

GEX Expands Output at Swisher Mine

Swisher Coal Co. is in southeastern Utah, where coal transportation is a major cost problem. Its solution is to offer high-quality prepared coal to its customers.

Daniel Jackson, western editor

General Exploration Co. (GEX) has been described as a company with foresight. It acquires underground coal mines in areas where marketing, mining and transportation are difficult and then wins a handsome long-term contract. The mines are then set up to produce coal at a high rate, and preparation plants and unit train loading facilities are established to overcome coal quality and transportation difficulties. A good example is the Swisher Coal Co. (owned by GEX), Price, Utah, which produced about 249,000 tons for the local custom spot coal market in 1975.

GEX purchased Swisher three years ago and put together a sales and mining organization to reverse the total dependence on the spot coal market by going after long-term contracts.

In the beginning, the company went after interim contracts to increase production although GEX wanted eventually to produce large volumes of coal for long-term contracts. The first of these interim agreements were two three-year contracts, followed by a 13-million-ton, 15-year contract.

The latter is the heart of GEX's marketing program. The contract gave Swisher enough clout at the bank to finance a new preparation plant and unit-train loading facility and to purchase almost all-new underground mining equipment for six sections. The company will have seven complete sections of underground equipment by 1979, including six on full production and one spare.

To satisfy present contract commitments, Swisher will be producing 1.5 million tpy of coal (1.2 million tpy of clean coal) from three mines—two are already operating—each equipped with two producing sections. Swisher is now installing the third mine to bring the number of sections up to a full complement of six. That mine is expected to be in production early this fall.

In addition, Swisher plans to continue serving the local spot coal market from its Wildcat Junction plant in the Price area. Coal for this market is cleaned in a Daniels heavy-media washer at plus ¼ in. and sized to meet customer specifications.

