THE DISASSEMBLY OF THE PHASE II BEAMLINES AT THE NSCL

D. P. Sanderson

In July of 1999, the operating schedule of the laboratory was suspended for the installation of the Coupled Cyclotron Project. At that time, the beam transport system from the K1200 cyclotron to the experimental vaults was configured as shown in Fig. 1. In the spring of 2001, at the completion of the CCP, the beamline configuration will be as shown in Fig 2.

As the experimental schedule was winding down in June, 1999, the cryogens in the beamlines were allowed to boil away. At the end of operations, less than half of the superconducting magnets were cold. During July, the radiation shielding roofbeams were removed and stored outside. Their removal allowed the laboratory s 40-ton crane access to the beamline magnets and the heavier items along the beamline. Michigan State University s Office of Radiation, Chemical, and Biological Safety set up screening stations, in the areas where the disassembly was taking place, to check each item to be removed for residual radioactivity. All employees directly involved with the disassembly were given refresher training in the handling of activated materials.

Two of the experimental vaults were used for storage of activated materials. Every piece of steel in the A1200 vault was slightly activated. Activated items were stored in a restricted area away from the reconfiguration traffic. All items with removable activity were handled separately and cleaned.

All of the non-activated beamline components were sorted and folded back into the laboratory s equipment pool. The cable tray, electrical service components, and copper plumbing fixtures were recycled back into stock. Over 90% of the control system wiring was not reusable and disposed of. Due to the activation of the steel and invar components of the cryolines between superconducting magnets, special precautions were used to separate the magnets from their neighbors. Each area was draped off and a saw were used to cut the lines. All shavings and chips were collected using a special vacuum cleaner with a HEPA filter. The magnets were moved to the N4 vault and the restricted roof area.

The north and south walls of the Analysis hall were removed and the laboratory s main liquid helium refrigerator/liquefier, its 2500 liter storage dewar, and the liquid helium dunking dewar were moved to the east high bay. The liquefier is scheduled to be used as a purification system for the new cryogenic plant. The entrance door to the old Analysis hall is to be reinstalled in the reconfigured N4 vault.

Work crews stacked block walls in the new configuration as each vault was cleared. A narrow hallway forms the coupling line vault, with the magnets and diagnostic elements for transporting beam between the two cyclotrons. The cast east wall of the K1200 vault was bored through its 6 feet of width to allow the beam and cryolines to pass through. The south wall has large steel blocks for additional shielding near the A1900 radioactive beam production target. Wall construction produced approximately 20% loss of shielding blocks due to load based breakage.

In summary, the disassembly of the Phase II beamlines went quite well. By the end of the year, the new coupling line was over 70% complete and installation of the exitline of the K1200 and the A1900 were in progress.

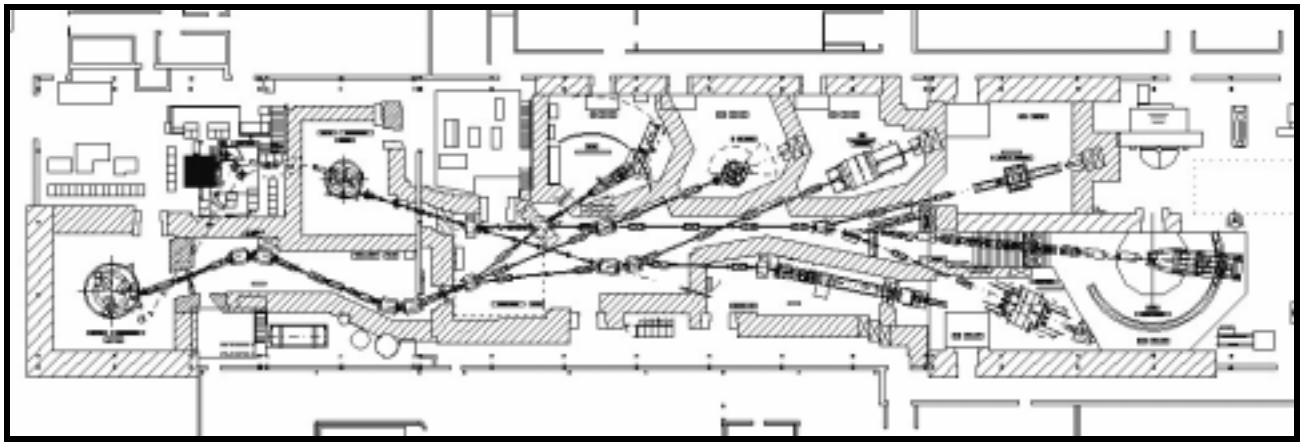

Figure 1. Pre-CCP Laboratory Layout

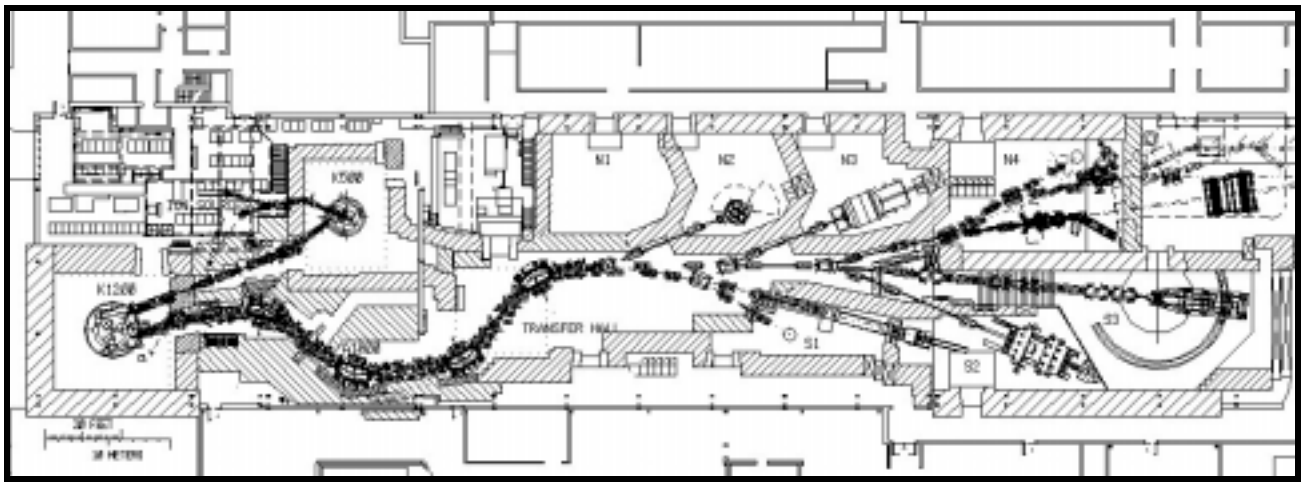

Figure 2. Post-CCP Laboratory Layout