



Per Arne Moen,
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CV

Name : MOEN, Per Arne
Job Title/Profession : Civil Engineer M.Sc., rock mechanics
Born : 1959
Nationality : Norwegian
Languages : English
Assignments in : Norway, Singapore, Saudi Arabia, Sweden, Italy, Irak and Vietnam.

Key Qualifications:

- Construction site management.
- Advisor for tunnelling and underground projects.
- Geology and rock engineering.
- Pre-investigations and geological field surveys.
- Digitalized design drawings and follow-up during construction.
- Permanent rock support of tunnels and caverns.
- Systematic pre-grouting programs to meet environmental demands

Hydroelectric plants, sub-sea tunnels and underground storage plants. TBM machine performance, influence of geological rock conditions on TBM drilling.
Slim hole directional drilling for pre-investigations and oil exploration.

Education:

1985 : MSc Engineering Geology, University of Science and Technology, Trondheim

Other Training:

Courses in CAD construction Microstation (1995) and AutoCAD (1990)

Courses in engineering site construction (1986), and rock mechanics (1986) at the University of Science and Technology, Trondheim

Petroleum technology; drill hole stability analysis (2001), Univ. of Technology, PTS, Trondheim

Experience Record:

1997- present: TUNNEL & GEOCONSULT (Own consultant company)

- Site management, geology and rock mechanics. Site supervision and rock support of tunnels and caverns.

2013 - : JERNBANEVERKET, Norwegian Railroad Authorities

Consultant; Site geologist, Assistant Superintendent, Rock Works.

Double track railroad tunnels, 20 km, Larvik - Porsgrunn, Norway. Contractor; NCC Construction, Veidekke as, Skanska as and Implenia as.

2010: Shetland Government, Subsea Tunnel preinvestigations

Consultant; Project leader.

2 subsea tunnels from Walsay and Bressay. Site investigations and meeting with the Shetland Minister of Transport.

2009-2012: Norwegian Department of Road and Communication, Karmøy Subsea tunnel

Consultant; Chief geologist, Rock Works.

9 km subsea tunnel, the "T-Connection". Fixed link between Haugesund and Karmøy, western Norway.

2007-2009: JERNBANEVERKET, Norwegian Railroad Authorities

Consultant; Site geologist, Assistant Superintendent, Rock Works.

Double track railroad tunnel, 5 km, Sandvika – Lysaker, Norway. Contractor; NCC Construction as.

2005-2007: ELKEM, Sauda Hydro Power project

Consultant; Site Geo Engineer.

- 2 hydropower plants and 30 km of tunnels, tail- and headrace tunnels for the Sauda Hydropower project. Total production 1500 GWh. Assistant superintendent and site geologist.

2006: Energy Technology Exploration, Irakish Kurdistan

Consultant; Chief Executive Officer.

- Field investigations in Duhok and Suleymania areas. Negotiations with prime minister Omar Fatah, provinsional government of Kurdistan.

2004-2005: Veidekke as VKR-Group,

Consultant; Site Geo Engineer.

- OPS Lyngdal-Flekkefjord Highway E39, southern Norway. 17 km highway construction including 8 bridges and 7 tunnels.

2002-2004: JERNBANEVERKET, Norwegian Railroad Authorities

Consultant; Assistant Superintendent, Rock Works.

- Double track railroad tunnel, 3.7 km, Sandvika – Asker, Norway. Extensive pre-grouting program to meet strict environmental demands in an agricultural and populated area. (see article in Tunnels & Tunnelling, June 2004; "Focus on Scandinavia").

2001: SRG, Scandinavian Rock Group AS

Consultant, directional drilling.

- Establishing of a directional drilling group in SRG/ AF-gruppen in cooperation with Devico as, Trondheim. Steered core drilling for preinvestigations (Atlanterhavstunnelen, Kristiansund).

- Tender documents for steered slim hole drilling for oil exploration in Spitsbergen (2000 meter deviated slim hole, diameter 76mm, on the Joker structure, Van Mijen fjord, NPG). Practical drill rig training, marketing and customer relations for new projects in Norway and Sweden.

