Project Execution Plan
for the
Ion Beam Laboratory
at Sandia National Laboratories

July 24, 2007

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DOE/NNSA/Sandia Site Office

Approvals

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Revision Log

Rev. No.	Approval Date	Reason
2	Added by IBL Federal Project Director on December 4, 2007.	The following changes were made for clarification based upon recommendations of the CD 2/3 Independent Project Review team as follows: 1) The third paragraph of section 14 Quality Assurance Program was changed to reference Appendix B1 rather than appendix B. The wording after "IBL Project Management Plan" was revised to state - titled "Facilities Maintenance and Operations Center quality Management Plan dated May 2007." 2) Dates provided in section 16.3 Schedule Baseline and Table 2 IBL Baseline Summary Schedule were revised to reflect the actual dates for approval of Critical Decision 0 and 1 and planned dates for approval of CD 2 and 3. 3) Attachment 5 –IBL TPC Cost Estimate of June 2007 was revised upward by $187,983 based upon recommendation that the project revisit contingency for D&D and procurements.
3	TBD- Planned to occur following development of funding profile	Revision 2 will include changes to cost and schedule baseline as a result of initial funding profiles.

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1. Background

The NNSA's mission requires an ion beam capability for the qualification of electronics, microelectronics, and other non-nuclear weapons components and materials in the current and projected stockpile as well as ongoing surveillance analysis of existing nuclear weapons components. This capability is currently available at the Sandia National Laboratories in an Ion Physics Laboratory.

This project execution plan is to support the design and construction of a replacement ion beam laboratory at Sandia National Laboratories. Replacement of the Ion Beam Laboratory (IBL) at SNL appears to be the most viable, cost effective, and lowest risk approach for maintaining these capabilities in support of the nuclear weapons program.

2. References

- IBL Mission Need Statement, July 2007
- IBL Program Requirements Document, July 2007
- IBL Acquisition Strategy, July 2007
- NNSA Capabilities Analysis Report "Ion Beam Capabilities for Sandia National Laboratories' Defense Program Mission", January 2006
- Sandia National Laboratories' Draft System Requirements, Codes and Standards for the Ion Beam Laboratory ("Functional and Operational Requirements"), December 2006

3. Mission Need Justification and Program Requirements

The National Nuclear Security Administration (NNSA) is a semi-autonomous agency established by Congress in 2000 within the Department of Energy (DOE). The mission of The NNSA is to strengthen national security through the military application of nuclear energy and by reducing the global threat from terrorism and weapons of mass destruction. To support this mission, NNSA is responsible for maintaining a U.S. nuclear deterrent, and for protecting and revitalizing the weapons complex.

NNSA maintains and enhances the safety, security, reliability and performance of the U.S. nuclear weapons stockpile without nuclear testing. To this end, the Department of Energy adopted a science-based Stockpile Stewardship Program (SSP) that emphasized development and application of technical capabilities to assess the safety, security, and reliability of nuclear warheads without the use of nuclear testing. The NNSA's Office of Defense Programs (DP) is the Program Sponsor responsible for the management and implementation of the SSP to ensure that the nuclear weapons continue to serve their deterrence role of the U.S. nuclear weapons stockpile.

An important element of the nuclear weapons research, development, and test program is the analysis, modeling and evaluation function which is accomplished using ion beam accelerators. This technology allows for controlled energies, ion species, specific irradiation areas, integrated sample manipulation and data collection required for the qualification and certification of weapons components for introduction and use in the nuclear stockpile.

Accelerated ion capabilities support the nuclear weapons program in the areas of:

- Material sciences studies,
- Condensed matter physics,
- Radiation effects studies,
- Material aging and performance,
- Nuclear weapons component manufacturing quality assurance,
- Microscopic diagnostics of radiation sensitivity of integrated circuits,
- War Reserve (WR) certification of tritium content in neutron tube targets,
- Corrosion behavior of materials in nuclear weapons components,
- Calibration of neutron detectors used throughout the nuclear weapons complex,
- Quantification of radiation resistance in electronic components,
- Studies in support of nuclear weapon component qualification.

The existing ion beam laboratory has demonstrated its contribution to the nuclear weapons program in a spectrum of NNSA mission areas. The ion beam work supports both the NNSA Science Campaign and the Engineering Campaign

Ion-beam laboratories are broadly used across NNSA. Each laboratory has unique accelerators and test stations as required to execute their assigned missions. These specific mission assignments are described below.

- Sandia National Laboratories' (SNL) ion-beam facilities are used to qualify, analyze and certify non-Nuclear Explosive Package (NEP) nuclear weapons systems and components to be operable and survivable.
- Los Alamos National Laboratory (LANL) ion-beam facilities are needed to resolve issues associated with the NEP, including the synthesis of nanomaterials, material science research, and Pu-alpha irradiation effects associated with the aging of pits on surrounding materials.
- Lawrence Livermore National Laboratory (LLNL) mission needs include National Ignition Facility (NIF) target analysis, NIF target modification, and work in nuclear nonproliferation.

The NNSA capability provided at SNL is specific to their assignment and provides the following capabilities to the NNSA in support of weapon activities.

- Qualification of integrated microsystems used in weapons components, subsystems and systems.
- Quantification of radiation resistance of electronic components, leading to qualification evidence.
- Diagnosis of design and process quality control for materials and devices manufactured at SNL.
- Assessment of radiation effects on microelectronics.
- Diagnosis of materials to improve performance and extend shot life of neutron tubes.
- Quality assurance of neutron generator component manufacturing, including qualification of neutron tube targets.
- Calibration of neutron detectors used across the nuclear weapons complex.
- Assessment of material aging and performance for surveillance and surety applications, especially in microsystems.

Because SNL is the only NNSA site which provides ion beam capability specific to these mission assignments, there is no duplication of capability or capacity in the complex for this activity.

The principal shortfalls are in three areas: operational interferences and restrictions, equipment reliability and facility space constraints.

The principal shortfall of operational interferences is due to inadequate shielding that requires when certain equipment is being operated; no test or experiments can be done at the adjacent equipment due to radiation exposure of personnel. Correspondingly, tests and experiments must be scheduled and coordinated; any interruptions or delays have a "ripple" effect on all other planned activities.

The second shortfall is that the older equipment is not reliable and/or does not provide the spectrum of energetic ions needed for current and future tests for the next generation of components. The additional equipment required to support the NNSA missions cannot be placed in the existing facility due to existing space constraints.

The third shortfall of the facility itself is that the age of the building is so old that continuing maintenance and repair problems require unplanned shutdown and/or delays in tests and experiments to allow for repairs. Further, the existing facility does not have adequate or reliable environmental controls of temperature and humidity or available electrical circuit loads for the projected IBL equipment.

4. Alternatives Analysis

The NNSA "Alternatives Analysis" dated 2006 determined that there is limited duplication of the ion beam laboratory capabilities at other accelerator installations, with no long-term capacity available. Further, the analysis determined that duplicating the SNL capability at an alternate location(s) would provide no cost savings, would increase the complexity of executing the mission, and would result in an increased programmatic risk with no offsetting benefits to operating or capital cost considerations.

Replacement of the Ion Beam Laboratory at SNL appears to be the most viable, cost effective, and lowest risk approach for maintaining these capabilities in support of the nuclear weapons program.

5. Project Description

The purpose of the project is to design and construct a replacement building for the existent Ion Beam Laboratory at Sandia National Laboratories which will include the relocation and installation of current and replacement equipment as part of the project.

The NNSA mission and program require a complement of equipment which includes accelerators, implanters, nano implanters, beam lines and microbeams. The Ion Beam Laboratory project is a replacement and upgrade of an existing laboratory which will completely replace that facility. The nuclear weapons program requires maintaining the current capability in ion-beam laboratory equipment as well as additional equipment for the smaller scale work.

The following equipment is currently available and existing in the current facility but requires a safer and more efficient configuration.

- A 6MV EN tandem electrostatic accelerator system
- Pulsed Laser Deposition of low energy ions/atoms
- Electron Cyclotron Resonance system for depositing medium energy ions (<1keV)
- High Voltage Ion Implanter (400keV)

The following equipment is required to meet mission and program requirements. This equipment will be provided under the IBL Project.

- A 3-4 MV electrostatic ion accelerator
- A focused ion beam implanter (100keV)
- A nuclear microbeam focusing system (MeV)

The following are technical requirement related to the referenced equipment or required by the program

a) An ion beam laboratory would utilize existing equipment or equipment currently available in the marketplace without any requirement for special purpose research or development in support of fabrication.

b) Accelerators and related and support equipment require protection from the elements and a temperature and humidity controlled environment.

c) Accelerator operation requires isolation from internal and external sources of electro-magnetic field emissions.

d) Accelerator operations require vibration control so as not to impact accelerator performance or beam focusing requirements.

e) Accelerator and equipment operation will require access to, and safe storage of, SF6 (Sulfur hexafluoride) in a volume to be determined in the design phase.

f) An ion beam laboratory will need to perform classified operations which require that some beam lines operate in vault-type rooms.

g) Accelerators, as well as exposure experiments conducted on the accelerators, produce radiation which necessitates physical separation and shielding for both equipment and people.

h) Program objectives require characterization laboratories and laboratory support areas in proximity to the accelerators and implanters.

i) Personnel will be required to operate the ion beam laboratory and will require office space with proximity to the equipment.

j) Both general and specialized utility services are required for, and in support of equipment operation including but not limited to chilled water, process chilled water, air handlers, compressed air, nitrogen, exhaust, electrical, plumbing, heating water, facility controls, irrigation, automatic door opening, non-potable water, snow melting, and safety interlocks and controls.

k) Laboratory support areas and workspace support areas will be required.

l) Systems to support an ion beam laboratory would include security, communications, fire protection and fire alarm.

These capabilities must be maintained in the existing facility until the replacement facility is complete in order to continue to support and not interfere with continued qualification of neutron generators for the stockpile. The capability must be provided in a manner which maintains those activities which have been categorized as “Mission Critical” as a result of previous NNSA evaluation and analysis.

The replacement building is an approximately 27,000 square foot office and light duty high bay structure. The building size and shape is determined by the accelerator, beam line, and equipment layout and shielding and separation requirements. This configuration has been modeled for radiation exposures to be As Low as Reasonably Achievable (ALARA). The layout is provided as Table 1 – Configuration and Layout Requirements for the IBL Building. The facility will provide office space for the approximately 19 current staff and will provide laboratory space for seven accelerators and associated controls, including areas for classified beam line work.

A design/build contractor will provide design, building shell, major utility backbone and interior finishing and building systems, site preparation and building utilities.

The project TEC includes SNL project management, design/build facility construction, construction management, capital equipment, Construction safety and inspection, Construction liaison, test, check and acceptance and several other categories of cost as outlined in the WBS dictionary. The Other project Cost (OPC) procurement, ES&H, security, and budget and finance support.

Congressional intent requires the Decontamination and Decommissioning (D&D) costs for the existing facility is included in the project. Current IBL facility staff will be responsible for the decontamination of equipment to be relocated to the new facility and these costs are included in OPC. Equipment which will not be relocated to the new facility and D&D of the old facility will be the responsibility of the D&D program which has site-wide responsibility for this program at SNL. The costs for the D&D program activity is contained in OPC. Any waste management actions resulting from D&D will be coordinated and implemented with the line organization and costs for this activity are contained in OPC.

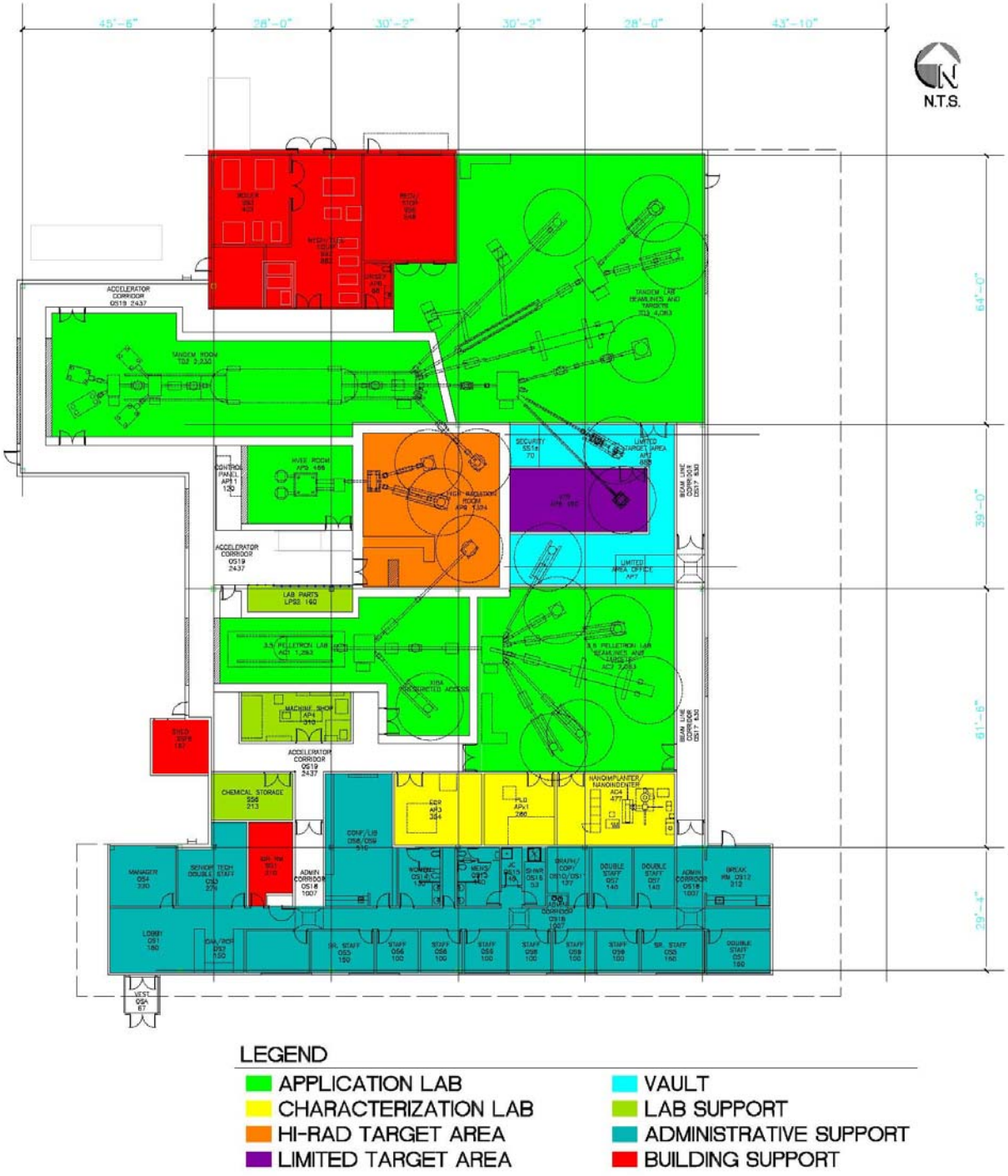
The detailed project description is presented in the Work Breakdown Structure and the related Work Breakdown Structure Dictionary which is presented in Attachment 1. This structure includes both the capital costs which represent the IBL Project Total Estimated Cost (TEC) and operating funded Other Project Costs (OPC) which together represent the full Total Project Cost.

