

SUBJECT: LABORATORY DIRECTED RESEARCH AND DEVELOPMENT

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1. OBJECTIVE. To establish Department of Energy (DOE) requirements for laboratory directed research and development (LDRD) while providing the laboratory director broad flexibility for program implementation. The objectives of the LDRD program are to—
  - maintain the scientific and technical vitality of the laboratories;
  - enhance the laboratories' ability to address current and future DOE/NNSA missions;
  - foster creativity and stimulate exploration of forefront areas of science and technology;
  - serve as a proving ground for new concepts in research and development; and
  - support high-risk, potentially high-value research and development.
2. CANCELLATION. DOE O 413.2C, *Laboratory Directed Research and Development*, dated 10-22-15. Cancellation of an Order does not, by itself, modify or otherwise affect any contractual obligation to comply with the Order. Canceled Orders that are incorporated by reference in a contract remain in effect until the contract is modified to delete the references to the requirements in the canceled Orders.
3. APPLICABILITY.
  - a. DOE Elements. The provisions of this Order apply to all DOE elements that have responsibility for laboratories with approved LDRD programs.

The Administrator of the National Nuclear Security Administration (NNSA) must assure that NNSA employees comply with their responsibilities under this directive. Nothing in this directive will be construed to interfere with the NNSA Administrator's authority under section 3212(d) of Public Law (P.L.) 106-65 to establish Administration-specific policies, unless disapproved by the Secretary.
  - b. DOE Contractors. The Contractor Requirements Document (CRD), Attachment 1, sets forth requirements that are to be applied to contractors operating laboratories that conduct LDRD programs approved by the appropriate Cognizant Secretarial Officer (CSO)/Deputy Administrator, NNSA.

c. Exclusions. None.

4. REQUIREMENTS.

- a. LDRD projects must be in the forefront areas of science and technology relevant to DOE/NNSA missions. Normally LDRD projects will be relatively small and will also include one or more of the following characteristics—
- (1) advanced study of hypotheses, concepts, or innovative approaches to scientific or technical problems;
  - (2) experiments and analyses directed towards “proof of principle” or early determination of the utility of new scientific ideas, technical concepts, or devices; and
  - (3) conception and preliminary technical analyses of experimental facilities or devices.
- b. Normally LDRD projects must be limited to a maximum period of performance of 36 months. Exceptions may be granted by the CSO/Deputy Administrator, NNSA, or his/her authorized designee.
- c. DOE/NNSA must concur on each LDRD project before the project is started and annually for continuations each fiscal year.
- d. The funding level established for LDRD must be within the congressionally mandated limits<sup>1</sup> of a laboratory’s total operating and capital equipment budget for the year. For the purposes of this policy, the operating and capital equipment budget includes non-DOE funded work, but excludes line-item construction activities and LDRD.
- e. No individual program, project, or activity at the laboratory may be charged more than the statutory maximum limit authorized for LDRD. To ensure compliance with the congressionally mandated limit, DOE laboratories shall allocate LDRD costs by applying a uniform rate to the same base that is used to calculate the LDRD budget for the year (see 4.d. above).
- f. LDRD expenditures are considered allowable costs in accordance with the terms and conditions of the laboratory operating contract and must be identified in the laboratory accounting system.

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<sup>1</sup> See references 6.k. and 6.m.

