June 29, 2017

Jack R. Craig, Manager
Department of Energy
Savannah River Site
Building 730-B, Rm. 310
Aiken, South Carolina 29802

Dear Mr. Craig:

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT (LDRD) FY2018 PROGRAM PLAN

2. DOE Order 413.2C – Laboratory Directed Research and Development (LDRD), Approved 4/19/06, Revised 10/22/2015.  

The purpose of this letter is to communicate the fiscal year 2018 (FY18) Savannah River National Laboratory (SRNL) LDRD Program Plan.

This Program Plan describes the management and organization of the LDRD program at the SRNL. The document requests the program annual funding level for FY18 to be 5.0% in order to maintain a competitive research and development portfolio that includes the development of SRNL capabilities through investment in targeted focus areas supporting SRNL’s Strategic and Institutional Plan as well as the business-unit program plans. The LDRD program provides the principle discretionary funding available to strengthen the lab’s core competencies, attract strategic hires, and position the lab for programmatic growth. Additionally, the Program Plan documents the process of project reporting, program self-assessing, and the scheduling of key program activities. The plan was developed in accordance with the requirements of each of the four references identified above.

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If you have any questions or comments on the plan, please contact me at (803) 725-3994 or the LDRD Program manager, Dr. Kathryn Taylor-Pashow, at (803) 725-8215.

Sincerely,

Dr. Terry A. Michalske
Laboratory Director

ktp:nwp
Att

c:  T. J. Spears, DOE-SR, 730-B
    A. S. Morton, 730-B
    C. N. Smith, 730-B
    P. A. Polk, 703-H
    J. J. Hynes, 703-H
    N. J. Peralta, 703-46A
    P. R. Jackson, 703-46A
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Savannah River National Laboratory
Laboratory Directed Research and Development Program

Sponsored by the
Office of Environmental Management (EM)

Program Plan

Fiscal Year (FY) 2018
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Purpose

This Program Plan describes the management and organization of the Laboratory Directed Research and Development (LDRD) Program at the Savannah River National Laboratory (SRNL). This Plan (1) provides the annual funding level request for fiscal year (FY) 2018, and (2) describes the management of the LDRD program, project reporting processes, program self-assessment, and a schedule of key LDRD program activities. It complies with and was prepared in accordance with the requirements of DOE Order 413.2C, The Roles, Responsibilities, and Guidelines for Laboratory Directed Research and Development at the Department of Energy/National Nuclear Security Administration Laboratories; the SRNL Guidance for Collecting and Allocating LDRD Costs (D.L. Becker to S.A. Blanding, April 13, 2006, CFO-2006-00022); and the Consolidated Appropriations Act, 2014, Division D, Title III, Sec. 309, Approved 1/13/2014.

The SRNL’s LDRD Program aims to support cutting edge science and engineering in areas that will provide long-term benefits to the Department of Energy and the nation. SRNL’s LDRD project objectives are as follows:

1. Maintain the scientific and technical viability of SRNL;
2. Enhance SRNL’s ability to address future DOE missions;
3. Maintain our competency in those core areas where our missions mandate that we must be the best, and evolve these competencies as our missions change—these core competency areas are consistent with the science, technology, and engineering foundations as defined in the Laboratory’s Strategic and Institutional Plan;
4. Foster creativity and stimulate exploration at the forefront of science and technology;
5. Serve as a proving ground for new concepts in research and development; Support high-risk, potentially high-value research and development;
6. Attract and retain the best and the brightest workforce by conducting world-class science, technology, and engineering; and
7. Develop capabilities in focus areas, guided by the Strategic and Institutional Plan as well as SRNL’s business-unit program plans, where we have chosen to build or expand our expertise to meet our strategic vision.

This Program Plan applies to all activities carried out under SRNL’s LDRD program, including the continuation of projects initiated prior to FY 2018, performance of Standard projects selected in FY 2017 to be carried out in FY 2018, performance of
Exploratory projects selected in FY 2017 to be carried out in FY 2018, and the optional selection and performance of Seedling projects for FY 2018.¹

Requested Program Budget and Focus

The program funding level is set by the Cognizant Secretarial Officer (CSO) each year and includes any specific guidance from the Chief Financial Officer (CFO), ensuring that there is no duplicate assessment of LDRD taxes. For FY 2018 the proposed level is 5.0%.

