



U.S. DEPARTMENT OF  
**ENERGY**

**Fiscal Year 2019  
Report to Congress:  
Laboratory Directed  
Research and  
Development at DOE  
National Laboratories**

**Report to Congress  
April 2020**

**United States Department of Energy  
Washington, DC 20585**

## Message from the Deputy Chief Financial Officer

As required by Section 3136 of the National Defense Authorization Act for Fiscal Year (FY) 1997 (Public Law 104-201; 50 U.S.C. 2793) and requested in the Conference Report accompanying the Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2001, (H. Rept. 106-988), this is the Department of Energy's (DOE) Report on Laboratory Directed Research and Development (LDRD), Plant Directed Research and Development (PDRD), and Site Directed Research and Development (SDRD) for FY 2019.

The report provides FY 2019 LDRD, PDRD, and SDRD expenditures by laboratory, weapons production plant and site. In FY 2019 there were 2,034 LDRD projects with a total cost of \$637.31 million, 331 PDRD projects with a total cost of \$74.41 million and 87 SDRD projects with a total cost of \$14.81 million.

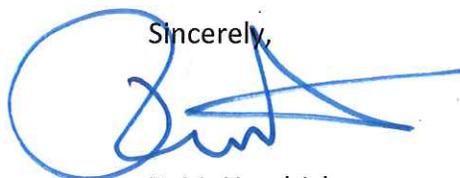
Pursuant to statutory requirements, this report is being provided to Members of Congress:

- **The Honorable Nita M. Lowey**  
Chairwoman, House Committee on Appropriations
- **The Honorable Kay Granger**  
Ranking Member, House Committee on Appropriations
- **The Honorable Marcy Kaptur**  
Chairwoman, Subcommittee on Energy and Water Development  
House Committee on Appropriations
- **The Honorable Mike Simpson**  
Ranking Member, Subcommittee on Energy and Water Development  
House Committee on Appropriations
- **The Honorable Richard Shelby**  
Chairman, Senate Committee on Appropriations
- **The Honorable Patrick Leahy**  
Vice Chairman, Senate Committee on Appropriations
- **The Honorable Lamar Alexander**  
Chairman, Subcommittee on Energy and Water Development  
Senate Committee on Appropriations
- **The Honorable Dianne Feinstein**  
Ranking Member, Subcommittee on Energy and Water Development  
Senate Committee on Appropriations

- **The Honorable James Inhofe**  
Chairman, Senate Committee on Armed Services
- **The Honorable Jack Reed**  
Ranking Member, Senate Committee on Armed Services
- **The Honorable Deb Fischer**  
Chairman, Subcommittee on Strategic Forces  
Senate Committee on Armed Services
- **The Honorable Martin Heinrich**  
Ranking Member, Subcommittee on Strategic Forces  
Senate Committee on Armed Services
- **The Honorable Adam Smith**  
Chairman, House Committee on Armed Services
- **The Honorable Mac Thornberry**  
Ranking Member, House Committee on Armed Services
- **The Honorable Jim Cooper**  
Chairman, Subcommittee on Strategic Forces  
House Committee on Armed Services
- **The Honorable Michael Turner**  
Ranking Member, Subcommittee on Strategic Forces  
House Committee on Armed Services

If you have any questions or need additional information, please contact Ms. Katie Donley, Deputy Director for External Coordination, Office of the Chief Financial Officer, at 202-586-0176, Mr. Christopher Morris, Deputy Assistant Secretary for House Affairs, or Mr. Shawn Affolter, Deputy Assistant Secretary for Senate Affairs, Office of Congressional and Intergovernmental Affairs, at 202-586-5450.

Sincerely,



R. M. Hendrickson  
Deputy Chief Financial Officer

## Executive Summary

The Laboratory Directed Research and Development (LDRD) Program at the Department of Energy (DOE) National Laboratories, and analogous programs at DOE such as the nuclear weapons production Plant Directed Research and Development (PDRD) and Nevada National Security Site Directed Research and Development (SDRD), are key components of the DOE mission to promote scientific and technical (S&T) innovation that advances the economic, energy, and national security of the Nation.

This report provides the DOE's FY 2019 expenditures for LDRD, PDRD, and SDRD and certifies that individual projects or activities are charged within the statutory maximum authorized for these programs. It also affirms that every LDRD activity derived from funds of other agencies is conducted in a manner that support science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies.

DOE National Laboratories LDRD projects address the Nation's energy, environmental, and national security challenges. LDRD is an institutional investment, part of the overhead rate charged by a DOE National Laboratory for work performed by the laboratory. LDRD is accrued in accordance with cost accounting standards and the terms of the laboratory management and operating contracts. FY 2019 LDRD projects were relevant to defense, non-defense, and homeland security mission categories. In FY 2019, Field Chief Financial Officers certified that the 2,034 LDRD projects, totaling \$637.31 million, which represents 4.18 percent of total cost base at the 16 laboratories, were in compliance with statutory requirements.

