			1. CONTRACT ID CODE	PAGE OF PAGES
	IT OF SOLICITATION/MODIFIC	ATION OF CONTRACT		1 12
2. AMENDMEN	T/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
0247		See Block 16C		N/A
6. ISSUED BY	CODE	892430	7. ADMINISTERED BY (If other than Item 6)	CODE 06006
SC Chica	go Service Center		Fermi Site Office	
Office o	f Science - Chicago		U.S. Department of Ener	дХ
U.S. Dep	artment of Energy		Fermi Site Office	
	th Cass Avenue		P.O. Box 2000	
Lemont I	L 60439		Batavia IL 60510	
8. NAME AND A	DDRESS OF CONTRACTOR (No., street,	county, State and ZIP Code)	(x) 9A. AMENDMENT OF SOLICITATION NO	
FERMI RES	SEARCH ALLIANCE, LLC			
Attn: JOH			9B. DATED (SEE ITEM 11)	
FERMI RES	SEARCH ALLIANCE, LLC			
PINE ST.	AND KIRK RD, MS-213			
BATAVIA I	IL 605105011		x 10A. MODIFICATION OF CONTRACT/OR DE-AC02-07CH11359	DER NO.
			10B. DATED (SEE ITEM 13)	
CODE 626	5399831	FACILITY CODE	11/01/2006	
		11. THIS ITEM ONLY APPLIES	S TO AMENDMENTS OF SOLICITATIONS	
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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*)

		Robert M. Scott	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
		Signature on File	04/07/2020
(Signature of person authorized to sign)		(Signature of Contracting Officer)	01/07/2020
		071110.000.000	

Previous edition unusable

STANDARD FORM 30 (REV. 11/2016) Prescribed by GSA FAR (48 CFR) 53.243

Table of Changes for

Fermi Research Alliance, LLC

Contract No. DE-AC02-07CH11359 Modification No. 247

The purpose of this modification is to update the following:

1.

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CONTRACT SECTION J ATTACHMENT 9 APPENDIX [

DOE ORDERS AND NOTICES AND LIST B – FERMILAB
WORK SMART STANDARDS

Order No.	Dates	С	Explanation for Change
DOE Order 142.3A Change 2	12/13/2019	Order Revised	This Order was updated to remove the ability for the Under Secretary for Science and Energy to provide exemptions to DOE Order 142.3A to institutions of higher education under limited circumstances. Supersedes DOE O 142.3A Change 1.
DOE Order 232.2A Change 1	10/4/2019	Order Revised	This Order was updated to incorporate changes made to add the Invoked Technical Standards paragraph, and to clarify that this Order does not invoke any technical standards. Supersedes DOE O 232.2A.
DOE Order 251.1D Change 1	11/8/2019	Order Revised	This Order was updated to incorporate changes to update definitions and contact information; and provide clarification for directives development and review processes. Supersedes DOE O 251.1D.
DOE Order 443.1C	11/26/2019	Order Revised	Supersedes DOE O 443.1B Change 1.
DOE Order 483.1B Change 2	12/13/2019	Order Revised	This Order was updated to address the use of the DOE Science and Technology Risk Matrix. Supersedes DOE O 483.1 Chg1.
DOE Order 550.1 Change 1	12/13/2019	Order Revised	This Order was updated to address the use of the DOE Science and Technology Risk Matrix. Supersedes DOE O 550.1.

Contract No. DE-AC02-07CH11359 Section J, Attachment J.9 Appendix I, List B

ATTACHMENT J.9

<u>APPENDIX I</u>

DOE ORDERS AND NOTICES AND LIST B – FERMILAB WORK SMART STANDARDS

Applicable to the Management and Operation of Fermi National Accelerator Laboratory