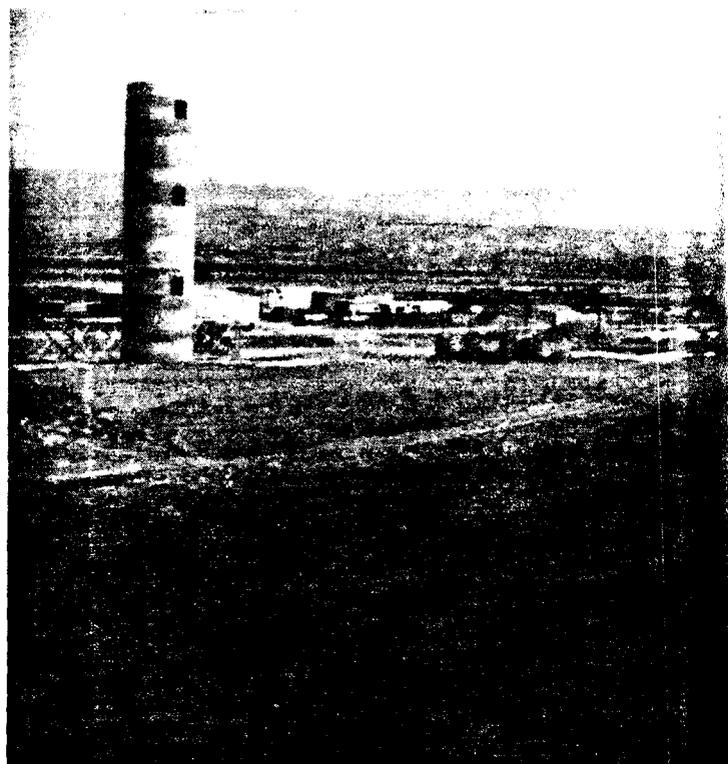
New prep plant gets ready

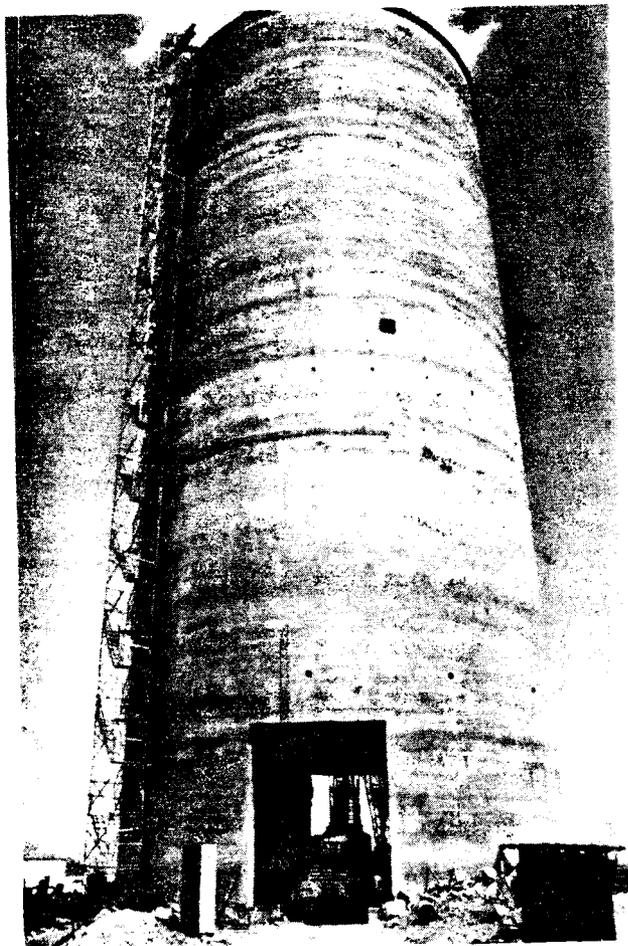
Although Swisher's new 400-tph preparation plant will not be completed until early 1979, the company will begin

loading 10,000-ton unit trains this month for shipment to its principal utility customer. Two unit trains consisting of one hundred, 100-ton cars will service that contract. At full capacity a train will be loaded about every fourth day.

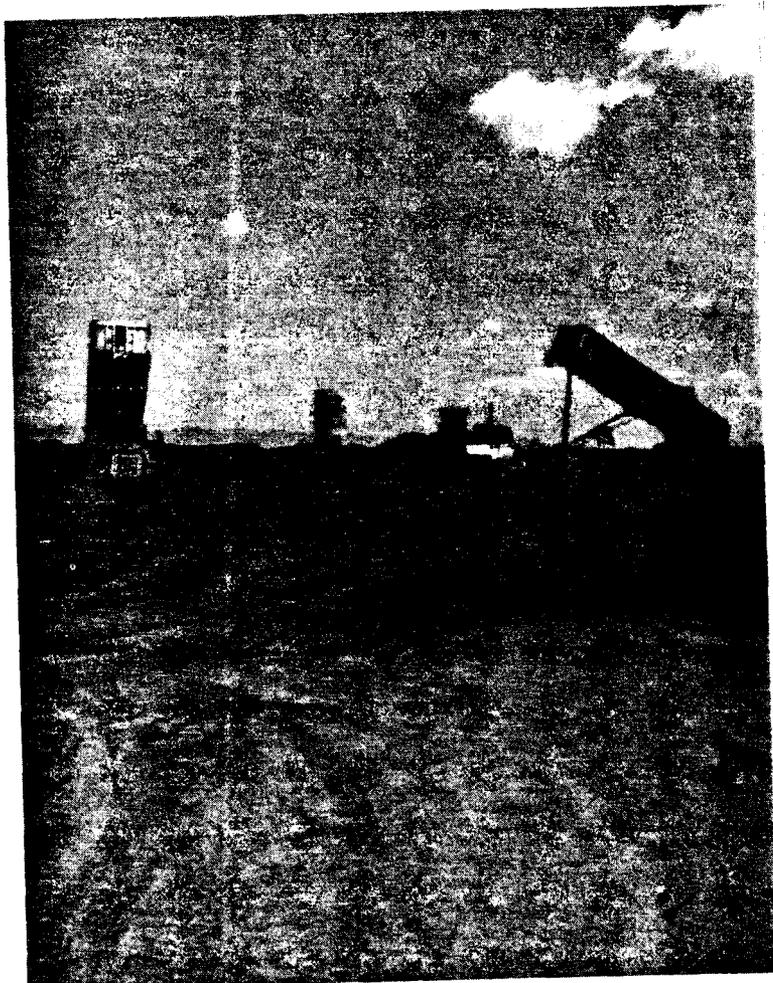
When the preparation plant goes on stream, ash will be reduced from 12% to 6% and moisture reduced to 10% or less. The Btu value of this medium volatile bituminous coal ranges from 12,500 to 13,000 when cleaned. Although the coal in-place is inherently clean, it is diluted in the mining process, primarily because of faults within the seams.