Section 308 of Division C of the Omnibus Appropriations Act, 2009 (Public Law 111-8), authorizes the Secretary of Energy to expend an amount less than four percent for both PDRD and SDRD. In FY 2019, DOE's Site and Plants invested \$74.41 million and \$14.81 million through the PDRD and SDRD programs, respectively, to fund science and technology projects with the potential to enhance the plants' mission-related manufacturing capabilities, operations, and core technical competencies. The Field Chief Financial Officers certified these programs were funded within the maximum authorized amount.

LDRD, PDRD, and SDRD funding by DOE program office or SPP and projects which started or ended in FY 2019 are at **Appendix C**.

DOE continues to manage the LDRD program in accordance with all Congressional requirements. DOE will continue to review the management and administrative procedures and funding levels at each of the relevant laboratories.



# FY 2019 REPORT ON LDRD<sup>1</sup> AT THE NATIONAL LABORATORIES

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<sup>1</sup> This report also includes SDRD and PDRD in accordance with all statutory report language requirements.

## I. Legislative Language

This report responds to Section 3136 of the National Defense Authorization Act for Fiscal Year (FY) 1997 (Public Law 104-201; 50 U.S.C. 2793). It requires “a report [annually] on the funds expended during the preceding fiscal year on [LDRD] activities [...] to permit an assessment of the extent to which such activities support the national security mission of the Department of Energy”.

It also responds to the Conference Report accompanying the Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2001, which requested that the DOE Chief Financial Officer develop and implement a financial accounting report of LDRD expenditures by laboratory and weapons production plant.

This report also addresses the Conference Report (H. Rept. No. 107-258) that accompanied the Energy and Water Development Appropriations Act, 2002. It requested that the Secretary of Energy affirm in the annual Report to Congress on LDRD expenditures that every LDRD activity derived from funds of other agencies is conducted in a manner that support science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies.

The full list of statutory and legislative report language requirements are at **Appendix A and B**.

## II. Background

Section 31 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2051), directs DOE to ensure the continued conduct of research and development (R&D) and assist in the acquisition of the existing and growing body of theoretical and practical knowledge in the fields of energy, production, uses, handling, and effects. This mission was initially the responsibility of the Atomic Energy Commission (AEC), then that of the Energy Research and Development Administration, and subsequently DOE.

The AEC recognized that to maintain laboratories’ intellectual vitality, ability to respond immediately to developments at the cutting edge of science and technology, and to retain the best scientific, technological, and managerial talent, a certain amount of work is to be at the laboratories’ discretion. From inception, the AEC and successor agencies made available certain amounts of research derived from the ideas from National Laboratory researchers.

In 1985, in response to the recommendations of national panels and commissions, the Department established the Exploratory Research and Development Program to formalize the practice of providing National Laboratories with the means to conduct laboratory-initiated

R&D.<sup>2</sup> Six years later, DOE renamed the program Laboratory Directed Research and Development (LDRD) and formally established Department-wide policies for implementation at DOE National Laboratories. Today, the LDRD Program at DOE National Laboratories, and analogous programs at the Department's nuclear weapons production plants (Plant Directed Research and Development, or PDRD) and Nevada National Security Site (NNSS) (Site Directed Research and Development, or SDRD), are critical components of the DOE mission to promote scientific and technical (S&T) innovation that advances the economic, energy, and national security of the United States (U.S.).

Every LDRD activity conducted at DOE National Laboratories is governed by DOE policy (DOE Order 413.2C, *Laboratory Directed Research and Development*), which provides guidance on effective management and oversight of the LDRD Program, while at the same time supporting the laboratories' statutory authority to pursue innovative, self-selected projects in support of the DOE mission. DOE's LDRD policy is consistent with the Department's management practices for R&D activities including annual planning and reporting requirements, as well as program and peer reviews to verify the investments reflect innovative, quality research projects. DOE concurs with each proposed LDRD project before a laboratory commences work to guarantee the project complies with DOE policy. The remainder of this report responds to the LDRD, PDRD, and SDRD Program financial reporting requirements required by law (**Appendix A and B** list the statutory and report language requirements).

### **III. FY 2019 LDRD Financial Reporting**

Table 1 enumerates DOE's FY 2019 LDRD costs, total funded amount, and the LDRD rate charged by laboratory. In accordance with Section 311 of Division D of the Consolidated and Further Continuing Appropriations Act, 2015, (Public Law 113-235) and DOE Order 413.2 C, *Laboratory Directed Research and Development* individual projects and activities are charged within the statutory maximum authorized amount for LDRD by the Secretary of Energy. The total cost figures in the table represent a laboratory's total operating and capital equipment costs, including non-DOE funded work, less exemptions and LDRD. DOE Field Chief Financial Officers certify that each laboratory is in compliance with statutory requirements, and to the accuracy of the total cost figures.

