

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE	PAGE OF PAGES 1 1
2. AMENDMENT/MODIFICATION NO. 174	3. EFFECTIVE DATE See Block 16C	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
6. ISSUED BY Idaho Operations U.S. Department of Energy Idaho Operations 1955 Fremont Avenue Idaho Falls ID 83415	CODE 00701	7. ADMINISTERED BY (If other than Item 6) Idaho Operations U.S. Department of Energy Idaho Operations 1955 Fremont Avenue MS 1221 Idaho Falls ID 83415	CODE 00701
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE ENERGY ALLIANCE, LLC Attn: Lisa A. Sehlke P.O. BOX 1625 IDAHO FALLS ID 834150001		(x) 9A. AMENDMENT OF SOLICITATION NO.	9B. DATED (SEE ITEM 11)
CODE 152020629	FACILITY CODE	x 10A. MODIFICATION OF CONTRACT/ORDER NO. DE-AC07-05ID14517	10B. DATED (SEE ITEM 13) 11/09/2004
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: See Block 14
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return 1 copies to the issuing office.

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

Tax ID Number: 68-0588324

DUNS Number: 152020629

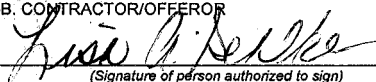

Block 13 C: Modification Authority: DEAR 970.5215-1, Total Available Fee: Base Fee Amount and Performance Fee Amount.

The purpose of this modification is to incorporate negotiated changes into the FY 2010 INL Performance Evaluation and Measurement Plan under Part III Section J Attachment K; Part III Section J Attachment K is deleted in it's entirety and replaced with the attached FY 2010 INL Performance Evaluation and Measurement Plan Rev 2 (24 Pages)

Subj to Retent: N

Period of Performance: 11/09/2004 to 09/30/2014

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Lisa A. Sehlke	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Suzette M. Olson
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED 5-3-10
16B. UNITED STATES OF AMERICA  (Signature of Contracting Officer)	16C. DATE SIGNED 5/4/10

Incorporate changes to Measure 2.2.1:

Table G. 2.0 Develop Science and Engineering Talent – Performance Measures.

Results and Performance Measures	Description
2.2	University Program Management and Alignment
2.2.1	University R&D awardees are selected by May 30, 2010 and announced at the June 2010 American Nuclear Society meeting. The NEUP scholarship and fellowships are selected and approved by July 16, 2010.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED

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Section A

Approach and Performance Rating Process

1.0 Introduction

This contract attachment sets forth the Performance Evaluation and Measurement Plan (PEMP) that will be used by the Department of Energy (DOE) to evaluate the performance of Battelle Energy Alliance, LLC (BEA) for the management and operation of the Idaho National Laboratory (INL) in Fiscal Year (FY) 2010.

The FY 2010 INL PEMP includes six Focus Areas, which emphasize achievements of the DOE Vision for INL (in Section C of the contract), but do not undervalue the expectation of satisfactory performance levels in other areas of the statement of work. DOE expects that INL will continue to implement and integrate environment, safety and health (ES&H), quality, and security into its programs and operations to enhance overall mission success.

The Secretary of Energy has identified the following major priorities and goals: Science and Discovery: invest in science to achieve transformational discoveries; Clean, Secure Energy: change the landscape of energy demand and supply; Economic Prosperity: create millions of green jobs and increase competitiveness; National Security and Legacy: maintain nuclear deterrent and prevent proliferation; and Climate Change: position U.S. to lead on climate change policy, technology, and science. Taking into consideration the above priorities and goals, this PEMP identifies Focus Areas where INL can have impact on results. These areas were categorized into Focus Areas to measure performance. The six Focus Areas for the FY 2010 PEMP are: 1) Deliver Transformational Research; 2) Develop Science and Engineering Talent; 3) Establish Broader, More Effective Collaborations; 4) Speed Demonstration and Deployment; 5) Safety, Operations & Stewardship; and 6) Leadership of the INL.

2.0 Definitions

PEMP Focus Areas: These are the six topical areas that are used to group the PEMP Results and related Performance Measures.

PEMP Results: Results that have been agreed upon by INL and DOE for encouraging contractor performance. PEMP Measures are part of and make up the PEMP Results. The grade and numerical score for each result will be determined using the definitions in Table A.

Performance Measure: Within the PEMP Results are the qualitative or quantitative measures for evaluating performance. PEMP measures are expected to be achieved during FY 2010. Absence of a performance measure in the PEMP process does not diminish the requirement for the contractor to comply with specific contractual

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requirements. Failure to meet a significant contractual requirement may result in the Contracting Officer overriding the PEMP measure score.

The following are examples of criteria that can be used for evaluating and differentiating grades of performance:

- Program milestones – and specific program performance expectations
- Performance related to a result, but that is considered to go above and beyond
- Degree of innovation applied to performance
- Degree of difficulty to achieve, issues resolved, innovations applied
- Degree of integration with existing INL programs
- Degree of collaboration/leverage obtained from outside partnerships
- Degree of impact (INL, NE, national, international)
- Performance that, while not specifically related to program milestones, provides value to DOE
- Quality of products and deliverables

Table A. General Letter Grade and Numerical Score Definitions

Letter Grade	Numeric Grade	Definition
A+	4.3-4.1	Progress made toward realizing strategic objectives with significant positive impact on INL's or DOE's mission. Significantly exceeds expectations of performance as set within performance measures identified for each desired result or within the purview of the desired result. Areas of notable performance have or have the potential to significantly improve the overall mission of the Laboratory. No specific deficiency noted within the purview of the overall result being evaluated.
A	4.0-3.8	Progress that exceeds expectations made toward realizing strategic objectives with positive impact on INL's or DOE's mission. Notably exceeds expectations of performance as set within performance measures identified for each desired result or within other areas within the purview of the desired result. Areas of notable performance either have or have the potential to improve the overall mission of the Laboratory. Minor deficiencies noted are more than offset by the positive performance within the purview of the overall result being evaluated and have no potential to adversely impact the mission of the Laboratory.
A-	3.7-3.5	Progress that exceeds expectations made toward realizing strategic objectives. Meets expectations of performance as set within performance measures identified for each desired result with some notable areas of increased performance identified. Deficiencies noted are offset by the positive performance within the purview of the overall result being evaluated with little or no potential to adversely impact the mission of the Laboratory.