- g. General and Administrative (G&A) costs must not be allocated to LDRD costs; however, other indirect charges should be allocated to LDRD in accordance with the contractor's approved cost accounting practices.
- h. LDRD costs are separate and distinct from site general and administrative (G&A) costs. As such, there is no requirement to allocate LDRD costs in the same manner as G&A.
- i. The LDRD cost accounting practices, including the method of accruing LDRD funding and practices regarding the assessment of indirect charges to LDRD, must be described in the Cost Accounting Standards disclosure statement and approved by DOE/NNSA.
- j. Costs must be incurred for LDRD projects in the same fiscal year in which the LDRD funds are collected.
- k. LDRD funds must not be used to—
  - (1) substitute for or increase funding for any tasks for which a specific limitation has been established by Congress or the Department or for any specific tasks that are funded by DOE/NNSA or other users of the laboratory;
  - (2) fund projects that will require the addition of non-LDRD funds to accomplish the technical goals of the LDRD project, except as provided by legislation;
  - (3) fund construction design beyond the preliminary phase (e.g., conceptual design, Title I design work, or any similar or more advanced design effort) or fund line-item construction projects, in whole or in part; or
  - (4) fund general purpose capital expenditures except for the acquisition of general purpose equipment that is clearly required for the project and is not otherwise readily available from laboratory inventory.
- l. The LDRD program must—
  - (1) include all discretionary research and development activities other than those provided for in a DOE/NNSA program or by specific designation in a DOE/NNSA contract and
  - (2) be consistent with all other applicable requirements for similar research and development activities at the laboratory.

5. RESPONSIBILITIES.

- a. Director, Office of Science. In cooperation with cognizant Departmental elements—
  - (1) performs periodic reviews of this Order and its implementation and recommends revisions, as required;
  - (2) establishes guidelines as required to implement the requirements of this Order; and
  - (3) develops a set of LDRD program performance measures that are consistent among DOE/NNSA laboratories in coordination with CSOs or their representatives.
- b. Cognizant Secretarial Officers/Deputy Administrator, NNSA.
  - (1) Exercise general oversight of all activities related to LDRD at the laboratories for which they have cognizance.
  - (2) Annually approve each laboratory's LDRD plan and allowable funding level and grant exceptions as required under paragraph 4.b.
  - (3) Annually review each laboratory's LDRD program with the assistance of the responsible DOE/NNSA site/field office manager.
  - (4) Prepare reports to Congress as required.
- c. Site/Field Office Managers.
  - (1) Assist the CSO/Deputy Administrator, NNSA, in providing oversight and review of the laboratory's LDRD program.
  - (2) Provide a recommendation to the CSO/Deputy Administrator, NNSA, on the laboratory's proposed annual LDRD plan and funding level.
  - (3) Formally authorize the annual LDRD program for the laboratory based on CSO/Deputy Administrator, NNSA, written approval.
  - (4) Concur on each laboratory LDRD project before the project is started and annually for continuations each fiscal year.
  - (5) Annually review and certify in writing whether the laboratory's method for accumulating LDRD funds is consistent with paragraphs 4d and 4e of this Order.
  - (6) Notify the responsible contracting officer that the CRD must be incorporated into the contract to manage and operate the laboratory.

- d. Contracting Officers. Once notified by site/field office managers, incorporate the CRD into affected contracts as directed.

6. REFERENCES.

- a. The Atomic Energy Act of 1954, as amended, sections 3, 31, and 33, 42 U.S.C. 2013, 2051, and 2053, which provides broad authority for research and development activities and their funding.
- b. The Energy Reorganization Act of 1974, as amended, Public Law (P.L.) 93-438, sections 2, 103, and 107, 42 U.S.C. 5801(b), 5813, and 5817(a), which creates the Energy Research and Development Administration (ERDA) to bring together and direct Federal activities relating to research and development on the various sources of energy and to carry out general basic research activities.
- c. The Department of Energy Organization Act, as amended, P.L. 95-91, sections 101 and 102, 42 U.S.C. 7111(4) and 7112(5), which places the research and development activities formerly performed by the Atomic Energy Commission and ERDA under the Secretary of Energy, and directs the Department to carry out the planning, support, and management of a comprehensive energy research and development program.
- d. An Act for Authorizations and Appropriations for the Energy Research and Development Administration for FY 1977, P.L. 95-39, which provides specific authority so that the director of a Government-owned, contractor-operated laboratory may use a reasonable amount of the laboratory's operating budget to fund employee-suggested projects up to the pilot stage of development, with the approval of the Secretary.
- e. The National Defense Authorization Act for Fiscal Year 1991, P.L. 101-510, Section 3132, 50 U.S.C. 2791, which authorizes Government-owned, contractor-operated laboratories that are funded out of funds available to DOE for national security programs (i.e., atomic energy defense activities) to carry out LDRD, not to exceed 6 percent of such funds, for the purpose of maintaining the vitality of the laboratory in defense-related scientific disciplines.
- f. The National Defense Authorization Act for Fiscal Year 1993, P.L. 102-484, section 3135, which directs that funds authorized to be appropriated to the Department of Energy for Atomic Energy Defense Activities and made available for LDRD, shall be made available for cooperative research and development agreements or other arrangements for technology transfer.
- g. The National Nuclear Security Administration Act, Title XXXII of P.L. 106-65, as amended, which established a separately organized agency within DOE.