The requested funds are subject to Savannah River Nuclear Solutions, LLC (SRNS) overhead and general and administrative (G&A) charges. The proposed collected LDRD program percentage is below the upper limit for LDRD programs of 6% permitted by the Consolidated Appropriations Act, 2014, P.L. 113-076 and Consolidated and Further Continuing Appropriations Act, 2015, P.L. 113-235.

The SRNL LDRD Program provides the principle discretionary funding available to strengthen the lab’s core competencies, attract strategic hires, and position the lab for programmatic growth. As such, the LDRD program supports several key areas such as student research involvement through the SRNL University Scholars Program, post-doctoral involvement, and research and development projects that are at the forefront of science and technology relevant to DOE missions or other national objectives.

The SRNL Strategic and Institutional Plan provides SRNL’s roadmap to develop strategic focus areas related to Basic Sciences, Applied Research and Development, and Research and Development Discoveries. Guided by these initiatives, the SRNL LDRD Program provides the following thrust areas:

- Environmental Stewardship
- Nuclear Materials Management
- National Security
- Secure Energy Manufacturing, and
- Applied Science and Technology Competency Enhancement.

Program Management Structure

Office of the Laboratory Director

The LDRD program is managed at SRNL from the Laboratory Director’s Office by an appointed LDRD Program Manager (See Figure 1). The SRNL Laboratory Director, with the support of senior staff, is responsible for defining the strategic focus areas for the

¹See pages 6-7 for an explanation of the LDRD project types.
year, and for making the final selection of LDRD projects to be recommended to the DOE Savannah River Operations Office (DOE-SR) for funding.

**DOE-Savannah River**

DOE-SR, through the Assistant Manager for Nuclear Material Stabilization Project (AMNMSP), is responsible for LDRD Program Oversight and concurrence for projects selected for funding by the SRNL Laboratory Director. The selected projects are recommended through the AMNMSP. DOE-SR is also responsible for review of this Program Plan, including obtaining the approval of DOE Environmental Management (DOE-EM), SRNL's Cognizant Secretarial Office (See Figure 1).

**LDRD Program Manager**

The LDRD Program Manager facilitates the proposal process, monitors project progress, and ensures that the entire program is conducted in accordance with DOE Order 413.2C, the Rules, Responsibilities, and Guidelines for Laboratory Directed Research and Development at the Department of Energy/National Nuclear Security Administration Laboratories, and the SRNL Guidance for Collecting and Allocating LDRD Costs (D.L. Becker to S.A. Blanding, April 13, 2006, CFO-2006-00022), and its associated Contractor Requirements Document. These responsibilities also include preparing this plan, providing a program self-assessment, ensuring project reviews are held during the year, providing annual Program collections and costs performance to achieve Site Office certification on LDRD FY financial performance, and preparing an annual report for the program.

**SRNL Project Controls**

SRNL Project Controls provides administrative and program support to the LDRD Program Manager. Monthly financial updates are maintained, which provide details on individual project spending and overall program collections. Project Controls also assigns unique cost codes associated with new start projects and financially closes projects upon completion or cancellation.

**SRNL Research Managers**

SRNL research managers are responsible for reviewing proposals from their respective organizations to ensure that the proposals are of a high quality and reflect the strategic goals of the organization. In addition, each research manager is responsible for monitoring the performance of Principal Investigators (PIs) in their organization carrying out LDRD projects. Research managers are also encouraged to assist PIs in seeking follow-on funding and submitting patents and peer-reviewed publications related to the LDRD-supported research.
**Principal Investigators (PIs)**

PIs are responsible for working toward their project’s objectives in a safe, timely, and cost-effective manner. PIs are required to participate in the mid-year review, provide scheduled updates, and a year-end project report. PIs are encouraged to seek follow-on funding and submit patents and peer-reviewed publications related to their LDRD-supported research.