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<sup>2</sup> See, among others, the *Report of the White House Science Council*, Office of Science and Technology Policy, Executive Office of the President, Washington, DC, May 1983; and Guidelines, Energy Research Advisory Board, December 1985.

**Table 1. FY 2019 Laboratory Costs and LDRD Costs at DOE Laboratories**

Lab	DOE Costs (\$M)	SPP Costs (\$M)	Total Costs (\$M)	LDRD Costs (\$M)	LDRD Rate	Projects
Ames Laboratory	52.27	0.69	52.96	1.03	1.94%	10
Argonne National Lab	624.03	104.61	728.65	26.35	3.62%	143
Brookhaven National Lab	512.01	53.23	565.24	13.21	2.34%	57
FERMI National Accelerator Lab	321.52	1.51	323.04	3.86	1.19%	35
Idaho National Lab	904.02	415.28	1,319.31	26.98	2.05%	116
L. Berkeley National Lab	687.70	114.11	801.81	21.92	2.73%	91
L. Livermore National Lab	1,581.33	309.67	1,891.00	109.02	5.77%	250
Los Alamos National Lab	2,250.90	227.93	2,478.83	130.79	5.28%	341
National Renewable Energy Lab	395.22	56.00	451.22	17.24	3.82%	99
Oak Ridge National Lab	1,150.37	255.23	1,405.61	49.79	3.54%	168
Pacific Northwest National Lab	704.50	254.29	958.79	38.59	4.03%	193
Princeton Plasma Physics Lab	93.69	1.77	95.47	2.21	2.32%	23
Sandia National Labs	2,371.30	1,087.40	3,458.69	181.15	5.24%	404
Savannah River National Lab	194.48	21.38	215.86	9.07	4.20%	70
SLAC National Accelerator Laboratory	342.77	23.10	365.87	5.41	1.48%	27
Thomas Jefferson National Accelerator Facility	130.15	2.23	132.38	0.68	0.52%	7
<b>Total LDRD</b>	<b>\$12,316.27</b>	<b>\$2,928.45</b>	<b>\$15,244.72</b>	<b>\$637.31</b>	<b>4.18%</b>	<b>2,034</b>

LDRD is an institutional investment, part of the overhead rate charged by a laboratory, which funds cutting edge, creative work that benefits laboratory programs. Consistent with Public Law 113-235, LDRD is accumulated through a percentage of the total cost, excluding LDRD and line-item construction, for work performed by a laboratory. LDRD is accrued in accordance with cost accounting standards and with the terms of the laboratory management and operating contracts.

The total FY 2019 LDRD program cost at the National Laboratories was \$637.31 million, which represents 4.18 percent of total cost base at these laboratories. This includes minimal credits or costs for projects which completed in previous fiscal years.

Each National Laboratory conducted a review of the FY 2019 LDRD projects to determine the relevance of those projects to the missions of the various laboratory customers that provided funds for LDRD. For this review, laboratory consumers are considered in three mission categories – defense, non-defense, and homeland security (i.e., Department of Homeland Security (DHS)). The review concluded that FY 2019 LDRD projects were relevant to one, two or three mission categories. The review also indicated that funds contributed by each consumer category were invested in LDRD projects relevant to the respective mission areas at a level at least equal to the LDRD funds provided by the customers.

## IV. LDRD and Strategic Partnership Projects

Strategic Partnership Projects (SPP) funding from non-DOE Federal and non-Federal resources create opportunities to promote, and where possible accelerate, scientific discovery and deploy solutions that benefit both DOE and sponsoring entity missions and goals. SPP plays an important role in the laboratories' efforts to develop, strengthen, and sustain unique S&T capabilities deemed critical by the Government and, in most cases, represents a coordinated set of activities that seek to address large and complex national needs. This use of DOE

facilities, personnel, and capabilities for SPP activities provides the laboratories an opportunity to deliver national solutions in a cost-effective manner.

Congress provided language in Conference Report 107-258 accompanying the Energy and Water Development Appropriations Act, 2002, which requested that DOE notify other Federal agencies that a portion of SPPs will be used to fund LDRD projects. With the creation of DHS in the FY 2002 Homeland Security Act, Congress enacted a requirement that LDRD funding provided by DHS must benefit DHS missions. In response to the FY 2002 Conference Report, the Secretary of Energy issued guidance requiring every LDRD laboratory to notify other Federal agencies of LDRD charges before funding work at the laboratories. Each SPP proposal DOE provides to a Federal agency must indicate the amount of LDRD charges that the project will collect. The proposal also serves to notify the sponsor that, by providing funding, the agency is acknowledging that LDRD activities are beneficial to the organization and are consistent with the appropriation acts that provided funds to the agency. In February 2003, the Secretary of Energy and the Secretary of Homeland Security entered into a Memorandum of Agreement to implement key provisions of the Homeland Security Act. To support DHS efforts, the Deputy Secretary of Energy issued DOE Order 484.1 on Reimbursable Work for the Department of Homeland Security. The Order provides information on the process by which the DHS may place orders for reimbursable work activities at the DOE laboratories. In the Order, there are provisions for notification of LDRD charges in the cost proposal as well as requirements for acknowledgements regarding the benefits of LDRD before final approval.

