit set forth above.

(End of Clause)

[M1110]

5. Revise Part I, Section H, Special Contract Requirements, to add Clause H-43, "Real Property Asset Management" to read as follows:

H-43 Real Property Asset Management

- A. The Contractor shall comply with Departmental requirements and guidance involving the acquisition, management, maintenance, disposition, or disposal of real property assets to ensure that real property assets are available, utilized, and in a suitable condition to accomplish DOE's missions in a safe, secure, sustainable, and cost-effective manner. Contractors shall meet these functional requirements through tailoring of their business processes and management practices, and use of standard industry practices and standards as applicable. The Contractor shall flow down these requirements to subcontracts at any tier to the extent necessary to ensure the Contractor's compliance with the requirements.
- B. Contractor shall:
 - 1. Submit all real estate actions to acquire, utilize, and dispose of real property assets to DOE for review and approval and maintain complete and current real estate records.
 - 2. Perform physical condition and functional utilization assessments on each real property assets at least once every five-year period or at another risk-based interval as approved by SC-1 based on industry leading practices, voluntary consensus standards, and customary commercial practices.

3. Establish a maintenance management program including: a computerized maintenance management system (CMMS); a condition assessment system; a master equipment list; maintenance service levels; a method to determine for each asset the minimum acceptable level of condition; methods for categorizing deficiencies as either deferred maintenance and repair (DM) or repair needs; management of the DM backlog; a method to prioritize maintenance work; and a mechanism to track direct and indirect funded expenditures for maintenance, repair, and renovation at the asset level.
4. Maintain Facilities Information Management System (FIMS) data and records for all lands, buildings, trailers, and other structures and facilities. FIMS data must be current and verified annually.

(End of Clause)

[M1110]

6. Revise Section J, Appendix A, Advance Agreement on Human Resources costs to update the language under Article XI "Employee Programs" at Paragraph (g) Extended Travel Duty to be read as follows:

(g) Extended Travel Duty (ETD) –Contractor shall maintain a program within the following parameters for ETD for all PNNL sponsors. PNSO review and approval is only required for DOE Office of Science assignments.

- (1) ETD will not exceed three years, i.e. (36) months, in duration and a break between assignments should be at least 12 months.
- (2) If a staff member is not maintaining a residence and/or the assignment will exceed 12 months from inception, Temporary Change of Station should be evaluated.
- (3) Employee initial trip to assignment location and final travel from assignment location will be reimbursed at 100% Federal Travel Regulation (FTR) per diem rate
- (4) Reimbursement for Meal & Incidental Expenses (M&IE) for the first 30 days and last 30 days of the assignment shall be at 100% of the FTR per diem rate. Reimbursement for lodging for the first 60 days and last 30 days of the assignment shall be paid at 100% of the FTR per diem rate. Interim M&IE and Lodging expenses will be reimbursed in accordance with Section H, H-21 "Advance Understandings on Allowable Costs", Item 12) Extended Domestic Travel.
- (5) Employee may be reimbursed up to 10 trips home from assignment location

in a 12-month period.

- (6) Employee may be authorized to ship up to 1,000 pounds of personal effects to the assignment location. Staff member may be authorized to ship an additional 3,000 pounds of personal effects if the staff member waives his/her trips home for the duration of the assignment.
- (7) Employee may be authorized to ship one Personally Operated Vehicle (POV), unless they travel to the assignment location via a POV.
- (8) Employee may be authorized to Extended TDY Tax Reimbursement Allowance (ETTRA), which will be calculated in accordance with the FTR methodology (FTR 301-11.604).
- (9) Employee may receive a transit subsidy for public transportation for assignments in the Washington, DC, area, consistent with what is allowed for Federal employees.
- (10) M&IE cannot be claimed concurrently in two different temporary duty locations.

[M1110]

7. Revise Section J, Appendix D, List of Applicable DOE Directives & External Requirements as follows:

Delete:

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| CRD O 430.1B, Chg. 2 | Real Property Asset Management |
| DOE-0223 | RL Emergency Implementing Procedures – Applicable to PNNL-Managed Facilities and Activities on the Hanford Site |

Add:

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| CRD M 142.2-1, Admin Chg. 1 | Manual for Implementation of the Voluntary Offer Safeguards Agreement and Additional Protocol with the International Atomic Energy Agency |
| CRD O 411.2 | Scientific Integrity |

Replace:

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| CRD O 142.3A | Unclassified Foreign Visits and Assignments Program |
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| CRD O 200.1A | Information Technology Management |
| CRD O 456.1, Admin Chg. 1 | The Safe Handling of Unbound Engineered Nanoparticles |
| CRD O 460.1C | Packing and Transportation Safety |
| CRD O 461.1B | Packaging and Transfer for Offsite Shipment of Materials of National Security Interest |
| CRD O 470.3B | Graded Security Protection (GPS) Policy |
| CRD O 470.4B, Admin Chg. 1 | Safeguards and Security Program |
| CRD O 483.1A | DOE Cooperative Research and Development Agreements |
| Replace With: | |
| CRD O 142.3A, Chg. 1 | Unclassified Foreign Visits and Assignments Program |
| CRD O 200.1A, Chg. 1 | Information Technology Management |
| CRD O 456.1A | The Safe Handling of Unbound Engineered Nanoparticles |
| CRD O 460.1D | Hazardous Materials Packaging and Transportation Safety |
| CRD O 461.1C | Packaging and Transfer for Offsite Shipment of Materials of National Security Interest |
| CRD O 470.3C | Design Basis Threat (DBT) Order |
| CRD O 470.4B, Admin Chg. 2 | Safeguards and Security Program |
| CRD O 483.1B | DOE Cooperative Research and Development Agreements |

8. This modification results in no further changes to the Contract.

(End of Contract Modification)

[M1100]