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Letter Grade	Numeric Grade	Definition
B+	3.4-3.1	Meets expectations of performance as set by the performance measures identified for each desired result with no notable areas of increased or diminished performance identified. Minor deficiencies identified are offset by other exceptional performance and have little to no potential to adversely impact the mission of the Laboratory.
B	3.0-2.8	Most expectations of performance as set by the performance measures identified for each desired result are met. Performance that does not meet expectations is identified but is offset by positive performance within the purview of the desired result and has little to no potential to adversely impact the mission of Laboratory.
B-	2.7-2.5	One or two expectations of performance set by the performance measures are not met and /or minor deficiencies are identified, and although they may be offset by other positive performance, they may have the potential to negatively impact the result or overall Laboratory mission accomplishment.
C+	2.4-2.1	Some expectations of performance set by the performance measures are not met and /or other deficiencies are identified, and although they may be offset by other positive performance, they may have the potential to negatively impact the desired result or overall Laboratory mission accomplishment.
C	2.0-1.8	A number of expectations as set by the performance measures are not met, and /or a number of other deficiencies are identified, and although they may be somewhat offset by other positive performance, they have the potential to negatively impact the desired result or overall Laboratory mission accomplishment.
C-	1.7-1.1	Most expectations as set by the performance measures are not met, and /or other significant deficiencies are identified that have or will negatively impact the result or overall Laboratory mission accomplishment if not immediately corrected.
D	1.0-0.8	Most or all expectations as set by the performance measures are not met, and /or other major deficiencies are identified that have negatively impacted the desired result or overall Laboratory mission accomplishment.
F	0.7-0	All expectations as set by the performance measures are not met, and /or other major deficiencies are identified that have significantly impacted both the desired result and accomplishment of the Laboratory mission.

3.0 Scoring

The scoring system used to arrive at the fee determination for INL performance has three components. Each PEMP Focus Area contains a number of PEMP Results, which are weighted.

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PEMP Results are graded by evaluating the Performance Measures described and assigning a letter grade and numeric grade for each Result based on the definitions in Table A, General Letter Grade and Numerical Score Definitions. Each numeric score is multiplied by the corresponding weight to arrive at a weighted score for each Result. After a total score is calculated for each PEMP Focus Area, those scores are transferred to Table C, FY 2010 Contractor Score Evaluation. Scores for each PEMP Focus Area are multiplied by the corresponding weight to arrive at a weighted score for each PEMP Focus Area. All weighted scores are summed together to arrive at a total numeric score for all PEMP Focus Areas. This total numeric score is entered on Table D, FY 2010 Final Fee Determination Calculation (rounded to the nearest hundredth). Using Table B, Performance-Based Fee Earned Scale, the percent of fee earned is identified and entered on Table D. The percent of fee earned is multiplied by \$18,700,000 to calculate the total fee earned for FY 2010.

Unless otherwise stated, all PEMP Focus Areas and their associated Results, and Performance Measures are to be completed by September 30, 2010. Each of the Performance Measures identifies significant activities, requirements, or milestones important to the success of the corresponding PEMP Result and shall be used as the primary means of determining the contractor's degree of success in meeting the desired result.

Although evaluation of Performance Measure completeness is the primary means for determining performance, other performance information from other sources including, but not limited to, BEA's self-evaluation report, customer service evaluations, other performance areas within the purview of a result, operational awareness (daily oversight) activities, "For Cause" reviews (if any), peer reviews, and other outside agency reviews (Office of the Inspector General and the General Accountability Office, etc.) may be used in determining INL 's overall success in meeting a result.

Table B. Performance-Based Fee Earned Scale

Grade	Overall Weighted Score from Table A	Percent Fee Earned
A+	4.3-4.1	100%
A	4.0-3.8	97%
A-	3.7-3.5	94%
B+	3.4-3.1	91%
B	3.0-2.8	84%
B-	2.7-2.5	77%
C+	2.4-2.1	64%
C	2.0-1.8	38%
C-	1.7-1.1	0%
D	1.0-0.8	0%
F	0.7-0.0	0%

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Table C. FY 2010 Contractor Score Evaluation

Focus Areas		Total Numeric Score	Weight	Weighted Score	Total Score
1.0	Deliver Transformational Research		30%		
2.0	Develop Science and Engineering Talent		15%		
3.0	Establish Broader, More Effective Collaborations		15%		
4.0	Speed Demonstration and Deployment		10%		
5.0	Safety, Operations & Stewardship		20%		
6.0	Leadership of the INL		10%		
			Total Score for All Focus Areas		

Table D. FY 2010 Final Fee Determination Calculation

Total Score from Table C (rounded to nearest hundredth)	
% of Fee Earned per Table B	
Total Fee Earned (\$18.7M x % fee earned)	

4.0 Performance Status Reporting and Evaluation Process

PEMP administration is a formal process that includes requirements for monthly status reports, change control, and final fee determination.

Monthly status of performance will be provided by both DOE and INL with the first monthly report combining October and November and the last monthly report covering August. Areas of disagreement will be highlighted and addressed. Performance Status Reviews will be conducted periodically as agreed upon by DOE and INL. INL is responsible to define and coordinate the process for conducting the reviews and to ensure the involvement of appropriate DOE and INL counterparts. Reviews will focus on PEMP Results and Performance Measures as well as other significant issues.