Contract No. DE-AC02-07CH11359

APPENDIX I - DOE ORDERS AND NOTICES

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ORDERS/	DATES	TITLE
NOTICES		
O 130.1	09/29/1995	Budget Formulation
O 142.3A Change 2	12/13/2019	Unclassified Foreign Visits and Assignments Program
O 200.1A Change 1	01/13/2017	Information Technology Management
O 205.1C	05/15/2019	Department of Energy Cyber Security Program
O 206.1 Change 1	11/01/2018	Department of Energy Privacy Program
O 206.2	02/19/2013	Identity, Credential, and Access Management
O 221.1B	09/27/2016	Reporting Fraud, Waste, and Abuse to the Office the Inspector General
O 221.2A	02/25/2008	Cooperation with the Office of Inspector General
O 227.1A	12/21/2015	Independent Oversight Program
O 231.1B Change 1	11/28/2012	Environmental Safety and Health Reporting
O 232.2A Change 1	10/04/2019	Occurrence Reporting and Processing of Operations Information
		(Reporting for Informational Level Events is not required in the ORPS system. Notification to FSO is required)
O 241.1B	04/26/2016	Scientific and Technical Information Management
O 243.1B Change 1	07/08/2013	Records Management Program
O 251.1D Change 1	11/08/2019	Departmental Directives Program
O 252.1A Change 1	03/12/2013	Technical Standards Program
O 313.1	11/19/2009	Management and Funding of the Departments Overseas Presence
O 341.1A	10/10/2007	Federal Employee Health Services
O 350.1	02/01/2018	Contractor Human Resource Management Programs
Change 6		
O 410.2 Change 1	04/10/2014	Management of Nuclear Materials
O 411.2	01/04/2017	Scientific Integrity
O 412.1A Change 1	05/21/2014	Work Authorization System
O 413.1B	10/28/2008	Internal Control Program
O 413.2C Change 1	08/02/2018	Laboratory Directed Research and Development
O 413.3B Change 5	04/12/2018	Program and Project Management for the Acquisition of Capital Assets.
		The Memorandum from S. Binkley (dated 8/2/2018) exempted Capital Asset Projects with a TPC under \$50M from the requirements of this Order, and delegated responsibility for their successful delivery to the cognizant SC Laboratory Director.

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ORDERS/	DATES	TITLE
G 413.3-5A	09/23/2011	U.S. Department of Energy Performance Baseline Guide
G 413.3-7A	01/12/2011	Risk Management Guide
O 420.2C	07/21/2011	Safety of Accelerator Facilities
O 436.1	05/2/2011	Departmental Sustainability
O 442.1B	01/31/2019	DOE Employee Concerns Program
O 442.2 (Change 1)	10/5/2016	Differing Professional Opinions for Technical Issues
		Involving Environment, Safety and Health Technical Concerns
O 443.1C	11/26/2019	Protection of Human Research Subjects
O 450.2 Change 1	01/17/2017	Integrated Safety Management
O 458.1	01/15/2013	Radiation Protection of the Public and the Environment
Change 3		
O 460.1D	12/20/2016	Hazardous Materials Packaging and Transportation Safety
O 462.1 Change 1	7/10/2013	Import and Export of Category 1 and 2 Radioactive Sources
		and Aggregated Quantities
O 470.3C	11/23/2016	Design Basis Threat Order (OUO)
O 470.4B Change 2	01/17/2017	Safeguards and Security Program
O 470.5	06/02/2014	Insider Threat
O 471.3	01/13/2011	Identifying and Protecting Official Use Only Information
Change 1		
O 472.2 Change 1	07/09/2014	Personnel Security
O 473.3A Change 1	01/02/2018	Protection Program Operations – Attachment 3, Section A, Chapters 1-7 and 9-11
O 474.2 Change 4	09/13/2016	Nuclear Material Control and Accountability
0 475.1	12/10/2004	Counterintelligence
O 481.1E Change 1	12/13/2019	Strategic Partnership Projects (Formerly Known as Work for Others (Non-Department of Energy Funded Work)
O 483.1B Change 2	12/13/2019	DOE Cooperative Research and Development Agreements
0 484.1	06/30/2014	Reimbursable Work for the Department of Homeland
Change 2		Security
O 486.1	06/07/2019	Department of Energy Foreign Government Talent
		Recruitment Programs
O 522.1A	08/02/2018	Pricing of Departmental Materials and Services
O 534.1B	01/6/2003	Accounting
O 550.1 Change 1	12/13/2019	Official Travel
Std. 1090-2011	09/01/2011	Hoisting and Rigging Standard
Std. 1196-2011	4/1/2011	Derived Concentration Technical Standard

