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Office of the President

TO MEMBERS OF THE COMMITTEE ON OVERSIGHT OF THE DEPARTMENT OF ENERGY LABORATORIES:

DISCUSSION ITEM

For Meeting March 19, 2015

UPDATE ON THE DEPARTMENT OF ENERGY NATIONAL LABORATORIES

This discussion will review recent administrative matters and program accomplishments at the three University of California-affiliated Department of Energy (DOE) National Laboratories:

- Lawrence Berkeley National Laboratory (LBNL or Berkeley Lab)
- Lawrence Livermore National Laboratory (LLNL)
- Los Alamos National Laboratory (LANL or Los Alamos)

ADMINISTRATIVE UPDATES

Greater net income earned from Lawrence Livermore National Security, LLC

Final accounting of actual net income earned by the University from Lawrence Livermore National Security, LLC (LLNS) and Los Alamos National Security, LLC (LANS) in calendar year 2014, and received in late January, was $13.9 million in net income versus the $24.1 million originally forecast and reported in May 2014, and the $10.5 million revised forecast reported in January 2015. University Corporate Accounting has applied this additional $3.4 million net income to the University's reserve funds, Factors Affecting Final Fee and Post Contract Contingency Fund, for any future potential liabilities.

Fines from the New Mexico Environment Department

As reported at the January 2015 Regents meeting, the New Mexico Environment Department (NMED) assessed a $36.6 million fine against the Department of Energy (DOE) and LANS for violations of state hazardous waste management requirements related to the breach of a LANL-generated waste container at the Waste Isolation Pilot Plant (WIPP) in New Mexico, which released a small but detectable amount of radiation in February 2014. At this time, the NMED and DOE are in discussions but have yet to reach a final agreement regarding a potential settlement of the fine.

LABORATORY HIGHLIGHTS

Lawrence Berkeley National Laboratory

Berkeley Lab launches new program for energy innovation and entrepreneurship

As the world grows hotter, young scientists with fresh ideas about energy technology are finding it increasingly difficult to find venture capital to get their ideas off the ground. Berkeley Lab is trying a new way to support these entrepreneurial scientists with the development of the *Cyclotron Road* innovation and commercialization program. The program was officially launched with a first cohort of eight scientist/entrepreneur innovators working on six cutting-edge clean energy technologies. Cyclotron Road has embedded this cohort in the National Laboratory environment to develop and spin out their technology within a finite timeframe. The selected scientists will be establishing collaborations within Berkeley Lab while also seeking outside support and funding.

First president of Berkeley Lab Foundation appointed

Ivy Clift has been named as the Berkeley Lab Foundation's first President and Chief Development Officer at LBNL. The Berkeley Lab Foundation was established by the University of California to promote corporate and philanthropic engagement in support of Berkeley Lab's mission.

A UC Berkeley alumna, Ms. Clift comes to Berkeley Lab from Stanford, where she has served as the assistant vice president of medical center development for the last three years. Previously, Ms. Clift directed the Stanford Fund, raising more than $20 million annually for undergraduate students. Ms. Clift has also served the University of California in a number of roles, including as UC Berkeley's assistant athletic director and as UCSF's development director for medical education. She has extensive nonprofit fundraising experience, in particular with the American Red Cross.

Lawrence Livermore National Laboratory

Labs team up with historically black colleges and universities in cybersecurity consortium

With national and global threats related to cybercrime at an all-time high, there is a considerable and growing need for expertise in cybersecurity. In January 2015, Vice President Joseph Biden and Secretary of Energy Ernest Moniz announced the DOE National Nuclear Security Administration (NNSA) Cybersecurity Workforce Pipeline Consortium. The Consortium has been established by the DOE/NNSA's Minority Serving Institutions Partnerships Program in order to create an underrepresented talent pipeline from Minority Serving Institutions to DOE National Laboratories and plants to help strengthen cybersecurity expertise.