- h. FY 2001 Energy and Water Development Appropriations Conference Report (H. Rpt. 106-998) directs the DOE Chief Financial Officer to develop and execute a financial accounting report of LDRD expenditures by laboratory and weapons production plant.
  - i. Homeland Security Act of 2002, P.L. 107-296, 6 U.S.C. 189(6)f, which directs that funds authorized to be used for LDRD must benefit the homeland security mission.
  - j. FY 2006 Energy and Water Development Appropriations Act, P.L. 109-103, Section 311, which raises the maximum LDRD funding level to 8 percent and makes all the DOE laboratories eligible for LDRD funding.
  - k. The Consolidated Appropriations Act, 2014, P.L. 113-076, which lowers the maximum LDRD funding level to 6% of the total operating and capital equipment budget.
  - l. The Consolidated and Further Continuing Appropriations Act, 2015, P.L. 113-235, which applies the 6% cap to the program, project, and activity level.
  - m. National Defense Authorization Act for Fiscal Year 2016, P.L. 114-92, Division C, Section 3115, which requires LDRD at national security laboratories to be between 5-7% of the funds provided by DOE for national security purposes.
  - n. National Defense Authorization Act for Fiscal Year 2017, P.L. 114-328, Division C, Section 3119, which establishes a three-year pilot where national security laboratories cannot allocate G&A on LDRD.
  - o. Senate Report 114-236, as adopted by the explanatory statement for the Consolidated Appropriations Act of 2017, which directs DOE to ensure that laboratory operating contractors do not allocate G&A onto LDRD.
  - p. OMB Circular A-11, Section 84.2(c), which defines research and experimental activities as creative and systematic work undertaken in order to increase the stock of knowledge and to devise new applications using available knowledge.
7. CONTACT. Questions covering this Order should be addressed to the Office of Laboratory Policy, Office of Science, 202-586-5447.

BY ORDER OF THE SECRETARY OF ENERGY:



DAN BROUILLETTE  
Deputy Secretary

**CONTRACTOR REQUIREMENTS DOCUMENT**  
**DOE O 413.2C, LABORATORY DIRECTED RESEARCH AND DEVELOPMENT**

Regardless of the performer of the work, the contractor is responsible for compliance with the requirements of this Contractor Requirements Document (CRD). The contractor is responsible for flowing down the requirements of this CRD to subcontractors at any tier to the extent necessary to ensure the contractor's compliance with the requirements and the safe performance of work.

As directed by the contracting officer, the contractor must do the following.

1. Establish and maintain a management system to ensure that the laboratory directed research and development (LDRD) program meets the following requirements.
  - a. LDRD projects must be in the forefront areas of science and technology relevant to Department of Energy (DOE)/National Nuclear Security Administration (NNSA) missions. Normally LDRD projects will be relatively small and will also include one or more of the following characteristics—
    - (1) advanced study of hypotheses, concepts, or innovative approaches to scientific or technical problems;
    - (2) experiments and analyses directed towards “proof of principle” or early determination of the utility of new scientific ideas, technical concepts, or devices; and
    - (3) conception and preliminary technical analyses of experimental facilities or devices.
  - b. Normally LDRD projects must be limited to a maximum period of performance of 36 months. Exceptions may be granted by the Cognizant Secretarial Officer (CSO)/Deputy Administrator, NNSA, or his/her authorized designee.
  - c. DOE/NNSA must concur on each LDRD project before the project is started, and annually for continuations each fiscal year.
  - d. The funding level established for LDRD must be within the congressionally mandated limits<sup>1</sup> of a laboratory's total operating and capital equipment budgets for the year. For the purposes of this policy, the operating and capital equipment budget includes non-DOE funded work, but excludes line-item construction activities and LDRD.

