

BNL's Science and Technological Programs Related to the Ocean Drilling Program.

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the concept of a deep underground nuclear park,

- In the development of nuclear energy, we have been studying the concept of a deep underground nuclear park, with an accelerator driven reactor.

Deep sea nuclear reactor

- By extending the concept of installing reactors underground to the deep sea, we are reduce the construct cost although the leakage of radioactive material has to be absolutely prevented. Evaluating both systems from the economic and environment as well as the engineering perspective will be studied

High-energy physics studies

- Our high-energy physics studies have been carried out using the accelerator of the alternating gradient synchrotron (AGS) and RHIC (relativistic heavy ion collider).
- Production and propagation of particles
neutrons, muon, pion . neutrino
- (high frequency sound wave)
- Coherent analysis

Use of deep underground and sea

- Neutrino Physics
- Detector development
- Dark matter and dark energy in cosmology
- High Energy Physics
- Biology Bacteria activity near mantle
- Energy production bio-chemistry

- In addition to the high power accelerator, the large detector, which will be installed deep underground or deep sea,

Solar Neutrino Study by Davis

- Deep underground exploration was supported by Nobel Laureate, Dr. Davis, who conducted solar neutrino experiments using a tank located 3000 meters deep in the Home Stake Gold Mine in South Dakota

Radio active decay

- We have studying weak interaction physics, which is responsible for many phenomenon in nuclear physics, cosmology, and radio activity.

Biology in deep sea and underground

- Another deep underground laboratory is conducting biological studies on bacteria relating to DNA research, gene sequencing, protein folding, gene network and drawing on the fields of computer science

DNA and Protein Folding Analysis

- **Gene Sequencing**
- **Radiation effect (Bikini Island study ;the Cold Spring Harbor Institute**
- **protein folding study using Light Source Blue-Gene Program a super computer with IBM.**
- **In addition, a theoretical and experimental study for the origin of life in deep magma will be studied**

TEPCO kannagawa Hydraulic Power plant



Photo 3: Underground power plant after excavation



Photo 2: Underground power plant undergoing excavation

New Technologies and Methods for Dam Construction

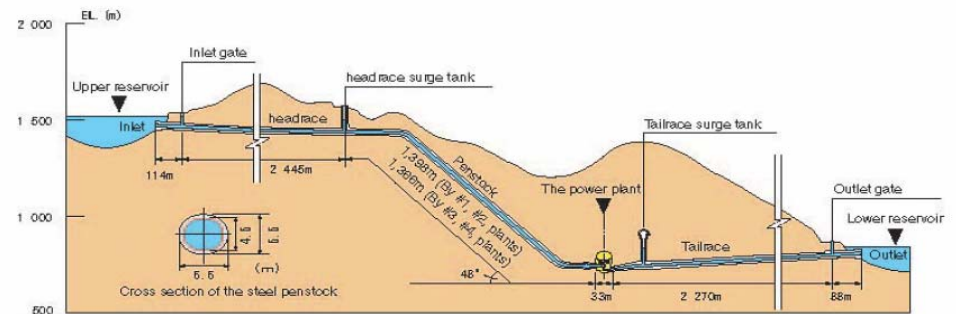


Figure 2: Vertical sectional plan of water tunnels in Kannagawa power plant

Nuclear powered Tunneling machine LANL



Deep Underground Nuclear Park and (Disposal of waste to outer- Space)

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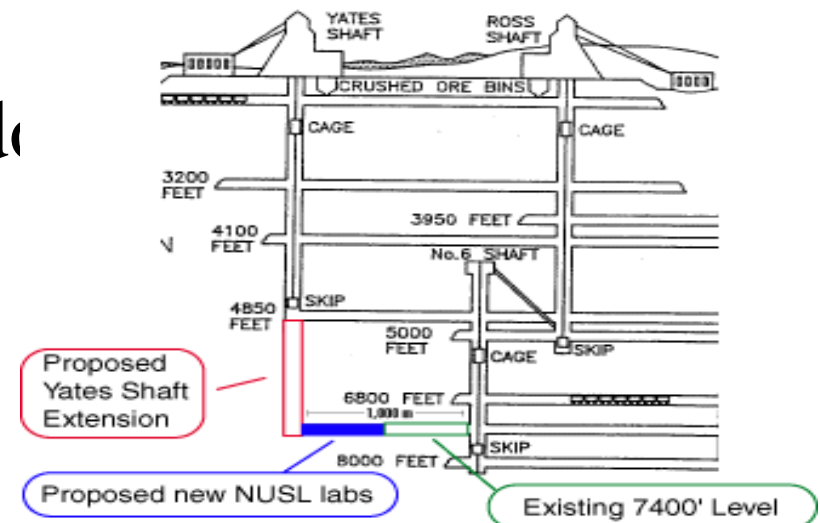
Brookhaven National Laboratory

**7th International Symposium of physics Beyond The
unknown,**

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South Dakota Gold mine Homestake

- Shutting down
- Prof. Davis
- 8000 ft depth
- More than 500 miles tunnel
- 1500 tons gold (12 billion dollars)



LHC at CERN

LHC large hadron collider at CERN