![Diagram of SRNL LDRD Management Structure](image)

*Figure 1. SRNL LDRD Management Structure*

**Project Structure**

**LDRD Project Types**

SRNL’s LDRD Program sponsors cutting-edge research across SRNL. The LDRD program primarily sponsors projects that are deemed to be strongly aligned to SRNL’s Strategic and Institutional Plan and business-unit program plans. It also provides substantial potential to fulfill DOE and national needs. Determination of project type and funding level is accomplished through coordination with the appropriate SRNL Associate
Laboratory Director and/or SRNL Senior Staff representative. A summary of the different types of projects is given below:

- The majority of the portfolio is comprised of standard projects which are initially proposed as either single or two-year efforts. All projects have the potential to continue for up to three years, and are reviewed for continuation annually. Extension to a fourth year is possible, but requires unusual circumstances, strong justification, and DOE approval in accordance with DOE Order 413.2C, Requirement 4.b. The FY 2018 portfolio will also contain some legacy “strategic initiative” project types. This project type was removed in FY 2018 to simplify the terminology related to LDRD project types. The standard projects address technical areas aligned with SRNL’s Strategic and Institutional Plan as well as the SRNL program plans.

- Exploratory projects are single year projects focused on out of the box ideas that may not necessarily align with current SRNL business areas. Funding for these types of projects will be limited to no more than 5% of the overall budget. These high risk/high reward projects could lead to new business areas for SRNL.

- Seedling projects are typically highly focused efforts lasting less than a year and are intended to provide data needed to demonstrate proof of concept and to attract additional funding for emerging strategic opportunities. Seedling calls are released at the discretion of the SRNL Laboratory Director, and the LDRD Program Manager will submit project data sheets for concurrence to DOE-SR prior to initiating such Seedling projects.

**LDRD Project Funding**

Funds granted to each individual project supported through the LDRD program will be a relatively small percentage of the total forecasted collection amount. This approach ensures that the program supports a range of projects and mitigates research risk.

Total funding for the LDRD program is dependent on the forecasted collection amount, which is determined by a percentage allocation from the SRNL direct operating and capital equipment project base. As described in the Savannah River National Laboratory Guidance for Collecting and Allocating LDRD Costs (D.L. Becker to S.A. Blanding, April 13, 2006, CFO-2006-0022), SRNL’s total operating and capital equipment budget is based on forecasted work. Accordingly, the LDRD budget is based on a forecasted collection amount. Due to the nature of the collection funds being forecasted, actual collections are monitored throughout the year by the LDRD Program Manager. As the year progresses, if actual collections result in reduced funds compared to the forecasted amount, funds may be retracted from individual projects, if necessary, to ensure compliance with application appropriations law and DOE guidance. If the actual funds are in excess of the forecasted funds, individual projects may be allotted additional

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funds pertaining to the original project scope, if requested in writing, or Seedling projects may be initiated. If the forecasted funds are in excess of the actual funds, the collection base will be recosted. All requests and changes in project funding are documented electronically via the Project Resource and Information Management Engine (PRIME) database.

**Appropriate Use of LDRD Funds**

Appropriate use of LDRD funds includes most approved activities encountered in an R&D project, such as experimental and theoretical work, computer modeling and analyses, literature searches, consultant services, subcontracts, and domestic or foreign travel to complete the approved scope and objectives of the LDRD project (e.g., travel to a user facility). All travel must be associated with the approved scope and objectives of the project, defined and estimated. Foreign travel justifications must be approved by the LDRD Program Manager, appropriate Associate Laboratory Director, and the Department of Energy.

Material purchases are restricted to the specific requirements and needs of the LDRD project. Costs related to developing and maintaining capabilities of a general nature (e.g., office equipment, laptop and desktop computers, etc.) will not be charged to the LDRD account. LDRD projects may use the existing infrastructure, equipment, and capabilities of the Laboratory.