6. Tailoring Strategy

The IBL Project may utilize various tailoring approaches suggested in and allowed by DOE Order 413.3A and DOE M 413.31 subject to the Acquisition Executive's approval. The project intends to propose the following strategy based on the design-build approach for this IBL:

1) Critical Decisions 0 and 1 will be a combined decision.
2) Critical Decisions 2 and 3 will be a combined decision.
3) Critical Decisions 2 and 3 will be supported by a single NNSA Independent Project Review.
4) Critical Decision 4 delegation to the Sandia Site Office Manager will be requested from the Acquisition Executive.

Table 1 – Configuration and Layout Requirements for the IBL Building



7. Acquisition Strategy and Procurement Plan

The IBL building is proposed as a design-build project. All project decisions, reviews, cost estimates, schedules and scope documents are developed around this strategy. This strategy was determined to be most likely to reduce the total cost and deliver the project more quickly than the traditional design-bid-build approach.

Small businesses will be targeted for the principal construction activities of this IBL project: Design/Build contract, Building Fit-up Design, Building Fit-up Construction, and Commissioning. In addition, small businesses will be targeted for competition for the procurement of one accelerator.

The procurement plans for the proposed contracts have been detailed as to scope, expected contract value and type of contract. The procurement cycle and contract performance schedules have been included in the current IBL integrated project schedule.

Award of all of the proposed procurements would be based on a Best Value Award Determination, with the exception of some commercial, off-the-shelf tool purchases that may be completed and awarded based on low price.

8. One-for-One Replacement

DOE has a plan to reduce the size of the nuclear weapons complex. In order to meet this requirement, the construction of this replacement facility of roughly 30,000 gross square feet must have a complementary plan to offset that construction with an equal amount of demolition. The planned demolition can be at the same site as the proposed construction, or can be taken from an overall complex-wide accrual of demolition called the “space bank”.

A requirement for approximately 30,000 gross square feet of offset for the IBL has been included in the SNL space plan. In order to meet this requirement, this square footage has been transferred to SNL from the Nevada Test Site to provide the offset. Once the Ion Beam Laboratory Project is complete, the existing current ion beam facility of roughly 15,000 gross square feet will be demolished along with its associated utility support space of roughly 400 gross square feet. The gross square footage will then be added into the SNL space bank.

9. Integrated Safety Management and IBL Construction Safety Program Plan

Integrated safety management is addressed at SNL under its Corporate Process Requirement 400.1.2, “Integrated Safety Management System” which applies to all activities at SNL.

Sandia has prepared a document, “IBL Construction Safety Program Plan (CSPP)” that addresses construction safety protocols and requirements specifically for this project. The IBL CSPP is based on the concept of effective and systematic application and implementation of SNL Integrated Safety Management System (ISMS) plan.

The IBL CSPP is a summary of the day-to-day references, forms and procedures necessary to provide a minimum set of compliance requirements that shall be enforced. These requirements provide a safety

and health culture with sufficient rigor to preclude or minimize risks to contractor workers and other contract laborers as well as personnel at SNL, the public, and the environment.

10. National Environmental Policy Act (ACT) Determination

A National Environmental Policy Act (NEPA) determination has been made that this facility is categorically excluded from further evaluation. As such, a NEPA Environmental Assessment or an Environmental Impact Statement will not be required.

External citizen and community environmental concerns have been addressed in the Sandia Site Wide Environmental Impact Statement (SWEIS). The mission of the IBL was included in the Sandia SWEIS.

The IBL Environmental Checklist and the resultant NEPA determination are provided as Attachment 2.

11. High Performance Sustainable Design

The design/build procurement will include a requirement that the contractor design and construct the IBL facility using the latest, "green-building" technologies and integrated Sustainable Design (SD) approaches. The IBL facility will be submitted for certification to the U.S. Green Building Council "Leadership in Energy and Environmental Design (LEED).

The design/build contractor will be responsible to perform all activities necessary for completing the LEED certification process. Appendix G of the IBL "Basis of Design Report" contains an initial LEED checklist that indicates those credits required to be fulfilled for the IBL project.

Sustainable design attributes incorporated in to the IBL facility will be documented in a Sustainable Design Report. A copy of the LEED certification application documentation package prepared for submission to the USGBC will constitute the Final Sustainable Design Report, and will be submitted to SNL following submission to the USGBC.

The Final Report is to include the LEED Letter plus all required supporting documentation. Interim sustainable design reports will be submitted during design and will be organized according to the LEED categories and credit structure, and will provide a status of completion for each prerequisite and credit.

12. Security Vulnerability Assessment

A security vulnerability assessment for the IBL project was conducted by the SNL Organization 12900 consistent with the requirement of DOE Order 413.3A and SNL New Mexico site policies. The IBL Security and Telecommunications Systems Descriptions including Security Vulnerability Assessment and Cyber Security Requirements are provided as Attachment 3.

13. Hazard Analysis Report

SNL performed an initial Hazard Identification and conducted a Preliminary Hazard Screen in compliance with the Integrated Safety Management System (ISMS) requirements and the authorization basis determination process. The Preliminary Hazard Screen resulted in an IBL classification as a low

hazard, non-nuclear facility. Although the IBL is a radiological facility, the inventory is below the DOE STD 1027 hazard category 3 threshold. This hazard identification work will be elaborated with a Design Hazard Analysis which will be developed when the design of the IBL facility is 50% complete. The IBL Hazard Classification Memo is provided as Attachment 4.

14. Quality Assurance Program

SNL has in place Corporate Quality Guidelines which implement the requirements of DOE Order 414.1A Quality Assurance. The successful contractors will be required to have a Quality Assurance program in place that complies with Sandia's Corporate Quality Guidelines. Quality Assurance will be a factor in the best value criteria evaluation of the bids. Sandia will also conduct Supplier Evaluations on each major contract.

The Ion Beam Laboratory (IBL) may necessitate inclusion of Quality Significant contract clauses. These clauses require that the contractor have an enhanced quality assurance program and also necessitates increased rigor in all project quality aspects by both the contractor(s) and SNL. The Price Anderson Amendment Act (PAAA) considerations on the IBL project are related to design and construction of radiation shield walls.

Additional IBL Project Quality Assurance information can be found in Appendix B1 of the SNL IBL Project Management Plan titled "Facilities Maintenance and Operations Center Quality Management Plan" dated May 2007.

15. Roles and Responsibilities

15.1 DOE Deputy Secretary

a) Dispositions baseline change proposals which increase the project TEC by up to or more than 25% from original cost baseline.

b) Dispositions Baseline change proposals which extend the project completion date by six months or more from the original scheduled completion date.

15.2 NNSA Deputy Administrator for NNSA, Program Secretarial Office

a) Serves as the Acquisition Executive for the IBL Project.

b) Approves Critical Decision 0 –Approve Mission Need for the IBL Project.

c) Approves or delegates Critical Decision 1- Approve Alternative Selection and Cost Range per DOE Order 413.3A.

d) Approves or Delegates Critical Decision 2 - Approve Performance Baseline Critical, Decision 3 – Approve Start of Construction, and/or Critical Decision 4 – Start of Operation. Delegation may be to the NNSA Sandia Site Office Manager, the NNSA Assistant Deputy Administrator for Research, Development and Simulation or the NNSA Assistant Deputy Administrator for Facility and Infrastructure Acquisition and Operation consistent with DOE Order 413.3A Table 1, Critical Decision Authority Thresholds.

e) Serves as Chair and appoints members for the IBL ESAAB.

f) Directs and convenes Independent Project Reviews for the IBL including those which may be requested by the Federal Project Director.

g) Convenes and chairs the Change Control Board for disposition of Level 1 Baseline Change Proposals.

15.3 NNSA Program Manager, Assistant Deputy Administrator for Research, Development & Simulation, NA-11

a) Serves as or appoints a program sponsor for the project.

b) Participates as a member of the ESAAB or serves as Acquisition Executive for the project,

c) Serves as the Acquisition Executive for disposition of Critical Decisions 1-4 assigned, or delegates to the Sandia Site Office Manager.

15.4 NNSA Program Manager, Assistant Deputy Administrator for Facility and Infrastructure Acquisition and Operation, NA-17.

a) Directs initial IBL Project planning and execution.

b) Initiates, directs and reviews definition of mission need based on input provided by other Program Offices, the Sandia Site Office, and SNL.

c) Oversees and supports budget requests and allocates resources for the IBL Project.

d) Serves as a member of the NNSA ESAAB.

e) Serves as the Acquisition Executive for disposition of Critical Decisions 1-4 if assigned, or delegates to the Sandia Site Office Manager

f) Conducts quarterly IBL Project reviews.

15.5 NNSA Sandia Site Office Manager as Head of a Field Organization

a) Assigns the Federal Project Director and both dedicated and matrixed federal members of the Integrated Project Team.

b) Performs the functions of the Acquisition Executive for Critical Decisions delegated by the Deputy Administrator of the NNSA.

c) Convenes and Chairs the Site Office ESAAB and ESAAB- Equivalent Board.

d) Convenes and Chairs the Site Office Change Control Board and dispositions IBL Project Baseline Change Proposals.

e) Oversees the project line management organization and ensures that line project team has the necessary experience, expertise, training and resources to execute their project responsibilities.

15.6 NNSA Sandia Site Office Federal Project Director

a) Attains and maintains Project Management certification in concert with the requirements outlined in DOE O 361.1A.

b) Plans, implements and completes the project within the approved project baseline.

c) Initiates, develops, implements and maintains key project documentation including the Project Execution Plan.

d) Defines project cost, schedule, performance and scope baselines

e) Provides responsible, timely, reliable and accurate integration and interpretation of project performance data, takes steps to mitigate baseline or performance issues and advises senior management in a timely manner of project problems or issues.

f) Evaluates and verifies reported project performance and progress and makes projections and identifies project trends and takes action as required.

g) Serves as a single point of contract between federal and contractor staff for all matters relating to a project and its performance.

h) Serves as the Contracting Officer's Representative, as determined by the Contracting Officer.

i) Leads the Integrated Project, provides broad guidance, and directs and delegates to Integrated Project Team members.

15.7 Integrated Project Team Members

a) Support the Federal Project Director.

b) Identify, define, and manage to completion, responsibilities assigned as a member of the Integrated Project Team as defined in SSO memorandum *Subject: Assignment of Sandia Site Office (SSO) personnel to the Ion Beam Laboratory (IBL) Project Team*, dated November 30, 2006. Such areas of responsibility can include but are not limited to the following: contracting strategies, contract planning, contract management, project interfaces, systems engineering, environmental, safety, health, security, quality assurance, cost estimates, project schedule, audits, appraisals, reviews of drawings, specifications, and/or construction packages, inspection reports, change control proposals, closeout documentation.

c) Participate on or lead a Readiness Assessment Team as requested and required.

d) The Roles and Responsibilities of the SNL personnel including the Program Director, Project Manager, and other SNL participants and team members, are described in the SNL IBL Project Plan in Appendix "A" – Project Management and Team Member Roles and Responsibilities, dated October 2006.

16. Performance Baseline

16.1 Scope Baseline

The project scope includes the design and construction of a replacement building which will provide approximately 27,000 square feet of office and light duty high bay. The building size and shape is dictated by the accelerator, beam line, and equipment layout and shielding and separation requirements. This configuration has been modeled for radiation exposures to be As Low as Reasonably Achievable (ALARA). The facility will provide office space and laboratory space for accelerators, equipment, and associated controls, including areas for classified beam line work.

Ion Beam Laboratory Equipment

The scope includes relocating the majority of the equipment in the current IBL, upgrading key pieces of equipment, and procuring a new accelerator and a new focused implanter.

The three major capital equipment acquisitions are:

- ***3-4 MV Ion Accelerator*** **–** a single-ended positive ion accelerator, analyzing magnet, two beam transport lines, and associated apparatus and components. Also includes a system for recovery and storage of SF_6.
- ***Focused Ion Beam (FIB) Nanoimplanter*** – providing capabilities for FIB implantation, FIB lithography, FIB assisted gas deposition, FIB assisted reactive gas etching, and microcutting. Includes ion sources, acceleration voltage, ion probe, ion optical system, electron beam system, detector system, active and passive anti-vibration system, scan & display system, UHV work chambers and stages, wafer position exchanging chamber, load lock chamber, evacuation systems, and computer control and data acquisition system.
- ***Nuclear Microprobe Focusing System*** – will be used for both ion beam analysis and proton beam writing. Includes low vibration girder, microprobe lens system, chamber, sample holder stage, beam line components, lens power supply, and computer control and data acquisition system.

The four major equipment systems to be relocated are:

- ***6MV Tandem*** - Electronic Accelerator System and associated beamlines and end stations.
- ***Electron Cyclotron Resonance (ECR) System*** – for depositing medium energy ions (<1keV) used for preparing samples in diverse areas (provides low-energy deposition). This ECR system is one of only a few such systems in the United States. It is used for preparing samples in diverse areas of importance to nuclear weapons, ranging from corrosion research to nanomechanics.
- ***Pulsed Laser Deposition (PLD) System*** – of low energy ions/atoms used to make samples for evaluating performance limits and mechanisms that give rise to high-strength metals.
- ***400keV High voltage Ion Implanter -*** Medium energy Ion accelerator system with high voltage power supply, beam analyzing magnet, beam lines and end stations used for ion-implantation, lead probe calibration and ion-photon emission microscopy.

16.2 Cost Baseline

The Total Estimated Cost (TEC) range for an Ion Beam Laboratory is between $34M and $35.7M, and a Total Project Cost (TPC) range of between $37.7M and $39.8M. The cost range is primarily dictated by when the project could be initiated.

