

# **Radiation Center Strategic Plan 2012**

**Mission, Vision, Goals and Strategies  
for Activities and Operations**

**July 2012**

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## Mission, Vision, Goals and Strategies for Activities and Operations

### I. Introduction

This Strategic Plan for the Oregon State University Radiation Center is designed to provide a focus for discussing, planning, executing, and evaluating our future activities and resource direction. It will remain an active and continuously updated and improvable document. The Radiation Center and its affiliated faculty and staff provide the necessary foundation on which all of the following activities are built. These very important people understand that there are many long-term beneficial applications of nuclear science and technology.

### II. Planning Horizons

Three planning horizons are envisioned in this plan covering the important time frames for the future activities of the Radiation Center. The first of these is the long-range mission and vision of the Radiation Center toward which all of the activities are directed. The second planning horizon develops the goals to be achieved over the next five years, and the third details the strategic activities of the Radiation Center for the two year time period from July 1, 2012 through June 30, 2014.

### III. Mission and Vision

The primary **mission** of the Oregon State University Radiation Center is to be ***a locally, nationally, and internationally recognized setting for programs involved in the analytical use of radiation and radioactive materials and the development of applications of nuclear science and technology.***

To us this provides a **vision** that the Radiation Center ***will have widely recognized facilities and people who enable the application of nuclear analytical and imaging techniques broadly across many scientific and engineering disciplines.***

This mission and vision has consistently expanded beyond the OSU campus and includes supporting other Oregon universities and state agencies, as well as institutions both nationally and internationally. We expect to be able to continue to build and maintain these facilities and to develop the people who will be needed to enable their safe operation and utilization.

## **IV. Goals (Five Year Horizon)**

We foresee a number of critical assumptions about the future that will have a significant impact on the directions that the Radiation Center can go and on the decisions and actions needed to enable the mission and vision to become a reality. These assumptions include:

1. OSU will continue to support an education and research environment that promotes safety and a strong safety culture. Furthermore, OSU will continue to recognize and respect the operational requirements of the several radioactive and radiological licenses that have jurisdiction, forming the highly regulated environment under which the facility operates. Safe operations of the facility should be considered the foundation upon which everything else is built.
2. Nuclear analytical and imaging tools will be widely utilized by universities, national laboratory and industry researchers, and there will be considerable demand and competition for the Radiation Center's services, products, and tools.
3. The U.S. Government will grow its research portfolio to include activities related to the development of Generation IV nuclear reactors, advanced nuclear fuel cycles, hydrogen fuels production, material and fluid flow analysis, imaging technology, and other areas. It will emphasize nuclear energy development activities at Idaho National Laboratory (INL) and will continue to support a diverse research portfolio at the other national laboratories, including Battelle Pacific Northwest National Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Lawrence Berkeley National Laboratory, and Sandia National Laboratory, and with industry.

A series of goals arise from the mission and vision statements to go along with the assumptions of where the research world will be going during the next five years. The three goals for the Radiation Center will be:

### **Goal A. OSU will continue safe operations of the OSTR.**

The OSTR has been the backbone of the Radiation Center for more than 40 years and continues to be the focus of attention for the activities of the Center. It is the clear objective of the Radiation Center that the OSTR and other facilities will be operated in a safe and economical manner following appropriate NRC, State and Federal regulations. The recent renewal of the OSTR license with the U.S. Nuclear Regulatory Commission (NRC) will enable the Radiation Center faculty and staff to continue to provide the high level of analytical capabilities and services that have been provided over the years and to enable new capabilities to be developed, for the next 20 years and beyond.

**Goal B. The OSU Radiation Center will be a leader in the deployment of widely recognized nuclear and radiation based analytical tools available for researchers, clinicians, and industry.**

The Radiation Center has for many years operated analytical and imaging facilities that utilize radiation techniques to meet the needs of a varied customer/client base. These activities will continue to be conducted with an eye toward the extension of the financial and academic support base for the Radiation Center.

These specialized facilities will include:

- A nuclear reactor with actively utilized in-core facilities,
- Capability to produce radioisotopes for research and industry,
- Analytical laboratories enabled for the use of radioactive materials and radiation, and
- Expansion of the beam port facilities, instrumentation and utilization.

Research users of the Radiation Center's capabilities will come from the OSU campus, the region, the nation, and across the globe to make use of high-quality investigative techniques such as neutron radiography, radiochemistry and instrumental neutron activation analysis. Researchers in the materials, biomechanical, and high-pressure two-phase heat transfer and fluid flow communities will make use of the neutron radiography and Prompt Gamma Neutron Activation Analysis (PGNAA) facilities. Instrumental neutron activation analysis (INAA) is an area where the Radiation Center already has an international reputation, but there are also opportunities for further growth, particularly research in archeometry and environmental science. Additional capabilities and services can also be developed, including isotope production, neutron and gamma irradiation of electronic components and materials, and neutron scattering for materials analysis, should a specific market or client opportunity presents itself.

**Goal C. The OSU Radiation Center will be an active collaborator with various Departments, Centers, Institutes and Programs both on the OSU campus and off.**

The Radiation Center, as one of OSU's original multidisciplinary research centers, has a long history of collaborative activities with individuals across campus and across the globe. It has many outstanding associated facilities and people that enable collaboration with others inside and outside of OSU. It is important to expand these contacts and opportunities for collaboration by connecting with researchers from academic departments and other Centers, Institutes, and Programs so that they know about the capabilities of the Radiation Center and can become active users.

## **V. Implementation of Specific Strategies (Two Year Horizon)**

The OSU Radiation Center will be a leader in the deployment of widely recognized nuclear and radiation based analytical tools available for researchers, clinicians, and industry. This requires both continued vigilance towards license responsibilities and expansion of and increased use of the existing analytical capabilities of the Radiation Center. In support of this effort, the following strategies will be implemented over the next two years.

**Strategy A. OSU will consolidate the licensing documents for the OSTR by preparing a revised OSTR Safety Analysis Report (SAR) and submit it to the USNRC**

1. Complete draft SAR by May 2012.
2. Obtain approval from the ROC for submission by October 2012.
3. Create annual review of SAR based upon 50.59 modifications by July 2013

**Strategy B. Expand the use of the neutron radiography/tomography facility that is utilized by researchers across campus and the country and supported by external grants and contracts**

1. Complete acceptance testing of MCP neutron radiography instrument by July 2012.
2. Create tomographic image of a fuel element provided by INL by August 2012.
3. Explore collaborative relationships with OSU nondestructive testing capabilities by December 2012.
4. Develop automated capability for neutron transmission studies by December 2012.

**Strategy C. Develop functioning capabilities on additional OSTR beam ports that can be supported by external grants and contracts centered on the utilization of neutrons in science.**

1. Hire research faculty with Ph.D. and expertise in neutron sciences by January 2013.
2. Replace the OSTR reflector to increase the available flux by December 2013.
3. Teach classes in neutron sciences by March 2013.
4. Identify prospective research and funding opportunities for OSTR beam ports by March 2013.
5. Write external research grant proposals centered on new uses of the current unused beam ports by 2014.
6. Obtain external grant funding in neutron sciences by June 2014.
7. Develop radiochemistry research program to be self-supporting by January 2016.

**Strategy D. Continue supporting a nationally recognized irradiation laboratory for Instrumental Neutron Activation Analysis (INAA).**

1. Develop automated NAA counting capability utilizing ORTEC software by December 2012.
2. Replace existing pneumatic transfer system by August 2013.