The dilution does not present difficult washing problems because of the small amount of near-gravity material, but it must be removed to enhance its quality and to satisfy Swisher customers. Also, the removal of some 6 to 7% ash and the reduction in moisture substantially improves transportation cost over long hauls.





The unit-train storage silo, designed for 10,000 ton capacity, is equipped to load at a rate of 6,000 tph.



Coal from three mines will be hauled to the Swisher plant by truck. The average 30-mile distance covers an elevation drop of 2,000 ft.

Two clean-coal stockpiles, each equipped with a lowering tube (center and left), will feed to the unit-train loadout silo (right).

With very little material to remove from the coal, Swisher elected to go with a seven-cell McNally Mogul jig washer as the primary cleaning unit and cyclones as the secondary. Centrifuges are used to dewater the coal. Provisions have also been included in the plant design for future installation of flotation cells if the economics can be justified.

Jigs, Tricones to be used

Raw coal from a 75-ton truck bin is fed into a McLanahan crusher for reduction to minus 3 in. From here it is conveyed to a stacking tube and fed to a 10,000-ton stockpile. Coal

from the stockpile is recovered by three FMC feeders, which discharge onto a belt conveyor. The coal is weighed by a Merrick scale prior to the preparation plant. At this point the coal can go directly to the jig washer or be bypassed. There will be times when clean 3 x 1/4-in. coal from the Wildcat Junction plant will be fed into the new facility for direct storage at one of two clean-coal storage areas. If 1/4-in. x 0 raw coal from the other plant is being cleaned it will go directly to 18, 12-in. McNally Visman Tricones in the fine-coal circuit.

When washing 3-in. x 0 raw coal, the total product is fed into the jig. Refuse from the jig reports to a refuse screen and screened at 1/2 in. for final disposal by truck. The minus 1/2-in. material then goes to a 20 x 12 x 20-ft Lamella thickener. Underflow goes to a 12-ft 6-in., eight-disk refuse filter and the overflow discharges into a clarified water sump for reuse in the plant. The cake from the filter goes to the refuse bin and effluent is returned to the thickener.

Clean 3-in. x 0 coal from the jig reports to two Tyler screens for 3/4-in. and 1/4-in. separations. The 1/4 in. x 0 goes to the fine-coal Tricone sump for further cleaning. The 3/4 x 1/4-in. product is dewatered by two McNally Wedag centrifuges prior to discharge onto the clean-coal belt. Plus 3/4 in. from the screens goes to a 36 x 60-in. McNally crusher for a final 3-in. reduction prior to discharging onto the clean-coal belt. Products from the crushers and the centrifuges are then conveyed to the 3-in. x 0 stockpile.

Fine coal circuit included

All 1/4-in. x 0 coal reports to the 18 primary Tricones. Overflow goes to a cyclone feed sump and the underflow to two secondary Tricones. The overflow from these units goes back to the primary Tricone for reprocessing and the underflow goes to the refuse bin.