Detailed estimates in support of this proposed cost baseline are provided in Attachment 5.

16.3 Schedule Baseline

The Project Schedule Baseline is represented in the original construction Project Data Sheet consistent with instructions for development of that document and is provided below.

- Energy Systems Acquisition Advisory Board (ESAAB) for the SNL Ion Beam Laboratory Project, Combined CD-0/1, with NNSA/NA-10, December 7, 2006.
- Critical Decision-0: Approve Mission Need, October 4, 2007
- Critical Decision-1: Approve Preliminary Baseline Range, October 4, 2007
- Critical Decision-2: Approve Performance Baseline, 2nd Quarter FY 2008
  (Independent Project Review conducted for CD 2/3)
- Critical Decision-3: Approve start of construction, 2nd Quarter FY 2008.
- Start Construction – 4th Quarter FY 2009
- Critical Decision-4: Approve Start of Operations – 2nd Quarter FY 2012
- Close out of Decontamination and Demolition of Building 884 – 4th Quarter FY 2012
- IBL Project Closeout Complete – 1st Quarter FY 2013

The Project Baseline Summary Schedule is provided as Table 2. Resource loaded schedules which support the summary schedule, including any subsequent changes to the project baseline schedule which are approved through the baseline change control process, will be maintained for the life of the project.

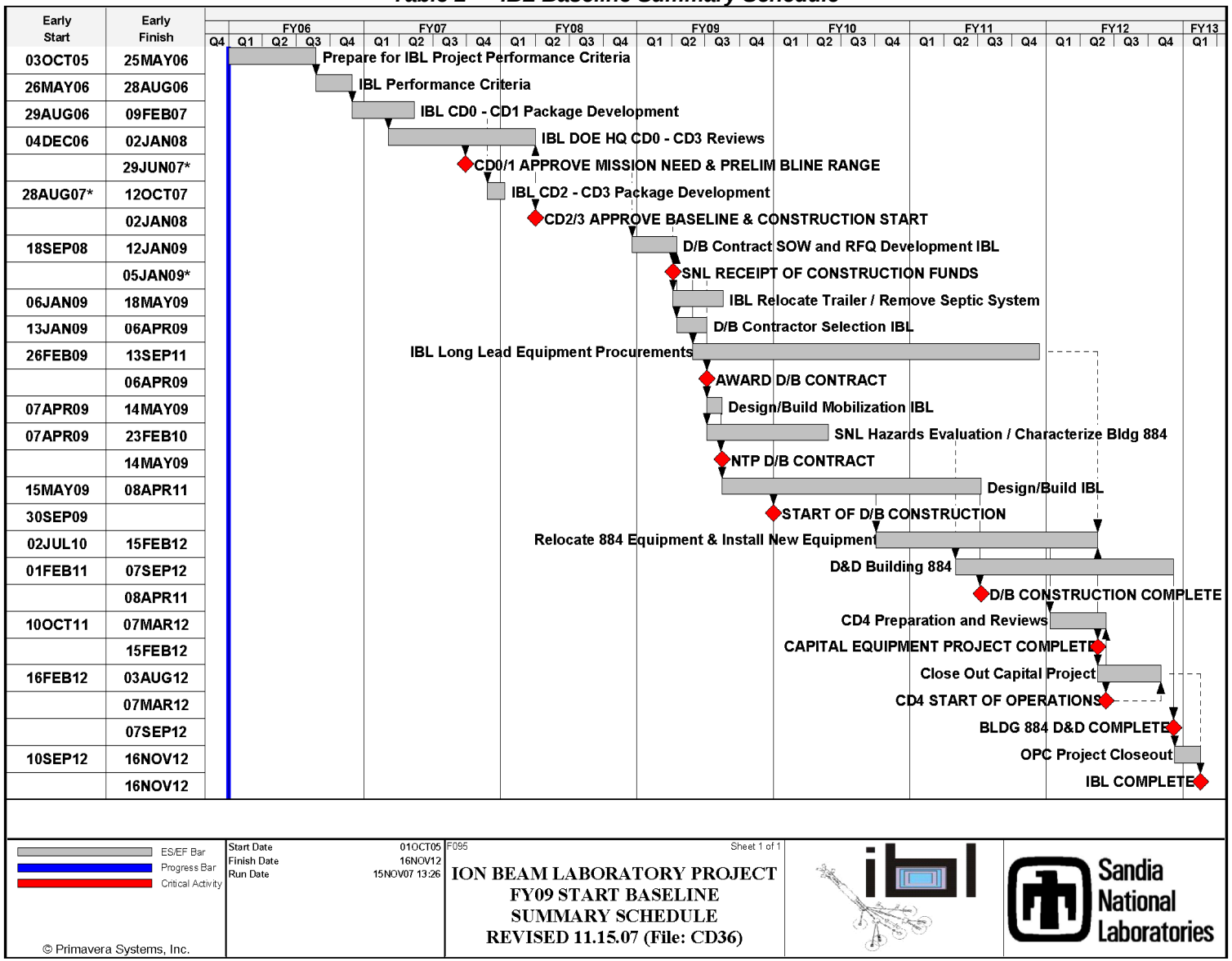
16.4 Baseline Change Control Process and Authorities

Authority levels and thresholds for disposition of Baseline Change Proposals are shown in Table 3 Change Control Threshold Matrix.

Execution of the Baseline Change Control process within the federal structure will be executed consistent with the respective processes and procedures within NNSA, between NNSA and SSO, and within SSO.

Change Control for “cost, schedule and scope” below Level 2 is delegated to SNL and is discussed in the SNL IBL Project Plan in Appendix C - Baseline Change Control.

Table 2 — IBL Baseline Summary Schedule



Change Level	Authority		
	Approval	Element	Threshold
0	Deputy Secretary	Schedule Cost	Changes that increase project TEC by 25% or more from original cost baseline. Changes that add six months or more to the original l scheduled completion date.
1	Deputy Administrator for NNSA	Scope	Changes to scope that require changes to the PRD.
		Schedule	Changes that individually or cumulatively increase the schedule by 3 months or more from the completion date reported to Congress in the Project Data Sheet or changes to the completion date for Critical Decision 4.
		Cost	Increases in cost that affect information reported to Congress in the Project Data Sheet.
2	NNSA Site Office Manager	Scope	Changes to scope that may affect operation functions but do not affect mission need. Any change in the gross square footage of plus or minus 10%. Any change to the IBL location, key equipment items or changes that affect security, operating systems, environmental issues, safety issues, permitting, or authorization basis. – - After review by the FPD, any modifications to the WBS or WBS dictionary which may be determined to suggest a scope modification.
		Schedule	Changes that individually or cumulatively from the approval of this document increase by 1-3 months any milestones shown in the schedule baseline. .
		Cost	- Any increase in the aggregate TEC for any of the individual Level 2 WBS elements that do not increase the overall project TEC. - Any change that would move funds, or a WBS element or scope, from operating to capital or capital to operating. -. Any individual change or action involving a cost change in excess of $1M. - Changes which constitute a downward directed action and will be executed with approval of the Level 2 CCB with advisement to the Level 1 CCB.
3	SNL BCCB	Scope	Any increase or decrease in Gross Square Footage (GSF) of the IBL facility from that specified in this PEP which is greater than 5% of the baseline line.
		Schedule	Changes that individually or cumulatively provide an increase of one month in any milestone shown in the approved baseline scheduled described in this PEP.
		Cost	Any individual change or action involving a cost increase that exceeds $500K.

Authorities below Level 3 are delegated to SNL and are described and discussed in the SNL IBL Project Plan.

17. Key Performance Parameters

The IBL Project Key Parameters for the project are as follows:

- Construct a 27,000 gross square foot facility capable of housing accelerator equipment and support personnel.
- Relocation of four pieces of equipment from the current IBL (See Section 16.1)
- Provide three replacement equipment items to specification referenced previously in this PEP. (See section 16.1)
- Provide layered security capabilities to allow for limited classified activities in the facility to meet program requirements.
- Meet low vibration criteria ISO standard VC-E in beam line areas.
- Meet low electro-magnetic frequency criteria of less than 4 mG in the facility.
- Provide facility radiation shielding to provide facility personnel with radiation exposures within allowable regulatory limits and "As Low as Reasonably Achievable (ALARA)".

18. Earned Value Management System

The IBL Project will utilize the SNL Corporate Earned Value Management System (EVMS) which is a requirement for projects over $20M as stated in the DOE Order 413.3A. This EVMS was certified by DOE, September 10, 2004, as meeting the ANSI Standard "Earned Value Management Systems, ANSI/EIA-748". This certification is provided as Attachment 6.

The SNL corporate earned value system will be used for managing, controlling, analyzing and reporting on the IBL Project.

19. Risk Management Assessment and Risk Management Plan

The SNL Risk Management Assessment and Risk Management Plan have been developed consistent with the DOE Order 413.3A and SNL Corporate policy and are included in the SNL IBL Project Plan, Appendix "B". Supplemental Quality and Risk Information, dated October 5, 2006

20. Project Authorization and Management

This section describes the responsibilities and authorities for the development, review, and recommendation and approval of deliverables for the IBL Project.

IBL Authorities Matrix

Document or Action	SNL Project Manager	Federal Project Director	NNSA/HQ Program Manager	Deputy Administrator for NNSA
Project Execution Plan	Both SNL Program Director and SNL Project Manager endorse	FPD Prepares FPD and SSO Manager both endorse	Endorses or approves if delegated	Approves
NNSA Independent Project Reviews (IPR)	Prepares and presents project information	Supports the program sponsor and directs CAP	Commissions and reviews results	Directs and reviews results
CD 0/1	Prepares material	Provides recommendation and Requests and receives decision	Endorses decision, or provides decision if delegated	Provides decision
CD 2 /3	Prepares material	Provides recommendations, requests and receives decision. SSO Manager provides decision if delegated.	Endorses decision, or provides decision if delegated, or delegates to SSO Manager	Provides decision or delegates. If delegated receives information.
Letter of Intent to Occupy	Prepares	FPD recommends. SSO manager approves	Receives information copy	Receives information copy
Readiness Assessment	Prepares for together with SNL line organization Conducted by SNL Corporate Organization	Receives information and advises SSO Manager	Receives information	Receives information
Final Cost Report	Prepares	Receives and reviews information copy	Receives information copy	Receives information copy
CD 4	Requests and Receives decision	FPD makes recommendation SSO Manager approves if delegated	Endorses decision, or provides decision if delegated, or delegates to SSO Manager	Provides decision or delegates. If delegated receives Information
OMB a-11 Annual Project Status Report, Monthly and Quarterly Reports	Prepares	Reviews and forwards	Receives information and forwards as required	

As referenced under Roles and Responsibilities the SSO Manager assigns both dedicated and matrixed personnel to support the IBL Project as required. The number and types of personnel assigned to provide

support will be dictated by the requirements and the phase of the project. The proposed federal organizational support for the project is shown below.

- IBL Federal Project Director (dedicated)
- SSO Change Control Board Secretariat (matrixed)
- Level 2 Change Control Board members (matrixed)
- SSO Contacting Officer (matrixed)
- Construction Safety Engineer (matrixed)
- Health and Safety Engineers and Industrial Hygienist as required (matrixed)
- NEPA Compliance Officer and Permitting Manager (matrixed)
- Financial Management (matrixed)

Annual budget authorization will be provided as guidance from DOE and/or NNSA to or through the NNSA Albuquerque Service Center and/or the Sandia Site Office using the process in affect at that time. Authorization and management by SNL, below the level discussed above is contained in the SNL IBL Project Plan.

21. Project Report and Meetings

The SNL certified Earned Value Management System will generate monthly and quarterly reporting of schedule status and critical path progress and problems, as well as Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), Actual Cost of Work Performed (ACWP), and variance analysis.

The SNL Oracle Financial System will provide monthly and quarterly information related to project budget, costs, and commitments in the WBS format.

The SNL Project Manager will convene regularly scheduled meetings to include the SNL Project Manager and the NNSA Federal Project Director and the Construction Management support contract manager at a minimum.

Status of the IBL performance metrics agreed to in the SNL/DOE performance agreement will periodically be discussed, evaluated and appraised.

The SNL Project Manager will provide annual and quarterly reports in the appropriate formats and provide as required to satisfy various external audiences. The quarterly reports will be prepared in the necessary formats and provided to the Federal Project Director in draft to support the Quarterly Construction Program Review televideo conference with NNSA/HQ, and make monthly update of project information through PARS.

22. Technical Consideration

22.1 Environment, Safety, and Health

Environment, Safety, and Health (ES&H)-related risks associated with the project are viewed as low.

The risk categorization derives from the number of ES&H requirements typical with projects of this scale. Potential risks reside primarily in the areas of construction safety, and in the schedules and costs associated with obtaining the necessary ES&H-related permits, reviews, and approvals.

The following provides a summary of the ES&H management areas and identifies the aspects and mitigating actions of each area where management of ES&H risk is pivotal to protecting schedule, cost, and overall safety.

- Coordinating with DOE and SNL/NM subject matter experts (SMEs) to ensure that safety features are integrated into basic designs (e.g., emergency management, worker safety);
- Integrating a full-time SNL construction safety engineer into the Integrated Project Team and an SSO matrixed construction safety engineer;
- Performing timely primary hazard screens, consistent with Integrated Safety Management System (ISMS) principles, of both the newly-proposed activities, and those that will transition from the existing facility into the new facility;
- Ensuring that supplemental safety reviews are performed with sufficient rigor to demonstrate complete adherence to ISMS Safety Management Functions, and ISMS Seven Guiding Principles, as applicable, and that draft, and final preliminary Safety Assessment documents follow DOE guidance and SNL corporate practices with the appropriate level of analyses.
- Ensuring that planning and analysis in support of operational health and safety is performed early in the project;
- Incorporating positive incentives in the construction contracts for safety, as well as awarding all contracts based on a best value analysis;
- Ensuring awareness of the need for a rigorous construction safety program early-on (included in the contract and program requirements as defined in Std. Spec. 01065 “Construction Safety”); and
- Integrating safety-related lessons learned from other capital projects across the NNSA complex

22.2 Relocation of the Tandem Accelerator

The relocation of the Tandem Van de Graaff Accelerator from the existing IBL facility to the new facility is the most complex part of the IBL Project. The size and weight of this equipment requires special procedures as this is a high-risk in terms of the value of this accelerator. The vessel weighs approximately 90,000 lbs with dimensions roughly 40 feet long, 8 feet in diameter.