Contract No. DE-AC02-07CH11359 Section J, Attachment J.9 Appendix I, List B

LIST B Work Smart Set of Standards

10 CFR 1021 (DOE NEPA rules) 10 CFR 1022 (Compliance with Floodplain/Wetlands environmental review requirements) 10 CFR 1046 Subpart B, App. A, Chapter X, par. H through I inclusive. (Physical protection of security interests, protective force personnel) 10 CFR 835 (Occupational radiation protection - applicable and enforceable portions) 10 CFR 850 (Chronic Beryllium Disease Prevention Program) 10 CFR 851 (Worker Safety and Health Program) 10 CFR 860 (Trespass to land owned & leased by the U.S. Government) 17 IAC 525 and permit pursuant (Nuisance animal trapping permits) 17 IAC 3700 and all permits pursuant (Construction in floodways of rivers, lakes and 17 IAC 3702 (Construction and Maintenance of Dams) 17 IAC 3704 and all permits pursuant (Regulation of public waters) 17 IAC 3708 and all permits pursuant (Floodway construction in Northeast Illinois) 18 U.S. Code Sections 841-848 (Use, or threat of use, of explosives; includes civil disorders) 28 CFR 36 (Section 302(b)(2) of the Americans with Disabilities Act and Section 4.1.3(9) of the ADAAG -- accommodations and accessibility) 29 CFR 1903.13 (Imminent danger) 29 CFR 1903.2 (Posting of notice...) 29 CFR 1904 (Recordkeeping and reporting occupational injuries and illnesses) 29 CFR 1910 (OSHA general industry standards - applicable and enforceable portions) 29 CFR 1926 (OSHA construction industry standards - applicable and enforceable portions) 29 CFR 1928 Subpart C (Roll-over protective structures - applicable and enforceable portions) 29 CFR 1928 Subpart D (Safety for agricultural equipment - applicable and enforceable portions) 29 CFR 1977.12 (Exercise of any right afforded by the Act) 29 CFR 1977.4 (Persons prohibited from discriminating) 29 IAC Chapter 1, Subchapter f (Emergency services, disasters, and civil defense /ESDA/ chemical safety) 33 CFR 320-323, 328-330 (Army Corp of Engineers wetlands regs) 35 IAC (State of IL environmental regs - applicable and enforceable portions) 36 CFR 60, 63, 65 (National historic landmark program) 36 CFR 78-79 (NHPA waiver and collection curation regs) 36 CFR 800 (Protection of historic and cultural properties) 40 CFR (Federal environmental regs - applicable and federally-enforceable portions)

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41 IAC 100 (Fire prevention and safety)
41 IAC 2120 (Boiler and pressure vessels)
41 IAC 160 (Storage, transportation, sale and use of gasoline and volatile oils: rules relating
to general storage)
41 IAC 180 (Storage, transportation, sale and use of volatile oils)
43 CFR 7 (Archaeological collections)
49 CFR (Offsite)
Parts 100-177 (Applicable Parts)
Parts 178-199 (Applicable Parts)
Parts 382-399 (Applicable Parts)
49 CFR (Onsite)
Parts 382-399 (Applicable Parts)
177.848 (Segregation Table for Hazardous Materials)
50 CFR 17 (Endangered species rules)
71 IAC 400 (Illinois accessibility code, Subparts C-F)
77 IAC 830 (Structural pest control code)
77 IAC 855 (Rules for Asbestos Abatement for Public & Private Schools and Commercial &
Public Buildings in Illinois)
77 IAC 890 (Plumbing code)
77 IAC 900 (Drinking water systems requirements)
77 IAC 905 (Private Sewage Disposal Code)
77 IAC 920 (Water well construction code)
77 IAC 925 (Well pump installation)
225 ILCS 207 (Commercial and Public Building Asbestos Abatement Act)
ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and
Biological Exposure Indices, 2005
ANSI A 17.1 (Elevator Construction)
ANSI A 17.3 (Elevator Maintenance)
ANSI/IWCA I-14.1 2001 (Standard for Window Cleaning)
ANSI B11 series (Metalworking - applicable portions)
ANSI B15.1 (Power transmission apparatus)
ANSI O1.1 (Woodworking machinery)
ANSI Z88.2 (Respiratory Protection) 1992
ANSI Z136.1 (Lasers), 2000