In December 2003, the DOE Office of the Chief Financial Officer provided other Federal agency Chief Financial Officers who are customers and sponsors of work at the Department's laboratories with applicable guidance and policy documents to explain the Department's processes. Collectively, the implementation and execution of these policies provide the basis for the Secretary's affirmation that the LDRD Program is managed in accordance with the Congressional requirements cited above.

## **V. FY 2019 PDRD and SDRD Programs – Financial Reporting**

### **Plant Directed Research and Development (PDRD) - Fiscal Year Expenditures**

Section 308 of Division C of the Omnibus Appropriations Act, 2009 (Public Law 111-8) authorizes the Secretary of Energy to authorize an amount less than four percent for PDRD.

Table 2 enumerates the Department's FY 2019 PDRD costs, total funded amount, and the PDRD rate charged by site. The total cost figures in the table represent a plant's total operating and capital equipment costs, including non-DOE funded work, less exemptions and PDRD. DOE Field Chief Financial Officers certify that each plant is in compliance with statutory requirements, and to the accuracy of the total cost figures.

Table 2. FY 2019 PDRD Expenditures

<b>PDRD</b>						
<b>Plant</b>	<b>DOE Costs (\$M)</b>	<b>SPP Costs (\$M)</b>	<b>Total Costs (\$M)</b>	<b>PDRD Costs (\$M)</b>	<b>PDRD Rate</b>	<b>Projects</b>
Kansas City National Security Campus	901.79	357.27	1,259.06	37.81	3.00%	233
Pantex Plant	795.75	0.00	795.75	8.97	1.13%	37
Savannah River Site	301.31	0.00	301.31	2.79	0.93%	14
Y-12 National Security Complex	1,068.32	0.00	1,068.32	24.84	2.33%	47
<b>Total PDRD</b>	<b>\$3,067.16</b>	<b>\$357.27</b>	<b>\$3,424.43</b>	<b>\$74.41</b>	<b>2.17%</b>	<b>331</b>

**Site Directed Research and Development (SDRD) - Fiscal Year Expenditures**

Section 308 of Division C of the Omnibus Appropriations Act, 2009 (Public Law 111-8) authorizes the Secretary of Energy for an amount less than four percent for SDRD. Table 3 enumerates the Department’s FY 2019 SDRD costs, total funded amount, and the SDRD rate charged by site. The total cost figures in the table represent the site’s total operating and capital equipment costs, including non-DOE funded work, less exemptions and SDRD. DOE Field Chief Financial Officers certify that the site is in compliance with statutory requirements, and to the accuracy of the total cost figures.

Table 3. FY 2019 SDRD Expenditures

<b>SDRD</b>						
<b>Site</b>	<b>DOE Funding (\$M)</b>	<b>SPP Funding (\$M)</b>	<b>Total Funding (\$M)</b>	<b>L-P-SDRD Costs (\$M)</b>	<b>% of FY Total Project</b>	<b>Projects</b>
Nevada National Security Site	476.06	55.11	531.17	14.81	2.79%	87
<b>Total SDRD</b>	<b>\$476.06</b>	<b>\$55.11</b>	<b>\$531.17</b>	<b>\$14.81</b>	<b>2.79%</b>	<b>87</b>

## VI. Conclusion

The Department continues to manage the LDRD, PDRD and SDRD programs in accordance with all Congressional requirements. LDRD, PDRD, and SDRD provide the laboratories with the means to explore pioneering and cutting edge research concepts to support current and future DOE and DOE NNSA and other national missions. LDRD, PDRD, and SDRD research projects bridge disciplinary boundaries to find solutions to science and technology challenges, to find and build capabilities that can support multiple cross cutting interests. DOE has, and will continue to, review the management and administrative procedures and funding levels at each of the relevant laboratories for compliance with statutory requirements.