Due to this being such a high-risk activity, a specific transportation and relocation plan will be utilized to ensure the protection of this accelerator.

22.3 Value Management and Engineering

Value Management (VM) and Value Engineering (VE) have been applied throughout the development of the IBL Project Plan.

A Value Management conference is planned for prior to the issuance of the design-build Request for Quotation and an additional VE exercise is planned for during the design-build construction phase. The design-build contract will specifically incorporate an incentive for a Value Engineering review and

decision. This incentive should enable the contractor to actively seek design and construction alternatives that will allow for a cost savings for SNL, while maintaining the standard of quality established by the program.

22.4 Configuration Management

The IBL Project Plan, Section 4.5.6, dated October 2006 will include configuration management program under an SNL "Facilities Management Policy for Configuration Control" July 1997 which complies with DOE Standard 1073.

This program consists of functions associated with the following elements: project scope, program management, design requirements, document control, change control, the Request for Information process and SNL assessments.

These existing SNL practices and processes and will be executed and supported by the IBL Integrated Project Team as described in this PEP and the SNL Project Plan, information management requirements and document control protocols.

Project configuration management of the IBL Project baseline technical performance, cost, and schedule will be executed using the processes described in this PEP in concert with DOE Order 413.3A.

22.5 Reliability and Maintainability

Reliability and maintainability have been included in the design and planning effort for the IBL projects and will continue to be part of the implementation of the IBL operations and maintenance activities. Specialists with expertise in facility operations and maintenance will support these activities by assessing and reliability and maintainability of the facility and its systems.

22.6 Document Control

The IBL Project Plan, Section 4.10, dated October 2006 includes document control processes to be used for IBL.

Existing SNL/NM processes will be implemented on this project to control preparation, review, comment resolution, approval, issuance, use, and revision of documents that establish policies, prescribe work, and specify requirements.

The principal IBL Project controlled documents include contract documents, the PEP, the SNL IBL Project Plan, the Construction Project Data Sheet, Critical Decision authorizations, work authorizations, construction drawings, design calculations, contract documents, special and standard specifications, ES&H compliance documents, the ES&H Plan, and the Construction Safety Program Plan.

This PEP will reflect BCPs and their disposition in the log at the front of this document.

22.7 Records Management

Existing SNL Records Management processes will be implemented to ensure that sufficient records are specified, prepared, reviewed, approved, and maintained to accurately reflect completed work.

The maintenance of records includes provisions for change or correction, retention, protection, preservation, traceability, accountability, and retrieval. The types of records will include minutes of project team meetings, project management information, design information, procurement information, and change control documents, and weekly, monthly, quarterly and annual reports.

Records that provide evidence of the quality of structures, systems, components, and activities are maintained during active use by each responsible organization or subcontractor. As specific records for the project have been completed, the SNL Project Manager will ensure that all records for design and engineering are submitted to the central project files. These records will include memos of record; Document Review and Comment Information; change requests; requests for information (RFIs); outline specifications; design analysis; design calculations; energy conservation evaluations; cost estimates; architectural/structural, mechanical and electrical design criteria; project correspondence; contracts; amendments; contractor submittals; substitution requests and change.

23. Transition to Operations and Readiness Review

The IBL Project Plan includes a "Transition to Operations" Plan, dated October 2006, to commission the IBL facility following the completion of inspections, and the movement, installation and acceptance of office and technical equipment.

The transition to operations will be accomplished in two phases. The first phase is the acceptance of the building structure and associated equipment by the SNL Facilities organization and the line organization. This phase ensures that the building systems are operational (including building life safety systems, structures and components, e.g. fire alarm, fire suppression, etc.).

- Approval of initial operation/beneficial occupancy will mark the completion and final acceptance of the building structure and equipment, such that commissioning and "punch lists" are complete, notice of contract release has been delivered, final invoices have been paid to the IBL general Contractor (GC), and the warranty period has begun.
- At this point, the building and its systems are deemed complete and ready to be released from the SNL IBL project team to the SNL line organization responsible for operations and to SNL line organization ("Facilities") for maintenance. This SNL line organization will be responsible to prepare and make available the appropriate building environment, safety, health, and security documentation, consistent with Integrated Safety Management and Integrated Safeguards and Security Management policies.

The second phase of operational startup of the IBL consists of the step-wise occupancy of laboratory space whereby line organization ES&H issues are addressed using processes outlined in the SNL ES&H Manual to ensure that laboratories are in compliance with ES&H regulations and ready to commence operations.

- Any SNL required Authorization Basis documentation for laboratories, such as training, technical work documents, pre-op checklists, or a check of primary hazard screens is to be performed during this phase using the checklist provided in the SNL ES&H Manual (Startup/Restart Review for Standard Industrial Hazard and Low-Hazard Non-nuclear Operations).

  The laboratory readiness reviews will occur on a laboratory-by-laboratory basis, based on an occupancy schedule to ensure that the following requirements are met:

  - Personnel possess the experience, knowledge, skills, and abilities that are necessary to carry out their responsibilities.

    - Protection of employees, the public, and the environment is demonstrated to be a priority.
- Before work is performed, the associated hazards are evaluated and an agreed-upon set of controls and requirements is established to provide adequate assurance which employees, the public, and the environment are protected from adverse consequences.
    - The administrative and engineering controls to prevent and mitigate hazards are to be tailored to the work being performed and associated hazards.

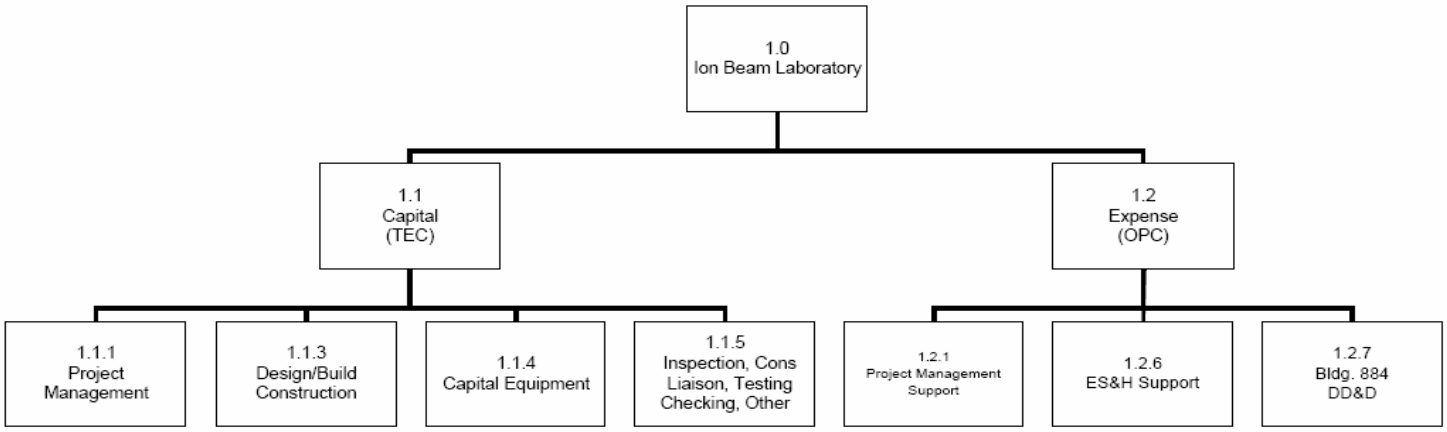
- In addition to laboratory-level readiness reviews, the line organization will develop an Emergency Response Plan and conduct an emergency response orientation meeting to key response personnel as described in SNL ES&H Manual Chapter 15 – Emergency Preparedness and Management dated August 20, 2004:
    - Incident commanders
    - Protective force
    - Emergency management
    - Maintenance response team
    - Rescue Recon
    - Fire department

The IBL project closeout will occur after CD- 4, Start of Operations. The closeout includes a review to verify that all appropriate documentation according to the applicable DOE Orders and SNL Policies and Procedures.

24. Related Projects

Currently planned programs, projects or efforts do not impact and are not impacted by the IBL Project.

IBL Project Execution Plan Attachment 1 - IBL Project Summary Work Breakdown Structure



IBL Project Execution Plan Attachment 1 (continued) –

Work Breakdown Structure Dictionary

WBS Element Number 1

WBS Title: IBL Project – Ion Beam Laboratory – Capital

Technical Content: This WBS element is a summary element for all funded activities for the Ion Beam Laboratory (IBL) Facility. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:

- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.
- Standard equipment (furniture)

WBS Element Number 1.2

WBS Title: IBL Project – Ion Beam Laboratory – Capital

Technical Content: This WBS element is a summary element for all Capital-funded activities to design and construct the IBL Ion Beam Laboratory (IBL) Facility. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:

- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.
- Standard equipment (furniture)

WBS Element Number 1.1.1

WBS Title: IBL Project - Capital – Project Management

Technical Content: This WBS element is a summary element for all capital funded IBL Project Management activities. Managing the IBL Project from its inception to its final completion involves performing four basic functions of project management: planning, organizing, leading, and controlling. The project manager has the overall responsibility of the project's technical, cost, and schedules performance and leads a team of individuals who contribute to the overall project objectives. The project manager performs day-to-day project management activities in order to keep the project running smoothly. These activities include: making decisions regarding scope, cost, and schedule; keeping

customers informed about progress; communicating project objectives to team members and keeping them on track; keeping DOE informed and making sure DOE Orders are followed; learning from past project mistakes and implementing creative solutions to current problems; running interference for project team members and handling personnel issues between team members. Other responsibilities include chairing team meetings, approving authorizations, reviewing project estimates, leading project revalidation's, providing contract negotiation support, Baseline Change proposals, developing management plans and revisions, and reporting.

WBS Element Number 1.1.1.1
WBS Title: IBL Project - Capital – Project Management - Manager
Technical Content: This WBS element supports the IBL Project Manager activities. Managing the IBL Project from its inception to its final completion involves performing four basic functions of project management: planning, organizing, leading, and controlling. The project manager has the overall responsibility of the project's technical, cost, and schedules performance and leads a team of individuals who contribute to the overall project objectives. The project manager performs day-to-day project management activities in order to keep the project running smoothly. These activities include: making decisions regarding scope, cost, and schedule; keeping customers informed about progress; communicating project objectives to team members and keeping them on track; keeping DOE informed and making sure DOE Orders are followed; learning from past project mistakes and implementing creative solutions to current problems; running interference for project team members and handling personnel issues between team members. Other responsibilities include chairing team meetings, approving authorizations, reviewing project estimates, leading project revalidation's, providing contract negotiation support, Baseline Change proposals, developing management plans and revisions, and reporting.

WBS element Number 1.1.1.2
WBS Title: Project Management – Capital – Risk Management – ES&H – Safety Documentation – Construction Safety Support
Technical Content. The IBL Project Manager has identified a construction safety lead that is responsible for the construction safety of the project. The responsibilities include but are not limited to: Coordinating with DOE and SNL/NM subject matter experts (SMEs) to ensure that safety features are integrated into basic designs (e.g., emergency management, worker safety). The individual performs timely primary hazard screens, consistent with Integrated Safety Management System (ISMS) principles, of both the newly proposed IBL activities, and those that will transition from the existing Building 884 facility into the IBL Complex. In the early second quarter of FY 2007, DOE concurred on SNL's determination on the appropriate level of Safety Documentation. Responding with the required documentation in project planning; Ensuring that planning and analysis in support of operational health and safety is performed early in the project. Incorporating positive/negative incentives in the construction contracts for safety, as well as awarding all contracts based on a best value analysis. The program requirements are defined in Specification Section 01065, "Environment, Safety, and Health". Integrating safety-related lessons learned from other capital projects across the NWC into all phases of the IBL Project.

WBS Element Number 1.1.1.3
WBS Title: Construction Management and Inspection – Project Construction Management – General Project Construction Management Support
Technical Content: This WBS element includes CM services during the construction phase of the IBL project. Construction phase and post construction phase services include coordinating regular construction meetings; maintaining construction records including daily logs, logs submittals, and monthly reports; providing records management support; reviewing and recommending feedback on Request for Information (RFIs); providing cost estimating support; verifying as-built drawings and documents; and providing construction-scheduling support, facilities commissioning support, and other required

supplemental services. It is anticipated that assistance will be required from several various work disciplines throughout the construction portion of the project that will not be facility specific; this WBS element has been set up for these various work disciplines.

WBS Element Number 1.1.1.4
WBS Title: Ion Beam Laboratory - Project Contingency
Technical Content: This WBS element is a summary level WBS for the IBL Ion Beam Laboratory project contingency that is the amount budgeted to cover costs that may result from incomplete design, unforeseen and unpredictable conditions, or uncertainties. The amount of the contingency will depend on the status of design, procurement, and construction, and the complexity and uncertainties of the component parts of the project. Contingency will not to be used to avoid making an accurate assessment of expected cost and does not provide for increases in scope or inflation.

WBS Element Number 1.1.3
WBS Title: Ion Beam Laboratory - Capital - Project – Design Build
Technical Content: This WBS element is a roll up of WBS element 1.1.3.2 (Design), 1.1.3.3 (Construction), 1.1.4 (Capital Equipment), and 1.1.5 (Inspection Test, Check, Accept). These elements provide for construction of a light lab/office facility for the Ion Beam Laboratory. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:

- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.

WBS Element Number 1.1.3.2
Task Description: Ion Beam Laboratory - Capital - Project – Design Build - Design Phase
Technical Content: Design for a design build project includes development of the performance requirements and the initial design for a project. Performance requirements are the preliminary design development phase, which usually consists of 50% - 60% of the design effort. During this phase schematic design is done for all building systems, and typical elevations and sections are developed. Very little work is performed on details, sections, and schedules. The intent is to design the project in a level of detail that can be presented to the customer base to confirm that the project is on the proper course for performance, cost, and schedule. All plans, sections, details, schedules, and specifications are completed during this phase. The deliverable from this phase is the bid document package. Title III activities are included in WBS number 1.1.51.

WBS Element Number 1.1.3.2.1
Task Description: Design Phase – Performance Requirements
Technical Content: Performance Requirements development, which usually consists of 50% - 60% of the design effort. During this phase schematic design is done for all building systems, and typical elevations and sections are developed. Very little work is performed on details, sections, and schedules. The intent of Title I is to design the project in a level of detail that can be presented to the customer base to confirm that the project is on the proper course for performance, cost, and schedule.
WBS Element Number 1.1.3.2.2
Task Description: Design Phase – Project Design

Technical Content: Project design is the final design development for a design build project. All plans, sections, details, schedules, and specifications are developed to support a design build contract. A customer review of the design is also included. The deliverable from this phase is the bid document package.