AWS (Ameri	can Welding Standard) Z 49.1 (Cutting, Welding and Hot Work Activities) 1
version	
	AE 15 (Mechanical refrigeration)
	B30.10 (Hooks) 2005
ANSI/ASME	B30.11 (Monorails and Underhung Cranes) 2004
ANSI/ASME	B30.16 (Overhead Hoists (Underhung)) 2003
ANSI/ASME	B30.17 (Overhead and Gantry Cranes (Top Running Bridge, Single Girder,
Undernung H	oist)) 2003
ANSI/ASME	B30.2 (Overhead and gantry cranes) 2005
ANSI/ASME	B30.20 (Below the hook lifting devices) 2006
ANSI/ASME	B30.21 (Manually Lever Operated Hoists) 2005
ANSI/ASME	B30.22 (Articulating Boom Cranes) 2002
ANSI/ASME	B30.5 (Mobile and locomotive truck cranes) 2004
	B30.9 (Slings) 2003
ANSI/ASME	B31.1 (Power piping) 2001, B31.1a 2002, Addenda to b 31.1 2001
	B31.3 (Process Piping) 2004
ANSI/ASME	B31.5 (Refrigeration piping) 2001
ANSI/ASME	B31.8 (Gas transmission and piping systems) 2003
	B31.9 (Building Services Piping) 1996
	al and Historic Preservation Act of 1974 (P.L. 93-291)
Archaeologic	al Resources Protection Act of 1979 [amended], 16 USC 470aa et seq.
ASME Press	ure Vessel Code - Section VIII
ASME B20.1	1996 (Safety Standard for Conveyors & Related Equipment)
Atomic Energ	y Act of 1954 [amended], 42 USC 2011 et seq.
	1997 (Radiation Protection Instrumentation Test and Calibration, Portable
Survey Instrur	nents)
Instrumentati	
Industries	1.00.01 – 2004 Application of Safety Instrumented Systems for the Process
Batavia Code	of Regulations, City Ordinance, Section 8-3-10-3
International I	Building Code Fire Prevention Code (latest edition)
	Building Code (latest edition)
3oiler & Press	ure Vessels of the Illinois Office of the State Fire Marshall - applies to CUB
Boilers Only	
	RA, 42 USC 9601 et seq.
City Code of V	Warrenville, IL Title 7, Chapter 4, sewer/sewerage ordinance
Clean Air Act / Plan, 40 CFR	Amendments 1990, 42 USC 7401 et seq., and Illinois State Implementation
lean Water	Act, 33 USC 1251 et seg.

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DOE Order 420.2C Safety of Accelerator Facilities
DuPage County Health Department Private Water Supply Ordinance (Chapter 18, Article
18-4, DuPage County Code)
E.O. 11988 (Floodplain Management)
E.O. 11990 (Protection of Wetlands)
E.O. 12580 (Implementation of superfund); Amended by E.O. 13016
E.O. 13058 (Protecting Federal Employees and the Public from Exposure to Tobacco Smoke in the Federal Work Place)
Endangered Species Act, 16 USC 1531 et seq.
Federal Facility Compliance Act, 42 USC 6961
Fermilab Nuclear Materials Control and Accountability Implementation Plan
FESHM 2010 (Planning and review of accelerator facilities and their operations)
FESHM 3010 (Significant and Reportable Occurrences) (formerly, Occurrence reporting)
FESHM 5031 (Pressure vessels)
FESHM 5031.1 (Piping systems)
FESHM 5032 (Cryogenic system review)
FESHM 5032.1 (Liquid nitrogen dewar installation and operation rules)
FESHM 5032.2 (Liquid Cryogenic Targets)
FESHM 5032.3 (Transporting gases in building elevators)
FESHM 5033 (Vacuum vessel safety)
FESHM 5033.1 (Vacuum window safety)
FESHM 5035 (Mechanical refrigeration systems)
FESHM 9100 (Fermilab electrical safety program)
FESHM 9110 (Electrical utilization equipment safety)
FESHM 9120 (AC electrical power distribution safety)
FESHM 9130 (Management and use of cable tray systems)
FESHM 9140 (Protection against exposed electrical bus)
FESHM 9160 (Low voltage, high current power distribution systems)
FESHM 9180 (Hazard Mitigation for Electrical Workers)
FESHM 4240 (Oxygen deficiency hazards)
FESHM 7060 (Fall Protection Program)
FESHM 4120 (Ergonomics Program)
FESHM 6020.3 (Storage and use of flammable gases)
FESHM 10170 (Aviation safety)