LDRD funds have the following restrictions:

- LDRD funds cannot be used to supplement programmatic and Strategic Partnership Program activities and vice versa;
- New funding cannot be solicited to supplement or augment an ongoing LDRD project;
- The project objectives in the proposal approved by SRNL Laboratory management must be addressed only with the awarded LDRD funds;
- New funding, which may arrive during the course of an LDRD project, may be used to start a new, related activity, but cannot be used to help complete the LDRD project;
- LDRD funds cannot be used to fund construction line-item projects or for construction design work beyond the preliminary phase;
- LDRD funds cannot be used for facility maintenance;
- LDRD funds cannot be used to fund general purpose capital expenditures, with the exception of general purpose equipment that is clearly required for the project and not otherwise readily available from the laboratory inventory;
- LDRD funds cannot be used to substitute or increase funding for any tasks for which a specific limitation has been established by Congress or DOE or for any specific

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tasks that are funded by DOE/National Nuclear Security Administration or other users of SRNL; and

- LDRD funds cannot be used for general program development purposes, such as travel to potential sponsors to market ideas or capabilities, unless directly related to the scope of the project. See “Appropriate Use of LDRD Funds” on previous page for additional details regarding travel.

The LDRD Program Manager eliminates any project proposals that potentially violate these restrictions prior to their inclusion in the proposal review process.

**Project Changes and Continuation**

The LDRD Program Manager, with concurrence from the SRNL Laboratory Director, will review and approve proposed changes in allocating LDRD project funding, shifting funds between projects, and/or canceling projects, as necessary. Modifications to project scope will be documented in applicable project data sheets and reported to DOE-SR.

**LDRD Project Management**

**LDRD Project Selection Process**

A schematic of the LDRD selection process is shown in Figure 2. In accordance with the LDRD Program schedule, the LDRD Program Manager issues a call for proposals to SRNL researchers. The call for proposals includes the focus areas in which proposals will be accepted, the appropriate proposal form, the selection criteria that will be used for proposal evaluation, and the due date for proposals. Focus areas are derived from the SRNL Strategic and Institutional Plan and business-unit program plans by the SRNL Laboratory Director with support from the Associate Laboratory Directors.

The majority of proposals submitted for funding are initiated directly by the researchers. All proposals are submitted by the researchers through PRIME. The proposal is then routed to SRNL line management for their consent. By approving a proposal, SRNL line management is also providing an organizational commitment to monitor the PI's progress if the project is funded.

Discretionary initiatives, or efforts initiated by a need identified by the SRNL Laboratory Director, SRNL Laboratory Management or SRNL Senior Staff, may also be submitted for funding. All efforts using allocated LDRD funds are submitted by SRNL management through PRIME. The proposal for each effort is routed to the appropriate level of management for their consent. By approving the proposal, management is also providing an organizational commitment to monitor the effort's progress if the effort is funded.
The LDRD Program Manager screens all proposals to ensure that they will constitute an appropriate use of LDRD funds (as described in “Appropriate Use of LDRD Funds,” above). SRNL legal counsel will evaluate proposals for intellectual property concerns, when appropriate. The process typically begins with a pre-proposal process, generally in the form of a pitch presentation to the Programmatic Panel. This allows for an initial down selection of proposals to be developed into full proposals. The full proposals are then made available electronically to both the Scientific Panel and the Programmatic Panel for review through PRIME. The panel members individually review and score the proposals based on scoring criteria related to 1) alignment, 2) technical concept, 3) work plan, and 4) prospects for follow-on funding. The LDRD Program Manager electronically compiles the scores, ranks the proposals based on their composite scores, and develops a consensus recommendation of projects to be funded through consultation with the Associate Laboratory Directors. Consideration of projects requesting continuation into the following year also occurs in parallel, and the final project selections include both continuing and new start projects. The consensus recommendation is provided to the SRNL Laboratory Director. Using the consensus recommendation as input, the SRNL Laboratory Director selects the projects that will be recommended to DOE-SR for funding. Following the SRNL Laboratory Director selection, the final recommended project list is transmitted to the DOE-SR for concurrence. DOE-SR notifies SRNL after reviewing the project listing; this notification addresses any concerns with the project list and notifies SRNL of DOE-SR’s concurrence. Once concurrence has been received, selected PIs and their research managers are notified. For late start projects (i.e., after October 1), DOE-SR will provide concurrence on an individual basis in accordance with the Rules, Responsibilities, and Guidelines for Laboratory Directed Research and Development at the Department of Energy/National Nuclear Security Administration Laboratories. SRNL’s Project Controls sets up an account and unique speed chart for each approved project.