WBS Element Number 1.1.3.3
WBS Title: Ion Beam Laboratory – Capital - Construction Phase
Technical Content: This WBS element is a summary of WBS element 1.1.3.3.1 (Project Construction Improvements to Land), 1.1.3.3.2 (Project Construction Buildings and Other Structures), 1.1.3.3.3 (Deferred Scope), 1.1.3.3.4 (Site Logistics), and 1.1.3.3.5 (Safety and Schedule Incentive). Building construction includes the basic building shell," the major utility backbone and the interior finishing necessary to bring the building into operation and to meet the general and specific needs of the occupants.
WBS Element Number 1.1.3.3.1

WBS Title: Ion Beam Laboratory – Capital – Construction **–** Improvement to Land/Utilities
Technical Content: This WBS element is a roll up of WBS element, 1.1.3.3.1.1 (Landscaping), and 1.1.3.3.1.2 (Other). These elements provide for work scope associated with the site of the Ion Beam Laboratory. Site preparation and other land improvements for the IBL may also be included in this WBS element if they are separated from the building general contractor scope of work. This WBS element will include any IBL site work beyond five feet of the IBL facility if that work is not apart of the general contract

WBS Element Number 1.1.3.3.1.1
WBS Title: Ion Beam Laboratory – Capital – Construction **–** Improvements to Land - Landscaping
Technical Content: This WBS element is for Landscaping activities associated with the IBL site.

WBS Element Number 1.1.3.3.2
WBS Title: Ion Beam Laboratory – Capital – Construction **–** Buildings and Other Structures
Technical Content: This WBS element is a roll up of WBS element 1.1.3.33.1 (Construction), 1.1.3.33.2 (SNL Furnished Equipment), and 1.1.3.33.3 (Special Systems). These elements provide for construction of a light lab/office facility for the Ion Beam Laboratory. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:

- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.

WBS Element Number 1.1.3.3.2.1
WBS Title: Ion Beam Laboratory – Capital – Construction **–** Buildings and Other Structures – Construction
Technical Content: This WBS element is a roll up of WBS element 1.1.3.3.2.1.2 (Construction) and 1.1.3.3.2.1.2 (Commissioning). This element provides for construction of a light lab/office facility for the Ion Beam Laboratory. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:

- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.

WBS Element Number 1.1.3.33.1.1
WBS Title: Ion Beam Laboratory – Capital – Construction **–** Buildings and Other Structures – Construction – IBL
Technical Content: This element provides for construction of a light lab/office facility for the Ion Beam Laboratory. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:
- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.

WBS Element Number 1.1.3.3.2.1.2
WBS Title: Ion Beam Laboratory – Capital – Construction **–** Buildings and Other Structures – Construction – IBL – Commissioning
Technical Content: This element provides for the commissioning activities during construction of a light lab/office facility for the Ion Beam Laboratory. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:
- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.

WBS Element Number 1.1.3.3.2.2
WBS Title: Ion Beam Laboratory – Capital – Project Construction Buildings – SNL Furnished Equipment
Technical Content: This WBS element is a roll up for all equipment for the IBL, which will be installed during construction by the contractor but will be furnished by Sandia National Laboratory (SNL). SNL does this to insure compatibility with all SNL Facilities wherever such compatibility is required.

WBS Element Number 1.1.3.3.2.2.1
WBS Title: Ion Beam Laboratory – Capital – Project Construction Buildings – SNL Furnished Equipment – Communications
Technical Content: This WBS element is for communications equipment for the IBL, which will be installed during construction by the contractor but will be furnished by Sandia National Laboratory (SNL). SNL does this to insure compatibility with all SNL Facilities wherever such compatibility is required.

WBS Element Number 1.1.3.3.2.2.2
WBS Title: Ion Beam Laboratory – Capital – Project Construction Buildings – SNL Furnished Equipment – Security
Technical Content: This WBS element is for security equipment for the IBL, which will be installed during construction by the contractor but will be furnished by Sandia National Laboratory (SNL). SNL does this to insure compatibility with all SNL Facilities wherever such compatibility is required.

WBS Element Number 1.1.3.3.2.2.3
WBS Title: Ion Beam Laboratory – Capital – Project Construction Buildings – SNL Furnished Equipment – Accelerator advisor
Technical Content: This WBS element is for and Accelerator Advisor for the IBL, which will be needed during construction, moving, and installation of the specialized equipment. SNL does this to insure compatibility with all SNL Facilities wherever such compatibility is required.

WBS Element Number 1.1.3.3.2.2.4
WBS Title: Ion Beam Laboratory – Capital – Project Construction Buildings – SNL Furnished Equipment – Other
Technical Content: This WBS element is for miscellaneous equipment (i.e. fire extinguishers, etc.) for the IBL, which will be installed during construction by the contractor but will be furnished by Sandia National Laboratory (SNL). SNL does this to insure compatibility with all SNL Facilities wherever such compatibility is required.

WBS Element Number 1.1.3.3.2.2.5
WBS Title: Ion Beam Laboratory – Capital – Project Construction Buildings – SNL Furnished Equipment – Electrical
Technical Content: This WBS element is for electrical equipment for the IBL, which will be installed during construction by the contractor but will be furnished by Sandia National Laboratory (SNL). SNL does this to insure compatibility with all SNL Facilities wherever such compatibility is required.

WBS Element Number 1.1.3.3.3
WBS Title: Ion Beam Laboratory – Capital - Construction Phase – Project Construction Buildings – Deferred Scope
Technical Content: This WBS element provides for any deferred construction scope activities that may be required following close out of the general contractor contract. Detailed work scope can not be specifically identified with other IBL construction WBS elements at this time but should be captured as a part of the IBL construction costs.

WBS Element Number 1.1.3.3.4.
Technical Content: This WBS element provides for costs associated with the construction site. These costs are broken out of the facility construction costs. These costs include temporary stairs, decks, and ramps, switch gear and transformer to enhance the safety of the project site during the construction of the project and will be dismantled prior to occupancy.

WBS Element Number 1.1.3.3.5
WBS Title: Ion Beam Laboratory – Capital - Construction Phase – Safety and Schedule Incentive
Technical Content: This WBS element has been established for an incentive that will be offered to the Construction Contractor(s) for meeting or bettering predetermined safety and schedule goals and/or milestones associated with the construction of the Ion Beam Laboratory facility.
WBS Element Number 1.1.4
WBS Title: Ion Beam Laboratory – Capital - Capital Equipment

Technical Content: Capital equipment includes equipment to be used in the construction of the facility or for facility operations. Capital equipment is anticipated to have a useful life of 2 years or more and an acquisition cost of $25,000 or more. This element includes special equipment and standard equipment. This WBS element is a roll up of WBS elements 1.1.4.41 (Special Equipment) and 1.1.4.42 (Standard Equipment).

WBS Element Number 1.1.4.1
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment
Technical Content: This WBS element is a summary of WBS element 1.1.4.1.1 (Special Equipment) and 1.1.4.1.2 (Building 884 Equipment Relocation) which includes special equipment for the IBL that provides unique programmatic and operational capabilities; as well as building and/or user equipment and lab furniture and equipment that is not commonly purchased and installed in line item projects. This includes both new equipment and relocation of special equipment, including all IBL equipment. For estimating purposes this activity has been subdivided into Procurement, Design, Fitup/Work Packages, and Installation/Testing. The new equipment is identified in the IBL "Table 1b of the Mission Need Statement, dated July 2007" document.

WBS Element Number 1.1.4.1.1
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment - New
Technical Content: This WBS element is a summary of WBS element 1.1.4.1.1 (Special Equipment – New) Procurement, Design, Installation, and Fitup, which includes special equipment for the IBL that provides unique programmatic and operational capabilities; as well as building and/or user equipment and lab furniture and equipment that is not commonly purchased and installed in line item projects. This activity has been subdivided into Procurement, Design Fitup/Work Packages, and Installation/Testing. The new equipment is identified in the IBL "Table 1b of the Mission Need Statement, dated July 2007" document.

WBS Element Number 1.1.4.1.1.1
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment – IBL – Procurement
Technical Content: This WBS element provides for the procurement of new equipment that will be installed in the IBL. The new equipment is identified in the IBL "Table 1b of the Mission Need Statement, dated July 2007" document.

WBS Element Number 1.1.4.1.1.2
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment **–** IBL - Design
Technical Content: This WBS element provides for the design of new equipment that will be installed in the IBL. The new equipment is identified in the IBL "Table 1b of the Mission Need Statement, dated July 2007" document.

WBS Element Number 1.1.4.1.1.3
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment –IBL – Installation
Technical Content: This WBS element provides for the installation of new equipment that will be installed in the IBL. The new equipment is identified in the IBL "Table 1b of the Mission Need Statement, dated July 2007" document.

WBS Element Number 1.1.4.1.1.4
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment –IBL - Fitup

Technical Content: This WBS element provides for the fitup of new equipment that will be installed in the IBL. Following building construction and equipment installation all of the equipment must be "fitup" to be operational.

WBS Element Number 1.1.4.1.2
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment – IBL Equipment Relocation
Technical Content: This WBS element provides for costs associated with the IBL capital equipment effort of relocating existing equipment from the current location to the new facility. The equipment list is included in the IBL supporting documentation. This element will be subdivided into the Accelerator Move and all other equipment relocation.

WBS Element Number 1.1.4.1.2.1
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment – IBL Equipment Relocation – Accelerator Move
Technical Content: This WBS element provides for costs associated with the IBL capital equipment effort of relocating an existing accelerator from the current location to the new facility. The equipment list is included in the IBL supporting documentation.

WBS Element Number 1.1.4.1.2.2
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Special Equipment – IBL Equipment Relocation – Other
Technical Content: This WBS element provides for costs associated with the IBL capital equipment effort of relocating existing equipment from the current location to the new facility. The equipment list is included in the IBL supporting documentation.

WBS Element Number 1.1.4.2
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Standard Equipment
Technical Content: This WBS element is a summary of WBS element 1.1.4.2 (Furniture). Standard equipment for the IBL and includes readily available "off the shelf" furniture and equipment that is procured and installed as part of the line item scope of work. This can include office furniture, lab furniture and equipment, specialty furniture, computers integral to building operations. This WBS element is for office and specialty furniture connected with the IBL Facility. The construction management firm will provide a separate estimate for the new furniture for the offices, special spaces, and the laboratories in the IBL.

WBS Element Number 1.1.4.2.1
WBS Title: Ion Beam Laboratory – Capital – Capital Equipment – Standard Equipment – Furniture
Technical Content: This WBS element is provided for the standard equipment for the IBL and includes readily available "off the shelf" furniture and equipment that is procured and installed as part of the line item scope of work. This can include office furniture, lab furniture and equipment, specialty furniture, computers integral to building operations. This WBS element is for office and specialty furniture connected with the IBL Facility. The construction management firm will provide a separate estimate for the new furniture for the offices, special spaces, and the laboratories in the IBL.

WBS Element Number 1.1.5
WBS Title: Ion Beam Laboratory – Capital - Inspection, Testing, Checking, and Acceptance
Technical Content: This WBS element is a roll up of WBS elements 1.1.5.1 (Title III) and 1.1.5.2 (Inspection, Operations & Maintenance, Testing). This includes activities required to assure that the project is constructed in accordance with the plans and specifications and that the quality of materials and workmanship is consistent with the requirements of the project.

WBS Element Number 1.1.5.1
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance – Title III
Technical Content: This WBS element is a roll up of WBS element 1.1.5.51.2 Title III SNL activities are required to assure that the project is constructed in accordance with the plans and specifications and that the quality of materials and workmanship is consistent with the requirements of the project. A breakdown of these activities includes resolution of constructability issues, requests for information, change order design, and quality control inspection during construction.

WBS element Number 1.1.5.1.1
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance – Title III – SNL
Technical Content: Title III is activities required to assure that the project is constructed in accordance with the plans and specifications and that the quality of materials and workmanship is consistent with the requirements of the project. A further breakdown of these activities includes resolution of constructability issues, requests for information, change order design, and quality control inspection during construction. This WBS element is for the Title III services provided by SNL.

WBS Element Number 1.1.5.1.2
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance – Title III – Facilities Control
Technical Content: Title III activities for Facilities Control are required to assure that the Controls for the Facility are installed in accordance with the plans and specifications and that the quality of materials and workmanship is consistent with the requirements of the project. A breakdown of these activities includes programming controls, resolution of constructability issues, requests for information, change order design, and quality control inspection during installation.

WBS Element Number 1.1.5.2
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance - Inspection, Operations & Maintenance, Testing
Technical Content: This WBS element is a roll up of WBS elements 1.1.5.2.1 (Construction Inspection), 1.1.5.2.2 (Operations & Maintenance), and 1.1.5.2.3 (Testing) and includes construction inspection, operations & maintenance, and testing. A breakdown of these activities includes: construction acceptance, operations and maintenance buildings systems training, operations and maintenance acceptance, outages, systems testing and acceptance, soils testing and acceptance, concrete compression testing and acceptance, electrical testing and acceptance, and HVAC testing and balancing.

WBS Element Number 1.1.5.2.1
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance - Inspection, Operations & Maintenance, Testing - Construction Inspection
Technical Content: This WBS element includes construction inspection activities during the construction of the IBL. This involves all activity to evaluate that the construction contractor's work is being done in accordance with Sandia specifications. This includes the day-to-day efforts of the Sandia inspection team. The team will consist of a mechanical inspector, an electrical inspector and an architectural/civil inspector. The inspectors will work with the Sandia delegated representative to verify that invoiced construction work was actually done as specified in contract documents.

WBS Element Number 1.1.5.2.2
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance - Inspection, Operations & Maintenance, Testing - Operations & Maintenance
Technical Content: This WBS element has been established to track separately the costs of the utilities provided to the IBL during the construction phase of the facility. The installation of the new equipment

and occupancy phase for the IBL will exceed one year. During this time it will be necessary to provide all the utilities to the facility to maintain the atmosphere while the tools and equipment are installed and tested and before the facility is turned over to the line. It has been determined that it is appropriate to track these costs separately.

