

OPG'S DEEP GEOLOGIC REPOSITORY PROJECT

For Low & Intermediate Level Waste

Safe and responsible long-term management

DGR Technical Review Group

The Technical Review Group (TRG) was formed in September 2009 to advise NWMO on matters related to the design and construction of the proposed DGR facility. The proposed DGR project has many of the attributes and challenges of a deep underground mine construction project. The TRG has conducted two formal reviews of the DGR facility design and members of the TRG have participated in NWMO-organized design reviews of the DGR facility.

The TRG is comprised of independent technical experts who collectively have extensive experience in the fields of deep underground mine construction, mine ventilation, mine hoisting, geomechanics and radioactive waste material handling. The members include: Evert Hoek (term ended March 2010), Arthur Malkin (joined September 2010), Derek Martin (joined February 2010), Morris Medd, Wolf Seidler, Bill Smyth and Peter Tiley (former Chair; term ended May 2010).

Evert Hoek

Evert has many years of experience and has authored numerous papers on rock engineering topics as well as textbooks on Rock Slope Engineering, Underground Excavations in Rock and Support of underground excavations in hard rock. Consultant, independent reviewer and member of consulting boards or panels of experts on major civil and mining engineering projects in 35 countries around the world. He has been elected to fellowship of the UK Royal Academy of Engineering, the US Academy of Engineering and the Canadian Academy of Engineering.

Arthur Malkin, P.Eng

Arthur replaced Peter Tiley in September 2010 as the hoisting expert on the TRG. He has over 40 years of experience in the mining industry and has extensive experience in the design of headframes, hoists and hoist houses, shaft guidance systems and hoist control systems. Arthur has worked on various mining projects throughout Canada, the USA, Europe, and the Middle East.

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Derek Martin

Derek is a professor at the University of Alberta in the Department of Civil and Environmental. He has 30 years of geotechnical engineering and research experience related to site characterisation and repository design in both crystalline and sedimentary rock settings. Within the Canadian Nuclear Fuel Waste Management Program, Derek's research included the successful completion of geomechanical experiments which were instrumental in understanding safety issues related to repository tunnel and shaft design. This experience has provided an opportunity for broad geotechnical involvement in international radioactive waste management programs including South Korea, Finland, France, Switzerland, the United Kingdom, Hungary, the United States and Japan. Current experience related to underground geomechanical research relevant for DGR implementation includes active participation on programs at the Swedish Aspo (crystalline) Hard Rock Laboratory and the Swiss Mont Terri (clay) underground research facility.

Morris J. Medd

Morris has over 45 years of experience in the civil and mining industries with 40 of those years working for engineering and contracting companies specializing in shaft sinking, raise boring, alimak raising, mine development, contract mining, tunneling and civil mine construction. Morris played a major role in developing the innovative methods used in shaft sinking to-day, he started off as a miner and was project manager on several large shaft sinking projects and retired as CEO and president of the Redpath Group in 2005. He has since served as "shaft expert" on a consulting basis for different companies.

Wolf Seidler

Wolf has 40 years of experience in designing, building and operating mines in Canada and internationally. This includes underground as well as open pit mines extracting precious metals, base & ferrous metals, uranium and asbestos. Was also involved in the construction of major hydroelectric projects in northern Quebec including the James Bay Project. He has just completed 5 year contract with the French National Radioactive Waste Management Agency (Andra). The Project focused on the design, fabrication and demonstration of prototype equipment to be used for deep geological emplacement of highly radioactive long lived waste. Such equipment does not currently exist in either the mining or the nuclear

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industry.

Bill Smyth

Bill has 45 years underground experience in operations, maintenance, engineering and project management; project and mine engineering, and mining in both hard and soft rock mining (copper, gold, lead/zinc, uranium, nickel, potash and platinum/palladium). Mine ventilation is an area of specific expertise, he has worked on numerous ventilation projects in Canada and Internationally.

Peter Tiley, P.Eng.

Peter is a professional engineer and designated consulting engineer. He has 32 years of experience in the design of headframes, hoists and hoist houses, shaft guidance systems and hoist control systems. He has provided these services and support to the mining industry and engineering consultants throughout Canada, the USA, South America, Europe, Australia and Africa.