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| <b>Management System: <a href="#">Nuclear and Facility Safety</a></b>            |  |   |
| <b>Subject Area: <a href="#">Accelerator Safety</a></b>                          |  |   |
| <b>Procedure: Accelerator Safety Requirements, Exemptions, and Equivalencies</b> |  |   |
| Major Revision Date: <b>Mar 19, 2012</b>   | Subject Matter Expert: <a href="#">Stuart Martin</a> | Management System Owner: <a href="#">Michael Stafford</a> |

[SBMS Home](#) | [Subject Areas](#) | [Highlight Changes](#) | [Revision Record](#) | [Definitions](#) | [Lessons Learned](#)

## 1.0 Applicability

This procedure applies to all line managers at the Oak Ridge National Laboratory (ORNL) who operate [accelerators](#) as described in the definitions section of this subject area.

## 2.0 Required Procedure

**IMPORTANT:** The numbered steps in SBMS procedures are requirements. Notes within a step may contain non-mandatory guidance, recommendations, or additional information for the user.

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| <b>Step 1</b> | Line management identifies any new or significantly modified accelerator.  |
| <b>Step 2</b> | Line management works with the Nuclear and Radiological Protection Division (NRPD) to assess the exemption status of the accelerator (Step 3 below) and for requests for other exemptions or equivalencies.  |
| <b>Step 3</b> | <p>Accelerators that meet the following criteria are exempted from the remaining requirements of this subject area:</p> <ul style="list-style-type: none"> <li>• hazards can be safely managed under the provisions of Title 10, Code of Federal Regulations (CFR), Part 835 and Part 851,</li> <li>• are non-complex in nature, and</li> <li>• produce only local work area impacts.</li> </ul> <p>Examples of such facilities include:</p> <ul style="list-style-type: none"> <li>• Radiation or current generating devices;</li> <li>• A room-sized accelerator with a single external/extractable beam, an active safety system, and a single point of entry into the room;</li> <li>• X-ray generators (below 10 MeV) or neutron generators (accelerating potential below 600 keV) that are bench top in size and that have a single external/extractable beam and a single operator such as those that are operated in accordance with American National Standards Institute (ANSI) N43.3-2008, or National Council on Radiation Protection and Measurements (NCRP) Report 72-1983 or other applicable Program consensus standard; and</li> <li>• Unmodified commercially available equipment including, but not limited to, electron microscopes, ion implant devices, and x-ray generators.</li> </ul> |
| <b>Step 4</b> | Line management may request DOE approval for other accelerator exemptions, in addition to those examples listed in Step 3, from the requirements of DOE O 420.2C.  |
| <b>Step 5</b> | <p>Line management may request DOE approval for an equivalency – that is, alternate safety standards, requirements or DOE Directives that provide equivalent (or greater) protection in lieu of or in addition to the requirements of DOE O 420.2C.</p> <p><b>Note:</b> These alternate standards would be primarily for those accelerator facilities or modules and their operations when they contain, use or produce fissionable materials in amounts sufficient to create the potential for <a href="#">criticality</a> based on the configuration of the materials.</p>   |
| <b>Step 6</b> | If DOE has approved any exemptions or equivalencies, the applicable portions of this subject area are determined by the terms of the exemptions or equivalencies.  |
| <b>Step 7</b> | If an accelerator does not meet the exemption requirements of Step 3, and no exemptions or equivalencies are approved by DOE, the remainder of this subject area applies.  |
| <b>Step 8</b> | Line management notifies NRPD of any exemptions or equivalencies approved by DOE.  |
| <b>Step 9</b> | NRPD maintains a current <a href="#">listing/inventory of accelerators</a> subject to the requirements of DOE O 420.2C and of any exemptions or equivalencies granted by DOE.  |

## 3.0 Suggested Guidelines

## 4.0 References

[DOE Order 420.2C. Safety of Accelerator Facilities Listing of ORNL Accelerators](#)

## 5.0 External/Internal Requirements

[DOE O 420.2C](#)

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[| SBMS Home Page](#) | [Subject Area](#) | [Instructions](#) |

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