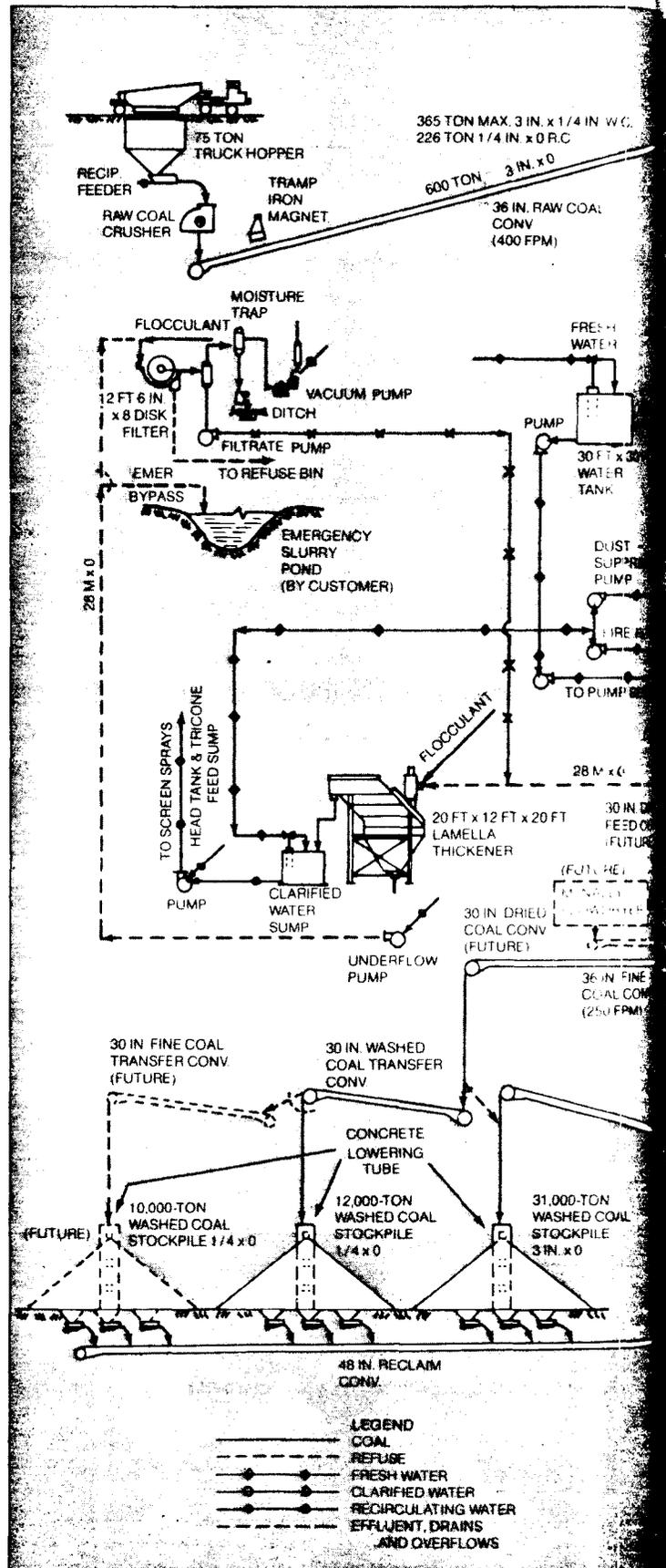
Material collected in the cyclone feed sump is pumped to 16, 14-in. McNally classifying cyclones. Overflow is pumped back to the plant water systems for reuse. Cyclone underflow reports to two Bird screen-bowl centrifuges. Effluent goes to the thickener and the dried 1/4-in. x 0 product is conveyed to a separate stockpile for storage.

Clean coal from either or both stockpiles is then weighed, sampled and conveyed to a 10,000-ton silo at the rate of 1,000 tph. At a loading rate of 6,000 tph, a 100-car train can be loaded in less than two hours.

