Brookhaven National Laboratory National Synchrotron Light Source X5 Beamline (LEGS Group)	Number: 1.0	Revision: 1
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Subject: Confined Space Procedures for Accessing 8 ft Deep Floor Pit In NSLS Room 1-169 (LEGS Cryolab).		
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*Document must contain approved signatures for validity.

The 8'-deep floor pit (157 ft^3 volume) contains the OXFORD KELVINOX 1000 dilution refrigerator. The pit is never accessed when the refrigerator is in operation and/or cryogenic gases and/or liquids are present in it. In any other circumstance, when access is needed, a hazard for possible oxygen deficiency is assumed. The following procedure is based on the assumption that initially there is 0% oxygen concentration within the pit volume.

Prior to entering the pit, the following procedures will be followed:

1. The pit cover is removed and the region around the top of the pit is delimited by a yellow warning ribbon.
2. All doors accessing the room will be fully opened.
3. A blower with an air flow capacity no less than 200 ft^3/min will be placed outside the main door, with its hose reaching the bottom of the pit.
4. The blower will be turned on for no less than 15 min. (*)
5. The pit volume is checked with a portable ODH monitor.
6. Provided the monitor indicates confined space is safe, the pit will be entered. Personnel entering the pit will wear a portable ODH monitor while working in the confined space.
7. At least one person will be present in the room, outside the pit, while someone is in the pit.

(*) A constant flow of air with oxygen concentration of 0.21 (21% by volume) is assumed to be provided by the blower. It is also assumed that the gas previously present in the pit completely mixes with the incoming air. Pressure in the confined volume is assumed to remain constant and near to atmospheric value during the use of the blower. This will guarantee a final oxygen concentration not less than 20.8% (99% of assumed oxygen concentration of air flow) after 3.6 min. An extra factor of four in the time to exchange the gas in the pit is required for the possibility that complete mixing of the pit volume may not occur.
For the above calculation, the *case A* equation of the *BNL SBMS Oxygen Deficiency Hazard Subject Area* web page was taken as a model and adapted to our specific case.