On an annual basis, INL will conduct a formal self-evaluation of its performance relative to each focus area, result, and associated measures. A written report documenting the self-evaluation will also address other significant issues and will be provided to DOE within ten calendar days after the end of the performance period. The report will be limited to 50 pages.

In addition to monthly reporting, DOE will perform and document a final evaluation of INL's performance relative to each Focus Area, Result, and Performance Measure and will provide a final fee determination. The absence of specific PEMP performance measures in this plan does not diminish the need to comply with minimum contractual requirements. The Fee Determination Official (FDO) may unilaterally adjust the fee earned based on the contractor's performance against all contract requirements. It is recognized that at the discretion of the FDO, fee earned may be adjusted upward, (not to

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exceed total eligible fee), based on the contractor delivering strategic value for real and relevant performance not otherwise specified in the PEMP. Data to support fee adjustments may be derived from other sources to include, but not limited to, operational awareness (daily oversight) activities; “For Cause” reviews (if any); other outside agency reviews (OIG, GAO, DCAA, etc.), significant events or incidents within the control of the contractor, or other reviews as appropriate.

5.0 Change Control

The FY 2010 PEMP was developed with the understanding that both parties engaged in good faith to define meaningful and challenging measures of success. It is also recognized that circumstances may arise in the course of the execution year that warrant a revisit of the agreements. When the need for a change has been identified, and validated in accordance with INL change control principles, INL and DOE will engage in INL PEMP change control process to negotiate and process changes in a timely manner.

Section B

PEMP Focus Areas, Results, and Performance Measures

In determining the performance of results and measures, the DOE evaluator(s) shall consider progress reports, Program Office reviews/oversight, deliveries against milestone dates, etc., in accordance with the described performance measures. Each of the performance measures identifies significant activities and/or requirements important to the success of the corresponding PEMP result and shall be used as the primary means of determining the contractor's success in meeting the desired result.

The six Focus Areas for the FY 2010 PEMP continue the DOE Vision for INL. The desired results and associated performance measures are included in the following six Focus Areas:

1. Deliver Transformational Research
2. Develop Science Engineering and Talent
3. Establish Broader, More Effective Collaborations
4. Speed Demonstration and Deployment
5. Safety, Operations & Stewardship
6. Leadership of the INL

These six Focus Areas are described in detail below.

1.0 Deliver Transformational Research (30%)

INL must deliver transformational research to demonstrate its ability to achieve DOE’s vision for INL. To deliver, INL must focus on the following results:

- 1.1 Nuclear Energy Programs Integration
- 1.2 Support for Integration of NE Programs with Other DOE Programs

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- 1.3 Comprehensive Fuel Cycle Management
- 1.4 Advancements in Fuel and Material Development
- 1.5 Advancements in High-Temperature Nuclear Applications
- 1.6 Research and Development Using Science-Based Understanding of Complex Systems
- 1.7 Advancements in Hybrid Energy Systems and Enabling Technologies
- 1.8 Nuclear Security
- 1.9 Critical Infrastructure Protection

The following performance measures provide the basis for earning grades as described in Table A, General Letter Grade and Numerical Score Definitions.

Table E. 1.0 Deliver Transformational Research - Performance Measures

Results and Performance Measures	Description
1.1	Nuclear Energy Programs Integration
1.1.1	With the NE Technology Roadmap as the basis (the draft roadmap was previously delivered by the INL under this measure), produce a report, that aligns existing INL programs with DOE programs as identified in the NE Technology Roadmap and its associated implementation plans, by June 1, 2010. Define needs or opportunities for new DOE or INL programs to enable or accomplish, respectively, the Department’s vision for INL. Execute identified FY 2010 actions.
1.1.2	Identify common research and development (R&D) areas/topics and opportunities for collaboration across programs within the INL; develop and implement an approach for integrating the planning and conduct of the work that will maximize the benefits to the programs within the INL; obtain the support of the affected program sponsors; and fully implement the approach in FY 2010. Demonstrate and document quantifiable benefits to the program.
1.1.3	Provide DOE with an action plan (based on the five imperative implementation plans) to address nuclear R&D (fuels, materials, etc.) issues facing the Department’s programs and the nuclear industry over the next five years. The action plan must identify a prioritized list of actions, beginning in FY 2010, against which INL will be measured once accepted by DOE. The applicability of the issue or action to multiple reactor, fuel, or material options must be identified and should be factored into the prioritization.
1.2	Support for Integration of NE Programs with Other DOE Programs
1.2.1	Provide an analysis to DOE of the impact that potential advancements in nuclear reactor and fuel cycle technologies would have on U.S. energy security and energy sustainability.
1.2.2	Provide an analysis to DOE on the contributions that Office of Nuclear Energy (NE) programs and their diverse nuclear energy systems and options could make toward meeting U.S. energy needs.

