

PART I – The Schedule

Section C

Description/Specifications/Work Statement

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C-1 Introduction

This Performance-Based Management Contract (PBMC) is for the management and operation of the Pacific Northwest National Laboratory (the Laboratory). Battelle Memorial Institute (the Contractor) shall, in accordance with the provisions of this Contract, accomplish the missions and programs assigned by the U.S. Department of Energy (DOE) and manage and operate the Laboratory. The Laboratory is one of the DOE's Office of Science (SC) multi-program laboratories. The Laboratory is a Federally Funded Research and Development Center (FFRDC) established in accordance with Federal Acquisition Regulation Part 35 and operated under this management and operating (M&O) contract, as defined in FAR 17.6 and DEAR 917.6.

This Contract reflects the Department's effort to enable the Contractor to achieve more highly effective and efficient management of the Laboratory, resulting in a safe and secure environment, outstanding science and technology results, more cost effective operations, and enhanced Contractor accountability.

This Contract reflects the application of performance-based contracting approaches and techniques which emphasize results/outcomes and minimize "how to" performance descriptions. The Contractor has the responsibility for total performance under the Contract, including determining the specific methods for accomplishing the work effort, performing quality control, and assuming accountability for accomplishing the work under the Contract. Accordingly, this PBMC provides flexibility, within the terms and conditions of the Contract, to the Contractor in managing and operating the Laboratory.

Desired results of this Contract include improved Contractor operational efficiencies, allocations of Contractor oversight resources to direct mission work, and streamlined and more effective federal line management focused on a system-based approach to federal oversight with increased reliance on the results obtained from the Contractor's assurance system as well as certified nationally recognized experts and other independent reviewers. Moreover, science and technology have improved peer review metrics, stretch goals, and incentives to achieve extraordinary results.

Under this PBMC, it is the Contractor's responsibility to develop and implement innovative approaches and adopt practices that foster continuous improvement in accomplishing the mission of the Laboratory. DOE expects the Contractor to

produce effective and efficient management structures, systems, and operations that maintain high levels of quality and safety in accomplishing the work required under this Contract, and that to the extent practicable and appropriate, rely on national, commercial, and industrial standards and can be verified and certified by independent, nationally recognized experts and other independent reviewers. The Contractor shall conduct all work in a manner that optimizes productivity, minimizes waste, and fully complies with all applicable laws, regulations, and terms and conditions of the Contract.

To the maximum extent practical, this PBMC shall:

- (a) Describe the requirements in terms of outcomes or results required rather than the methods of performance of the work;
- (b) Use a limited number of systems-based measurable performance standards (*i.e.*, terms of quality, timeliness, quantity, etc.) to drive improved performance and increased effective and efficient management of the Laboratory;
- (c) Provide for appropriate financial incentives (e.g., fee) when performance standards and contract requirements are achieved;
- (d) Specify procedures for reduction of fee when services are not performed or do not meet Contract requirements; and
- (e) Include non-financial performance incentives where appropriate.

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C-2 RESERVED [M707]

C-3 Performance Expectations, Objectives, and Measures

3.1 Core Expectations

3.1.1 General

The relationship between DOE and its national laboratory management and operating contractors is designed to bring best practices for research and development to bear on the Department's missions. Through application of these best practices, the Department seeks to assure both outstanding programmatic and operational performance of today's research programs and the long-term quality, relevance, and productivity of the laboratories against tomorrow's needs. Accordingly, DOE has substantial expectations of the Contractor in the areas of: program delivery and mission accomplishment; laboratory stewardship; and excellence in laboratory operations and financial management.

