DRAFT
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S1 Management Subgroup Report

Principles

A consensus emerged among the participants of the S1 process that the laboratory science program should be managed by scientists, and that the managing organization should have strong links to the scientific community. Should there be several US DUSEL sites, a single laboratory would oversee all and coordinate the R&D and experimental program.

The laboratory organization should support the functions needed for a dynamic underground research program, namely:

- Build, equip, and operate the underground facilities;
- Employ an in-house staff whose members will participate in experiments and be a resource for the Laboratory;
- Conduct a technology R&D program (this will require a strong in-house staff working with the scientific community);
- Sponsor an outreach and education activity;
- Be a center point of the underground science and technology for the US and international scientists; organize conferences and workshops; and operate a low counting background facility as a service to the international community.

Furthermore, DUSEL's significant issues of liability, building and safety codes, and environmental impacts (unique among large science projects) require special handling and should be a primary consideration in the choice of the management entity.

Management Structure

The organization governing the laboratory must incorporate interdisciplinary elements of the scientific and engineering programs. The management structure will depend on many factors; for example,

- It will be different if scientific and engineering investigations are carried out at a single site or multiple sites
- It will depend on the ownership—is the Laboratory a sole custodian of the site, or is it owned by a different entity that maintains responsibilities for parts of the operation, such as safety issues or lifts operation?
- Mining or other activities concurrent with the science and engineering program will have also a strong impact

In the classic organization, a contractor is the financial fiduciary responsible for the execution of agreements with the funding agencies—NSF, DOE, or any other

organization providing funds for the laboratory. Because of the interdisciplinary nature of DUSEL, there will be many lines of communication between the laboratory and the disciplinary units in the agencies. In this classic example, the contractor would have a board of overseers that would set policy for the contractor, review various functions of science and engineering, administration, safety, and finance, and make major appointments to the laboratory including its director. The director would be responsible for the activities of the laboratory. Scientific and engineering advisory committees would advise the director.

Single Site Laboratory. The governance of DUSEL might be similar to that of existing laboratories; for example, such as the DOE multipurpose national laboratories. The principal organizational elements of DUSEL might be:

- Administration with subunits for contracting, purchasing, accounting, fiscal management, and personnel;
- Scientific and engineering advisory committees for advising on activities of the various disciplines;
- Research with subunits for managing the programs, such as physics, geosciences, biology, engineering, and national security;
- Construction and experimental area operations with units for managing the construction of experimental areas, the construction and maintenance of the surface facilities, the physical plant, and the utilities needed for operations.
- Education and outreach.

Multiple Site Laboratory. Many of the characteristics of a single site organization can be applied to the management of multiple sites.

An example of a multi-site laboratory is LIGO, the Laser Interferometer Gravitational-Wave Observatory, whose goal is to detect gravitational radiation from extraterrestrial sources and use the radiation to study astrophysical processes under conditions of very strong gravity. LIGO is operated through an agreement between the National Science Foundation and Caltech. The director of LIGO sets the science goals and, with a central administration at Caltech, provides business, engineering and technical support for the program. Each of the other sites has an organization sufficient in scientific, engineering, and technical strengths to conduct the operations at the site. The remote sites at Hanford, WA, and Livingston, LA, house the gravitational-wave detectors. The development of future detectors is conducted both at Caltech and at MIT, in collaboration with other university sites throughout the US. The LIGO project was constructed through the National Science Foundation Major Research Facilities and Equipment account and has been operating since 1998.

The NSF Ocean Observatories Initiative is another example of a multi-site installation. In October 2003, NSF solicited proposals for three systems of ocean observatories: a regional observatory on the sea floor spanning a region of about 1000Km; relocatable deep sea moored buoys; and a network of coastal observatories. These initiatives involve several disciplines, including climatology, seismology, hydrology, and biology. With the grant, the Ocean Research Interactive Observatory Networks (ORION) was formed to

manage a partnership of consortia of academic institutions, laboratories, aquaria and other institutes. The activities are directed through the ORION Project Office, which provides oversight and funding to the three systems of observatories. The ORION Project Office has also organizational units for maintenance and operations, education and outreach, and data management.

It is not possible to define in detail the organizational structure of DUSEL now; it will depend on the number of sites and the interdisciplinary nature of each of them.

Interface between the Site Owner and the Laboratory.

As with many of the existing underground laboratories, the owner or custodian of the site and the operator of the laboratory may not be the same. The interrelation between the site owner and the laboratory management is site dependent. Examples of functions for which one or both of these entities could be responsible are: safety of personnel and equipment; excavation of caves and drifts; maintenance and structural integrity of excavations; drilling of boreholes and archiving of cores; provision of common services, such as electricity, water, ventilation, communications; operation and maintenance of the underground transport; construction and maintenance of surface facilities and infrastructure. Mechanisms for handling these site-dependent shared responsibilities will be worked out when the site or sites are chosen and agreements for their use are negotiated.