2000-2001: SINGAPORE Ministry of Defence

Seconded by NorConsult as: Technical advisor, rock mechanics (July -00 to January -01)

- Underground construction in Singapore: Technical advisor in rock mechanics for DSTA (Defence Science & Technology Agency) on underground storage facilities.

2000

- Devico AS: Project "DeviMole". Automated deviation steering system for horizontal directional drilling for cables, fiber optics etc. Research and marketing evaluation, market report and meetings with possible investors (SND Invest) and partners/customers (Vermeer and DCI (USA) and Trakto-Technik GmbH (Germany)).

1997-1999 Statens Vegvesen Hordaland, Department of Road and Communication

Consultant and Site Geologist

- The Bømlafjord sub sea tunnel. Length 7.8 km. Site geologist. Site supervision, geological follow up and permanent rock support of Norway's until then deepest sub sea tunnel (260 meter below sea level (see article in Tunnels & Tunneling March 2000)).

1997 Norplan, NVK. Advisor geology and rock mechanics in Vietnam

- Song Hinh Hydropower Project, Vietnam:
Site investigations and meetings with client in Hanoi. Tunnel design, mapping and tunnel support. Slope protection of access roads.

1995-1997 NCC, Chief Geoenvironmental Engineer, Stockholm, Sweden

- The Arlanda Railroad Tunnel Project - Tunnels and caverns under Arlanda international airport (800,000 m³ rock excavation). Complicated excavation with wide spans and low rock cover under existing airport constructions. Leader of NCC's geo-department, (4 geologists and 1 Cad operator). Member of the monthly rock mechanical expert team (Prof.Ph.D. H. Stille; KTH, Dr.Ph.D. A. Palmstrøm; Norconsult as). Follow up of the rock mechanical test program; convergence and extensometer installations in tunnels and elevation measurements on surface. Geological databases with daily updates and electronic distribution to all construction sites (15 faces) of rock conditions and rock support recommendations. See article from Arlandabanen in "Fjellsprengningskonferansen, Oslo -96".

1991-1994: SAUDI Strategic Storage Project (SSSP)

ABV Rock Group KB, Medina, Saudi Arabia - Site Geo Engineer.

- Site supervision, geological follow up and decision of permanent rock support for underground storage caverns. CAD design of construction drawings. (Rock excavation: 4.3 mill m³, at peak: 32 production faces). Head of Site Geo Engineering department of 5

engineers, 2 CAD operators and 3 technicians. Member of the rock mechanical expert team (Dr.PhD O.T.Blindheim, Dr.PhD O.Siegl and others).

- Field mapping of the 13 km pipeline TBM tunnel from Medina Site to the Yanbu Oil Refinery at the Red Sea. Team leader.
- Rock Mechanical Test Program for Saudi Strategic Storage Plant. Project leader. (Underground oil storage caverns).

1987 -91: NORWEGIAN STATE POWER COMPANY (Statkraft)

Senior Engineer/Site Geologist

- Permanent rock support of the Svartisen Hydro Power Plant tunnels and caverns. Design of all tunnels and caverns in computer CAD system. Geological field survey of the head race tunnel of the coming Melfjord Hydropower Plant. Pre-investigation of sub-glacial water intakes.
- Svartisen Hydro Power Project: Complete geological mapping of the coming Svartisen headrace tunnel, project leader. Geological field surveys of the minor water tunnels. Total length 100 km. Supervisor of rock support and excavation in tunnels and caverns.
- Jostedal Hydro Power Project: Trainee, shift supervisor on dam construction, open pits and tunnels, site geo engineer.

1985-1986: NTH, Norwegian Institute of Technology, Trondheim

Scientific assistant in engineering geology and teaching of student classes.

- Project 8-87; "Deep Sea Fjordcrossing". Project assistant. Division of Construction Engineering.

1985: IKU, Institute of Petroleum and Continental Research, Trondheim

Field engineer

- Oil exploration drilling, Barent Sea. Geological mapping, core logging and seismic evaluation of offshore drill holes on the Loppa Ridge, Barent Sea. Field engineer and diploma candidate of the IKU Barent Sea Program 1985 with drill ship "M/S Bucentaur".

1983: Store Norske Spitsbergen Coal Company

Trainee, miner

- Underground Coal Mining, Longyearbyen, Svalbard.

END CV

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