3.1.2 Program Development and Mission Accomplishment

The Contractor is expected to provide effective planning, management, and execution of assigned research and development programs. The Contractor is expected to execute assigned programs so as to strive for the greatest possible impact on achieving DOE's mission objectives, to aggressively manage the Laboratory's science and technology capabilities and intellectual property to meet these objectives, and to bring forward innovative concepts and research proposals that are well-aligned with DOE missions. The Contractor shall propose work that is aligned with, and likely to advance, DOE's mission objectives, and that is well matched to Laboratory capabilities. The Contractor shall strive to meet the highest standards of scientific quality and productivity, "on-time, on budget, as-promised" delivery of program deliverables, and first-rate service to the research community through user facility operation.

The Contractor is expected to demonstrate benefit to the nation from R&D investments by transferring technology to the private sector and supporting excellence in science and mathematics education to the extent such activities are consistent with achieving continuous progress towards DOE's core missions.

3.1.3 Laboratory Stewardship

The Contractor is expected to be an active partner with DOE in

assuring that the Laboratory is renewed and enhanced to meet future mission needs. Within the constraints of available resources and other Contract requirements, the Contractor, in partnership with DOE, shall:

- (a) Maintain a Laboratory vision and long-term strategic plan that addresses the evolution of Laboratory capabilities to meet anticipated DOE and national needs.
- (b) Attract, develop, and retain an outstanding work force, with the skills and capabilities to meet DOE's evolving mission needs.
- (c) Renew and enhance research facilities and equipment so that the Laboratory remains at the state-of-the-art over time and is well-positioned to meet future DOE needs.
- (d) Build and maintain a financially viable portfolio of research programs that generates the resources required to renew and enhance Laboratory research capabilities over time.
- (e) Maintain a positive relationship with the broader research community, to enhance the intellectual vitality and research relevance of the Laboratory, and to bring the best possible capabilities to bear on DOE mission needs through partnerships.
- (f) Build a positive, supportive relationship founded on openness and trust with the community and region in which the Laboratory is located.

3.1.4 Operational and Financial Management Excellence

The Contractor is expected to effectively and efficiently manage and operate the Laboratory through best-in class management practices designed to enable research while assuring the protection and proper maintenance of DOE research and information assets, the health and safety of Laboratory staff and the public, and the environment. The Contractor is expected to operate the Laboratory so as to meet all applicable laws, regulations, and requirements. The Contractor is expected to manage the Laboratory cost-effectively, striving to provide the greatest possible research output per dollar of research investment, and, accordingly, to develop and deploy management systems and practices that are designed to enhance research productivity and mission accomplishment consistent with meeting operational requirements.

3.2 Performance Evaluation Expectations

The performance expectations of this Contract are broadly set forth in this Section and reflect the DOE's minimum needs and expectations for Contractor performance. Specific performance work statements, performance standards (measures applied to results/outputs), acceptable performance levels (performance expectations), acceptable quality levels (permissible deviations from performance expectations), and related incentives shall be established annually, or at other such intervals determined by the DOE to be appropriate. The related incentives may be monetary, or where monetary incentives are not desirable or considered effective, the Contractor's performance may be used as a factor which directly affects the past performance report card, or a factor in a decision to reduce or increase DOE oversight or Contractor reporting, as appropriate.

In performance under this Contract, the Contractor shall be evaluated within the following general performance goals and expectations:

- (a) **Mission Accomplishment:** Produce original, creative scientific output that advances science and technology while achieving sustained scientific progress and impact that is recognized by the scientific and technical community.
- (b) **Design, Fabrication, Construction, and/or Operation of Facilities:** Provide quality strategic planning, design, fabrication, and construction for facilities/equipment needed to insure the Laboratory can meet its S&T missions today and in the future, while effectively and efficiently maintaining current S&T facilities and equipment and providing effective, efficient operation of user facilities.
- (c) **Science and Technology Program Management:** Provide for effective S&T program vision, leadership, strategic planning, and development of initiatives while maintaining efficient and effective communications and responsiveness to customer needs.
- (d) **Leadership and Stewardship of the Laboratory:** Provide for strategic planning to meet the mission and vision of the overall Laboratory; appropriate accountability and responsiveness to specific issues and needs, and appropriate levels of corporate office leadership, resources, and support for the overall success of the Laboratory.
- (e) **Integrated Safety, Health, and Environmental Protection:** Provide for and sustain an effective, and well deployed integrated safety,

health and environmental protection program.

