

SCA'S NEW WATER SUPPLY

The Sunnyside Cogeneration Associates (SCA) operates a 50 MW power generation plant in Sunnyside, Utah. The plant, co-owned by Constellation Power and American Consumer Industries (ACI), produces power by burning the refuse pile left from the old Sunnyside Mine of Kaiser Steel.

Following four years of drought, it became very clear that additional water supplies would be required if the facility was to continue producing power at current levels. SCA has rights to the water impounded in the abandoned Sunnyside Mine and although they had previously drilled two wells into abandoned areas of the mine, the water supply was not sufficient. SCA had considered installing a 700 gpm (2650 L/min) submersible pump in the abandoned Whitmore Canyon mineshaft and although the 1,185 ft. (361 m) deep shaft had approximately 265 ft. (81 m) of water in the bottom, the problem was that the top 920 ft. (280 m) was filled with a mixture of 25% methane and other gases.

Norwest was engaged to degas the shaft and provide a safe environment for the contractors to install the pump and 18-inch (0.45 m) diameter casing. This would require safely diluting the methane content from 25% down through the explosive range, between 15% and 5%, to a safe level of less than 1%. The unknown factor in providing the design for this project was the methane generation rate of the shaft. Due to the length of time that the shaft had been in existence and subsequently sealed, the liberation rate was assumed to be relatively low.

Bob Evans, Vice President Underground Mining, tackled the project from the project management and ventilation perspective while Craig Hawe, Mechanical Engineer, provided the design support for installation of the required ventilation

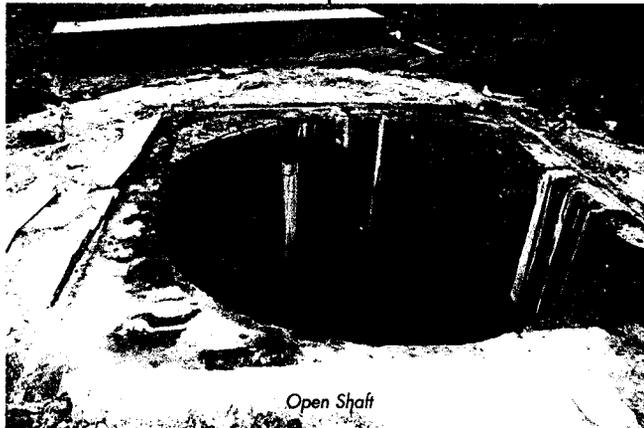
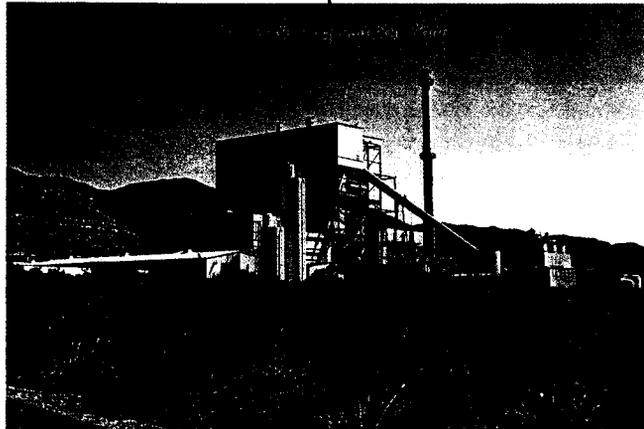
apparatus. They developed a concept that would introduce CO₂ into the shaft and gradually lower the methane concentration through its explosive range. Once the methane concentration was lowered to below 1%, the shaft seal would be removed and the shaft ventilated in its entirety with fresh air to provide a safe environment for casing and pump installation.

A ventilation plan was presented to The Mine Safety and Health Administration (MSHA) for approval prior to implementation. The plan was quickly approved by MSHA after only one iteration, and SCA was able to move to the construction phase of the project without delay. MSHA had two inspectors on site while the shaft was being ventilated.

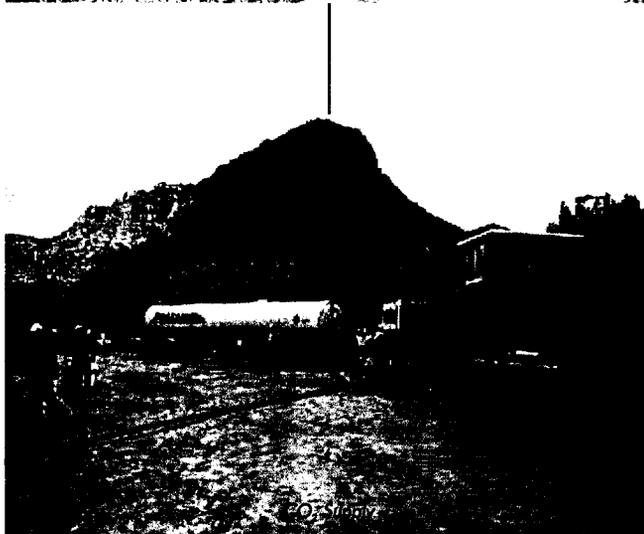
During the ventilation process air sampling equipment was used to constantly measure and record the quantities of methane, oxygen, and carbon dioxide that were present in both the shaft and the working atmosphere outside. A technician monitored this data in graphical form to provide feedback to Norwest during the project. This provided maximum assurance of safety for all involved.