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Results and Performance Measures	Description
1.2.3	Provide DOE a study with recommendations for collaborative activities among DOE offices, laboratories, and other national laboratories on the integration or combination of energy efficiency, fossil energy, and renewable energy systems or technologies with nuclear energy systems that maximize overall system efficiency and minimize environmental and/or societal impact.
1.3	Comprehensive Fuel Cycle Management
1.3.1	Develop a broad range of potential integrated nuclear energy system concepts that cover the range of technology options in disposal, separations, and transmutations. Deliver to DOE by September 30, 2010 the Options Analysis Report Phase II, that provides a summary of nuclear fuel cycle options such that DOE and external policy and decision makers are fully informed (including limits of current knowledge/understanding) on future decisions.
1.3.2	Perform and document analyses and evaluations of selected potential integrated nuclear energy system concepts. As part of the development of potential integrated nuclear energy system concepts, identify areas where further R&D would be needed to enable, improve, or facilitate the development and implementation of the integrated nuclear energy system.
1.3.3	Conduct research in various fuel cycle options that will inform policy development and demonstrates leadership in support of major U.S. fuel cycle and safeguards programs (NE, National Nuclear Security Administration [NNSA]). Quality contributions to national and international forums, conferences, funded programs, and/or publications will characterize achievement of this objective.
1.4	Advancements in Fuel and Material Development
1.4.1	Execute FY 2010 activities defined in the FY 2009 PIE Strategic Plan, to develop post irradiation examination (PIE) capabilities to achieve world-class status (i.e. state-of-the-art capabilities in fully upgraded facilities). Specific milestones/activities from the approved plan will be negotiated by December 31, 2009 , as the basis for this measure.
1.4.2	Execute FY 2010 activities defined in the FY 2009 Ceramic Fuel Strategic Plan, to develop ceramic fuel research capabilities to develop a flexible ceramic fuel fabrication R&D capability at MFC that is unique in the world in terms of the ability to test advanced processes with comprehensive characterization and analytical support. Specific milestones/activities from the approved plan will be negotiated by December 31, 2009 , as the basis for this measure.
1.5	Advancements in High-Temperature Nuclear Applications
1.5.1	The high helium-coolant-outlet temperature of High Temperature Gas Reactors (HTGR) enable these systems to deliver process heat, electricity and hydrogen to the chemical industry thereby providing a transformational solution to reduce the large carbon foot print and green house gases produced by the industrial sector of the U.S. economy. Demonstration of the key technologies by INL and its partners is critical to deployment of the technology in the U.S. In FY 2010, R&D will be performed in the areas of fuel, graphite, materials, and methods to support HTGR needs and demonstrate leadership of gas reactor technology for DOE. Key

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Results and Performance Measures	Description
	<p>measures for FY 2010 are:</p> <ul style="list-style-type: none"> ▪ Demonstrate effective technical integration and leadership of gas reactor technologies for DOE; ▪ Advance state of the art of TRISO fuel fabrication, fuel characterization, irradiation performance and accident testing; ▪ Characterize material performance of potential grades of HTGR graphite; ▪ Establish performance of candidate high temperature alloys for high temperature gas reactor internals and reactor pressure vessel through high temperature materials testing and characterization; and ▪ Enhance current HTGR methods and develop well characterized scientifically sound benchmarks for HTGR design, analysis, and verification & validation (V&V).
1.5.2	<p>Develop a white paper that documents the current status of very high temperature reactor (VHTR) technology development in key areas (e.g., fuels, high-temperature materials, graphite, methods, hydrogen, and instrumentation and control (I&C)) and describe those specific areas where the lack of sufficiently mature technology solutions limits the ability of the VHTR from meeting its full potential, thus forcing conservative engineering solutions to enable design certification, licensing, and deployment in the near term.</p>
1.6	Research and Development Using Science-Based Understanding of Complex Systems
1.6.1	<p>Create a new funded partnership (e.g., labs, academia, industry) and develop microstructural models (where experiments and theory are coupled to create the model) of the phenomena occurring in at least one of the following:</p> <ul style="list-style-type: none"> ▪ The metal fuel during irradiation ▪ The oxide fuel during irradiation ▪ Advanced alloy systems in extreme environments (e.g., creep fatigue, aging, corrosion regimes to be faced in advanced reactors).
1.6.2	<p>Using high-performance computing, complete a demonstration problem for fuel performance modeling where the thermo-mechanical solution for a fuel pellet is bridged with mesoscale formulation of the phase-field equation, using a model fuel form and targeting a specific phenomenon (e.g. fission gas bubble nucleation, growth, diffusion, retention, and release).</p>

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Results and Performance Measures	Description
1.6.3	<p>Create new funded partnership(s) that advance(s) INL reactor safety analysis capabilities in areas such as:</p> <ul style="list-style-type: none"> ▪ risk-informed safety margin characterization methodology; ▪ a next generation of computer codes for plant system simulation focused on transforming codes to state of the art in safety methodology; ▪ advanced techniques in multi-physics coupling; and ▪ advanced models for multiphase/multicomponent thermal hydraulics. <p>Initiate planning for integral effect and separate-effect test program and database for reactor safety code validation and uncertainty quantification.</p>
1.7	Advancements in Hybrid Energy Systems and Enabling Technologies
1.7.1	<p>Develop process designs for nuclear hybrid systems. Assess nuclear hybrid system attributes and performance relative to environmental, input resource utilization, and product interests. Assess the impact of nuclear hybrid systems deployment on U.S. energy security objectives, including aspects of environmental sustainability, resource security, and economic stability.</p>
1.8	Nuclear Security
1.8.1	<p>Coordinate and ensure that the four scheduled highly enriched uranium spent nuclear fuel (SNF) shipments from Poland to Russia are completed during FY 2010.</p>
1.8.2	<p>Demonstrate leadership to engage and support the Global Threat Reduction Initiative (GTRI) on emerging mission needs, effectively using recognized expertise as well as leveraging other INL expertise and capabilities. Success will be measured by expanded support of the Protect Program and feedback from the GTRI Office concerning INL's innovation and responsiveness in addressing emerging needs.</p>
1.8.3	<p>Establish/expand R&D capabilities to address safeguards and security needs for existing and planned nuclear infrastructure by using optical and radiation sensors, control system/cyber security concepts, and monitoring activities in fuel processing. Success will be measured by new capabilities developed in safeguards for sponsor/user community.</p>
1.9	Critical Infrastructure Protection
1.9.1	<p>Achieve full operational capability for Industrial Control System-Computer Emergency Response Team (ICS-CERT) including equipment and staffing in accordance with Department of Homeland Security (DHS)-Control Systems Security Program approved Annual Operating Plan covering the FY 2010 period of performance. Success will be defined by meeting customer expectations as defined by FY 2010 Annual Operating Plan milestones.</p>

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Results and Performance Measures	Description
1.9.2	Expand the use of or develop new INL capabilities in support of the DOE Office of Electricity (OE) R&D program under FY 2010 program funding opportunities utilizing all of the relevant capabilities available at INL. Success will be defined by having at least one new project or program task funded by OE in FY 2010 that utilizes INL capabilities and industry partnerships to address emerging issues or technology challenges for OE (e.g., smart grid applications).
1.9.3	Perform critical evaluation and testing for significant Department of Defense (DOD) missions using INL’s electric grid and/or wireless communications infrastructures. The significance of these missions will distinguish INL capabilities and be an indication of the value of INL assets and expertise in Critical Infrastructure Protection.