- (f) Business Programs and Resources: Provide for effective, efficient, and responsive business programs and resources that enable the successful achievement of the Laboratory missions.
- (g) Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to meet Laboratory Needs: Provide appropriate planning for, construction and management of Laboratory facilities and infrastructures required to efficiently and effectively carry out current and future programs.
- (h) Integrated Safeguards and Security Management and Emergency Management: Provide for and sustain an effective, and well deployed integrated safeguards, security and emergency management program.

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3.3 Performance Objectives and Measures

The results-oriented performance goals/objectives of this Contract are stated in the Performance Evaluation and Measurement Plan, and/or in the Work Authorization Directives issued annually in accordance with the clause entitled, "DEAR 970.5211-1, Work Authorization" and Clause H-41, "Work Authorization". The goals/objectives shall be accomplished within an overall framework of management and operational performance requirements and standards contained elsewhere in this Contract. DOE's Quality Assurance/Surveillance Plan (QASP) for evaluating the Contractor's performance under the Contract shall consist primarily of the Performance Evaluation and Measurement Plan (PEMP) as called for within the Section I Contract clause entitled "Total Available Fee: Base Fee Amount and Performance Fee Amount." The QASP establishes the process DOE shall use to ensure that the Contractor has performed in accordance with the performance standards and expectations. The QASP shall summarize the performance standards, expectations and acceptable quality levels for each task; describe how performance will be monitored and measured; describe how the results will be evaluated; and state how the results will affect Contract payment. The Contractor shall develop and implement an assurance system in accordance with the clause entitled "Contractor Assurance System".

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C-4 Statement of Work

4.1 General

The Contractor shall furnish the necessary personnel, facilities, equipment, materials, supplies, and services (except those provided by the Government) to accomplish the statement of work. The statement of work under this PBMC is comprehensive in that the Contractor is expected to perform all necessary technical, operational, and management functions to manage and operate the Laboratory and perform the DOE missions assigned to the Laboratory. This statement of work encompasses all on-going objectives of the Laboratory, as well as those objectives that may be assigned during the term of the Contract, and includes, but is not limited to: all infrastructure management and maintenance; human resources management; environmental management; health, safety, and security; and purchasing, financial, and other administrative systems.

4.2 Mission

The Laboratory's research and development missions and programs support the overarching national security mission of the DOE through efforts in fundamental science, energy and environmental sciences and technologies, and national security. The Laboratory shall continue to provide highly skilled staff who support multi-disciplinary efforts to rapidly translate scientific discoveries into applications in physical, computational, and environmental sciences, and on special facilities, including the Environmental Molecular Sciences Laboratory (EMSL). The Laboratory shall support the President's commitment to sustain and nurture the nation's science and technology enterprise, to support national goals in security, energy, environmental quality, human health and economic growth, and to provide a significant resource for scientists world-wide to engage with Laboratory staff in accelerating the nation's progress towards these goals.

The Laboratory's mission statement is documented and updated annually as necessary as part of the Laboratory's strategy development process. As a multi-program national laboratory, the Laboratory's mission is to create new knowledge and deliver solutions to science and technology challenges in DOE's core missions. The Laboratory envisions being DOE's best-in-class multi-program laboratory known for breakthrough science and for rapidly translating discoveries into applications that solve critical challenges and benefit our nation and society. Over the term of this Contract, the Contractor shall conduct a broad spectrum of research and development programs in DOE's science, national security, environmental quality, and energy missions as assigned by DOE. The Contractor shall make its government-funded scientific and technical research results

broadly available to the public. The Contractor shall continue to use its multidisciplinary capabilities and apply its expertise to conduct research for the government and the private sector. The Contractor shall also provide technical advice and guidance to DOE in support of policy development, program planning, and other DOE activities as requested by DOE, and shall bring forward recommendations for new research and development programs designed to achieve DOE mission goals.

