

**ALAN AULD ENGINEERING LTD
PROJECT DATA SHEETS – DEEP SHAFTS**



Date	Contract Type	Contract Title	Client	Contractor	Contract Description
Oct 08	Design Review	Scissor's Creek (Rocanville West no 3 shaft)	Potash Corporation of Saskatchewan	AMC	Independent review of shaft lining design from collar to sump including composite steel and concrete lining proposals together with iron tubing through the water bearing Blairmore strata
Jun 08	New mine shaft lining design review	Potash Shaft Linings in Saskatchewan	-	Cementation Canada Inc	Review of Design proposals for sinking of new mine shafts in Saskatchewan. Work carried out for Hatch Engineering
May 08	Options Study	NDA Nuclear Waste Repository – Generic Shaft Lining and shaft Sinking Study	Parsons Brinckerhoff for the UK Nuclear Decommissioning Authority	Parsons Brinckerhoff	Review and generic lining design for different geological models including strong rock, weak sedimentary rock and evaporites, work carried out as part of a review of geological disposal sites
Dec 08	Pre-feasibility Design	API Burr Shaft Saskatchewan		Cementation Canada Inc	Review of prefeasibility proposals
2008	Detailed design for rehabilitation of Victorian brick lined ventilation shaft	Caphouse Colliery Furnace shaft lining Stabilization and Shaft bottom reconstruction	National Coal Mining Museum for England	Amco Ltd	Design of 140m deep brick lined shaft lining stabilization measures, including replacement of brick lining and support curbs as well as design and stabilization of shaft bottom and connecting roadways
June 2008	Shaft Inspection and Report	Caphouse Colliery Report and inspection of old furnace ventilation shaft	National Coal Mining Museum for England	Amco Ltd	Inspection and report on the integrity of the condition of the man riding shaft
April 2008	Shaft Inspection and Report	Caphouse Colliery Report on condition of Man Riding Shaft	National Coal Mining Museum for England	Amco Ltd	Inspection and report on the condition of the man riding shaft
31.3.08	New Production and Service Shafts	Picadilly Potash Project, New Brunswick, Canada	Potash Corporation of Saskatchewan Inc	Cementation Canada Inc	Detailed engineering design for 2No. 5.5m (18ft) ID shafts, 885m deep.
19.10.07	New Mine Production and Service Shafts	Lubelska No.1 & 2 Mine, North West Ukraine	CCI – Lubelya	China Coal No.3 Construction (Group) Ltd	Wardell Armstrong Western Style Bankable Feasibility Study – Shaft Sinking Section Design Review. 8m ID shafts, 900m deep.

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15.2.07	New Production and Service shafts	Picadilly Potash Project, New Brunswick, Canada	Potash Corporation of Saskatchewan Inc	Cementation Canada Inc	Concrete lining design (preliminary) for 2 No. 5.5m (168ft) ID shafts, 885m deep
28.11.02	New No.3 Shaft (Production Shaft)	Red Lake Mine, Red Lake, Ontario, Canada	Goldcorp Inc	Cementation Skanska Canada Inc	Peer review of Geotechnical Study to recommend temporary/permanent excavation wall support for 7.8m I.D. shaft to a depth of 2225m through Basalt, Greywacke and Cherty Conglomerate
6.8.01	Investigation Shaft	Onkalo (Underground Rock Characterisation Facility) Design – Stage 1, Olkiluoto, Finland	Posiva Oy	-	Preliminary design of 5.8m I.D., 500m deep shaft through predominately Mica Gneiss, including sinking, lining, winding systems, construction programmes and costings, to provide access to an underground nuclear waste facility
26.2.01	No. 4 Main Production Shaft	Kidd Creek Mine, Timmins, Ontario, Canada	Falconbridge Ltd	Cementation Skanska Canada Inc	Peer Review of Ground Support Study to recommend temporary/permanent excavation wall support for 8.2m I.D. shaft to be deepened from 2000m to 3200m in Rhyolite and Andesite/Diorite
8.1.01	Investigation Shaft	Onkalo (Underground Rock Characterisation Facility) Olkiluoto, Finland	Posiva Oy	-	Feasibility Study for 5.8m I.D., 500m deep shaft through predominantly Mica Gneiss to provide access to an underground nuclear waste facility
6.12.02	Rock Shaft	Boulby Mine, Loftus, Cleveland	Cleveland Potash Ltd	-	Review of proposed remedial works at vent inset and onset levels of 5.5m I.D. shaft in Halite
23.10.00	No.1 Shaft (Production) No. 2 Shaft (Personnel, Materials) No. 3 Shaft (Production)	Goderich Salt Mine, Ontario, Canada	Sifto Canada Inc	-	Preparation of Concrete Lining Visual Condition Assessment Review Report. Shaft diameters (inspection depths) No.1, 16ft (1850 ft), No. 2, 16ft (1700 ft), No. 3, 22ft (condition O.K. not reviewed)
20.6.00	Rock Shaft	Boulby Mine, Loftus, Cleveland	Cleveland Potash Ltd	-	Inspection and report on condition of 5.5m I.D. shaft lining above and below onset level at 1100m depth in Halite and Potash.

