

National Institute of Rock Mechanics (NIRM)

The National Institute of Rock Mechanics (NIRM) is a premier centre for research in applied and basic rock mechanics. It is an ISO 9001 : 2000 certified research Institute. The Institute provides research and consultancy services for improving safety and productivity in the mining and civil engineering sectors. With its rich experience, underpinned with the strength of world class software and laboratory facilities, NIRM plays a vital role in offering technical services in mining, hydroelectric and tunnelling projects, site evaluation for construction of nuclear power plants and other infrastructure development projects both in India and abroad. Due to its assured quality of work, the Institute has been receiving a number of challenging projects from governmental and non-governmental organizations.

NIRM has been carrying out research work through both government-funded and industry-sponsored S&T and consultancy projects. The Institute has been extending its support to the industry in the following areas :

- Metalliferous mines / Hard Rock Mines
- Coal Mines
- Hydroelectric & Tunnelling Projects
- Other Civil Construction Projects

The major projects undertaken by NIRM, to mention a few, are the underground cavern for storage of crude oil at Vishakhapatnam, controlled blasting for Bangalore metro project, site evaluation for nuclear power plant at Kudankulam, construction-stage technical services for a nuclear plant at Rawatbhatta, Rajasthan, DPR stage investigation at Bunakha project, Bhutan, achieving yet another milestone in the annals of NIRM during the year 2010-11.

During the year 2010-11, 37 projects were successfully completed and 33 were in progress. The finance of the Institute remained satisfactory during the year, by realizing a total cash flow of ` 8.6 crore. A highly skilled and creative research team of NIRM has contributed 51 technical papers at various national/international journals and proceedings of seminars.

Besides carrying out research and industry sponsored projects, NIRM organized the International Conference on Underground Space Technology (ICUST-2011), participated in the 98th Indian Science Congress, and offered 90 days training in various aspects of rock mechanics to the engineers and engineering geologists from hydropower sector.

The brief S&T / R&D activities in respect of few projects are given below:-

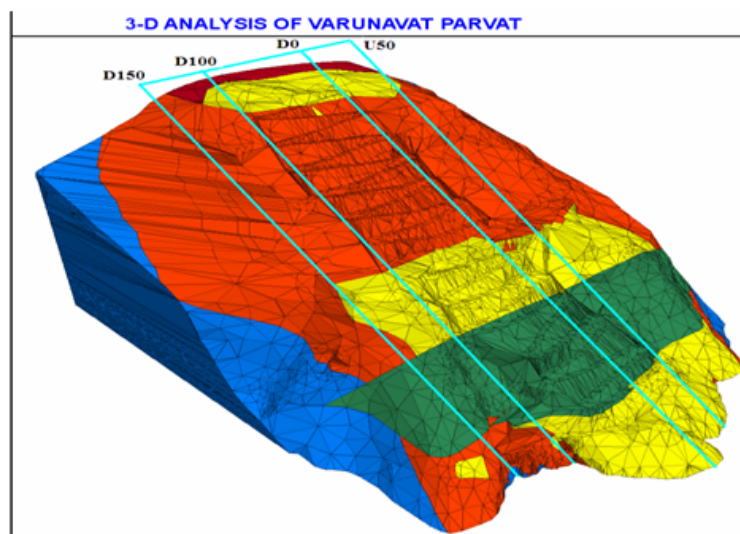
- Estimating the recurrence of earthquakes in the Central-Eastern Himalaya and Upper Assam from the distant liquefaction features of the river plains.
- Contemporary depositional environmental investigations of Chorabari Glacier in Rudrapur District of Garhwal Himalaya
- Monitoring Indian Shield Seismicity with 10 BBS to understand seismotectonics of the region using V-SAT Connectivity
- Caveability of roof strata in longwall panels
- Study on blasting dust management system in an opencast coal mine
- Assessment of ground water quality in the gold mining areas at KGF and its impact on health (In-house project)

Testing Services

NIRM caters to the needs of mining and other industries for testing of wire ropes, vital parts of mine machinery and its accessories involving Destructive and Non-destructive Testing (NDT). NIRM has state-of-the-art facilities and infrastructure to carry out tests as per various standards and statutory regulations including DGMS guidelines. It is one of the unique laboratories in India manned by qualified and experienced scientific personnel.

Industry Sponsored Projects

- Geological and geotechnical investigations for preparation of DPR for 2 x 350 MW Malshej Ghat PSS, Maharashtra
- Construction stage engineering geological investigations of underground rock cavern complex for strategic storage of crude oil at Visakhapatnam, AP
- Construction stage engineering geological mapping of foundation of Rajasthan Atomic Power Project, Rawatbhata, Rajasthan
- Seismotectonic evaluation and related geological studies in Pudimadaka area in Achutapuram mandal, Vishakhapatnam, AP
- Cross-hole seismic tomography at Sainj HEP, Himachal Pradesh
- Seismic refraction and tomography survey at Bunakha HEP, Bhutan
- Determination of in-situ stress parameters by hydrofrac method at proposed pressure shaft of Rangit HEP.
- Stability analysis of landslide area of Varunavat Parvat Project.



3D model of Varunavat Parvat

- Controlled blast design for rock excavation close to structures and green concrete and ground vibration measurement near Unit 7 & 8, Nuclear Plant, RAPP, Kota
- Technical guidance for rock blasting and monitoring of ground vibration, air overpressure and flyrock during excavation at underground stations from Chinnaswami Stadium to City Railway station (Bangalore Metro Project)



Demonstration of wedge cut blast and control of fly rock for metro project, Bangalore

Performance at a Glance

NIRM Scientists published 51 technical papers during the year 2010-11 and 37 technical reports on the projects undertaken by the Institute were released. The Institute has registered an external cash flow of ` 860 lakh during the period.