## VII. Secretarial Affirmation

*As required by Section 3136 of the National Defense Authorization Act of 1997 (Public Law 104-201; 50 U.S.C. 2793) and requested in the Conference Report accompanying the Energy and Water Development Appropriations Act, 2002, (H. Rept. 107-258), the following is the affirmation by the Secretary of the Department of Energy (DOE) on the **Report on Laboratory Directed Research and Development (LDRD) for FY 2019**.*

*Based on the information and acknowledgments provided to the Department and DOE contractors by the Federal agencies that are funding LDRD activities in Fiscal Year 2019, I affirm that every LDRD activity derived from funds of other Federal agencies (1) is conducted in a manner supporting scientific and technical development that benefits the programs of those agencies, and (2) is consistent with the appropriations acts that provided funds to those agencies.*



Dan Brouillette  
Secretary of Energy  
April 2020

## Appendix A. Statutory Language Requirements

### **Section 3115 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92)**

FUNDING OF LABORATORY-DIRECTED RESEARCH AND DEVELOPMENT PROGRAMS.

(a) IN GENERAL.—Section 4811(c) of the Atomic Energy Defense Act (50 U.S.C. 2791(c)) is amended—

- (1) by striking “to such laboratories” and inserting “to a national security laboratory”;
- (2) by striking “not to exceed 6 percent” and inserting “of not less than 5 percent and not more than 7 percent”; and
- (3) By striking “by such laboratories” and inserting “by the laboratory”.

(b) BRIEFING REQUIRED.—Not later than February 28, 2016, the Administrator for Nuclear Security shall provide a briefing to the congressional defense committees on—

- (1) all recent or ongoing reviews of the laboratory-directed research and development program, including such reviews initiated by the Secretary of Energy;
- (2) costs and accounting practices associated with laboratory-directed research and development; and
- (3) how laboratory-directed research and development projects support the mission of the National Nuclear Security Administration.

### **Section 311 of the Consolidated and Further Continuing Appropriations Act, 2015 (Public Law 113-235)**

Of the funds authorized by the Secretary of Energy for laboratory directed research and development, no individual program, project, or activity funded by this or any subsequent Act making appropriations for Energy and Water Development for any fiscal year may be charged more than the statutory maximum authorized for such activities: Provided that this section shall take effect not earlier than October 1, 2015.

### **Section 309 of Division D of the Consolidated Appropriations Act, 2014 (Public Law 113-76)**

Notwithstanding section 307 of Public Law 111-85, of the funds made available by the Department of Energy for activities at Government owned, contractor operated laboratories funded in this or any subsequent Energy and Water Development Appropriations Act for any fiscal year, the Secretary may authorize a specific amount, not to exceed 6 percent of such funds, to be used by such laboratories for laboratory directed research and development.

### **Section 307 of the Energy and Water Development and Related Agencies Appropriations Act, 2010 (Public Law 111-85)**

Of the funds made available by the Department of Energy for activities at Government-owned, contractor-operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory directed research and development: Provided, That the Secretary may also authorize a specific amount not to exceed 4 percent of such funds, to be used by the plant

manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site directed research and development.

**Section 308 of Division C of the Omnibus Appropriations Act, 2009 (Public Law 111-8)**

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT. Of the funds made available by the Department of Energy for activities at government-owned, contractor-operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory directed research and development: Provided, That the Secretary may also authorize a specific amount not to exceed 4 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site directed research and development: Provided further, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding.

**Section 309 of Division C of the Consolidated Appropriations Act, 2008 (Public Law 110-161)**

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT. Of the funds made available by the Department of Energy for activities at government-owned, contractor-operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory-directed research and development: Provided, That the Secretary may also authorize a specific amount not to exceed 4 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site-directed research and development: Provided further, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding.

**Section 311 of the Energy and Water Development Appropriations Act, 2006 (Public Law 109-103)**

Of the funds made available by the Department of Energy for activities at government-owned, contractor-operator operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory-directed research and development: Provided, That the Secretary may also authorize a specific amount not to exceed 3 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site-directed research and development: Provided further, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding.

**Section 310 of the Energy and Water Development Appropriations Act, 2002 (Public Law 107-66)** The Administrator of the National Nuclear Security Administration may authorize the manager of the Nevada Operations Office to engage in research, development, and demonstration activities with respect to the development, test, and evaluation capabilities necessary for operations and readiness of the Nevada Test Site: Provided, That of the amount allocated to the Nevada Operations Office each fiscal year from amounts available to the Department of Energy for such fiscal year for national security programs at the Nevada Test Site, not more than an amount equal to 2 percent of such amount may be used for these activities.

**Section 309(f) of the Homeland Security Act of 2002 (Public Law 107-296, 6 USC 189(f))** Laboratory Directed Research and Development by the Department of Energy.--No funds authorized to be appropriated or otherwise made available to the Department in any fiscal year may be obligated or expended for laboratory directed research and development activities carried out by the Department of Energy unless such activities support the missions of the Department of Homeland Security.