FIFRA, 7 USC 136 et seq.

FRCM Article 362 (X-Ray Generating Devices & Radiography Sources)

FRCM Article 411 (Radioactive Material Identification, Storage and Control - Definitions)

Handbook for Sampling & Sample Preservation of Water and Wastewater, EPA-600/4-82-029

IEC 61511, Functional Safety, Safety Instrumented Systems for the Process Industry Sector Illinois Chemical Safety Act, 430 ILCS 45/1 et seq.

Illinois Compiled Statutes (ILCS) Chapter 625 (State vehicle code -- Applicable Portions)

Illinois Department of Public Health, DuPage County Dept. Public Health. CDC December 7,1990

Illinois Endangered Species Protection Act, 520 ILCS 10/1 et seq.

Illinois Ground Water Protection Act, 415 ILCS 55/1 et seq.

Illinois Health and Safety Act, 820 ILCS 225/1 et seq.

Illinois Pesticide Act, 415 ILCS 60/1 et seq.

Illinois Structural Pesticide Act, 225 ILCS 235/1 et seq.

Kane County Health Department Ordinance 04-199/05-141 Water Well Code

National Fire Protection Association Codes and Standards (NFPA Standards - applicable portions)

NFPA (National Electric Code), 2005

NFPA-520 Standard on Subterranean Spaces, version 2005

NFPA 70E (Standard for Electrical Safety in the Workplace), 2004 (except, Tables 130.7(C)(9) (Hazard/Risk Category Classification), 130.7(C)(10) (Protective Clothing and Personal Protective Equipment), and 130.7(C)(11) (Protective Clothing Characteristics))

NFPA 70E (Standard for Electrical Safety in the Workplace), 2009 (Tables 130.7(C)(9) (Hazard/Risk Category Classification), 130.7(C)(10) (Protective Clothing and Personal Protective Equipment), and 130.7(C)(11) (Protective Clothing Characteristics))

National Historic Preservation Act of 1966 [amended], 16 USC 470 et seg.

Native American Graves Protection and Repatriation Act of 1990, 25 USC 3001 et seq.

NEPA, 42 USC 4321 et seq.

OSH Act, 29 USC 654(a)(1) -- General duty clause.

Pressure Equipment Directive (PED) 97/23

Privacy Act of 1974, 5 USC 552a

RCRA Part B Permit (Illinois Log #131), including Emergency Contingency plan

RCRA, 42 USC 6901 et seq.

Recommended standards for Water Works, Great Lakes Upper Mississippi R. Bd. of State Public Health & Environmental Managers (1992)

Safe Drinking Water Act, 42 USC 300f et seq.

Standard Methods for the Examination of Water and Wastewater, 18th Ed., APHA (1992) Standards and Specifications for Soil Erosion and Sediment Control, 10/87, IEPA 87-102 TSCA, 15 USC 2601 et seg.

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UL Listing

Uniform Federal Accessibility Standards, Chapter 4, Accessible Elements and Spaces: Scope and Technical Requirements

Energy Solutions LLC Bulk Waste Disposal and Treatment Facilities Waste Acceptance Criteria

Rather than attempt a precise analysis of all necessary standard citations to exclude nonapplicable parts, inclusive citations were made qualified by the phrase "applicable and enforceable parts thereof."