Review Panels

Scientific Panel
The scientific panel is composed of senior scientists who are selected by the SRNL Laboratory Director’s Senior Staff. This panel evaluates the technical aspects of proposals and focuses their review on determining whether the proposals selected for funding have high technical merit and whether the research plans are technically viable.

Programmatic Panel
The Programmatic Panel consists of the SRNL Laboratory Director’s Senior Staff and selected managers that understand the needs of SRNL’s core business units. This panel evaluates the programmatic and strategic aspects of proposals. During the proposal review process, they have access to the proposal narratives, biographical sketches of the
proposers, and a budget estimate electronically approved by SRNL’s Project Controls. The focus of this review is to determine whether proposals selected for funding are likely to be of high value to DOE and the nation and whether the research plans have sufficient resources to be able to accomplish their objectives.

![Diagram of LDRD Project Selection Process](image)

*Figure 2. LDRD Project Selection Process*

**Project Monitoring**

Projects are monitored by the LDRD Program Manager to ensure that the funded projects are maintaining technical focus and that costs are consistent with project progress. Once financial accounts are set up by SRNL’s Project Controls, the PIs begin executing their research projects as described in their proposals. PIs provide periodic updates to the LDRD Program Manager. The LDRD Program Manager electronically maintains data on individual LDRD projects, such as project identification, funding level, PIs, and status reports, via PRIME. Incurred costs (e.g., labor, material, and equipment) are reported by the SRNL Project Manager. The LDRD Program Manager monitors the project costs and total program collections, reducing project budgets if necessary, to remain within the fully burdened maximum percentage funding level established on a yearly basis within the program plan, as described by the SRNL Accounting Guidance for Cost Collecting and Allocating for the LDRD Costs (D.L. Becker to S.A. Blanding, April 13, 2006, CFO-2006-00022).

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June 13, 2017

Savannah River National Laboratory

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SRNL-RP-2017-00360
Project Reporting

Listed below are internal project reporting requirements:

- Monthly financial reports by SRNL Project Controls;
- Quarterly progress reports by the PIs as requested by the LDRD Program Manager;
- Mid-year progress reports by the PIs;
- Year-end project review reports by the PIs (applies to multi-year projects only); and
- Project final reports by the PIs.

Listed below are external project reporting options:

- Proposed journal articles;
- Technical talks/presentations; and
- Intellectual property (e.g., invention disclosures, patents) as a result of the work performed in the LDRD projects.

External reporting is encouraged and expected, but not required. All external reports are to be documented via PRIME.

Program Reporting Requirements

Annual Report to Congress

Program metrics are annually reported to the DOE Office of Science (DOE-SC) for inclusion into an annual report to Congress. The metrics requested for this report include the number of peer reviewed publications, the number of invention disclosures submitted, and the number of patents granted associated with LDRD projects. In addition the number postdoctoral researchers supported by LDRD funds and the total number of postdoctoral researchers at the laboratory are requested.

Annual Financial Certification

Program collections and costs are annually certified by the DOE CFO.

Annual LDRD Program Report

Project final reports are compiled into a single LDRD program report. This final report is issued to DOE-SR, DOE-EM, and DOE-SC.

Annual LDRD Program Plan

The SRNL Laboratory Director submits the annual fiscal year LDRD program plan to DOE-SR for review and approval. To complete the approval process, DOE-SR forwards the plan to the Cognizant Secretarial Office, DOE-EM, for review. If any concerns are
expressed by DOE-SR or DOE-EM, resolution will be coordinated with the SRNL LDRD Program Manager prior to program initiation.

