

SNOLAB Workshop

August 22nd and 23rd, Sudbury Ontario

Second Circular: June 12th, 2007

Dear Colleagues:

We will be holding a SNOLAB workshop in Sudbury on August 22nd and 23rd, 2007. There will also be an opportunity for tours on August 21st for those who wish to get underground to see the SNOLAB facility and SNO detector. Note that the workshop website is now operational and accepting registrations. Please see <http://www.snolab.ca> for practical details about the workshop.

The main goals of the workshop will be to discuss the scientific program, review the progress of experiments, discuss the infrastructure needs of the experiments, and make the initial assignment for space underground. It is our intent to leave the meeting with a significant fraction of the available space allocated to experiments so that we can move forward on getting several experiments operational in the new facility in 2008. We will also want to have a clear picture of the infrastructure needs of the experiments so where possible, we can tailor the infrastructure installation to suit. To this end, we are making a renewed call for Letters of Interest and Proposals to be received by SNOLAB by August 15th, 2007. If your project wishes to be sited at SNOLAB within the next two years, please prepare a proposal stating this clearly. In addition, we would like to receive requests for development or prototyping space.

In this circular we have summarized the process to get an experiment sited at SNOLAB and included details on the content we would like to see in the Letters of Interest and Proposals. We have also included a report on the status of SNOLAB construction.

Best Regards,

Tony Noble,

SNOLAB Director

Overview of the Process:

In the normal course, it is expected that collaborations interested in being sited at SNOLAB will first produce a Letter of Interest (LOI). The expected content for this letter is described below. The LOIs will be reviewed by an international Experiment Advisory Committee (EAC). When a collaboration wishes to make a formal application for space

and resources, a full proposal is expected. This will contain much the same content as the LOI, but will generally have greater detail, and will contain a specific request outlining the space and resources required. Full proposals are also reviewed by the EAC. The goal of the laboratory is to stage as many quality experiments as possible in the space allowed. Whereas the highest priority experiments will get the first priority for space, medium ranked, or lower ranked experiments may run provided there is sufficient space available when they are ready to be deployed.

Once approved by the Director, experiments will need to have a technical review to ensure that the experiment can be run safely, that there is an adequate QA plan, and that all local regulations and codes are adhered to. At all times we encourage dialogue between the lab and the collaborations to ensure that the collaborations understand from the outset the nature of the regulations and codes. We have engineering staff available that can assist in hazards assessments and identifying areas where the codes and regulations might apply to your experiment. The review will normally be conducted by experienced SNOLAB engineers and scientist, although other experts may be brought in for guidance in some cases.

SNOLAB is also able to offer experiments some limited technical and engineering support. Any projects wishing to make use of these resources should make a request for this in their submissions. The areas where technician help may be available include electronics, chemistry, cleaning, materials handling, and assembly. Mechanical and process engineering and design may also be available. It is recommended that projects requesting such support should consult with the Director prior to submission of the request, to understand what might be possible and reasonable.

Role of the EAC:

The Experimental Advisory Committee will provide expert advice to the director on the SNOLAB scientific program. This includes:

- I. Initial Experimental Evaluation. This will normally be based on a Letter of Interest (LOI) submitted by the collaboration.
- II. Evaluation of Full Proposals requesting an allocation of space in SNOLAB
- III. The ongoing review of the Scientific Program and Progress of Experiments.

In reviewing each experiment, the committee will consider:

- The scientific merit of the experiment.
- Research capability of the proposed collaboration.
- Funding potential.
- Technical feasibility.
- Match to the existing experimental program and relative priorities.
- Readiness to mount the experiment.
- For projects already reviewed: the ongoing scientific relevance and progress.

The EAC will rank the scientific merit of experiments for SNOLAB as:

High: The experiment is a very high scientific priority and should be encouraged to work towards a full proposal requesting space in the laboratory in a timely way.

Medium: The experiment is of medium scientific priority. Such experiments could be granted space after a full proposal has been submitted, provided there was sufficient space available.

Low: In its present configuration, the proposed experiment is low priority for inclusion in the SNOLAB scientific program.

The committee will also comment on the state of readiness of the projects to help define the occupancy schedule. They would typically categorize the experiments as:

Ready Now: The experiment has demonstrated that they are essentially in a position to install their experiment now.

Ready Soon: The experiment is expected to have completed the R&D efforts and be ready to deploy soon. Considering the scales of these experiments, “soon” is loosely defined to be within the subsequent two years.

Not Ready: The proposed experiment is still making progress at the R&D phase and is unlikely to be ready for installation in the next two years.

Space allocations will be subject to ongoing review to ensure that good progress is being made to properly utilize the space in a timely way.