Table F. 1.0 Deliver Transformational Research – Grading.

1.0	Deliver Transformational Research	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
1.1	Nuclear Energy Programs Integration			10%		
1.2	Support for Integration of NE Programs with Other DOE Programs			5%		
1.3	Comprehensive Fuel Cycle Management			15%		
1.4	Advancements in Fuel and Material Development			20%		
1.5	Advancements in High-Temperature Nuclear Applications			10%		
1.6	Research and Development Using Science-Based Understanding of Complex Systems			15%		
1.7	Advancements in Hybrid Energy Systems and Enabling Technologies			5%		
1.8	Nuclear Security			10%		
1.9	Critical Infrastructure Protection			10%		
Deliver Transformational Research Focus Area Score						

2.0 Develop Science and Engineering Talent (15%)

To enable INL to become the preeminent, internationally recognized nuclear energy research, development and demonstration laboratory, INL must ensure adequate science and engineering talent exist to fulfill its human capital needs. To develop science and engineering talent, INL will focus on the following results:

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- 2.1 Science and Engineering Eminence
- 2.2 University Program Management and Alignment
- 2.3 Expanded Interactions with Universities and Other Researchers
- 2.4 Expansion of Science, Technology, Engineering, and Mathematics (STEM) Education Model
- 2.5 Application of Advanced Modeling and Simulation and Expanded Base of Users

The following performance measures provide the basis for earning grades as described in Table A, General Letter Grade and Numerical Score Definitions.

Table G. 2.0 Develop Science and Engineering Talent – Performance Measures.

Results and Performance Measures	Description
2.1	Science and Engineering Eminence
2.1.1	The reputation, recognition, and impact of the INL will be evaluated based on the feedback provided by external peer review of key mission areas. Feedback on the effectiveness and impact of the INL LDRD project portfolio associated with the respective mission areas will also be provided by these external peer reviews. Mission areas include E&E, NST, NHS, ATR NSUF, and Distinctive Signatures as appropriate.
2.2	University Program Management and Alignment
2.2.1	University R&D awardees are selected by May 30, 2010 and announced at the June 2010 American Nuclear Society meeting. The NEUP scholarship and fellowships are selected and approved by July 16, 2010.
2.2.2	Work with DOE-NE and technical integration offices (TIOs) to ensure that solicitation and selected projects are aligned with priorities and mission needs.
2.2.3	Approved and announced university R&D contracts are in place (i.e., awardees can begin billing).
2.2.4	Conduct workshops, outreach conferences, and university visits to promote university involvement and obtain feedback on DOE's Nuclear Energy University Program (NEUP) performance.
2.3	Expanded Interactions with Universities and Other Researchers
2.3.1	Plan and execute a second successful modeling, experimentation, and validation (MeV) school.
2.3.2	Jointly sponsor, plan, and execute at least one topical R&D workshop/course with university/lab partner(s).
2.3.3	Provide internship opportunities that keep INL as one of the top internship programs in the country as measured by a national rating.
2.3.4	Demonstrate partnerships with Idaho universities through the Center for Advanced Energy Studies (CAES), the Nuclear University Consortium (NUC), the new Institute for Nuclear Engineering Science and Technology, and other colleges and universities through workshop opportunities, joint research proposals, and joint hires, as programmatically appropriate.

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Results and Performance Measures	Description
2.3.5	Expand the educational offerings by the Advanced Test Reactor National (ATR) Scientific User Facility (NSUF) to include the following possibilities for university-based researchers: new user training experiments, reactor experiment instrumentation short courses, and graduate student and postdoctoral fellowships that support the broader laboratory science and technology mission. Continue to add to the topics offered by existing programs.
2.4	Expansion of Science, Technology, Engineering, and Mathematics (STEM) Education Model
2.4.1	INL will work with the State of Idaho to define the Idaho model for enhanced STEM education and will identify pilot areas for FY 2010 execution.
2.4.2	Pilot thematic teacher training concepts, critically evaluate results, and identify improvements for ongoing implementation.
2.5	Application of Advanced Modeling and Simulation and Expanded Base of Users
2.5.1	Initiate upgrades to ATR safety and experimental analysis by adapting modern commercial and DOE codes such as HELIOS, ATTILA, NJOY, and MCNP. Test this capability with select Advanced Test Reactor Critical (ATRC) and ATR measurements to validate that the new capabilities will meet the needs of users.

Table H. 2.0 Develop Science and Engineering Talent – Grading.

2.0	Develop Science and Engineering Talent	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
2.1	Science and Engineering Eminence			15%		
2.2	University Program Management and Alignment			15%		
2.3	Expanded Interactions with Universities and Other Researchers			30%		
2.4	Expansion of Science, Technology, Engineering, and Mathematics (STEM) Education Model			20%		
2.5	Application of Advanced Modeling and Simulation and Expanded Base of Users			20%		
Develop Science and Engineering Talent Focus Area Score						

3.0 Establish Broader, More Effective Collaborations (15%)

To achieve DOE’s vision, INL must establish broader, more effective collaborations to engage industry, local, state, regional, federal, and other stakeholders in meaningful ways. To establish these collaborations, INL must focus on the following results:

3.1 Engagement of the Nuclear Industry and Nuclear-Interested Parties

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- 3.2 Expansion of the ATR NSUF Idea of Distributed Partnerships across INL Programs
- 3.3 International Nuclear Energy Leadership
- 3.4 Enhancement of INL Capabilities
- 3.5 Enhancement of Energy Programs RD&D and Regional Clean Energy Objectives

The following performance measures provide the basis for earning grades as described in Table A, General Letter Grade and Numerical Score Definitions.

