

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE OF PAGES 1 2
2. AMENDMENT/MODIFICATION NO. A213	3. EFFECTIVE DATE See block 16C	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)		
6. ISSUED BY CODE U.S. Department of Energy Brookhaven Site Office 53 Bell Avenue, Building 464 Upton, NY 11974-5000		7. ADMINISTERED BY (If other than Item 6) Code			
8. NAME AND ADDRESS OF CONTRACTOR (No. street, county, State and ZIP Code) Brookhaven Science Associates, LLC 25 Brookhaven Avenue Building 460 Upton, New York 11973-5000		<input checked="" type="checkbox"/>	9.A. AMENDMENT OF SOLICITATION NO.		
			9.B. DATED (SEE ITEM 11)		
		<input checked="" type="checkbox"/>	10.A. MODIFICATION OF Contract/Order NO. DE-AC02-98CH10886		
			10.B. DATED (SEE ITEM 13) 01/05/1998		
CODE N/A	FACILITY CODE N/A				

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)

All required accounting and appropriations data are included in the attached financial worksheet and Section C.6 of the contract.

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

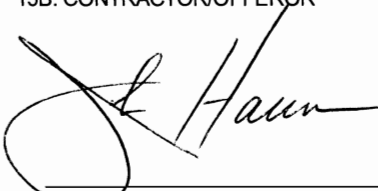

<input type="checkbox"/>	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
<input type="checkbox"/>	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).
<input type="checkbox"/>	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
<input checked="" type="checkbox"/>	D. OTHER (Specify type of modification and authority) Mutual agreement of the parties

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 heading, including solicitation/contract subject matter where feasible.)

This Modification is issued to obligate American Recovery and Reinvestment Act of 2009 funds in the amount of \$7,759,000 under Treasury Accounting Symbol 89-09/10-0227. As a result, Section C.6, "Recovery Act Projects" has been amended to add funding for High Energy Physics – Long Baseline Neutrino Experiment and increase funding for Basic Energy Sciences – Nanoscale Science Research Centers, Nuclear Physics – PHENIX Forward Vertex Detector MIE, and Nuclear Physics – Enhanced AIP Funding at NP User Facilities.

Furthermore, revise Clause I.104, "Obligation of Funds."

15A. NAME AND TITLE OF SIGNER (Type or print) John Hauser Chief Financial Officer		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Evelyn Landini Contracting Officer	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED 8/19/2009	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
 (Signature of person authorized to sign)		 BY (Signature of Contracting Officer)	

Said contract, as modified previously, is hereby further modified as follows:

- 1. Section C.6, Recovery Act Projects:** Replace the first page of this section with the revised attached page which adds a project to Category 6 Recovery Act projects for High Energy Physics entitled "Long Baseline Neutrino Experiment" and makes minor additions to other categories.
- 2. Section C.6.1, Recovery Act Projects Category 1:** Replace the pages of this Section with the attached revised pages which increase funding to the Basic Energy Sciences Project entitled "Nanoscale Science Research Centers."
- 3. Section C.6.4, Recovery Act Projects Category 4:** Replace the pages of this Section with the attached revised pages which increase the funding for the second Nuclear Physics (NP) Project, PHENIX Forward Vertex Detector MIE and the third Nuclear Physics (NP) Project, Enhanced AIP Funding at NP User Facilities.
- 4. Section C.6.6, Recovery Act Projects Category 6:** Replace the pages of this Section with the attached revised pages which add one High Energy Physics Project entitled "Long Baseline Neutrino Experiment." (Please note: Although this new project was originally funded for \$7M, the funding was adjusted to \$6M per Revision 01. Both actions are processed via this modification.)
- 5. Clause I.104 - OBLIGATION OF FUNDS:** The first sentence of paragraph (a) is revised to read as follows: "The amount presently obligated by the Government with respect to this Contract is **\$5,696,271,774.60.**"
- 6.** The following is a history of the change in the obligated amount since the last Modification that updated Clause I.104.

PRIOR OBLIGATION A211	\$ 5,688,512,774.60
INCREASE IN MOD A213	\$ <u>7,759,000.00</u>
CURRENT TOTAL OBLIGATION:	\$ 5,696,271,774.60

Attachments:

Financial Worksheet
Section C.6

- Section C.6.1 – Basic Energy Sciences
- Section C.6.4 – Nuclear Physics
- Section C.6.6 – High Energy Physics

C.6 – RECOVERY ACT PROJECTS

This section is created to identify individual Recovery Act Projects as follows:

1. Recovery Act Project Category 1: Basic Energy Sciences (BES)
 - National Synchrotron Light Source II (NSLS-II)
 - Nanoscale Science Research Centers
 - Light Source Improvements