WBS Element Number 1.1.5.2.3
WBS Title: Ion Beam Laboratory – Capital – Inspection, Testing, Checking, and Acceptance - Inspection, Operations & Maintenance, Testing - Testing
Technical Content: This WBS element includes all testing associated with the construction of the IBL. These include systems testing and acceptance, soils testing and acceptance, concrete compression testing and acceptance, electrical testing and acceptance, HVAC testing and balancing, and any other testing that may be required during construction.

WBS Element Number 1.2
WBS Title: IBL Project – Expense
Technical Content: This WBS element is a summary element for all expense funded activities for the Ion Beam Laboratory (IBL) Facility. To meet the mission requirements, the facility will be approximately 27,000 square feet (GSF) of light high bay lab and office. The facility houses accelerators and control, application labs, laboratory and building support, and workspaces and support. The facility will be located in the vicinity of the existing MDL office/light lab building. The facility must provide:

- Office and workspaces for approximately 19 personnel
- Laboratory space for seven accelerators and controls (including areas for classified work)
- Conference Room
- Library
- Building common spaces
- Communications data and phone connection to the SNL network and communications equipment.

Standard equipment (furniture)

WBS Element Number 1.2.1
WBS Title: IBL Project – Expense - Project Management – Construction Phase – Project Management Support Activities
Technical Content: This WBS element is a roll up of WBS elements 1.2.1.1, 1.2.1.2, 1.2.1.3, 1.2.1.4, 1.2.1.5, 1.2.1.6, and 1.2.1.7. During the construction phase the project manager will use subject experts to assist with management activities which are specific to the project which occur following the design phase and are a part of the capital project and include such activities as expense related management costs, telecommunications and security, financial planning, project controls, procurement, communications, and administrative support. Other Project Management Activities are included in the Capital funded Project Management WBS 1.1.1.

WBS Element 1.2.1.1
WBS Title: IBL Project – Expense - Project Management – Construction Phase – Project Management Support Activities – Telecommunications and Security

Technical Content: During the construction phase, provide observation and coordination of Sandia Furnished Materials procurement and installation of security and communications systems. This WBS element includes support for telecommunications and securities:

- Interfacing with equipment vendors and managing the procurement and delivery of Sandia Furnished Material to construction contractors in accordance with the IBL baseline schedule.
- Identifying and developing requirements based on IBL Project goals, and DOE orders and regulations. This function involves (1) Identifying current, draft and proposed orders that may affect this facility throughout the life of the IBL Project design and construction. (2) Serving as custodians of an awareness program to ensure continuing compliance with DOE regulations and requirements as

they evolve throughout the life of the project. (3) Maintaining a proactive, integrative role by teaming with the DOE personnel that are responsible for the implementation of DOE orders.

- The IBL security and telecommunications systems shall be designed and constructed based on the Sandia corporate infrastructure model. This includes providing a modern, robust telecommunications infrastructure to satisfy the needs and demands of the IBL facility mission. It will also provide physical security and telecommunications security to protect the assets of the IBL facility, which include people, information, equipment, infrastructure, and materials. The systems will accommodate classified operations up to the SRD level. There are no quantities of Special Nuclear Material (SNM) stored or in use at this site. Security inspections will be conducted as required to obtain NNSA certification for classified operations in compliance with the DOE Physical Security and Telecommunications Security orders.

- Provides consultation in implementing communications, networking and video teleconferencing systems. This activity includes: (1) Interfacing with the existing SNL telecommunications departments (2) Observing construction of communication related portions of the physical plant (conduit, communication distribution rooms, user outlet installations, etc.) (3) Coordinating the startup and commissioning of telecommunication and networking systems.

- Interface with SNL Security and provide coordination and consultation to the IBL team in order to meet corporate requirements.

- Provide research and options to meeting security requirements.

- Maintain security plan and provide periodic briefings to the IBL team.

WBS Element Number 1.2.1.2
WBS Title: IBL Project – Expense - Project Management – Construction Phase – Project Management Support Activities – Financial Planning
Technical Content: During the construction phase, management involves overseeing the construction part of the project by managing the construction team, coordinating with the project team, and interacting with the customer and consultants. This WBS element includes support for financial planning, which includes activities for development and maintenance of systems for project control and financial management integration. Activities include tracking project funding status, financial and labor rate information for estimating purposes, tracking capital equipment, analyzing status and trends, and supporting the generation of responses to non-project specific and ad hoc requests for financial information. Prepare all appropriate financial, budget, and costing reports for the IBL Project. Support, assist, and/or review preparation of cost estimates. Perform cost budgeting analysis, special studies, cost/revenue/funding projections, and provide assistance in the interpretation and understanding of financial data, indirect burdens, and Sandia corporate and DOE financial processes. With regard to external and internal regulations, analyze cost information to ensure financial reporting integrity.

WBS Element Number 1.2.1.3
WBS Title: IBL Project – Expense - Project Management – Construction Phase – Project Management Support Activities – Project Controls
Technical Content: During the construction phase, management involves overseeing the construction part of the project by managing the construction team, coordinating with the project team, and interacting with the customer and consultants. This WBS element includes support for a Project Control Person (PCP) who is responsible for providing professional project controls support for the IBL Project. Specifically, the PCP is responsible for working with the Facilities Corporate Project Manager and members of the A/E, contractor(s)/builder(s), or other consultants, to develop the IBL cost and integrated

project schedule baselines. Cost estimates are developed by the design team and/or its subcontractors as well as by professional cost estimators. The PCP works in conjunction with such cost estimating professionals to appropriately allocate costs per individual activities (resource loading) within the IBL WBS and then track, control, and report progress, both in terms of schedule and earned value in place on the project at any given point in time. The PCP is responsible for:

WBS (1) Develops and maintains the project Work Breakdown Structure, WBS Dictionary, and the Responsibility Assignment Matrix (RAM). (2) Develops, distributes, and maintains the Project Summary Work Breakdown Structure.

Reporting **(**1) Reports monthly project status (performance, cost, and schedule) to PM. (2) Provides input to consolidated final cost report for the project. (3) Provides project support (i.e., quarterly reviews and other required reporting). (4) Prepares and implements the cost and schedule control and reporting system, monthly and quarterly status reporting, baseline change coordination, and cost account planning. (5) Maintains cost and schedule baselines and provides cost account planning information to IBL Financial analyst.

Schedule/Cost/Funding (1) Develops and maintains schedules, cost, and funding profiles with input from the project team. (2) Provides historical documentation of project performance, cost, and schedule to Information System and Document Control Lead for long-term archiving. (3) Monitors, documents, and reports project cost, schedule and technical progress. (4) Supports the change control procedure (authorization for changes in scope, schedule and cost). (5) Supports PM with validation and independent cost estimate. (6) Incorporates cost estimate for the Total Estimated Cost, Other Project Costs to result in a Total Project Cost.

Project Management (1) Coordinates and records the systems to track the impacts of each proposed change to the baseline. (2) Monitors progress of authorized work. (3) Inputs to and maintains the Project Execution Plan. (4) Participates as a voting member of the IBL PMT. (5) Identifies, documents, and communicates the project critical path to the management team. (6) Participates in and supports construction, performance, and status meetings.

Project Control System Documents (1) The Project Control System (PCS) to be utilized by SNL for the IBL Project was established in accordance with the guidance formulated by DOE/KAO, "Project Development at Strategic Systems, Line Item & Major Engineering Projects," dated May 13, 1999. (2) An internal "Baseline Change Control Procedure" (BCCP), which meets or exceeds all of the DOE requirements, will be used as part of the PCS for baseline configuration management. The BCCP establishes an on-site Baseline Change Control Board (BCCB) empowered to review and approve all required changes to the IBL baseline during the course of the project. Specific approval authority levels are specified for changes affecting project technical scope, schedule, and cost thresholds. (3) Additional documentation exists for PCS report generation.

Cost Management Graphs (CMGs) are produced monthly as part of the PCS to report project status, Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), and Actual Cost of Work Performed (ACWP) in accordance with the approved Project WBS and Project/Task structures. The CMG reports use data contained in the approved project baseline and the Sandia financial system to accurately correlate ACWP with the monthly and cumulative BCWS and BCWP. (4) WBS. (5) Master schedule. (6) Baseline change control. (7) Monthly reporting.

WBS Element Number 1.2.1.4

WBS Title: IBL Project – Expense - Project Management – Construction Phase – Project Management Support Activities – Procurement

Technical Content: During the construction phase, management involves overseeing the construction part of the project by managing the construction team, coordinating with the project team, and interacting with the customer and consultants. Procurement responsibilities include: (1) Consults with Project Manager and prepares the Acquisition Strategy and the Procurement Plan. In this activity, she will interact, consult, advise, etc., the PM for each of the main project areas, User Group Leaders, etc. (2) Researches, gathers data, analyzes and evaluates non-traditional proposals or available contract routes/

methods (existing contract vehicles already in place elsewhere in the Labs) to procure needed good and services. (3) Manages contractual issues related to construction (including quotations), negotiating and awarding the contract, and administering the contract after award. (4) Serves as the single point of contact for the contractor for all contractual issues. (5) Delegates appropriate contract responsibility to the SDR. (6) Provides, as needed, research, data gathering, and etc. activities as a participating member of any scenario planning, and/or contingency planning initiated by Project Manager and/or other members of the Project Management Team (PMT). (7) Places and manages procurements and contracts within signature authority delegated by the Laboratory's Procurement and Materials Manager. Interfaces with contract specialists and other staff within Sandia's Procurement Center to facilitate the effective and expeditious placement of the IBL procurements and contracts. (8) Advises the Project Manager on contract and procurement issues, particularly provides advance warning of possible problems whenever possible. (9) Interfaces with, in conjunction with the Project Manager, the DOE and participating institutional procurement organizations and legal (e.g., contracts) as needed. (10) Manages proactively the interfaces and relationships with various groups of procurement and contract specialists internal to Sandia's Procurement Center who are involved in the IBL procurements. (11) Employs the best practices that will result in the best project for the best value. (12) Procures the highest quality construction services talent as early as practical. (13) Uses price and qualifications-based (best value) procurement for contractor selection and contract placement when appropriate. (14) Ensures that IBL and its customers have a mutual understanding of the scope, schedule, and budget for the project. (15) Facilitates mutual commitments to maintaining the scope, schedule, and budget.

WBS Element 1.2.1.5
WBS Title: IBL Project – Expense - Project Management – Construction Phase – Project Management Support Activities – Administrative Support
Technical Content: During the construction phase, management involves overseeing the design part of the project by managing the construction team, coordinating with the project team, and interacting with the customer and consultants. This WBS element includes the Administrative Support Activities of the IBL Project. It also includes reporting of all facilities cost and supply costs, these items were included as a part of the labor rates during the estimating process but costs for the IBL project are reported in this WBS element. Activities included in this element are as follows: a) setting up and maintaining the IBL calendar, b) daily administrative support for the IBL team such as buying supplies, c) setting up meetings. Serve as the technical communicator support for the IBL Project including the following: a) prepare meeting summary reports, b) periodic reporting, and document management and archiving, c) assist in preparing conceptual design reports, design criteria, and other documentation, d) edit and update project execution documents, e) edit and update environmental and safety documentation, f) responsible for maintaining electronic distribution lists for dissemination of project documentation, g) prepare and coordinate electronic presentations for the Department of Energy's annual validation and quarterly progress meetings, h) prepare summary reports of these meetings, i) prepare process documentation as needed, j) scan photos and text for incorporation into project documentation, k) develop and maintain a design review reporting system to gather reviewer comments on project design documents and drawings, l) develop and maintain a project Risk Management tracking system for ensuring compliance with IBL Project risk management requirements, m) develop and maintain a "Current Suppliers" database.

WBS Element Number 1.2.1.6
WBS Title: IBL Project - Expense - Project Management – Quality Assurance
Technical Content: Quality Assurance is the implementation of the quality assurance plan and any updates to the plan while performing capital funded activities. Quality assurance review is the process of evaluating construction performance by reviewing drawings and receiving input from all construction disciplines, specialty groups such as fire protection, security, industrial hygiene, all project team members, DOE, and the customer. QA reviews are used to ensure that the construction will satisfy the relative quality standards, meet codes, and achieve the objectives of the project. Lessons learned are

captured and disseminated. Results of reviews needing corrective action are tracked through the resolution process. These activities establish the Quality Assurance as an ongoing process that begins with the initial stages of the project before capital funds are available. Other activities include: developing processes and procedures; developing and maintaining the Project Plan; monitoring ES& H activities; documenting and reporting risks by conducting risk assessments, ensuring owners are assigned and mitigating strategies are developed and risks are tracked and status updated; and performing self-assessment activities to drive continuous improvement.

WBS Element Number 1.2.1.7
WBS Title: Ion Beam Laboratory – Expense – Inspection, Testing, Checking, and Acceptance – Project Moves
Technical Content: This WBS element includes the maintenance of the record drawings (As-Builts and CADD Support), security, escorts, commissioning, fit-up and move-in of furniture and lab furniture. This element is associated with moving the occupants into the Ion Beam Laboratory. Other moving costs are included in the Capital funded portion of the IBL WBS.

WBS Element 1.2.1.9
WBS Title: IBL Project –Expense - Project Contingency
Technical Content: For the IBL project, contingency is an amount budgeted to cover costs that may result from incomplete design, unforeseen and unpredictable conditions, or uncertainties. The amount of the contingency will depend on the status of design, procurement, and construction, and the complexity and uncertainties of the component parts of the project. Contingencies will not to be used to avoid making an accurate assessment of expected cost. Contingency does not provide for increases in scope or inflation. Contingency will be identified and managed for both the design phase and the construction phase. This WBS element is for the Expense Contingency identified during the Construction of the IBL Project.

WBS Element Number 1.2.6
WBS Title: IBL Project - Expense – ES&H Support
Technical Content: This WBS element is a rollup of ES&H activities that includes activities which are in support of the risk management function of the IBL project: Meeting Support and Presentations, Facility Design Review/ES&H Analysis, ES&H Issues Resolution, ES&H Project Development, and Regulatory Compliance Planning and Analysis.

WBS Element Number 1.2.6.1
WBS Title: IBL Project - Expense – ES&H Support
Technical Content: This WBS element includes the following activities which are in support of the risk management function of the IBL project: Meeting Support and Presentations, Facility Design Review/ES&H Analysis, ES&H Issues Resolution, ES&H Project Development, and Regulatory Compliance Planning and Analysis.