**Schedule for FY 2018 LDRD Program**

The following table provides the schedule of actions and due dates for implementing the LDRD Process; any call may be eliminated if there are insufficient funds.

<table>
<thead>
<tr>
<th>FY 2018 Program Requirements</th>
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<tbody>
<tr>
<td>FY17 Year End Review</td>
<td>October 2017</td>
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<tr>
<td>FY17 Program Financial Certification</td>
<td>November 2017</td>
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<tr>
<td>FY17 Program Metrics – Submitted for Report to Congress</td>
<td>November 2017</td>
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<tr>
<td>FY17 Annual Report – Detailed Internal Project Compilation</td>
<td>March 2018</td>
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<td>FY18 Program Self-Assessment</td>
<td>April 2018</td>
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<td>FY18 Mid-Year Review</td>
<td>April 2018</td>
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<tr>
<th>FY 2019 LDRD Program Plan</th>
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<tbody>
<tr>
<td>LDRD Program Manager sends FY 2019 Plan to Laboratory Director</td>
<td>May 2018</td>
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<tr>
<td>SRNL Laboratory Director Transmits FY2019 Program Plan to DOE-SR</td>
<td>June 2018</td>
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<tr>
<td>DOE-SR Transmits FY 2019 LDRD Plan to DOE-EM</td>
<td>June 2018</td>
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<tr>
<td>DOE-EM notifies DOE-SR of plan approval</td>
<td>July/August 2018</td>
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<tr>
<td>DOE-SR notifies SRNL of plan approval</td>
<td>August/September 2018</td>
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<tr>
<th>FY 2018 and 2019 Project Selection</th>
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<tr>
<td>Action</td>
<td>Scheduled Date</td>
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<tr>
<td>FY 2018 Seedling projects (per Laboratory Director’s Discretion)</td>
<td>October 2017 - September 2018</td>
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<tr>
<th>FY 2019 Project Selection Process</th>
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<tr>
<td>Call for proposals</td>
<td>March 2018</td>
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<tr>
<td>Pre-Proposals/Pitch Presentations due</td>
<td>April 2018</td>
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<td>Full Proposals Due</td>
<td>June 2018</td>
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<td>Reviews complete</td>
<td>July 2018</td>
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<td>Laboratory Director’s review completed</td>
<td>August 2018</td>
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<td>DOE-SR notified of proposed selections</td>
<td>August 2018</td>
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<td>DOE-SR informs SRNL of project approvals</td>
<td>August 2018</td>
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<tr>
<td>Approved projects begin work</td>
<td>October 1, 2018</td>
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Overall LDRD program activities include a mid-year review to be held by April. This mid-year review will evaluate the progress of all active projects for FY 2018. An annual review will be held in October 2018 for completed FY 2018 projects. The program plan for FY 2019 will be transmitted to DOE-HQ in June 2018, with anticipated DOE-HQ approval prior to the end of the fiscal year. The request for proposals and selection process for Standard and Exploratory projects will occur concurrently, with the call for these proposals starting in March 2018. Requests and approvals for Seedling Projects will be carried out throughout the fiscal year at the Laboratory Director’s discretion with final project approvals coming from DOE-SR. Reviewing standard and exploratory projects concurrently enables a distribution of awards between the project types and maximizes the benefit for SRNL.

Upon guidance from the SRNL Laboratory Director, the selection process for Seedling projects will be implemented, as required, throughout the year. This facilitates SRNL’s ability to address immediate or emerging strategic ideas.

The following Gantt chart summarizes the LDRD program’s activity at varying points throughout the year.

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<td>Mid-Year Review – FY 2018 projects &amp; Self-Assessment</td>
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<td>DOE-SR notifies SRNL of Plan Approval</td>
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<td>Call for proposals</td>
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<td>DOE informs SRNL of project approvals</td>
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FY 2018 Seedling Projects (*per Director’s discretion*)

June 13, 2017
Savannah River National Laboratory
FY18 Laboratory Directed Research and Development Program Plan

SRNL-RP-2017-00360