

Sample Handling on the Magnetism Reflectometer

Revised 2/9/2009



A U.S. Department of Energy Multilaboratory Project

SPALLATION NEUTRON SOURCE

Argonne National Laboratory • Brookhaven National Laboratory • Thomas Jefferson National Accelerator Facility • Lawrence Berkeley National Laboratory • Los Alamos National Laboratory • Oak Ridge National Laboratory

This report was prepared as an account of work sponsored by an agency of the United States government. Neither the United States government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States government or any agency thereof.

Sample Handling on the Magnetism Reflectometer

R. J. Goyette

Revised 2/9/2009

Prepared by
OAK RIDGE NATIONAL LABORATORY
P.O. Box 2008
Oak Ridge, Tennessee 37831-6285
Managed by
UT-Battelle, LLC
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-00OR227

Sample Handling on the Magnetism Reflectometer

Objective

The objective of this procedure is to ensure that SNS Magnetism Reflectometer Users be familiar with the procedures and equipment necessary for proper handling of samples that have been exposed to the neutron beam and are potentially activated.

Description

This procedure describes how to operate the Portable Geiger Mueller Detector and proper techniques for sample monitoring, as well as possible alarms and appropriate responses

Precautions

Failure to follow or complete this procedure may result in the unintentional release of activated samples to non designated areas. This could potentially result in the cancellation of an experiment and/or the loss of beam time.

References

OPM document 05-U-4A-01-R00 BL4A *Emergency Response Procedure*

OPM document 06-X-05-R00 *Sample Handling Interim Policy*

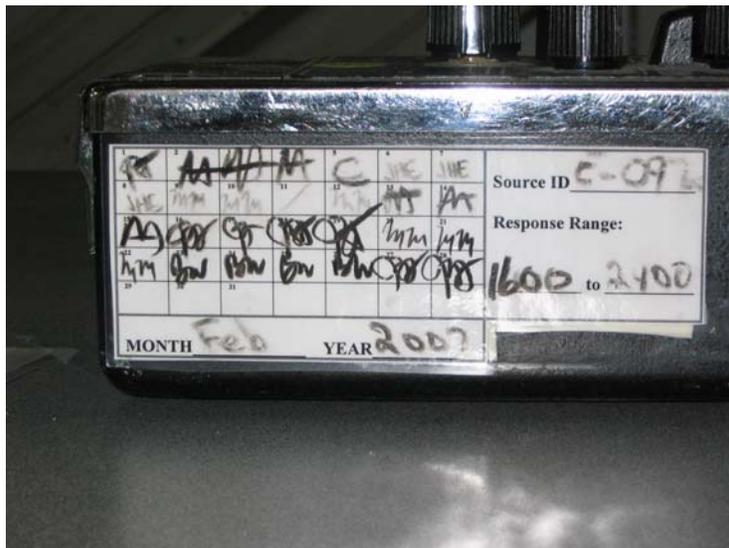
NOTE: The sample position on the Magnetism Reflectometer is between the pole pieces of an electromagnet. It is imperative that the electromagnet be turned off before continuing with the sample handling procedure. A member of the beam line staff will explain the procedure for turning off the electromagnet during the instrument specific training session.

Verifying Detector Operation

Obtain a portable Geiger Mueller Detector, provided by the Radiation Control Technician, located in the beam line 4 area.



Visually inspect the instrument and verify that the detector is within the calibration date. Ensure that the GM detector is initialed for the date that it will be used. This confirms that the detector has been source checked.



Turn the large black knob in the center of the meter to the x100 position.



Check the audio knob on the detector and make sure that it is set to the “On” position. You should hear some ticking sounds coming from the detector. If no sounds/ clicks are heard coming from the detector, contact a RCT to receive another GM detector. (865-574-6588)

Verify that the Response knob is turned to the slow position.



Monitoring Sample Activation

Take the Portable Geiger Mueller Detector to the sample on the sample stage. Remove the detector head from the holding clamp.



Holding the black handle, place the circular head as close as possible to the sample, without touching the sample or any part of the instrument. Monitor the needle position on the scale.



If the needle says within the scale (between the 0 and the 500 on the upper scale), then the sample may be removed from the sample holder and placed into the sample storage bin, located inside of the instrument cave.



If the needle goes off of the scale (past the 500 on the upper scale), then call a RCT immediately to handle the sample (865-574-6588). **Do not attempt to move the sample or remove the sample from the sample holder.**

NOTE: To have a sample released that has been in the neutron beam at the Magnetism Reflectometer instrument, you must contact a RCT at 865-574-6588. Radiological Control Technicians are the only staff at SNS who can release potentially radioactive or radioactive samples from posted areas.