WBS Element Number 1.2.6.2
WBS Title: IBL Project - Expense - Project Management – Risk Management – Other ES&H – Fire Hazard Analysis IBL
Technical Content: A fire hazard analysis is a comprehensive and qualitative assessment of the risk from fire for a facility to ascertain whether the proposed design incorporates the appropriate type of fire safety features sufficient to meet applicable DOE fire safety objectives. This WBS element is for the preparation of the Fire Hazard Analysis for the IBL of the IBL project.

WBS Element 1.2.6.3
WBS Title: IBL Project - Expense - ES&H – Readiness Review

Technical Content: Operational readiness involves a disciplined, systematic, documented, and performance-based examination of facilities, equipment, personnel, procedures, and management control systems to ensure that the responsible personnel will operate a facility as defined by the facility safety bases. This WBS element is set up for this Readiness Review which applies to the IBL subproject and is not specific to any of the sub elements. The following activities are included within this element: a readiness checklist, transition plans for operations as applicable, standard operating procedure and readiness review and documentation.

WBS Element 1.2.7
WBS Title: IBL Site Infrastructure – Expense – D & D Costs – Building 884
Technical Content: This WBS element is for the Decontamination, Decommissioning, and Demolition of Building 884 following completion of the IBL Project. All activities related to environment, safety, and health evaluation and compliance is expensed. This includes site/building characterization and remediation. Site/building characterization includes the investigation, including historical audits, site visits and sampling, of a site in an effort to determine the presence or absence of any regulated material which may pose a health and safety or waste hazard if the project were to continue. Remediation includes the corrective action necessary to ensure that employee health and safety issues and waste issues are in compliance with local, federal, state, and DOE orders and laws. This may include the clean-up (decontamination) of the area in situ or the removal of the contaminated material from the site through demolition.

WBS Element Number 1.2.7.1
WBS Title: IBL Site Infrastructure – Expense – D & D Costs – Building 884 Characterization
Technical Content: This WBS element is for the Characterization of the Decontamination, Decommissioning, and Demolition of Building 884 following completion of the IBL Project. All activities related to environment, safety, and health evaluation and compliance is expensed. This includes site/building characterization and remediation. Site/building characterization includes the investigation, including historical audits, site visits and sampling, of a site in an effort to determine the presence or absence of any regulated material which may pose a health and safety or waste hazard if the project were to continue.

WBS Element Number 1.2.7.2
WBS Title: IBL Site Infrastructure – Expense – D & D Costs – Building 884 D&D
Technical Content: This WBS element is for the Decontamination, Decommissioning, and Demolition of Building 884 following completion of the IBL Project. All activities related to environment, safety, and health evaluation and compliance is expensed. Remediation includes the corrective action necessary to ensure that employee health and safety issues and waste issues are in compliance with local, federal, state, and DOE orders and laws. This may include the clean-up (decontamination) of the area in situ or the removal of the contaminated material from the site through demolition

IBL Project Execution Plan Attachment 2 - NEPA Determination

NEPA ID: SNA05-0811
Title: New Ion Beam Lab (IBL) Building - Construction Project
Owner: DOYLE, BARNEY L.
Org: 01111
DOE/SSO has completed the review and determination for New Ion Beam Lab (IBL) Building - Construction Project.
The NEPA number for this review is: SNA05-0811.
Use this number for citations, such as budget documents, related to your project.
Determination:
DOE determined CX
B 3.6 Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects B 3.10 Siting/construction/operation/decommissioning of particle accelerators, including electron beam accelerators, primary beam energy less than approximately 100 MeV
Please review the Rationale / Stipulations for any actions with which you must comply.
Rationale / Stipulations:
Rationale: Sandia National Laboratories, New Mexico proposes to construct a replacement Ion Beam Laboratory that will house the existing equipment with the exception of two accelerators that will be replaced with two new commercially available instruments. The facility will be approximately 27,000 gross square feet and will include office space. Additional radiological shielding would mitigate increases in exposure resulting form the increases in radiation output of the new Pelletron accelerator. An existing septic system on the site will be sampled and removed. Trenching and excavation will be required to connect to utility systems. A new entrance will be constructed to include paving, sidewalks, curbs and gutters, lighting and traffic striping. Construction would disturb approximately 3 acres and would be located north of H Street between 18th and 20th streets. No known cultural resources would be impacted. A biological survey will be completed prior to construction. A Fugitive Dust Control permit will be required as well as a Storm Water Pollution Prevention Plan permit and appropriate dig permits.
SNL Reviewer: BONAGUIDI, JOSEPH M.
This is an automated message from ISMS Software - NEPA Module
********** PLEASE DO NOT RESPOND TO THIS MESSAGE! **********

IBL Project Execution Plan Attachment 3

IBL Security and Telecommunications Systems Descriptions

Including Security Vulnerability Assessment and Cyber Security Requirements

Introduction

The Ion Beam Laboratory (IBL) facility is an accelerator laboratory totally unlike any other such lab in the DOE/NNSA complex. The new IBL facility will provide a state-of-the-art environment for performing ion beam irradiations for applications that directly impact the NNSA DSW programs and NW Campaigns, balanced with fundamental research into radiation effects and materials science. The IBL security and telecommunications systems have been designed and will be constructed based on the Sandia corporate infrastructure model. This includes providing a modern, robust telecommunications infrastructure to satisfy the needs and demands of the IBL facility mission. It will also provide physical security and telecommunications security to protect the assets of the IBL facility, which include people, information, equipment, infrastructure, and materials. The systems will accommodate classified operations up to the SRD level. There are no quantities of Special Nuclear Material (SNM) stored or in use at this site. Security inspections will be conducted as required to obtain NNSA certification for classified operations in compliance with the DOE Physical Security and Telecommunications Security orders.

Security and Communications Design Approach

Directives

The following DOE / NNSA Manuals (which are based on corresponding Orders) and SNL New Mexico site policies have been used in the design of the IBL Security and Communications systems:
DOE O 470.4, "Safeguards and Security Program"
DOE M 470.4-1, "Safeguards and Security Program Planning and Management"
DOE M 470.4-2, "Physical Protection"
DOE M 470.4-3, "Protective Force"
DOE O 205.1, "Department of Energy Cyber Security Management Program"
DOE M 470.4-4, "Information Security"
DOE M 205.1-3, "Telecommunications Security Manual"
SNL's Site Safeguards and Security Plan (SSSP)
DOE M 471.2-2, "Classified Information Systems Security Manual"
OMB Circular No. A-130, "Management of Federal Information Resources"
SNL 1000, "SNL Network Security Plan, Sandia Classified Network"
SNL 8000, "SNL Unclassified Master Plan"

Physical and Technical Security

A graded approach is being used in the implementation of security designs for the IBL. In the execution of a graded approach, DOE intends that the level of effort and magnitude of resources expended for the protection of a particular interest are commensurate with the importance of that interest or the impact of its loss, destruction, or misuse. Interests whose loss, theft, compromise, or unauthorized use will have serious impacts on national security, health and safety, the public, the environment, or DOE programs shall be given the highest level of protection.

Site Security Interests

The IBL facility is being designed to be able to generate, receive, store, reproduce, transmit, and destroy classified matter up to and including S/RD. Other work performed at the IBL facility includes unclassified Laboratory Directed Research and Development (LDRD) and unclassified Work-for-Others (WFO).

Site Threat

Defining the site threat for the protection of the facility and government property is based on the current appropriate Department of Energy (DOE) and National Nuclear Security Administration (NNSA) Orders and Directives. The most likely threat is theft or damage to the IBL facility or to classified information and/or government property.

The Safeguards and Security Center, SNL/NM, is responsible for the overall development, implementation, and administration of security programs that meet DOE/NNSA, SNL/NM Safeguards and Security Programs. The corporate Site Safeguards and Security Plan (SSSP) is the overarching plan that covers the operations and facilities at SNL/NM. Newly constructed facilities like the IBL will be included as addenda to the SNL/NM SSSP.

In the SNL security environment, education and personal awareness are complemented by reasonable, graded, and value-based, security policies to form the basis for much of the security program and to mitigate, to the degree possible, the threat. The procedures and policies described in the SSSP are graded and designed primarily to mitigate the threat to SNL facilities, including the IBL. The plan recognizes that all threats cannot be completely eliminated or defeated without overly restrictive operational policies. Therefore the security strategy at the SNL is to:

- Recognize the threats
- Educate the employees and contractors
- Encourage an atmosphere of personal awareness, responsibility, self-discipline, and accountability on the part of all employees and contractors working at the IBL facility or at any other SNL site
- Meet the requirements of all DOE/NNSA security policy documents.

SECON Measures

SNL's SSP implements the DOE/NNSA SECON Measures as outlined in the SNL/NM "DOE Security Conditions (SECON) Implementation Plan."

IBL's physical security designs and construction encompasses the following considerations.

1) Location is USA-NM-ABQ-KAFB, building is a Property Protection Area (PPA) with a Limited Area (LA) that contains a vault-type room (VTR). KAFB provides 24 hour access control to the base.
2) SNL SSSP, including construction requirements for PPAs, LAs, and VTRs.
3) DOE M 470.4-1 requires a minimum distance of 90 FT stand-off between vehicle parking and the building. No additional perimeter security is required.
4) Homeland Security threat conditions (known in DOE as Security Conditions, or SECONs, indicating a greater risk of terrorist attack risk, including attack probability and gravity).
5) KAFB protection strategies (known in the DoD as Force Protection Conditions FPCONS, which increases the base access protection level with increasing threat).
6) An integral part of the SNL site technical security systems (Infographics CR/KP, BMS, volumetric sensors, as applicable).
7) Physical building construction as applicable (STC-45 sound attenuating walls and HVAC acoustic isolation for the LA, SNL unique keyways, and XO-9 combination locks where required.
8) Alarms integrated into SNL-NM Central Alarm Station annunciation. Responses by local SNL Protective Force. SNL PF can be augmented by KAFB security police upon request.
9) Design must be in full compliance with the new Sandia Security System Replacement Project (SSRP) requirements.
10) Other specific security subsystems will be integrated into the detailed design for IBL.

Computers and Telecommunications

The Information Systems Security Site Manager (ISSM) through the Cyber Security Department directs and coordinates implementation of computer security policies and develops procedures for the

protection of classified and unclassified Automated Information Systems (AIS) for SNL, which will include the IBL facility.

The IBL will also include both red (classified) and black (unclassified) communication systems. The systems will be extensions of the corporate enterprise. The innovative corporate communications design provides red and black communications within limited areas and black communications in property protection areas.

The communication infrastructure will enable high-performance scientific workstations, administrative desktop workstations and laptops, and standard telephone communications and STE (secure) telephones.

The IBL telecommunications design concepts are based on the telecommunications infrastructure design used on other SNL projects. The proposed design for the IBL is in full compliance with the recently approved DOE M 205.1-3, which pertains to communications security.

IBL's telecommunications infrastructure designs and construction will encompass the following considerations.

1) DOE M 205.1-3 (formerly DOE M 200.1-1) Telecommunications Security Manual, for Protected Transmission Systems & Classified Distributed Information Networks (PTS/CDIN)
2) TSCM over-sight during construction
3) SNL/NM & DOE technical inspections/acceptance prior to start of classified operations.
4) Highest operating level is SRD.
5) DOE type-1 encryption equipment for SCN data housed in an approved GSA-safe used for transmissions between SNL secure areas.
6) Systems must operate and survive in an experimental RF environment (grounded conduits to provide shielding for telecommunications cabling to labs and offices)
7) SNL site utilities and outside-plant communications duct banks extended to include IBL (copper voice and optical data). Planned connection to the existing manhole system and existing Buildings 880 and 897 for data and voice communications.
8) STE secure telephones for LA use.
9) The telecommunications subcontractor will be directly responsible for telecommunications conduit installation as well as cabling infrastructure. The telecommunications subcontractor must have a contractual relationship directly with the design-build general contractor. Also, the telecommunications subcontractor must be a New Mexico SYSTIMAX™ VAR that shall provide SNL with a SYSTIMAX 20-year warranty for the cabling infrastructure. Telecommunications work shall not be carried out under a subcontract to the electrical subcontractor.
10) Gigabit Ethernet networking
11) In order to obtain NNSA certification for classified operations TSCM advice and assistance services, PTS inspections, and a final technical inspection will be conducted during the course of the telecommunications and security infrastructure construction.

Cyber Security

IBL's cyber security operations will encompass the following considerations.

1) Cyber security requirements are defined in DOE 471.2-2 and OMB Circular no. A-130.

2) IBL will be incorporated into and operate under existing SNL master cyber security plans.
    a. The SNL1000 Network Security Plan will be updated by the Computer Security Department to reflect the extension of the Sandia Classified Network (SCN) for the IBL facility. All classified computing terminals that will access the SCN must be registered in the Network Information System (NWIS) and will be operated under an accredited plan. Automated Information Systems that process classified information are located within security areas requiring authorized access.
    b. The SNL8000 Unclassified Master Plan defines the use and protection of unclassified workstations at SNL in general, and Cyber Accreditation Agreements (CAAs) are used to

specify how computers in each work environment will adhere to the plan. A CAA will be formulated to define unclassified computer use and protection in the IBL.

Building Codes and Standards

IBL's design and construction will also be guided by SNL/NM site facilities and Construction Specifications Institute (CSI) construction specifications. These documents reference and apply national, state, and local building and construction codes (e.g., NEC, IBC, and IEEE). These documents ensure compliance with SNL's full site requirements and advanced mission needs which are sometimes more restrictive than typical commercial requirements.

IBL Project Execution Plan: Attachment 4 – IBL Hazard Classification Memo

Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

Albuquerque, New Mexico 87185-

date: September 11, 2006

to: William Jenkins, Mesa Project Manager, MS-0939 (12920)

from: John Shaw, Safety Basis Department Manager, MS-1091 (10326)

subject: Ion Beam Laboratory (IBL) Hazard Classification

ref: Memorandum, Bill Jenkins to John Shaw, dtd August 24, 2006, subject: Request for Memo Confirming IBL Hazard Classification

A request has been made that Safety Basis confirm the position that the proposed Ion Beam Laboratory (IBL) is a low hazard non-nuclear facility. The review is to be based upon the provided preliminary Hazard Identification (HI).

