

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 future DOE/NNSA missions;
  - foster creativity and stimulate exploration of forefront 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 413.2A, *Laboratory Directed Research and Development*, dated 01-08-01. 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. (Attachment 1 is a list of all DOE elements as of the approval date of this Order. This Order automatically applies to DOE elements created after it is issued.)

The National Nuclear Security Administration (NNSA) Administrator will assure that NNSA employees and contractors comply with their respective responsibilities under this Order.
  
  - b. DOE Contractors. The Contractor Requirements Document (CRD), Attachment 2, 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 will 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. The maximum funding level established for LDRD must not exceed 8 percent of a laboratory’s total operating and capital equipment budgets, including non-DOE funded work, for the year. The system for accrual of these funds, to a reasonable extent, must provide for equitable pro rata contributions by all sources of operating and capital equipment funding.
- d. LDRD expenditures are considered an allowable cost in accordance with the terms and conditions of the laboratory operating contract and must be identified in the laboratory accounting system.
- e. LDRD funds will 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 laboratory inventory.

- f. The LDRD program will—
  - (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 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.
- b. Cognizant Secretarial Officers/Deputy Administrators, 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 4b.
  - (3) Annually review each laboratory's LDRD program with the assistance of the responsible DOE/NNSA site office manager.
  - (4) Prepare reports to Congress as required.
- c. Site 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) Annually review and concur on each laboratory LDRD project before the project is started or continued.

- (5) Annually review and certify in writing to the CSO/Deputy Administrator, NNSA, whether the laboratory's method for accumulating LDRD funds is consistent with paragraphs 4c and 4d 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 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. 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.
  - i. FY 2006 Energy and Water Development Appropriations Act, P.L 109-103, Section 311, raises the maximum LDRD funding level to 8 percent and makes all the DOE laboratories eligible for LDRD funding.
7. CONTACT. Questions covering this Order should be addressed to the Office of Laboratory Policy and Infrastructure, Office of Science, 202-586-5447.

BY ORDER OF THE SECRETARY OF ENERGY:



CLAY SELL  
Deputy Secretary

**DEPARTMENTAL ELEMENTS TO WHICH DOE O 413.2B IS APPLICABLE**

Office of the Secretary  
Departmental Representative to the Defense Nuclear Facilities Safety Board  
Energy Information Administration  
National Nuclear Security Administration  
Office of Civilian Radioactive Waste Management  
Office of Congressional and Intergovernmental Affairs  
Office of Counterintelligence  
Office of Economic Impact and Diversity  
Office of Electricity Delivery and Energy Reliability  
Office of Energy Efficiency and Renewable Energy  
Office of Environment, Safety and Health  
Office of Environmental Management  
Office of Fossil Energy  
Office of General Counsel  
Office of Hearings and Appeals  
Office of Human Capital Management  
Office of Intelligence  
Office of Legacy Management  
Office of Management  
Office of Nuclear Energy, Science and Technology  
Office of Policy and International Affairs  
Office of Public Affairs  
Office of Science  
Office of Security and Safety Performance Assurance  
Office of the Chief Financial Officer  
Office of the Chief Information Officer  
Office of the Inspector General  
Secretary of Energy Advisory Board  
Bonneville Power Administration  
Southeastern Power Administration  
Southwestern Power Administration  
Western Area Power Administration

**CONTRACTOR REQUIREMENTS DOCUMENT**  
**DOE O 413.2B, *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 will 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. The maximum funding level established for LDRD must not exceed 8 percent of a laboratory's total operating and capital equipment budgets, including non-DOE funded work, for the year. The system for accrual of these funds, to a reasonable extent, must provide for equitable pro rata contributions by all sources of operating and capital equipment funding.
  - d. LDRD expenditures are considered an allowable cost in accordance with the terms and conditions of the laboratory operating contract and must be identified in the laboratory accounting system.
  - e. LDRD funds will 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.

f. The LDRD program will—

- (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 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 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. Submit an annual written report on the laboratory's LDRD activities to the CSO/Deputy Administrator, NNSA, and the responsible DOE/NNSA site office manager within 6 months after the end of the fiscal year. The annual report must include an overview of the program as well as a short summary of each funded project. Additionally, each laboratory must provide a report on completed projects to the Office of Scientific and Technical Information.
5. Report annually on the standard LDRD program performance measures, and collect and provide other data on the LDRD program as negotiated with the CSO/Deputy Administrator, NNSA.



6. Lead or participate in LDRD program reviews of the business and technical aspects of the program.
7. Submit to the CSO/NNSA Deputy Administrator or his/her designee requests for exceptions to the LDRD maximum 36-month performance period.
8. Evaluate the quality of science and technology of the LDRD program.
9. Annually submit a project data sheet to the responsible DOE/NNSA site office manager for each LDRD project.