**Section 310 of the Energy and Water Development Appropriations Bill, as enacted by the Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2001 (Public Law 106-377)**

The Administrator of the National Nuclear Security Administration may authorize the plant manager of a covered nuclear weapons production plant to engage in research, development, and demonstration activities with respect to the engineering and manufacturing capabilities at such plant in order to maintain and enhance such capabilities at such plant: Provided, That of the amount allocated to a covered nuclear weapons production plant each fiscal year from amounts available to the Department of Energy for such fiscal year for national security programs, not more than an amount equal to 2 percent of such amount may be used for these activities: Provided further, That for purposes of this section, the term "covered nuclear weapons production plant" means the following:

- (1) The Kansas City Plant, Kansas City, Missouri.
- (2) The Y-12 Plant, Oak Ridge, Tennessee.
- (3) The Pantex Plant, Amarillo, Texas.
- (4) The Savannah River Plant, South Carolina.

**Section 3156 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-398) ENGINEERING AND MANUFACTURING RESEARCH, DEVELOPMENT, AND DEMONSTRATION BY PLANT MANAGERS OF CERTAIN NUCLEAR WEAPONS PRODUCTION PLANTS**

(a) Authority for Programs at Nuclear Weapons Production Facilities.--The Administrator for Nuclear Security shall authorize the head of each nuclear weapons production facility to establish an Engineering and Manufacturing Research, Development, and Demonstration Program under this section.

(b) Projects and Activities.--The projects and activities carried out through the program at a

nuclear weapons production facility under this section shall support innovative or high-risk design and manufacturing concepts and technologies with potentially high payoff for the nuclear weapons complex. Those projects and activities may include--

- (1) replacement of obsolete or aging design and manufacturing technologies;
- (2) development of innovative agile manufacturing techniques and processes; and
- (3) training, recruitment, or retention of essential personnel in critical engineering and manufacturing disciplines.

(c) Funding.--The Administrator may authorize the head of each nuclear weapons production facility to obligate up to \$3,000,000 of funds within the Advanced Design and Production Technologies Campaign available for such facility during fiscal year 2001 to carry out projects and activities of the program under this section at that facility.

(d) Report.--The Administrator for Nuclear Security shall submit to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives, not later than September 15, 2001, a report describing, for each nuclear weapons production facility, each project or activity for which funds were obligated under the program, the criteria used in the selection of each such project or activity, the potential benefits of each such project or activity, and the Administrator's recommendation concerning whether the program should be continued.

(e) Definition.--For purposes of this section, the term "nuclear weapons production facility" has the meaning given that term in section 3281(2) of the National Nuclear Security Administration Act (title XXXII of Public Law 106-65; 113 Stat. 968; 50 U.S.C. 2471(2)).

### **Section 3136 of the National Defense Authorization Act for Fiscal Year 1997 (Public Law 104-201)**

(a) Limitation— No funds authorized to be appropriated or otherwise made available to the Department of Energy for fiscal year 1997 under section 3101 may be obligated or expended for activities under the Department of Energy Laboratory Directed Research and Development Program, or under any Department of Energy technology transfer program or cooperative research and development agreement, unless such activities support the national security mission of the Department of Energy.

(b) Annual Report— (1) The Secretary of Energy shall annually submit to the congressional defense committees a report on the funds expended during the preceding fiscal year on activities under the Department of Energy Laboratory Directed Research and Development Program. The purpose of the report is to permit an assessment of the extent to which such activities support the national security mission of the Department of Energy. (2) Each report shall be prepared by the officials responsible for Federal oversight of the funds expended on activities under the program. (3) Each report shall set forth the criteria utilized by the officials preparing the report in determining whether or not the activities reviewed by such officials support the national security mission of the Department.

## Appendix B. Conference Report Language

**109<sup>th</sup> Congress Conference Report regarding the Energy & Water Development Appropriations Bill, 2006 (H. Rept. Report 109-275)** The conferees are concerned with the level of overhead charges applied to programs funded in this bill and urge the Department to continue to work to minimize the overhead burden on all program activities. In order to guarantee an equitable allocation of overhead costs the Secretary should apply overhead charges to LDRD activities consistent with cost accounting practices applied to program activities that are direct funded. The conference agreement increases the allowable percentage for LDRD, PDRD and SDRD activities to allow this accounting change without harming the underlying discretionary research activities. The change in accounting practices should be implemented with no net reduction in LDRD levels below 6 percent of the funds provided by the Department of Energy to such labs for national security activities and 2 percent for PDRD and SDRD activities at the appropriate plants and sites. Within 90 days after the date of enactment of this Act, the Secretary of Energy shall submit a report to the Committees on Appropriations detailing how the accounting change will be implemented without effecting the basic research and the change shall be implemented within 180 days of enactment.