Guidelines for Drafting LOI's and Proposals:

The following paragraphs are meant to give guidance to the content expected for a LOI or a Full Proposal. In the latter case, the experiment is expected to be much more mature and more detail is anticipated. Please also include any other pertinent information related to your experiment.

If your project wishes to be sited at SNOLAB within the next two years, you will need to develop a full proposal for review by the Experiment Advisory Committee. The committee will be asked to provide advice to the Director on the allocation of space.

If your project wished to have development space, please outline the requirements and the Experiment Advisory Committee will be asked to evaluate your request.

1. Scientific Merit

Please describe the scientific motivation/reach of your experiment and how it requires or benefits from the unique opportunities at SNOLAB.

How is the technical approach of the experiment novel and what competition exists?

Can the experiment lead to a fundamental discovery in the field?

Can the experiment provide a valuable stepping-stone in the development of future experiments?

2. Infrastructure Needs

Please provide a summary of the infrastructure needs of your experiment.

Attached below is an infrastructure matrix that we have used effectively in previous interactions with the scientific community that can serve as a guide. Please take the freedom to add to, or eliminate from, the existing list as it seems appropriate for your experiment. It would be useful to include such a matrix as an appendix to your LOI.

3. Progress on R&D

Please describe the key technical requirements/challenges of the experiment and the R&D program in place or envisioned to meet these requirements. Please describe the manpower and resources in place or required to carry out this R&D. If SNOLAB facilities are required during the R&D phase please provide details and schedule.

4. Technical Feasibility

Please describe the process in place or envisioned to move from the R&D phase to a full-scale construction project. If a full-scale construction proposal exists can it be made available to SNOLAB management? Please provide information regarding the engineering plan required to bring the project into operating mode, as well as the plan to operate the experiment once full-scale construction is complete. Please focus here on the technical details to stage and carry out a full-scale construction project. Guidelines for issues of Safety, Funding, and Schedule are outlined below.

5. Safety

Please address any safety issues relevant to the construction and operation of your experiment while recognizing the unique safety aspects of operating underground in an active mine. How will safety issues be addressed in the design, construction, and operation of your experiment?

6. Funding & Schedule

Please describe your construction plan and schedule, including laboratory access needs for both manpower and hardware.

Please describe any steps taken or envisioned to secure the necessary funding for construction and operation of the experiment.

What plans exist for decommissioning the experiment once complete?

7. Participation & Management

Please describe the participants of your experimental program with names and institutions.

Does a formal collaboration exist? If so, please describe the institutional responsibilities of your collaboration and the organizational structure by which the project will be managed.

Specific Infrastructure Requirements Underground – SNOLAB

Item	Comments / Details
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Basic Requirements

Depth

Space

Power

Heating & Cooling

Other?

Background Tolerances

Muons

Gamma Rays

Neutrons (< 10 MeV)

Neutrons (> 10 MeV)

Radon

Shielding Requirements

Other?

Special Facilities

Water Purification

Laser & Optics

Vibration Control

Cryogenics

Radioactive Sources

Other?

Fabrication Processes

Machine Shop

Cleanroom

Electroforming

Materials Storage

Chemical Etching

Other?

Additional Requirements

Office Space

Computing Resources

Overhead Crane

Staging Area

Storage Area
Special Facilities
Other?