In keeping with its overall role as a multi-program national laboratory, the specific research programs conducted and the overall mix of research at the Laboratory will change, as needed, over the Contract period in keeping with DOE's changing mission needs, advances in science and technology, and other drivers. Accordingly, this statement of work is not intended to be all-inclusive or restrictive, but is intended to provide a broad framework and general scope of the work to be performed at the Laboratory. This statement of work does not represent a commitment to, or imply funding for, specific projects or programs.

As a multi-program laboratory, work under this Contract includes scientific and technical programs sponsored by major DOE organizations. Primary DOE sponsors include:

- Office of Science
- Environmental Management
- Nuclear Energy Science and Technology
- Energy Efficiency and Renewable Energy
- Fossil Energy
- National Nuclear Security Administration
- Office of Intelligence
- Office of Counterintelligence

Additionally, the Contractor shall engage in other DOE and non-DOE science and technology initiatives that derive from the Laboratory's missions and utilize the Laboratory's core competencies. A summary of current Laboratory programs supporting DOE's mission areas follows. Descriptions of major programs are updated annually in the Laboratory's strategy.

4.2.1 Science mission role

In the science mission, the Contractor shall deliver the scientific knowledge and discoveries for DOE's applied missions; advance the frontiers of the physical sciences and areas of the biological,

environmental and computational sciences; and provide world-class research facilities and essential scientific human capital to the nation's overall science enterprise. Areas of research shall include conducting research under DOE's Biological and Environmental Research programs, including biomolecular science and microbiology, environmental science (atmospheric science, climate research, and subsurface science), and computational modeling. The Contractor shall also conduct research programs in chemistry, chemical physics, materials science, nuclear science and technology, and computer and information science as part of DOE's Basic Energy Sciences and Advanced Scientific Computing Research programs.

Specifically the Contractor shall operate the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL), a user facility that provides a broad range of advanced experimental and computational tools for advanced research in the environmental, biological, chemical, and materials sciences, and other user facilities as designated by or constructed by DOE.

4.2.2 National Security mission role

In the national security mission, the Contractor shall support DOE efforts to strengthen United States security through the application of nuclear science and by reducing the global threat from weapons of mass destruction. The Contractor shall also support DOE efforts in arms control and nonproliferation, intelligence analysis, and counterintelligence. In particular, the Contractor shall provide science, technology, and engineered systems to monitor nuclear treaties and agreements, to prevent the proliferation of weapons of mass destruction, and to counter terrorism, including threats from chemical and biological agents. The Contractor shall provide technical expertise for the United States' international efforts to improve the safety of nuclear power generation and the management and safeguarding of nuclear materials. Other areas of emphasis shall include cyber security, homeland security, and infrastructure protection. The Contractor shall also provide selected support for DOE's stockpile stewardship.

4.2.3 Energy Resources mission role

In the energy resources mission, the Contractor shall increase global energy security, maintain energy affordability and reduce adverse environmental impacts associated with energy production, distribution, and use by developing and promoting advanced energy technologies, policies and practices that efficiently increase domestic energy supply, diversity, productivity, and reliability. The Contractor shall be a major asset to DOE and the nation in providing a balanced portfolio of secure,

clean, and affordable energy systems compatible with achieving a sustainable energy future. The Contractor shall provide science and engineering for developing clean, affordable technologies for transportation, energy generation, and energy efficient buildings and industrial processing. Particular areas of emphasis include development of low-cost, high performance, solid oxide fuel cells, hybrid fuel cell systems, energy storage systems, bio-based products, and essential technology for a hydrogen economy. Tools shall also be developed for transforming the energy grid into a secure and dynamically predictable transmission and distribution system. Other areas of emphasis include leadership in climate modeling, integrated assessment, and CO₂ capture and sequestration science and technology, establishing a sound basis for the geologic and terrestrial sequestration that enables the nation to effectively manage the risks posed by climate change. The Contractor shall also provide unique capabilities in advanced materials, processes and diagnostics critical to the development of next-generation nuclear reactors and securing a safe and viable nuclear energy option.