Table I. 3.0 Establish Broader, More Effective Collaborations – Performance Measures.

Results and Performance Measures	Description
3.1	Engagement of the Nuclear Industry and Nuclear-Interested Parties
3.1.1	Identify, improve, and streamline policies and guidelines to better support INL industry customer interactions. Provide a summary of actions taken and planned to DOE, and, where improvements require agency action, provide recommendations to DOE, no later than May 31, 2010 .
3.1.2	Demonstrate support to the Nuclear Regulatory Commission (NRC) by increased levels of NRC work and increased involvement in providing technical expertise to support policy decisions.
3.1.3	Increase engagement with the nuclear industry as measured by substantive partnerships with nuclear-related industry.
3.1.4	Increase engagement with industrial partners and increase INL capabilities to address problems critical to the nuclear industry. <ul style="list-style-type: none"> ▪ Insert four capsules into ATR for Electrical Power Research Institute (EPRI) Zr-growth experiments ▪ Complete FY 2010 phase-one scope for unirradiated material in the two-phase CRADA with EPRI ▪ Reach agreement with EPRI on the scope for phase two of a CRADA that prepares for irradiation testing of Light Water Reactor materials ▪ Complete FY 2010 scope for hardware fabrication and documentation of environmental crack-growth equipment for testing of irradiated materials
3.2	Expansion of the ATR NSUF Idea of Distributed Partnerships Across INL Programs
3.2.1	Develop and implement a unified process model to manage the irradiated experiment life cycle. Begin a pilot to assess the gaps and redundancies in the process model.
3.2.2	Benchmark INL data quality, cost, and schedule for irradiation testing and post irradiation examination activities against world-class nuclear laboratories such as Halden and Studsvik.

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Results and Performance Measures	Description
3.2.3	Expand the experimental offerings through solicitations for proposals beyond those currently being conducted that could include the following possibilities: ATRC experiments, Advanced Photon Source experiments, or new user training experiments.
3.2.4	Initiate a pilot project that uses capabilities at ATR NSUF partner facilities to complete an INL Nuclear Science and Technology (S&T) research need.
3.3	International Nuclear Energy Leadership
3.3.1	Lead an evaluation of the U.S. participation in international nuclear energy R&D activities and recommend more efficient options for NE to move forward with high-priority international collaborations.
3.4	Enhancement of INL Capabilities
3.4.1	Support re-establishment of reactor transient testing capabilities: <ul style="list-style-type: none"> ▪ Complete experiment source term estimates to support National Environmental Policy Act (NEPA) process for resuming transient testing capability in the U.S. ▪ Provide information that supports the NEPA process ▪ To define the Transient Reactor Experiment and Test Facility (TREAT) alternative in the Draft Environmental Assessment, complete a detailed engineering evaluation to determine the extent of needed refurbishment and repair of TREAT systems and identify costs and schedules for refurbishment/repair.
3.4.2	Continue strategic engagement with clients to leverage INL investments and grow capability and programs. By focusing on high-priority critical infrastructure protection and nuclear nonproliferation missions, obtain sponsor advocacy to make INL an enduring asset to the nation. Establishment of additional key capabilities (e.g., Wireless Communications Test Bed enhancements, electric grid/loop enhancements, expansion of nuclear/radiological material use, cyber security analysis, and training enhancements) will be the measure of success.
3.4.3	Develop specifications and finalize arrangements for putting in place an Energy Systems R&D facility that will integrate and leverage Energy Systems programs and enhance nuclear energy integration.
3.5	Enhancement of Energy Programs RD&D and Regional Clean Energy Objectives
3.5.1	Develop federal- or private-funded research partnership(s) with regional stakeholders and/or world-class university focused on hybrid energy systems design, deployment, or demonstration activities.
3.5.2	Enhance partnerships with regional stakeholders through technical support of state/provincial energy offices or other entities focused on energy production and use.
3.5.3	Develop funded research partnership with DOD and DOE focused on advanced energy applications for the purpose of defense energy security.

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Results and Performance Measures	Description
3.5.4	Develop opportunities and business models and gain commitment from regional and national energy enterprises to conduct technology demonstrations that are consistent with the DOE vision for the INL.

Table J. 3.0 Establish Broader, More Effective Collaborations – Grading.

3.0	Establish Broader, More Effective Collaborations	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
3.1	Engagement of the Nuclear Industry and Nuclear-Interested Parties			20%		
3.2	Expansion of the ATR NSUF Idea of Distributed Partnerships across INL Programs			20%		
3.3	International Nuclear Energy Leadership			10%		
3.4	Enhancement of INL Capabilities			30%		
3.5	Enhancement of Energy Programs RD&D and Regional Clean Energy Objectives			20%		
Establish Broader, More Effective Collaborations Focus Area Score						

4.0 Speed Demonstration and Deployment (10%)

In addition to delivering transformational research, INL must speed demonstration and deployment of new capabilities to further DOE’s vision for INL. To demonstrate success in this area, INL must focus on the following results:

- 4.1 Bench-Scale Systems Integration Tests
- 4.2 Radioisotope Power Systems
- 4.3 Strategy for Small Modular Reactor Technology Development and Deployment

The following performance measures provide the basis for earning grades as described in Table A, General Letter Grade and Numerical Score Definitions.

Table K. 4.0 Speed Demonstration and Deployment – Performance Measures.

Results and Performance Measures	Description
4.1	Bench-Scale Systems Integration Tests
4.1.1	Setup and operate a Hybrid Energy Systems Testing and Demonstration (HYTEST) integrated experiment to produce liquid fuel. Perform parametric testing sufficient to determine feasibility and challenges of deploying coupled (hybrid) energy processes.