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<sup>1</sup> The Consolidated Appropriations Act, 2014, P.L. 113-076 sets the maximum LDRD funding level to 6% of the total operating and capital equipment budget of a laboratory and the National Defense Authorization Act, 2016, P.L. 114-92, Division C, Section 3115 required national security laboratories to use 5-7% of funds provided for national security purposes to be collected for LDRD.

- e. Establish a cost accounting system that ensures that no individual program, project, or activity is charged more than the statutory maximum limit authorized for LDRD.
  - (1) DOE laboratories shall allocate LDRD costs by applying a uniform rate to the same base that is used to calculate the LDRD budget for the year (See 1.d. above).
  - (2) This methodology shall be described in the Cost Accounting Standards disclosure statement and approved by DOE/NNSA.
- f. LDRD expenditures are considered allowable costs in accordance with the terms and conditions of the laboratory operating contract and must be identified in the laboratory accounting system. General and Administrative (G&A) costs must not be allocated to LDRD costs<sup>2</sup>, however other indirect charges should be allocated to LDRD in accordance with the contractor's approved cost accounting practices.
- g. Costs must be incurred for LDRD projects in the same fiscal year in which the LDRD funds are collected.
- h. LDRD funds must not be used to—
  - (1) substitute for or increase funding for any tasks for which a specific limitation has been established by Congress or the Department or for any specific tasks that are funded by DOE/NNSA or other users of the laboratory;
  - (2) fund projects that will require the addition of non-LDRD funds to accomplish the technical goals of the LDRD project, except as provided by legislation;
  - (3) fund construction design beyond the preliminary phase (e.g., conceptual design, Title I design work, or any similar or more advanced design effort) or fund line-item construction projects, in whole or in part; or
  - (4) fund general purpose capital expenditures with the exception of acquisition of general purpose equipment that is clearly required for the project and is not otherwise readily available from the laboratory inventory.

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<sup>2</sup> Senate Report 114-236, as adopted by the explanatory statement for the Consolidated Appropriations Act, of 2017, which directs DOE to ensure that laboratory operating contractors do not allocate G&A onto LDRD.

- i. The LDRD program must—
  - (1) include all discretionary research and development activities other than those provided for in a DOE/NNSA program or by specific designation in a DOE/NNSA contract and
  - (2) be consistent with all other applicable requirements for similar research and development activities at the laboratory.
2. Establish criteria that emphasize innovative scientific and technological excellence for selection of projects using internal peer and/or technical management review. A significant number of the projects selected should be those independently proposed by individual researchers or small multidisciplinary teams.
3. Submit an annual LDRD program plan for approval to the CSO/Deputy Administrator, NNSA, and the responsible DOE/NNSA site/field office manager at least 45 days before the start of the fiscal year. The plan must provide a requested funding level, general description, and justification of the LDRD program; the plan must also explain how this program will meet laboratory needs, support the laboratory's mission, and benefit DOE/NNSA and the nation.
4. Provide a report on completed projects to the Office of Scientific and Technical Information.
5. Maintain short and long-term performance indicators for the LDRD program at the laboratory, including the shared set of program performance measures developed by the CSOs and coordinated by the Director, Office of Science.
6. Collect and provide other data on the LDRD program as negotiated with the CSO/Deputy Administrator, NNSA, including data necessary to complete the annual LDRD Report to Congress.
7. Lead or participate in LDRD program reviews of the business and technical aspects of the program.
8. Submit to the CSO/Deputy Administrator, NNSA, or his/her designee requests for exceptions to the LDRD maximum 36-month performance period.
9. Evaluate the quality of science and technology of the LDRD projects.
10. Annually submit a project data sheet to the responsible DOE/NNSA site/field office manager for each LDRD project.