4.2.4 Environmental Quality mission role

In the environmental quality mission, the Contractor shall provide science and technology support to DOE's effort to aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs, permanently dispose of the Nation's radioactive wastes, minimize the social and economic impacts to individual workers and their communities resulting from departmental activities, and ensure the health and safety of DOE workers, the public and protection of the environment. The Contractor shall provide science and technology contributions that substantially reduce the cost, time, and risk associated with DOE's cleanup, and enable site cleanup and closure decisions to have a sound, scientific basis. The Contractor shall support DOE's waste characterization, waste disposal, cleanup, and land restoration programs, both nationally and at the Hanford Site. The Contractor shall utilize advanced computational capabilities that enable the design of bio-chemical remediation processes that target specific distributed contaminants, optimize the facilities that will be used to treat large quantities of concentrated contaminants, and provide sub-surface contaminant behavior models that satisfy stakeholder needs for decision and informational tools. Areas of emphasis include solving tank waste problems at DOE sites, vitrification and processing technologies for waste treatment and immobilization, fate and transport modeling, environmental measurements and monitoring, ecological studies, and technology for groundwater cleanup. The tools and technologies developed by the Contractor for cleanup shall be expanded to help address the region's and Nation's most challenging natural resource issues - water stewardship, carbon management, and ecosystem protection.

4.2.5 Technology Transfer Programs

The Contractor shall contribute to U.S. technological competitiveness through research and development partnerships with industry that capitalize on the Laboratory's expertise and facilities. Principal mechanisms to effect such contributions are: cooperative research and development, access to user facilities, reimbursable work for non-DOE activities, personnel exchanges, and licenses.

The Contractor shall cooperate with industrial organizations to assist in increasing U.S. industrial competitiveness, by assisting in the application of energy science and technology. Such cooperation may include an early transfer of information to industry by arranging for the active participation by industrial representatives in the Laboratory's programs. Cooperation with industrial partners may include long-term strategic partnerships aimed at commercialization of inventions or the improvement of industrial products. The Contractor shall respond to specific near-term technological needs of industrial companies with special consideration given to working with small, small disadvantaged and women-owned businesses as well as regional and local companies through special assistance programs targeting such organizations. The Contractor shall develop productive relationships/partnerships with regional and local companies, Governments and universities through forums such as conferences, workshops, and traveling presentations. It is anticipated that these organizations will be particularly effective participants in the Laboratory's technology transfer activities in promoting a mutually beneficial relationship between DOE, the Contractor and the communities surrounding the Laboratory.

Cooperation may also include use by industrial organizations of Laboratory facilities and other assistance as may be authorized, in writing, by the Contracting Officer.

4.2.6 Science and Mathematics Education Programs and Cooperation with Universities and Other Research Institutions

The Contractor shall develop partnerships with colleges and universities, including Minority-Serving Institutions, and manage programs to enhance science and mathematics and technology education at all levels. The Contractor shall encourage participation by a diverse group of faculty and students in Laboratory programs bringing their talents to bear on important research problems and contributing to the education of future scientists and engineers. The Contractor shall conduct programs for pre-college students and faculty to enrich science and mathematics and technology education including programs to encourage members of under-represented societal groups to enter careers in the science and engineering fields.

The Contractor shall manage and operate programs for cooperation with academic and nonprofit research institutions to integrate research and education in scientific and technical fields underlying DOE's programs, as well as facilitate partnerships between the Laboratory and other research and educational institutions. This cooperation may include, but is not limited to, such activities as: (i) joint experimental programs with colleges, universities, and nonprofit research institutions; (ii) exchange of college and university faculty and Laboratory staff; (iii) student/teacher educational research programs at the pre-collegiate and collegiate level; (iv) post-doctoral programs; (v) arrangement of and participation in regional, national, or international professional meetings or symposia; (vi) use of special Laboratory facilities by colleges, universities, and nonprofit research institutes; or (vii) provision of unique experimental materials to colleges, universities, or nonprofit research institutions or to qualified members of their staffs.