The ventilation phase of the project was completed in 3½ days without incident. SCA followed up by running a camera the length of the shaft and then proceeded with installation of the casing and pump. The pump was started and pumped at a rate of 800-840 gpm (3028-3180 L/min) lowering the water level by about 0.3 ft. (0.09 m) overnight. With a head-of-water of more than 200 ft. (61 m), this installation will solve SCA's water supply problem.

We can't conclude this article without mention of the natural surroundings. Whitmore Canyon in Carbon County, Utah is a beautiful



Open Shaft



Sunnyside

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area located in the Book Cliff Mountains. During the project it was common to see mule deer grazing near the work site and on several occasions the crew witnessed four Bighorn Sheep crossing the road leading to the worksite.

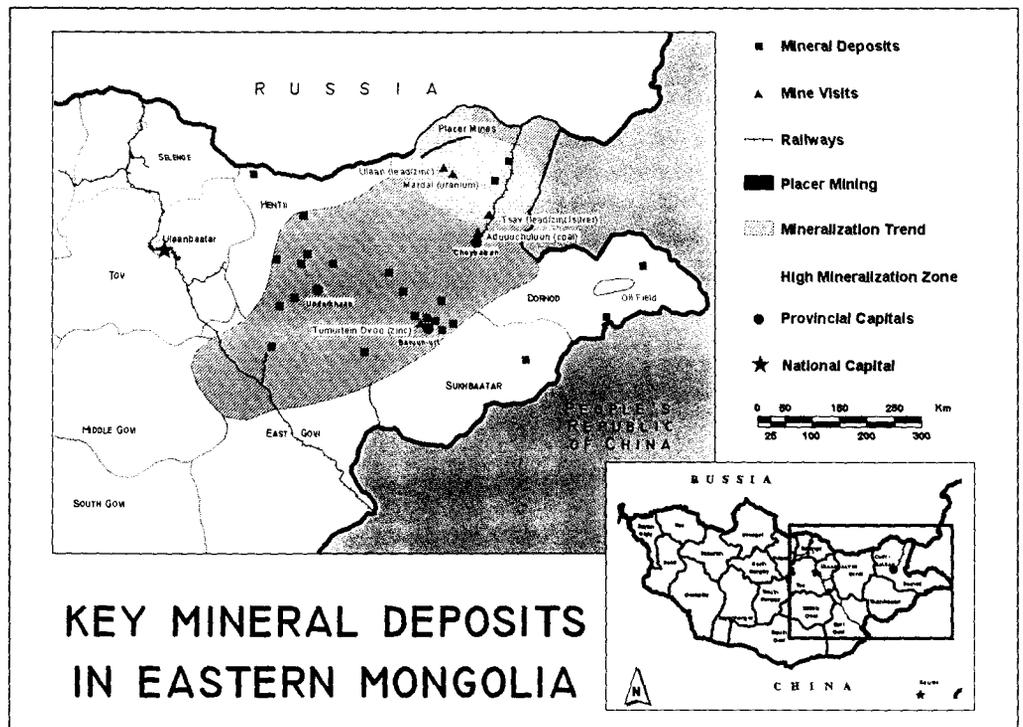
Norwest wishes to thank Randall Scott and Rusty Netz of SCA for the opportunity to provide this service to them. Kendall Reed of ACI was the owner's representative in charge of the project and was a pleasure to work with. Norwest was subcontracted by Psomas of Salt Lake City who provided the civil engineering and overall project management. Scott Carlson was the project manager for Psomas and we thank him for the opportunity to participate with Psomas. CounterPoint Construction Company of Layton, Utah performed the work. Thanks to all involved for a safe and successful project.

Bob Evans

Congratulations to Donovan Symonds on being named to the Executive Committee for the Manufacturers and Services Board of Governors of the National Mining Association.

MINERALS PROJECT IN MONGOLIA

In a continuation of previous projects in Mongolia, Norwest recently completed minerals-related assignment as sub-contractor to the Washington, DC company, "Transportatic and Economic Research Associates, Inc.". A major item of Norwest's assignment, which part of a larger economic development project, was to assess the mineral potential of the three eastern-most provinces indicated on the map. The project was funded by the Asian Development Bank. Virtually all of Mongolia's current exploration data was developed during the previous socialist era (pre-1992) with most of the work being funded by the former Soviet Union. Mongolia is recognized as having very high mineral potential and, to raise living standards within the framework of a free-market economy, the government is actively encouraging investment in the mining industry.



As part of the assignment, visits were made to five high priority potential mining sites in the eastern part of Mongolia. This is the least developed region of the country and most vehicle access is across the steppe without the benefit of paved roads or signposts. Accordingly, a four-wheel drive vehicle (in good condition) and driver were hired and adequate provisions and equipment taken along for the visits. After meeting with government officials in the provincial capitals the visiting team, comprised of Norwest, a Mongolian counterpart mining engineer and a translator, was provided with guides who reportedly knew the way to the various mine sites which are located in remote areas with low population density, even by Mongolian standards. Despite the guides, actually finding the mine sites was no easy task and the team was completely lost on several occasions. However, by following topographical landmarks during the day and the stars at night, the team, under the leadership of the happy-go-lucky (and intrepid) guide and driver