LLNL and Sandia National Laboratories (Sandia) are participating as partners in the consortium to help solve pressing and challenging cybersecurity problems, to meet mission needs, anticipate

future challenges and assist in developing talent for the growing cyber workforce. Through a $25 million grant, the five-year partnership will connect LLNL and Sandia with 13 Historically Black Colleges and Universities (HBCUs) and the Charleston County School District in South Carolina. The program will give students from the HBCUs the depth and hands-on training they might not get if enrolled in a typical computer science or cybersecurity program. The educational enrichment will ensure that students participating in the consortium will develop strong skills and will be able to fill opportunities within the National Laboratories and throughout the nation. LLNL will be an active participant by providing technical expertise and guidance on curriculum in mathematics, computer science, and cybersecurity, and will provide students with mentors, resources, support, and on-the-job training in a stimulating work environment.

Collaboration on hand proprioception and touch interfaces project

The Defense Advanced Research Projects Agency (DARPA) recently selected LLNL to join a collaborative research team that intends to build the world's first neural system to enable naturalistic feeling and movements in prosthetic hands. Known as Hand Proprioception and Touch Interfaces (HAPTIX), the program seeks to provide wounded service members with dexterous control over advanced prosthetic devices that substitute for amputated hands. If successful, HAPTIX will give patients the psychological benefit of having natural sensation in their prosthetic hands and reduce "phantom limb" pain, a sensation some amputees can feel despite the removal of a limb.

LLNL and collaborators (Case Western Reserve University and the Louis Stokes Cleveland Veterans Administration Medical Center) intend to develop neural interface systems that measure and decode motor signals recorded in peripheral nerves and muscles in the forearm by using tiny electrodes. For these neural interface systems, LLNL intends to further develop the advanced prosthetic limb systems developed under other DARPA programs, which have made major steps forward in providing a direct and powerful link between user intent and prosthesis control. The HAPTIX program intends to incorporate sensors that provide tactile and proprioceptive feedback to patients from their hands, delivered through a patterned stimulation of sensory pathways in peripheral nerves. These DARPA programs intend to allow users to control prosthetic hand movements with their thoughts and have natural sensations. That means the bionic hand would be able to perform movements of a human hand and experience pressure, touch, and texture.

Los Alamos National Laboratory

Los Alamos unveils explosives detection expertise

A team of LANL scientists is rolling out a collaborative project to defeat explosives threats using enhanced detection technologies. This effort will progress through the creation of a collaboration of strategic public and private partners with a focus on innovations and education in explosives detection technologies. Through the Los Alamos Collaboration for Explosives Detection (LACED) online portal and related collaborations, LANL is providing essential expertise in some extremely specialized fields. The LACED site serves as a virtual gateway to world-class

expertise and capabilities designed to counter all types of explosives threats, predominantly through enhanced detection capabilities. The site went public in January 2015 and is beginning to attract attention among specialty audiences. The explosives detection collaborative is made up of 57 scientific experts, spanning 18 technical divisions at Los Alamos. Ranging across 11 unique fields of expertise, these scientists have published more than 100 explosive-detection-related publications.

LANL supports collection of one million curies of unwanted radioactive material

Collecting and safeguarding unwanted, unused, or unguarded nuclear materials are keys to preventing the malicious use of radioactive materials in devices such a "dirty bombs." LANL recently helped the DOE's Off-Site Source Recovery Project (OSRP) achieve a significant milestone – recovery of more than one million curies of radioactive materials.

The OSRP mission includes removal and disposal of excess, unwanted, abandoned, or orphan radioactive sealed sources that pose a potential risk to national security, public health, and safety. These sources include radiological materials from universities, and medical and research facilities worldwide that could potentially be utilized for nefarious purposes.

Los Alamos has been a leader in the DOE's OSRP since its inception in 1999. OSRP efforts have extended across more than 1,100 locations worldwide, including locations in all 50 states. (The 1-millionth curie came from a facility in Maryland.) Over its life span, the program has safely secured more than 38,000 sealed radioactive sources.

Key to Acronyms

DARPA	Defense Advanced Research Projects Agency
DOE	Department of Energy
HAPTIX	Hand Proprioception and Touch Interfaces
HBCUs	Historically Black Colleges and Universities
LACED	Los Alamos Collaboration for Explosives Detection
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
LBNL	Lawrence Berkeley National Laboratory
LLC	Limited Liability Company
LLNL	Lawrence Livermore National Laboratory
LLNS	Lawrence Livermore National Security, LLC
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
OSRP	DOE's Off-Site Source Recovery Project
Sandia	Sandia National Laboratories
WIPP	DOE's Waste Isolation Pilot Plant