4.2.7 International Research Collaboration

In accordance with established DOE policies, the Contractor will maintain a broad program of international research collaboration in areas of research of interest to the DOE. This collaboration will be both in areas where DOE has formal international cooperation agreements which assign the Contractor a specific role, as well as in areas of general interest to DOE's research programs.

This collaboration may include, but is not limited to, such activities as: (i) participation in assigned aspects of formal international agreements; (ii) maintenance of liaison with peer groups in the international R&D community; (iii) participation in programs of international scientific organizations; (iv) developing and proposing to DOE, joint experimental programs and/or work for others from international sponsors; or (v) participation in programs involving visits, assignments, or exchanges of staff/students.

4.2.8 Other Related Work and Operation of the Laboratory

The Contractor shall plan, manage and execute other research and development programs as directed or approved by DOE. In addition, the Contractor shall support local and regional economic development and apply existing Laboratory assets in the execution of such support.

The Contractor shall also manage, operate, protect, maintain and enhance the Laboratory's ability to function as a DOE multi-program national laboratory, provide the infrastructure and support activities, support the accomplishment of the Laboratory's missions and provide the

accountability to the DOE under the results-oriented, performance-based provisions of this Contract.

The Contractor shall assist DOE through direct participation and other support in achieving DOE's energy efficiency goals and objective in electricity, water, and thermal consumption, conservation, and savings, including goals and objectives contained in Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management. The Contractor shall maintain and update, as appropriate, its Site Plan (as required elsewhere in the contract) to include detailed plans and milestones for achieving site-specific energy efficiency goals and objectives. With respect to this paragraph, the Plan shall consider all potential sources of funds, in the following order: 1) the maximum use of private sector, third party financing applied on a life-cycle cost effective basis, particularly from Energy Savings Performance contracts and Utility Energy Services Contracts awarded by DOE; and 2) only after third-party financing options are evaluated, in the event that energy efficiency and water conservation improvements cannot be effectively incorporated into a private sector financing arrangement that is in the best interests of the Government, then DOE funding and funding from overhead accounts can be utilized. [M485]

4.3 Operating Envelope

4.3.1 Operating Principles

Contractor and federal line managers are fully responsible for achieving assigned objectives in a manner that is safe, secure, legally and ethically sound, as well as fiscally responsible.

The Contractor is accountable for providing *reasonable assurance* to the DOE that the Laboratory's system of management controls when properly implemented provides an effective and efficient means of meeting all applicable requirements while accomplishing assigned missions.

To provide reasonable assurance, the Contractor must identify, monitor, and address existing and/or emerging risks important to the accomplishment of the Laboratory's mission and Contract requirements.

Laboratory management provides performance data to Governance processes, which ultimately provide assurance to DOE.

Provisions of reasonable assurance are the result of properly functioning performance management and Governance processes, not a substitute for the processes themselves.

Effective Assurance is built on mutual trust between DOE and the Contractor and must be combined with effective Governance in order for DOE to consider modification of its oversight model.

[M600]

4.3.2 Facilities

The Laboratory's facilities include Government-owned or leased land, buildings, utilities, equipment and other facilities located on the PNNL Site in Richland, Washington in addition, Laboratory facilities may include Government-owned or leased facilities at such other locations as may be approved by DOE for use under this Contract. Subject to mutual agreement, other facilities may be used in the performance of the work under this Contract (e.g., Contractor-owned or Contractor-leased facilities) as approved by the Contracting Officer. Research and development work performed outside approved Laboratory space (i.e. Off-site) shall be reviewed and assessed for hazards, risks, and application of appropriate mitigating controls prior to the initiation of work consistent with a documented approach accepted by the DOE Contracting Officer.