**108<sup>th</sup> Congress - House Report Regarding the Energy & Water Development Appropriations Bill, 2004 (H. Rept. Report 108-212)** The Committee recognizes the value of conducting discretionary research at DOE's National Laboratories. Such research provides valuable benefits to the Department and to other Federal agencies, and is crucial to attracting and retaining scientific talent at the laboratories. However, the Committee continues to have concerns about the financial execution of this program. One concern centers on the manner in which DOE levies the LDRD "tax" on all DOE and Work for Other programs, and then accumulates the funds into an overhead pool. This Committee typically deals with defense and non-defense allocations within the Energy and Water Development bill, and the line between those two allocations is not easily crossed. Under LDRD, however, the laboratory directors are able to pool defense and non-defense appropriations at will. The only obvious solution to this concern is to require DOE to establish and track separate LDRD accounts for defense and non-defense funding sources, and the Committee is not yet ready to direct that change. The other principal concern deals with the application of LDRD to work being performed for other agencies (Work for others). The conference report accompanying the Energy and Water Development Appropriations Act, 2002 (P.L. 107-66) directed the Secretary to "include in the annual report to Congress on LDRD activities an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that support science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies." The Department has implemented this guidance by including the following language into its standard project proposal and funding acceptance documents that it requires the funding WFO agencies to sign: "The Department of Energy believes that LDRD efforts provide opportunities in research that are instrumental in maintaining cutting edge science capabilities that benefit all of the customers at the laboratory. The Department will conclude that by providing funds to DOE to perform work, you

acknowledge that such activities are beneficial to your organization and consistent with appropriations acts that provide funds to you.” This is too facile a solution for the Department. According to a review conducted by this Committee’s investigative staff, only a little more than half of the WFO customers indicated they could reliably certify that DOE’s LDRD activities are consistent with the funding agencies’ appropriations acts. Nevertheless, most agencies sign the required certification letter to DOE because they see no real alternative. The Committee fully expects that there are terms and conditions attached to the appropriations acts for these other agencies that are being ignored through this so-called “certification” process for LDRD work.

The Committee is considering changing the arrangement by which LDRD activities are funded to eliminate these concerns. The results of an ongoing General Accounting Office review will help to inform the Committee’s choice. The Committee is receptive to streamlining the annual LDRD report to Congress, which is undoubtedly a significant burden for the Department to prepare and is of little value to this Committee in resolving the concerns identified above. The Department should work with Committee staff to develop a simpler and more useful LDRD report.

**107<sup>th</sup> Congress Conference Report regarding the Energy & Water Development**

**Appropriations Bill, 2002 (H. Rept. Report 107-258)** The conference agreement does not include bill language proposed by either the House or the Senate regarding the Laboratory Directed Research and Development (LDRD) program. The conferees recognize the benefits of LDRD and expect LDRD activities to continue at previously authorized levels. However, when accepting funds from another Federal agency that will be used for LDRD activities, the Department of Energy shall notify that agency in writing how much will be used for LDRD activities. In addition, the conferees direct the Secretary of Energy to include in the annual report to Congress on all LDRD activities an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies.

**106<sup>th</sup> Congress – House Report Regarding the Energy & Water Development Appropriations**

**Bill, 2001 (H. Rept. Report 106-693)** The Committee has retained the limitation of four percent on laboratory directed research and development (LDRD) that was included in the fiscal year 2000 appropriations bill. This program allows each laboratory director to use four percent of all operating funds provided to the laboratory to conduct research and development projects selected at the discretion of the laboratory directors. For fiscal year 2001, the Department estimates that the laboratories will spend \$300,000,000 on LDRD and additional funds on Director's Discretionary Research and Development (DDRD). The Committee recommendation would provide approximately \$200,000,000 for LDRD, the same level as fiscal year 2000. Rather than allowing each laboratory to tax all operating dollars that are sent to the laboratory, the Committee directs the Department to submit a separate line item for LDRD funding in each appropriation account in the fiscal year 2002 budget request. This will provide the visibility and accountability for this type of funding that the Committee believes has been lacking in prior years. It also addresses another concern of the Committee that LDRD funding is automatically

taken off the top of each program performed at the laboratory. This has the effect of placing LDRD funding in a completely protected funding category at the expense of all other programs in the Department. The Committee supports some LDRD funding, but believes it should be placed on equal terms with other important programs. The Department is directed to submit a specific request for laboratory directed research and development funding in each program in the annual budget submission.

