

# Status of the High Flux Isotope Reactor Upgrades

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A number of upgrades to the High Flux Isotope Reactor (HFIR) and its scientific capabilities have been underway since 1998. As reported in previous IGORR newsletters, the planned upgrades are being accomplished in three phases.

The first phase of the upgrades included: the replacement of the beryllium reflector, the construction of a new reactor cooling tower, upgrades to hydraulic rabbit facilities for medical isotope production, and the replacement of the HB-1 and HB-3 beam tubes with larger beam tubes that are 2.5 times the previous beam height. This phase of the HFIR upgrades is now, considered to be completed.

Phase two of the upgrades includes: the design, fabrication, and installation of triple axis instruments with new monochromator drums at HB-1, HB-2 and HB-3; a shield tunnel at HB-2 extending out into the beam room to allow access to the neutron beam by four instruments; a thermal neutron guide at HB-2; and three crane systems at HB-2. This phase of the upgrades is nearly completed. The triple axis instrument and new monochromator drum at HB-1 (shown in Figure 1) and HB-2 are now both operational. As a result of the upgrades at HB-1, we measured about a 2.5 factor increase in flux delivered to the experiments, and we are now running a regular schedule of about 12 experiments per 25 day cycle. The HB-2 shield tunnel (shown in Figure 2), the crane systems at HB-2, and the HB-2 thermal neutron guide (shown in Figure 3) have all been installed. We expect to have the HB-2 system operating with at least 2 instruments within the next nine months.

The third and final planned phase of the upgrades includes the addition of a hydrogen cold source for the HB-4 beam line; the construction of a new guide hall; the design, fabrication, and installation of four cold neutron guides with associated shielding; and the addition of several new scientific instruments (two new SANS

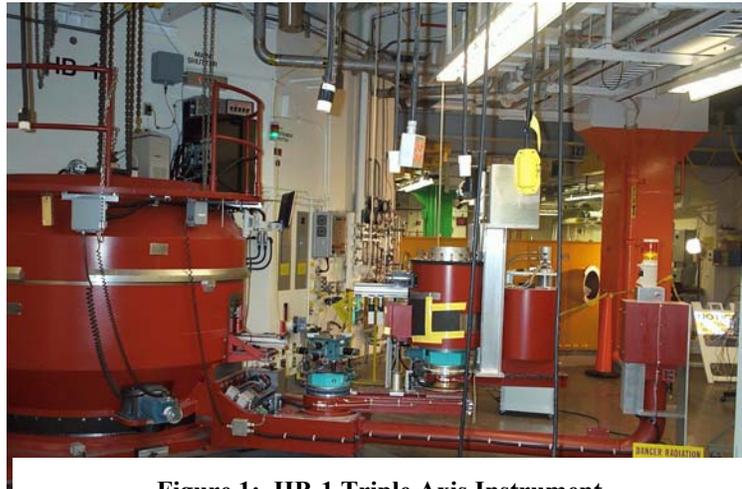
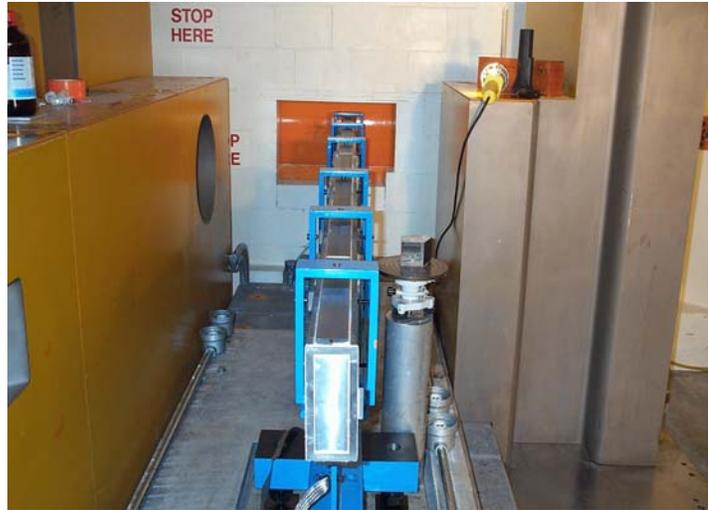


Figure 1: HB-1 Triple Axis Instrument



Figure 2: HB-2 Shield Tunnel 1

instruments, a reflectometer and two triple axis instruments). Most of the guide system has been fabricated and shipped to ORNL, and its installation is expected to begin next spring. Construction of the new guide hall is underway, but weather delays and other issues have pushed completion into the spring of next year. The assembly of the cold source into the new beam larger HB-4 beam tube is underway and testing of the cold source system is expected to begin during the next 9 months. Contracts have been placed for the fabrication of the two new SANS instruments with delivery and installation planned for next summer.



**Figure 3: HB-2 Thermal Guide**