2. Recovery Act Project Category 2: Science Laboratories Infrastructure (SLI)
 - Roofing
 - Mechanical & Electrical Upgrades
 - Chemistry Bldg Fire safety Corrections
 - Interdisciplinary Science Building

3. Recovery Act Project Category 3: Environmental Management (EM)
 - Accelerated Cleanup of Surplus Nuclear Facilities

4. Recovery Act Project Category 4: Nuclear Physics (NP)
 - PHENIX Silicon Vertex MIE
 - PHENIX Forward Vertex Detector MIE
 - Enhanced AIP Funding at NP User Facilities
 - Enhanced Utilization of Isotope Facilities

5. Recovery Act Project Category 5: Energy Efficiency and Renewable Energy (EERE)
 - Federal Lab Support for Recovery Act Transactions ARRA FY09

6. Recovery Act Project Category 6: High Energy Physics (HEP)
 - Advanced Technology R&D Augmentation
 - Long Baseline Neutrino Experiment

**C.6.1 – Recovery Act Project Category 1:
 Basic Energy Science (BES)**

- A. This modification increases the obligation of American Recovery and Reinvestment Act of 2009 funds by \$759,000.00 from \$157,810,000.00 to a revised total of \$158,569,000.00. The value of each project is indicated separately below.
- B. Clause I.104 DEAR 970.5232-4 “Obligation of Funds” has been adjusted accordingly.
- C. The specific work funded by this modification is as follows:

1. National Synchrotron Light Source II {NSLS-II} (\$150M)

Statement of Work: These funds provided under 39KC02 are for the construction associated with the NSLS-II, Project Number 07-SC-06. Specifically, this funding is to be used to optimize project execution by acceleration of civil construction and advancement of the designs and procurements of Accelerator System Components as compared to the approved project baseline plan.

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KC/CH13/9 Project Code 2005010	Basic Energy Science – NSLS-II

2. Nanoscale Science Research Centers (\$4.810M + \$.759M = revised TEC \$5.569M)

Statement of Work: These funds provided under KC020401H EQU to update, upgrade, or expand capabilities of the Center for Functional Nanomaterials to conduct leading edge science and serve users. Specifically, funds are provided as follows:

- Upgrade of JEOL Electron Beam Lithography System
- Mask Aligner for Optical Lithography
- Electron Energy-Loss Spectrometer
- Reactive Ion Etcher for Metals
- Transmission Electron Microscope for Soft Materials
- Reactor Scanning Tunneling Microscope
- High-Resolution Analytical Scanning Microscopy

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KC/CH13/9/ARRA-1 and Rev 01 Project Code 2005040	Basic Energy Science – Nanoscale Science Research Centers

3. Light Source Improvements (\$3M)

Statement of Work: Equipment funds are provided under KC0204011 EQU provided as follows:

- Transmission X-ray Microscope for In-Situ Study of Materials for Energy and Microelectronics Research at the National Synchrotron Light Source (NSLS)
- Advanced X-Ray Detectors for Enhanced NSLS Capabilities and User Throughput

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KC/CH13/9 ARRA-2 Project Code 2005045	Basic Energy Science – Light Source Improvements

D. The work described in this modification shall be performed using funds obligated under this contract, which have been appropriated under the Recovery Act of 2009, Pub. L. 111-5, and as such, is subject to the special statutory conditions, the additional contractual terms and conditions that are listed in paragraph E below and the changes made to Sections E and G of the contract pertaining to the Recovery Act. The funds obligated hereunder shall only be used to accomplish the work as set forth in paragraph C. above and may not be used for any other purpose without the prior written consent of the Contracting Officer.

E. The Contractor shall complete all Recovery Act Work funded by this modification in accordance with Recovery Act requirements, including the required completion dates specified therein, and by the completion date identified in the approved work authorization for the activity.

Note: Paragraph F pertains to the NSLS-II project only.

F. ACCELERATED WORK: The Contractor shall submit to the CO a revised project baseline that clearly identifies the changes to the baseline due to the acceleration of work to include a detailed description of accelerated work, a budget of estimated costs for the accelerated work, and a schedule for the performance of this work within 60 days of this modification.

**C.6.4 – Recovery Act Project Category 4:
 Nuclear Physics (NP)**

- A. This modification increases the obligation of American Recovery and Reinvestment Act of 2009 funds by \$1,000,000.00 from \$8,442,000.00 to a revised total of \$9,442,000.00. This modification increases PHENIX Forward Vertex Detector MIE and Enhanced AIP Funding at NP User Facilities. The value of each project is indicated separately below.
- B. Clause I.104 DEAR 970.5232-4 “Obligation of Funds” has been adjusted accordingly.
- C. The specific work funded by this modification is as follows:

1. PHENIX Silicon Vertex MIE (\$0.225M + \$.025M = revised TEC \$.250M)

Statement of Work: These funds are provided under KB-02-01-02-1 EQU to advance funding for equipment purchases for the PHENIX Silicon Vertex Tracker MIE (71RD) project, including data acquisition crates for front-end modules for strip detectors; data collection modules, and installation fixtures and external cooling system.