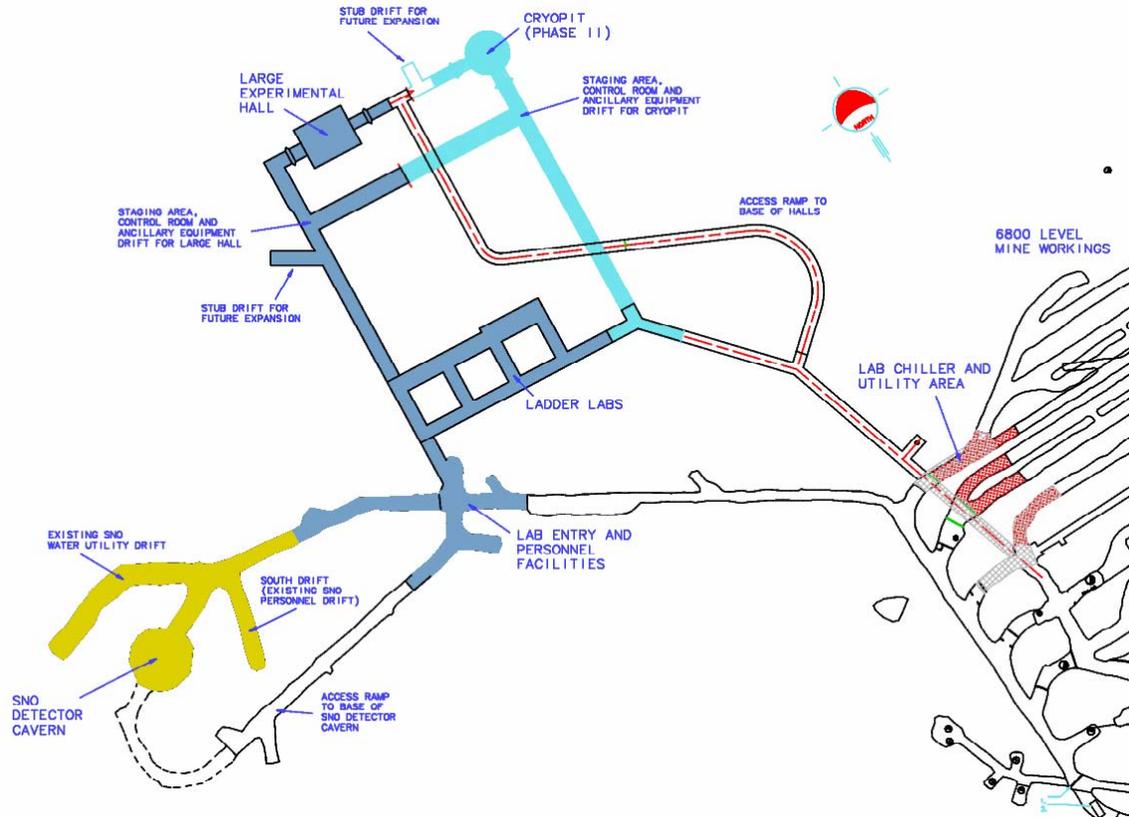
Above Ground Requirements

Clean room space
Office space
Computing, networking facilities
Control room space
Other laboratory space
Other?

SNOLAB Construction and Program Status: 8 June 2007

Construction Status

Construction of SNOLAB is progressing well. The 3,160 m² surface facility has been operational for 18 months. Underground, the excavation for Phase I, the large Cube Hall (for 15m scale experiments) and the smaller Ladder Labs (for 6m scale experiments) is now complete. Funding is almost in place for Phase II, the second large experimental hall called the Cryopit. The configuration of the Cryopit is still being finalized but it will nominally hold a 15m scale experiment. Outfitting of the civil work and infrastructure for Phase I and the relocation of the clean/dirty boundary of the laboratory from the existing SNO area to the new facility entrance has begun and will continue in parallel with the excavation for Phase II. Phase I outfitting will be complete and occupancy of the new experimental spaces can occur in early 2008. Phase II excavation will be completed in the fall of 2008 with occupancy in early 2009.



Phase I will expand the underground class 2000 clean room space to 3,899 m² with 2,427 m² of that space available for the experiments. Phase II will increase the total clean room space of the facility to 4,942 m² of which 3,055 m² is experiment space. In total there will be four major experimental areas in SNOLAB: the existing SNO Cavern, the Cube Hall, the Ladder Labs and the Cryopit. As well there will be space available for smaller prototyping efforts. In addition to the experimental spaces there will be infrastructure for shipping and receiving of materials under clean room conditions, machine and electronics shops, a chemistry facility, low background counting facilities and some material storage space. The initial facility will have available approximately 0.5 to 1 MW of power and cooling capacity for experiments. Details on the design of the laboratory and infrastructure can be found in the SNOLAB Users Handbook which is available at: <http://www.snolab.ca/snolab/index.html>

	<i>Excavation</i>		<i>Clean Room</i>		<i>Laboratory</i>	
	<i>Area ft²(m²)</i>	<i>Volume ft³(m³)</i>	<i>Area ft²(m²)</i>	<i>Volume ft³(m³)</i>	<i>Area ft²(m²)</i>	<i>Volume ft³(m³)</i>
Existing	20,049 (1,863)	582,993 (16,511)	12,196 (1,133)	470,360 (13,321)	8,095 (752)	412,390 (11,679)

	<i>Excavation</i>		<i>Clean Room</i>		<i>Laboratory</i>	
	<i>Area ft²(m²)</i>	<i>Volume ft³(m³)</i>	<i>Area ft²(m²)</i>	<i>Volume ft³(m³)</i>	<i>Area ft²(m²)</i>	<i>Volume ft³(m³)</i>
Existing + Phase I	65,340 (6,072)	1,367,488 (38,728)	41,955 (3,899)	1,049,393 (29,719)	26,117 (2,427)	837,604 (23,721)
Existing + Phase I&II	77,636 (7,215)	1,647,134 (46,648)	53,180 (4,942)	1,314,973 (37,241)	32,877 (3,055)	1,043,579 (29,555)



Illustration 1: Looking down into the Cube Hall.



Illustration 2: The Ladder Labs