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Results and Performance Measures	Description
4.1.2	Using results from ongoing research, specifications for bench-scale and pilot-scale HYTEST CO ₂ separation test equipment will be developed to support future HYTEST development and demonstration work.
4.1.3	Develop specifications for a general purpose HYTEST facility to be integrated into the Energy Systems R&D Laboratory and potential component test complex.
4.2	Radioisotope Power Systems
4.2.1	Identify and implement innovative and cost-effective approaches to radioisotope power system (RPS) assembly and test capabilities and infrastructure challenges facing INL and the complex. The implementation must be supported by the headquarters' sponsor and be shown to have quantified benefit (cost and operational flexibility) to the NE program in support of future mission operations.
4.2.2	Identify common research and development (R&D) areas and establish new collaborations among DOE laboratories, other federal research centers, universities and private industry that would promote and develop technical basis for space and terrestrial applications of nuclear technology. Demonstrate effective technical leadership by engaging Other Federal Agencies, DOE program leads, and technology advocates on emerging mission needs and applicable research areas to provide the basis in applying nuclear technologies to meeting long term mission objectives and capabilities of the country. This includes active engagement/support from potential sponsors for collaborations and initiatives
4.3	Strategy for Small Modular Reactor Technology Development and Deployment
4.3.1	Identify barriers to small modular reactor (SMR) deployment and options to overcome those barriers.
4.3.2	Develop potential strategies for SMR development and deployment; develop a consensus (with DOE, national laboratories, and industry) on the most promising approach. Assist NE in developing a program plan consistent with the SMR development and deployment strategy.
4.3.3	Establish a national SMR community on an INL web server populated with the available information on SMR concepts, including design, regulatory and deployment status, background papers, and draft strategy papers for use by INL, NE, ORNL, and other stakeholders in the strategy development by March 31, 2010.

Table L. 4.0 Speed Demonstration and Deployment – Grading.

4.0	Speed Demonstration and Deployment	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
4.1	Bench-Scale Systems Integration Tests			35%		
4.2	Radioisotope Power Systems			35%		
4.3	Strategy for Small Modular Reactor			30%		

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4.0	Speed Demonstration and Deployment	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
	Technology Development and Deployment					
Speed Demonstration and Deployment Focus Area Score						

5.0 Safety, Operations, and Stewardship (20%)

INL will bring about measureable improvements in management systems, controls, and deploy management practices that increase overall effectiveness of the Laboratory. To demonstrate improvement in safety, operations, and stewardship, INL should focus on the following results:

- 5.1 Materials Management for Environmental Stewardship
- 5.2 Energy Efficiency Improvement
- 5.3 Demonstration of Improved Performance in Operational Aspects of the Contractor Assurance System (CAS)
- 5.4 Safety and Operational Performance.

The following performance measures provide the basis for earning grades as described in Table A, General Letter Grade and Numerical Score Definitions.

Table M. 5.0 Safety, Operations, and Stewardship – Performance Measures.

Results and Performance Measures	Description
5.1	Materials Management for Environmental Stewardship
5.1.1	Nuclear Material Consolidation and Disposition <ul style="list-style-type: none"> ▪ Prepare and deliver a combined Critical Decision (CD)-2/3 package for the Material Security and Consolidation Project to the DOE federal project director within 6 months of DOE approval of CD-1. ▪ Award construction contract for Material Security and Consolidation Project and start work within five months after DOE approval of CD-2/3 Package. ▪ By June 30, 2010, reactivate existing uranium gloveboxes for the purposes of near-term processing of surplus highly enriched uranium. ▪ Develop a logic-tied integrated schedule that includes SNM and SNF treatment and disposition activities and projected costs by January 31, 2010. ▪ Process 400 kg heavy metal of Experimental Breeder Reactor-II (EBR-II) blanket fuel using the electrometallurgical treatment process in the Fuel Conditioning Facility.
5.1.2	Environmental Liabilities: <ul style="list-style-type: none"> ▪ Complete by February 1, 2010 an inventory of excess radioactive/hazardous materials for transfer from NE to Environmental Management (EM). The inventory will include a comprehensive review to ensure materials and chemicals included in INL's Unneeded Materials & Chemicals Program are

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Results and Performance Measures	Description
	<p>not transferred to EM.</p> <ul style="list-style-type: none"> ▪ Develop a transition plan for DOE approval. The transition plan shall identify the scope, schedule, and cost required to complete the prerequisites required to transfer INL’s excess contaminated facilities from NE to EM. Phase 1 of the plan, submitted by November 15, 2009, will address transferring the Sodium Processing Facility (Materials and Fuels Complex (MFC)-799), Caustic Storage Tank Building (MFC-799A), and Nuclear Calibration Laboratory (MFC-770C) from NE to EM to accommodate FY 2010 facility transfer activities. Balance of the facilities will be included in Phase 2 and will be submitted by February 1, 2010. ▪ Per the DOE-approved transition plan, complete prerequisites to facilitate transfer of the Sodium Processing Facility (MFC-799), Caustic Storage Tank Building (MFC-799A), and Nuclear Calibration Laboratory (MFC-770C) from NE to EM without impact to NE operations. ▪ Complete retrieval, packaging, and transfer of remote-handled transuranic (RH TRU) waste located at MFC from NE to EM. The following milestones are contingent, based on availability of funding provided by EM: <ul style="list-style-type: none"> ○ Complete design activities for Radioactive Scrap and Waste Facility (RSWF)-area upgrades to support out-year RH waste retrieval campaigns. ○ Support accelerated disposition of RH TRU waste to the Waste Isolation Pilot Plant (WIPP) in accordance with DOE-approved scope and schedule, including retrieval and preparation RH TRU waste containers approved for shipment from MFC to Idaho Nuclear Technology and Engineering Center (INTEC). ○ Provide DOE support in transferring Phase 2 of INL environmental liabilities from NE to EM.
5.1.3	<p>Remote-Handled Low-Level Waste (RH LLW) Disposal Project Complete the following performance measures, which will be paid provisionally for progress toward successful completion of construction and turnover of the RH LLW Disposal Project facilities/structures by September 30, 2014. \$500,000 in earned fee will be returned to the DOE if construction is not complete and turned over to operations by September 30, 2014.</p> <ul style="list-style-type: none"> ▪ Submit the complete documentation package required by DOE Order 435.1A to DOE for evaluation and approval by the Low-Level Waste Federal Review Group. ▪ Submit NEPA documentation to DOE for public review by July 17, 2010. ▪ Submit the complete Critical Decision (CD)-2 documentation package for the RH LLW Disposal Project (including performance specification and cost estimate independent reviews) to DOE to support a preliminary independent project review and baseline validation.
5.2	Energy Efficiency Improvement
5.2.1	Develop a project capable of at least a 6% energy reduction for INL. Reduce or