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KB/CH13/9/ARRA-1 and Rev 01 Project Code 2005200	Nuclear Physics - PHENIX Silicon Vertex MIE

2. PHENIX Forward Vertex Detector MIE (\$.767M + \$.2M = revised TEC \$.967M)

Statement of Work: These funds are provided under KB-02-01-02-1 EQU to advance funding for the purchasing of two silicon endcaps for the PHENIX Forward Vertex Detector MIE (81SF)

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KB/CH13/9/ARRA-2 and Rev 01 and Rev 02 Project Code 2005210	Nuclear Physics – PHENIX Forward Vertex Detector MIE

3. Enhanced AIP Funding at NP User Facilities (\$7.2M + \$.8M = revised TEC \$8M)

Statement of Work: These funds are provided under KB-02-02-01-1 for accelerated implementation of the stochastic cooling in both storage rings and implementation of electron lenses for RHIC.

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KB/CH13/9/ARRA-3 and Rev 01 Project Code 2005220	Nuclear Physics – Enhanced AIP Funding at NP User Facilities

4. Enhanced Utilization of Isotope Facilities (\$.225M)

Statement of Work: These funds are provided under ST-60-0103 for procuring and commissioning a new inductively coupled plasma (ICP) mass spectrometer. This funding will enhance isotope production and processing capabilities at BNL to enable the program to better meet the need for isotopes in short supply.

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
ST/CH13/9/ARRA-4 Project Code 2005230	Nuclear Physics – Enhanced Utilization of Isotope Facilities

- D. The work described in this modification shall be performed using funds obligated under this contract, which have been appropriated under the Recovery Act of 2009, Pub. L. 111-5, and as such, is subject to the special statutory conditions and the additional contractual terms and conditions that are listed in paragraph E below and the changes made to Sections E and G of the contract pertaining to the Recovery Act. The funds obligated hereunder shall only be used to accomplish the work as set forth in paragraph C. above and may not be used for any other purpose without the prior written consent of the Contracting Officer.
- E. The Contractor shall complete all Recovery Act Work funded by this modification in accordance with Recovery Act requirements, including the required completion dates specified therein, and by the completion date identified in the approved work authorization for the activity.

**C.6.6 – Recovery Act Project Category 6:
 High Energy Physics**

- A. This modification increases the obligation of American Recovery and Reinvestment Act of 2009 funds by \$6,000,000.00 from \$55,000.00 to a revised total of \$6,055,000.00. The value of each project is indicated separately below.
- B. Clause I.104 DEAR 970.5232-4 “Obligation of Funds” has been adjusted accordingly.
- C. The specific work funded by this modification is as follows:

1. Advanced Technology R&D Augmentation (\$.055M)

Statement of Work: These funds are provided under KA-15-02-01-1 for the first year’s work on “A Laboratory-University-Industry Collaboration for the Development of Magnets with Fields > 22 Tesla Using HTS Conductor” program under the direction of Drs. Peter Wanderer and Arup Ghosh as described in the Field Work Proposal KACH139 submitted 05/15/2009.

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KA/CH13/9/ARRA-1 Project Code 2005170	High Energy Physics – Advanced Technology R&D Augmentation

2. Long Baseline Neutrino Experiment (\$6M)

Statement of Work: \$5,000,000 under KA-11-02-03-3 and \$1,000,000 under KA-11-02-03-4 is provided to support the Long Baseline Neutrino Experiment (LBNE) at Brookhaven National Laboratory for preconceptual R&D and the contributions to the conceptual design of the Long Baseline Neutrino Experiment required for Critical Decision-1. This work is subject to the detailed reporting requirements under Recovery Act.

The specific Contractor Recovery Act Statement of Work, Milestones, Outcomes and Measures, and Deliverables funded by this modification are identified in the following referenced Work Authorization:

Work Authorization Number	Work Authorization Title
KA/CH13/9/ARRA-2 and Rev 01 Project Code 2005175	High Energy Physics – Long Baseline Neutrino Experiment

- D. The work described in this modification shall be performed using funds obligated under this contract, which have been appropriated under the Recovery Act of 2009, Pub. L. 111-5, and as such, is subject to the special statutory conditions and the additional contractual terms and conditions that are listed in paragraph E below and the changes made to Sections E and G of the contract pertaining to the Recovery Act. The funds obligated hereunder shall only be used to accomplish the work as set forth in paragraph C. above and may not be used for any other purpose without the prior written consent of the Contracting Officer.
- E. The Contractor shall complete all Recovery Act Work funded by this modification in accordance with Recovery Act requirements, including the required completion dates specified therein, and by the completion date identified in the approved work authorization for the activity.