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14.6.00	Lower Main Shaft (men and materials transport, fresh air supply) and Equipped Winze (production, second egress, exhaust air return)	Onaping Depth Project Feasibility Study, Sudbury, Ontario, Canada	Falconbridge Ltd	Kvaerner Cementation	Shaft lining designs. Lower Main Shaft 9.15m I.D., Equipped Winze 7.2 I.D. Both shafts to be sunk from 1494m below ground to depth of 2635m through Felsic Gneiss, Dark Norite and Granite Breccia.
9.3.99	Service/production and fresh air shaft	Onaping Depth Project Feasibility Study, Sudbury, Ontario, Canada	Falconbridge Ltd	Kvaerner Cementation	Water free shaft (ventilation) study. 7.6m and 9.15m I.D. shaft diameters to depth of 2632m. Review of mines operating under similar circumstances and overview of available methods for sealing shafts.
1.8.98	No. 2 Shaft (Production shaft)	Pugwash Mine, Nova Scotia, Canada	Morton International, Inc. and The Canadian Salt Co. Ltd	J.S. Redpath/ Deilmann-Haniel J.V.	Design check for installation of steel lining within existing concrete shaft to repair top 79m (shaft I.D. 4.877m)
29.7.97	Rock Shaft	Boulby Mine, Loftus, Cleveland	Cleveland Potash Ltd	-	Alternative concept studies for repairing precast contract block lining at depth of 1100m in time dependent deformable marl (shaft I.D. 5.5m)
21.1.97	Two Shafts for Each Site	Est, Gard and Vienne Nuclear Waste Underground Storage Proposed Sites, France	ANDRA	Kvaerner Cementation	Design of cast in situ concrete and combined concrete and steel shaft linings through frozen and unfrozen ground for Tender
17.7.96	Second Access Shaft	Mol, Belgium, Nuclear Waste Underground Storage Test Laboratory	ANDRAF	CFE/MBG/ BDF J.V.	Design of cast in situ concrete shaft lining capable of withstanding ground loadings, together with the temporary support, after being installed through frozen sands, silts and clay to 230m depth (shaft I.D. 3.0m) for Tender
4.7.96	Man and Materials Shaft	Iles-de-la-Madeleine Salt Mine, Quebec, Canada	Morton International, Inc. and The Canadian Salt Co. Ltd	Thyssen Mining Construction of Canada Ltd	Design and detailing of unreinforced concrete, hydrostatic pressure resisting extension of shaft lining from 83.7m to 162.65m upon recovery of the flooded shaft together with sealing concepts (shaft I.D. 5.5m)

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16.1.96	Man and Materials Shaft	Boulby Mine, Loftus, Cleveland	Cleveland Potash Ltd	Amalgamated Construction Co. Ltd	Proposed high strength (120N/mm ²) precast concrete block lining repair appraisal, modification recommendation to include plywood squeeze packs for flexibility, finite element analysis design check, Tender document preparation and contract supervision. Repair depth 1100m in time dependant deformable marl (shaft I.D. 5.5m)
22.11.94	Two Shafts, Shaft Winding System and Shaft Bottom Underground Layout	Sellafield, Cumbria, Nuclear Waste Rock Characterisation Test Facility (RCF)	UK Nirex Ltd	-	Total shaft design and detailing for Tender. Reinforced concrete collars and foreshafts. Hydrostatic pressure resisting shaft linings (5m I.D.) to a depth of 516m. Remainder nominally lined to 769m. Steel headtower, winding system, shaft furnishings, insets and shaft bottom layout design.
13.4.93	Two Shafts	Sellafield, Cumbria, Nuclear Waste Rock Characterisation Test Facility (RCF)	U.K. Nirex Ltd	-	Proposed concepts for cast in situ concrete shaft linings through water bearing sandstones together with the sealing concepts at the bottom located in dry strata at a depth of 516m (shaft I.D.'s 5.0m)
5.7.91	Second Access Shaft	Mol, Belgium, Nuclear Waste Underground Storage Test Laboratory	C.E.N./S.C.K.	Cementation Mining Ltd	Design of cast in situ concrete shaft lining capable of withstanding ground loadings, together with the precast concrete, segmental shaft lining temporary support, during and after being installed through frozen sands, silts and clay to 230m depth (shaft I.D. 2.0m) for Tender