Review of the HI indicates that the hazard classification is based upon results from the PHS as follows:

- Question 1c(8) Use of an x-ray generator or low-energy particle accelerator.
- Question 1c(9) Use of high-energy particle accelerator exempted from DOE order 420.2 as an unmodified commercially available unit (note: accelerators are below DOE Order 420.2 significance level).

The IBL also maintains chemical inventories, sealed radioactive sources, and other standard industrial hazards presented in the HI that pose localized consequences only. From the HI, the areas of concern are with the amount of sulfur hexafluoride (SF_6) that will be stored for accelerator operation, and the individual accelerators.

To address the SF_6 an ALOHA evaluation was performed to determine potential impact to onsite workers and the offsite public. The results of the analysis indicate that there are no significant onsite consequences and negligible offsite consequences such that the facility can be classified as a low hazard facility.

For the accelerators and ion implanters at IBL the criteria for inclusion under the accelerator order, DOE O 420.2B, are as follows:

(1) Unmodified commercially available units that are acceptable for industrial applications, including (but not limited to) electron microscopes, ion implant devices, and x-ray generators.

(2) Accelerator facilities not capable of creating radiological areas as defined in Title 10, Code of Federal Regulations (CFR), Part 835, "Occupational Radiation Protection; Final Rule."

Exceptional Service in the National Interest

(3) Naval Nuclear Propulsion Program accelerators covered under Executive Order 12344 (42 United States Code 7158 Note).

(4) Nonmedical x-ray devices with the capability of accelerating particles to energies not greater than 10 MeV, which are operated in accordance with American National Standards Institute N43.3-1993, General Radiation Safety Standard for Installations Using Non-Medical X-Ray and SealedGamma-Ray Sources, Energies Up to 10 MeV, or in accordance with another applicable consensus standard as directed by the cognizant field element manager/NNSA field manager.

(5) Low-voltage neutron generators incapable of creating high-radiation areas (as defined in 10 CFR 835, "Occupational Radiation Protection; Final Rule,"), which are operated in accordance with National Council on Radiation Protection Report 72-1983, Radiation Protection and Measurements for Low-Voltage Neutron Generators, or in accordance with another applicable consensus standard as directed by the cognizant DOE/NNSA field manager. For the purpose of this Order, a low-voltage neutron generator is defined as a bench-top scale, single-purpose device generating neutrons by accelerating deuterons or tritons into targets through a maximum accelerating potential not greater than 600 kV.

(6) Entire DOE/NNSA accelerator facilities or modules thereof when and only when accelerators and their operations involve or produce a sufficient inventory of fissionable materials to create the potential for criticality.

Review of the HI indicates that the accelerators and ion implanters are commercially available units acceptable for industrial use and unmodified. Therefore, these devices are excluded from DOE O 420.2B.

The only outstanding issue that is not covered is potential radiation exposures. The HI indicates that radiation fields up to 500 mR/hr may be present during operation of the accelerators/ion implanters. This dictates the need for shielding (credited passive barrier or initial condition) to limit exposures to the public and onsite workers. This will require a shielding design and verification following startup to ensure that only localized hazards exist.

The information provided in the HI allows an initial classification of the facility as a low hazard industrial facility. Since the facility has not been built, several steps will be necessary to maintain this hazard classification. The facility should complete the Design Hazards Analysis (DHA) to verify necessary controls that will maintain the current classification. This will include shielding calculations and specification for passive design features to limit radiation exposure to the local area of the facility. Following completion of the facility, the shielding design calculations should be verified. Based upon these recommendations, the facility will maintain its low hazard classification following startup.

If you have any questions, please contact Stan Haynes of my staff at 844-0756.

Copy to:
MS-1037 John Loye, 10320
MS-1091 Steve Coffing, 10326
MS-1091 Department Files, 10326

IBL Project Execution Plan Attachment 5 – IBL Cost Estimate

SANDIA NATIONAL LABORATORIES, NEW MEXICO

ION BEAM LABORATORY PROJECT - FY 2009 START

SUMMARY OF DIRECT COSTS, SNL CORPORATE ASSESSMENTS, ESCALATION AND CONTINGENCY

Funding	WBS	Description	Unburdened Direct Costs	SNL Corporate Load	Burdened Cost	Escalation	Escalated Cost	Contingency Rate (%)	Contingency Amount	Grand Total
Capital	1.1.1.1	Project Management - Manager	544,320	304,891	849,211	212,540	1,061,751	0.08	84,940	1,146,691
	1.1.1.2	Project Management - Safety Support	215,053	120,458	335,511	81,381	416,893	0.08	33,351	450,244
	1.1.1.3	Project Management - Construction Management	731,856	262,736	994,592	245,742	1,240,334	0.08	99,227	1,339,560
	1.1.1.5.1	Project Management - Project Support - Telecom & Security	41,600	23,301	64,901	17,913	82,814	0.09	7,453	90,268
	1.1.1.5.2	Project Management - Project Support - Project Controls	372,654	133,783	506,436	126,627	633,064	0.09	56,976	690,039
	1.1.3.2.2	Design/Build Design Phase - Project Design	500,129	26,007	526,136	99,818	625,954	0.11	68,855	694,809
	1.1.3.3.1.1	Design/Build Construction Phase - Improvements To Land/Utilities - Landscaping	1,020,205	53,051	1,073,256	247,856	1,321,112	0.11	145,322	1,466,434
	1.1.3.3.2.1.1	Design/Build Construction Phase - Buildings and Other Structures - Construction - IBL	6,991,342	363,550	7,354,892	1,662,937	9,017,829	0.11	991,961	10,009,790
	1.1.3.3.2.1.2	Design/Build Construction Phase - Buildings and Other Structures - Construction - IBL - Commissioning	32,400	1,685	34,085	8,780	42,865	0.11	4,715	47,580
	1.1.3.3.2.2.1	Design/Build Construction Phase - Buildings and Other Structures - SNL Furnished Equipment (SFE) - Communications	157,324	8,181	165,505	35,749	201,254	0.09	18,113	219,367
	1.1.3.3.2.2.2	Design/Build Construction Phase - Buildings and Other Structures - SNL Furnished Equipment (SFE) - Security	36,932	1,920	38,852	8,392	47,245	0.09	4,252	51,497
	1.1.3.3.2.2.3	Design/Build Construction Phase - Buildings and Other Structures - SNL Furnished Equipment (SFE) - Accelerator Adv	639,999	229,760	869,759	196,487	1,066,246	0.10	106,625	1,172,871
	1.1.3.3.2.2.4	Design/Build Construction Phase - Buildings and Other Structures - SNL Furnished Equipment (SFE) - Other	11,800	614	12,414	2,681	15,095	0.10	1,509	16,604
	1.1.3.3.2.2.5	Design/Build Construction Phase - Buildings and Other Structures - SNL Furnished Equipment (SFE) - Electrical	48,000	2,496	50,496	10,907	61,403	0.10	6,140	67,543
	1.1.3.3.4	Design/Build Construction Phase - Site Logistics	204,200	10,618	214,818	33,941	248,760	0.13	32,339	281,098
	1.1.3.3.5	Design/Build Construction Phase - Safety and Schedule Incentive	75,000	3,900	78,900	21,776	100,676	0.00	0	100,676
	1.1.4.1.1.1	Capital Equipment - Special Equipment - IBL - Procurement	6,315,890	328,426	6,644,316	1,746,191	8,390,507	0.18	1,510,291	9,900,798
	1.1.4.1.1.3	Capital Equipment - Special Equipment - IBL - Installation	130,160	6,768	136,928	31,985	168,913	0.14	23,648	192,561
	1.1.4.1.1.4	Capital Equipment - Special Equipment - IBL - Fit Up	1,691,480	87,957	1,779,437	481,411	2,260,849	0.14	316,519	2,577,368
	1.1.4.1.2.1	Capital Equipment - Special Equipment - Bldg 884 Equipment Relo - Accelerator Move	566,453	29,456	595,909	164,471	760,380	0.24	182,491	942,871
	1.1.4.1.2.2	Capital Equipment - Special Equipment - Bldg 884 Equipment Relo - Other	1,180,896	61,407	1,242,303	324,300	1,566,602	0.16	250,656	1,817,259
	1.1.4.1.2.3	Capital Equipment - Special Equipment - Bldg 884 Equipment Relo - Escort Services	109,200	5,678	114,878	27,806	142,684	0.16	22,829	165,513
	1.1.4.2.1	Capital Equipment - Standard Equipment - Furniture	122,822	6,387	129,209	35,662	164,870	0.06	9,892	174,763
	1.1.5.1.1	Inspection, Constr Liaison,Test,Check,Accept - Title III - SNL	230,369	82,702	313,071	72,857	385,928	0.09	34,734	420,661
	1.1.5.1.2	Inspection, Constr Liaison,Test,Check,Accept - Title III - Facility Controls	16,200	5,816	22,016	6,076	28,092	0.09	2,528	30,620
	1.1.5.2.1	Inspection, Constr Liaison,Test,Check,Accept - Inspection/O&M/Testing -Construction Inspection	276,727	155,003	431,730	101,669	533,399	0.09	48,006	581,405
	1.1.5.2.2	Inspection, Constr Liaison,Test,Check,Accept - Inspection/O&M/Testing - Operations & Maintenance	20,000	7,180	27,180	7,502	34,682	0.09	3,121	37,803
	1.1.5.2.3	Inspection, Constr Liaison,Test,Check,Accept - Inspection/O&M/Testing - Testing	90,000	4,680	94,680	20,670	115,350	0.09	10,381	125,731
Capital Total			22,373,010	2,328,411	24,701,421	6,034,128	30,735,549	0.13	4,076,876	34,812,425
OPCs	1.2.1.1.1.2	Project Management - Project Manager - Pre CD-2	16,920	13,751	30,671	2,398	33,069	0.08	2,646	35,714
	1.2.1.1.1.3	Project Management - OPC Project Close Out	28,710	23,332	52,042	18,596	70,639	0.08	5,651	76,290
	1.2.1.1.2.3	Project Management - Safety Support - D&D 884	15,736	12,788	28,524	9,698	38,222	0.08	3,058	41,280
	1.2.1.1.3.2	Project Management - Construction Management - Pre CD-2	23,610	13,670	37,280	2,764	40,044	0.08	3,204	43,247
	1.2.1.1.3.3	Project Management - Construction Management - OPC Project Closeout	18,537	10,733	29,270	10,459	39,728	0.08	3,178	42,907
	1.2.1.1.4.2	Project Management - Telecommunciations and Security - Pre CD-2	1,820	1,479	3,299	165	3,464	0.08	277	3,741
	1.2.1.1.5.2	Project Management - Project Controls - Pre CD-2	25,474	15,463	40,937	3,140	44,077	0.08	3,526	47,603
	1.2.1.1.5.3	Project Management - Project Controls - OPC Project Closeout	18,537	10,733	29,270	10,459	39,728	0.08	3,178	42,907
	1.2.1.1.6.2	Project Management - Procurement - Pre CD-2	1,350	1,097	2,447	179	2,626	0.08	210	2,836
	1.2.1.1.7.2	Project Management - Performance Requirements - Pre CD-2	183,540	47,530	231,070	5,291	236,360	0.08	18,909	255,269
	1.2.1.2	Project Management Support Activities - Financial Planning	110,102	89,479	199,581	49,827	249,409	0.08	19,953	269,361
	1.2.1.5	Project Management Support Activities - Administrative Support	179,314	24,925	204,238	51,082	255,320	0.08	20,426	275,746
	1.2.1.6	Project Management Support Activities - Quality Assurance	127,201	73,649	200,850	47,750	248,600	0.08	19,888	268,488
	1.2.1.7	Project Management Support Activities - IBL People Moves	14,450	2,009	16,459	4,368	20,827	0.08	1,666	22,493
	1.2.6.2	ES&H Support - IBL FHA	30,000	4,170	34,170	9,431	43,601	0.08	3,488	47,089
	1.2.6.3	ES&H Support - IBL Readiness Review	10,000	5,790	15,790	4,358	20,149	0.08	1,612	21,760
	1.2.7.1	Bldg 884 Decontamination, Decommissioning & Demo - Bldg 884 Characterization	245,460	34,119	279,579	68,095	347,674	0.25	86,919	434,593
	1.2.7.2	Bldg 884 Decontamination, Decommissioning & Demo - Bldg 884 D&D	1,318,801	183,313	1,502,114	491,774	1,993,888	0.25	498,472	2,492,360
	1.2.7.3	Bldg 884 Decontamination, Decommissioning & Demo - Bldg 884 Escort Services	214,200	29,774	243,974	75,472	319,446	0.25	79,861	399,307
OPCs Total			2,583,761	597,804	3,181,565	865,306	4,046,871	0.19	776,121	4,822,992
Grand Total			24,956,771	2,926,215	27,882,986	6,899,434	34,782,420	0.14	4,852,997	39,635,418

IBL Project Execution Plan Attachment 6 – Sandia Corporation compliance with ANSI/EIA Standard 748-98, Earned Value Management

Department of Energy
Washington, DC 20585

SEP 10 2004

Dr. C. Paul Robinson
President and Laboratories Director
Sandia National Laboratories
1515 Eubank Boulevard, SE
Albuquerque, New Mexico 87123

Dear Dr. Robinson:

It is a pleasure to inform you that Sandia Corporation Lockheed Martin (SCLM) has successfully demonstrated compliance of its Earned Value Management System with the ANSI/EIA Standard 748-98, *Earned Value Management Systems.*

Presentation of this Letter of Acceptance is based on the Compliance Evaluation Review performed April 5-9, 2004, at Sandia National Laboratories. Your team is to be commended for their dedication and professionalism in the process of attaining this acceptance. The compliance evaluation, which has been accepted as indicated above, will apply to all Sandia acquisition projects.

The Department of Energy, as recommended to us by the Defense Contract Management Agency (DCMA), expects SCLM to maintain the Earned Value Management System as an integrated management system through an internal surveillance program. Recognizing that management systems must be dynamic to meet changing business needs and to improve effectiveness, we encourage continuous improvement as long as compliance with the ANSI/EIA-748 standard is maintained. Any proposed changes should be submitted to my office.

The Department of Energy, together with the Defense Contract Management Agency, congratulates Sandia Corporation Lockheed Martin on its acceptance. You have achieved a significant milestone by demonstrating a performance measurement system that provides valid data and is effective in managing project performance.

Sincerely,

Bruce M. Carnes
Associate Deputy Secretary/Chief Acquisition Officer

cc: Linton Brooks, NNSA/NA-1
Eleanor R. Spector, LMCO, M/P110

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