To the extent these standards apply to DOE and not the contractor, the contractor will assist DOE in complying with them.

This Set does not change any existing Federal, State or local enforcement authority. For standards not applicable as a matter of law (other than FESHM provisions), the applicable version shall be the revision in effect on July 14, 1995, unless otherwise indicated. For FESHM provisions, the applicable version shall be the most recent version established through the procedures set forth in Appendix I.

AMENDM	ENT OF SOLICITATION/MODIFIC	ATION OF CONTRACT		1. CONTRACT ID CODE	PAGE (OF PAGES
					1	2
	ENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQ	UISITION/PURCHASE REQ. NO.	5. PROJECT N N/A	IO. (If applicable)
02475 6. ISSUED B	Y CODE	See Block 16C	7.451		<u></u>	
		892430	7. AUN	INISTERED BY (If other than Item 6)	CODE 060	06
	cago Service Center			i Site Office		
	of Science - Chicago epartment of Energy			Department of Energy		
	outh Cass Avenue			ui Site Office Box 2000		
	IL 60439			uvia IL 60510		
8. NAME AN	D ADDRESS OF CONTRACTOR (No., street,	county, Stale and ZIP Code)	(x) ^{9A.}	AMENDMENT OF SOLICITATION NO.		
	ESEARCH ALLIANCE, LLC					
	OHN MYER		9B,	DATED (SEE ITEM 11)		
	ESEARCH ALLIANCE, LLC					
	. AND KIRK RD, MS-213 IL 605105011		x 10A	MODIFICATION OF CONTRACT/ORDER NO -AC02-07CH11359	Э.	
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			108	DATED (SEE ITEM 13)		
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CHECK ONE	A. THIS CHANGE ORDER IS ISSUED P ORDER NO. IN ITEM 10A.	URSUANT TO: <i>(Specify authority)</i> THE C T/ORDER IS MODIFIED TO REFLECT TH IN ITEM 14, PURSUANT TO THE AUTHO	CHANGE HE ADM ORITY C	DIFIES THE CONTRACT/ORDER NO. AS DES S SET FORTH IN ITEM 14 ARE MADE IN TH INISTRATIVE CHANGES (such as changes in F FAR 43.103(b).	IE CONTRACT	1 14.
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	D. OTHER (Specify type of modification a		••=-			
E. IMPORTAN		Is required to sign this document and i		copies to the issuing		
		Organized by UCF section headings, inclu	uding sol	icitation/contract subject matter where feasible	9.)	
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	ed on Page 2.					
Payment						
	- Direct Payment					
	S. Dept of Treasury					
	of Performance: 01/01/					
All security clearances (DOE Form 470.1) were previously approved - no form attached.					. •	

Except as provided herein, all terms and conditions of the docume	nt referenced in Item 9 A or 10/	A, as herelofore changed, remains unchanged and in full force	e and effect.	
15A. NAME AND TITLE OF SIGNER (Type or print)	8	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
Nigel Lockyer Direc	tor	Robert M. Scott		
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED	
(Signature of person authorities (asign)	4/1/2020	(Signature of Contracting Officer)	4/7/2020	
Previous edition unusable		ŚTANDAI	PD EODM 20 (REV/ 44/2016)	

STANDARD FORM 30 (REV. 11/2016) Prescribed by GSA FAR (48 CFR) 53.243

Modification No. 247 Contract No. DE-AC02-07CH11359 Page No. 2 of 2

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14. Description of Amendment/Modification:

The purpose of this modification is to update the following:

 SECTION J ATTACHMENT 9 APPENDIX I – DOE ORDERS AND NOTICES and LIST B – WORK SMART STANDARDS dated 8/5/2019, (attached hereto) is substituted for the APPENDIX I – DOE ORDERS AND NOTICES and LIST B – WORK SMART STANDARDS previously incorporated into this contract by Modification No. 245.

All other terms and conditions remain unchanged.

END OF MODIFICATION