## Appendix C. Cost Base by Program Offices or SPP

DOE Cost Base by Program Offices or Strategic Partnership Projects (SPP) (\$M)													
DOE Program Funding Office (\$M)	NNSA	Office of Science	Energy Efficiency & Renewable Energy	Office of Nuclear Energy	Office of Environmental Management	Office of Cybersecurity, Energy Security, & Emergency Response	Office of Electricity	Office of Fossil Energy	Advanced Research Projects Agency - Energy	Office of Environment, Health, Safety and Security	Other	SPP	Total Costs
Ames Laboratory	0.00	23.58	26.65	0.00	0.00	0.00	0.11	1.82	0.08	0.00	0.02	0.69	\$52.96
Argonne National Lab	58.16	397.64	87.81	36.80	3.21	0.00	11.09	1.04	1.04	0.90	26.33	104.61	\$728.65
Brookhaven National Lab	11.24	477.03	4.80	2.36	0.55	4.01	0.73	0.00	0.24	0.05	11.00	53.23	\$565.24
FERMI National Accelerator Lab	0.00	321.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	\$323.03
Idaho National Lab	74.44	7.65	35.79	724.80	13.79	16.25	5.18	1.78	0.00	0.28	24.05	415.28	\$1,319.29
L. Berkeley National Lab	12.19	538.35	93.06	0.00	0.00	0.00	6.30	12.70	0.00	0.00	25.10	114.11	\$801.81
L. Livermore National Lab	1461.33	55.29	16.19	1.40	3.38	26.25	4.89	8.36	0.90	3.15	0.19	309.67	\$1,891.00
Los Alamos National Lab	1988.83	92.37	18.19	21.89	28.48	18.56	4.08	9.37	2.01	0.74	66.39	227.93	\$2,478.84
National Renewable Energy Lab	0.00	15.04	363.89	0.05	0.00	0.04	5.21	0.24	4.24	0.00	6.52	56.00	\$451.23
Oak Ridge National Lab	149.43	693.26	155.69	98.31	0.78	25.18	14.83	7.28	3.63	0.00	1.98	255.23	\$1,405.60
Pacific Northwest National Lab	266.73	164.12	104.36	19.05	2.55	23.44	34.51	12.65	4.36	2.31	70.43	254.29	\$958.80
Princeton Plasma Physics Lab	0.80	92.62	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	1.77	\$95.47
Sandia National Labs	2106.38	60.20	71.44	37.05	17.35	20.69	19.63	6.94	2.63	2.96	26.01	1087.40	\$3,458.68
Savannah River National Lab	76.81	1.21	2.59	3.10	104.79	5.07	0.90	0.00	0.01	0.00	0.00	21.38	\$215.86
SLAC National Accelerator Laboratory	1.64	322.13	9.56	0.00	0.00	0.00	1.67	0.73	0.04	0.00	7.00	23.10	\$365.87
Thomas Jefferson National Accelerator Facility	0.00	130.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	2.23	\$132.38
Kansas City National Security Campus	901.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	357.27	\$1,259.06
Pantex Plant	795.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	\$795.75
Savannah River Site	301.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	\$301.31
Y-12 National Security Complex	1068.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	\$1,068.32
Nevada National Security Site	476.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.11	\$531.17
<b>Total by Office or SPP</b>	<b>\$9,751.20</b>	<b>\$3,392.02</b>	<b>\$990.04</b>	<b>\$944.81</b>	<b>\$174.89</b>	<b>\$139.49</b>	<b>\$109.13</b>	<b>\$62.92</b>	<b>\$19.45</b>	<b>\$10.40</b>	<b>\$265.16</b>	<b>\$3,340.81</b>	<b>\$19,200.32</b>

<sup>1</sup> The cost base information is provided by the labs, plants, or sites and certified by the field office managing the lab, plant, or site.

<sup>2</sup> The cost base does not directly tie to obligations in the DOE accounting system because the LDRD, PDRD and SDRD base is accrued through indirect costs.

## Appendix D. FY 2019 LDRD, SDRD, and PDRD Projects Status

Lab, Site, or Plant Name	Started		Completed	
	Projects with a Start Date Prior to FY 2019	Projects with a FY2019 Start Date	Projects Started in Prior Fiscal Years and Completed in FY 2019	Projects Started and Completed within FY 2019
Ames Laboratory	1	6	2	1
Argonne National Lab	26	47	29	41
Brookhaven National Lab	31	22	4	0
FERMI National Accelerator Lab	19	10	6	0
Idaho National Lab	32	37	41	6
Kansas City National Security Campus	0	0	103	130
L. Berkeley National Lab	12	42	35	2
L. Livermore National Lab	56	75	81	38
Los Alamos National Lab	100	114	99	28
National Renewable Energy Lab	13	24	22	40
Nevada National Security Site	1	21	33	32
Oak Ridge National Lab	70	68	30	0
Pacific Northwest National Lab	67	113	13	0
Princeton Plasma Physics Lab	7	12	4	0
Sandia National Labs	65	131	123	85
Savannah River Site	3	9	2	0
Savannah River National Lab	4	9	36	21
SLAC National Accelerator Laboratory	21	6	0	0
Thomas Jefferson National Accelerator Facility	0	0	3	4
Y-12 National Security Complex	13	26	8	0
Pantex Plant	7	20	7	3
<b>Total Count</b>	<b>548</b>	<b>792</b>	<b>681<sup>1</sup></b>	<b>431</b>

<sup>1</sup> This includes minimal credits and costs from projects completed in prior fiscal years.