In accordance with the *Operational Agreement Between the Office of Science Pacific Northwest Site Office and the Office of Environmental Management Richland Operations Office (Operational Agreement)*, dated March 2008, and contained in Section J, Appendix F of this Contract, the Contractor shall operate designated EM facilities located on the Hanford Site in the 300 Area. These facilities shall be operated consistent with the clauses contained in the Operational Agreement and include operation of a Hazard Category 2 nuclear facility as well as various facilities categorized as less than Hazard Category 3. The Contractor will maintain the resources and expertise required to support these activities.

The Contractor shall perform overall integrated planning, acquisition, upgrades, and management of Government-owned, leased, or controlled facilities and real property accountable to the Laboratory. The Contractor shall employ an integrated management approach for management and utilization of the Laboratory facilities and infrastructure and shall renew and enhance research facilities and equipment such that the Laboratory remains state-of-the-art over time. The facilities management approach for the Laboratory shall be clearly defined and consistent with the latest DOE-approved Campus Master Plan.

The Contractor shall employ facilities management practices that are integrated with mission assignments and business operations. The maintenance management program shall maintain facilities, equipment and materials in a manner that:

- promotes and continuously improves operational safety, environmental protection and compliance, property preservation, and cost effectiveness;
- ensures protection of life and property from potential hazards, continuity and reliability of operations, and fulfillment of program requirements;
- ensures the condition of the assets will be maintained or improved to most effectively meet the DOE mission.

The Contractor shall initiate and continually improve facility and waste management practices that implement the “Start Clean – Stay Clean” principles whereby research projects and facility operations are planned to minimize wastes at the end of each project or the life of each facility.

[M599]

4.3.3 Hazards/Risks

The hazards associated with accomplishing the Laboratory’s mission and the operations of the Laboratory include but are not limited to the following:

- Biological, including animal
- Nuclear, radiological, and chemical, including nano.
- Non-ionizing radiation hazards including but not limited to infrared sources, lasers, magnetic fields, radio frequency fields, microwave fields, electric fields and ultraviolet light sources.
- Physical hazards including but not limited to electrical, pressure systems, work at heights (e.g. roofs and ladders), noise greater than 85dBA, thermal hazards, and other energy hazards.
- Operating equipment or hazards including but not limited to the following: aircraft, boats, firearms, underwater diving, confined space, facility construction and modification, forklifts, cranes, hoists, and off-road motor vehicle use.

The Contractor shall be responsible for maintaining effective systems of management controls for both administrative and programmatic functions. The Contractor shall conduct research in accordance with authorized limits. The Contractor shall not conduct research with biological agents that exceed biosafety level II without prior DOE approval. The Contractor will maintain individual facility chemical inventories below Threshold Planning Quantities. The Contractor will maintain radiological materials

within authorized operating limits. The Contractor shall maintain business systems within compliance of applicable laws, regulations and directives.

The Contractor will maintain a risk analysis system(s) acceptable to DOE that addresses institutional/reputational, environment, safety, health or business risks and legacy considerations created by the acceptance of work under this Contract. All proposed work shall clearly identify risks and legacy considerations as part of the work authorization package along with justification for performing the work and controls that will be instituted to mitigate the risks and legacy considerations.

DOE maintains its right to not authorize the proposed work based upon analysis of the hazards/risks and legacy considerations involved.

[M707]

4.3.4 Security

The Contractor shall conduct work in a manner that protects sensitive unclassified information, classified information, special nuclear material, cyber systems and Government property, from sabotage, espionage, loss or theft. The Contractor shall obtain approval of safeguards and security plans from the cognizant security authority (i.e., Site Office Manager) which describes protective measures appropriate to the work being performed. Any significant changes or deviations from the approved safeguards and security plans require the cognizant security authority's review and approval.

[M707]