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Results and Performance Measures	Description
	plan for the reduction of INL water consumption intensity by a cumulative 6% relative to the established FY 2007 baseline. Decrease petroleum-based fuel use in INL fleet by at least 2% from FY 2009, and increase alternative fuel use at least 10% from FY 2009. Plan for and achieve progress toward ensuring that 15% of INL’s enduring infrastructure is compliant with the Guiding Principles by FY 2015 by implementing sustainable principles in a minimum of an additional 2% of those facilities.
5.2.2	Develop the draft INL carbon footprint baseline to include all greenhouse gas (GHG) carbon dioxide emissions from INL energy use, processes, chemicals, and other materials as applicable.
5.2.3	Complete project close out for the ATR Radioanalytical Chemistry Laboratory Project, which is defined as “beneficial occupancy.” Beneficial occupancy allows the owner to move in and occupy the building and allows ongoing punch list work in the form of minor items that do not affect operations.
5.3	Demonstration of Improved Performance in Operational Aspects of the Contractor Assurance System (CAS)
5.3.1	Implement a risk-informed process to schedule, perform, and document assessment activities. This includes the timely planning, execution, and close-out of assurance activities that identify substantive issues followed by appropriate and timely corrective actions.
5.3.2	Implement a formal process to identify and report issues, analyze operational events and issues, and identify and address trends. Implementation must include risk-based event reporting, critiquing, investigation, and timely and effective corrective actions.
5.3.3	Implement a comprehensive issues management system that provides for the timely and effective resolution of issues. This includes a high-volume/low-threshold issues management system to be implemented by March 31, 2010 , and demonstrate INL’s ability to find, trend, and fix problems.
5.4	Safety and Operational Performance
5.4.1	Prepare and submit DSAs in accordance with current DOE-approved NS-18308, MFC Work Plan for Safety Basis Upgrade. Implement DSAs within 60 days or per the DOE-approved implementation plan, as applicable.
5.4.2	SMC Production: <ul style="list-style-type: none"> ▪ Meet approved front armor production quantities ▪ Meet approved side armor production quantities ▪ Cumulative quality of 98% or above
5.4.3	Measurement of ATR’s support of the Naval Reactors (NR) program will be based on the initial approved FY 2010 ATR Integrated Strategic Operational Plan (ISOP). The measure will include items specifically related to priority experiments (including experiment margin), as well as items related to the overall NR program execution. Other measures that support the NR program, as well as non-naval reactors programs, will be considered for inclusion in this topical area. The customer requirements form will be generated by INL and

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Results and Performance Measures	Description
	approved by DOE after approval of the FY 2010 ATR ISOP. If revisions of the ISOP occur during FY 2010, the customer requirements form may (upon DOE approval) be updated.
5.4.4	Complete the M-42 Enterprise Diesel Overhaul, including systems operability testing.

Table N. 5.0 Safety, Operations, and Stewardship – Grading.

5.0	Safety, Operations, and Stewardship	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
5.1	Materials Management for Environmental Stewardship			35%		
5.2	Energy Efficiency Improvement			15%		
5.3	Demonstration of Improved Performance in Operational Aspects of the CAS			20%		
5.4	Safety and Operational Performance			30%		
Safety, Operations, and Stewardship Focus Area Score						

6.0 Leadership of the INL (10%)

BEA leadership must translate INL vision and strategies into explicit performance expectations that are effective in aligning all managers and the workforce into a cohesive, collaborative, and integrated team pursuing mission execution. To demonstrate improvement in leadership, INL should focus on the following result:

6.1 Leadership of the INL.

The following performance measure provides the basis for earning grades as described in Table A, General Letter Grade and Numerical Score Definitions.

Table O. 6.0 Leadership of the INL – Performance Measures.

Results and Performance Measures	Description
6.1	Leadership of the INL
6.1.1	BEA leadership translates INL vision and strategies into explicit performance expectations that are effective in aligning all managers and the workforce into a cohesive, collaborative, and integrated team pursuing mission execution. BEA planning and work products consistently reflect an integrated institutional viewpoint, are supported companywide, and demonstrate responsiveness and flexibility across organizational barriers. Proposals, positions, requests, etc., submitted to DOE from key personnel and/or the designated contract specialist

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Results and Performance Measures	Description
	<p>represent the integrated position of the company.</p> <p>Deliverables to DOE are accurate and timely; comply with contractual, regulatory, and legal requirements; and consistently demonstrate alignment with established DOE priorities and direction.</p> <p>Planning and execution of work demonstrates a comprehensive business approach and firm cost culture that integrates all resource elements towards achieving INL missions and objectives.</p> <p>BEA internal management practices (including its CAS) systematically identify strengths that result in actual improvements and prevent occurrence of negative consequences, while positively contributing to mission success.</p>

Table P. 6.0 Leadership of the INL - Grading

6.0	Leadership of the INL	Letter Grade	Numeric Score	Weight	Weighted Score	Total Score
6.1	Leadership of the INL			100%		
Leadership of the INL Focus Area Score						