Tough haul for coal

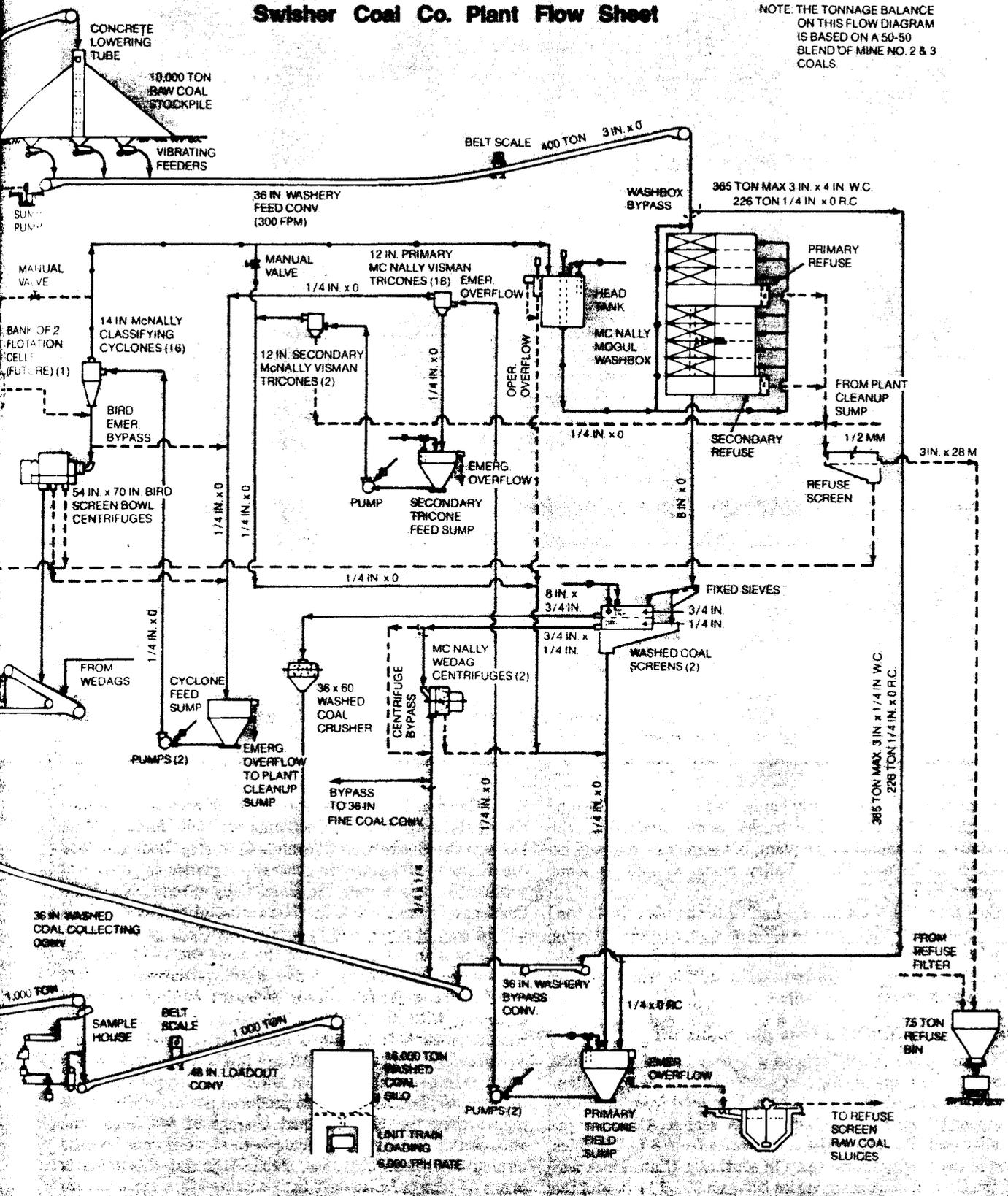
Not only did Swisher have a plant-to-market transportation barrier caused by the rugged terrain of southeastern Utah, it also had a 30 to 36-mile, mine-to-plant haul. The mines operated by the company are located in two remote areas at elevations about 2,000 ft above the plant site. Although other modes of transportation were considered, the one most feasible for the company was a contracted on-highway truck haulage fleet.

Approximately 2,000 tpd of coal from the Huntington Canyon No. 4 mine will be hauled 36 miles to the Swisher Castle Valley plant. The two mines at Gordon Creek, Nos. 2 and 3, are located 12 miles from the Utah Railway tracks that serve the Wildcat Junction preparation plant. Coal



Swisher Coal Co. Plant Flow Sheet

NOTE: THE TONNAGE BALANCE ON THIS FLOW DIAGRAM IS BASED ON A 50-50 BLEND OF MINE NO. 2 & 3 COALS





Off-highway trucks are presently used at mines Nos 2 and 3 to haul coal 12 miles to a 200-tph Daniels heavy-media plant.

from these mines is presently hauled to the plant by 110-ton, off-highway 660 Caterpillar trucks. Some production will continue to be hauled to the plant, but some raw coal will be trucked to the new Castle Valley plant, as well as some prepared coal.

Coal from the No. 4 mine is hauled to the plant in 45-ton, bottom-dump trailers and 30-ton end-dump trucks. Moving 1 million tpy of coal by trucks operating 240 days, for example, will require 119 trips daily by the truck fleet, or well over 30,000 trips annually.

Productivity hits 18.5 tons per manshift

Six continuous miner sections will be required to produce the 1.5 million tpy of raw coal needed to provide 1.2 million tons of clean coal. The coal is being produced from the Blind Canyon, Hiawatha and Castlegate A seams. All are high-quality coal. The Hiawatha seam varies from 6 to 7 ft thick and is the most uniform seam in southeast Utah. Thickness of the Castlegate A seam varies between 9 and 11 ft, and the

Blind Canyon, 9 ft. In the Gordon Creek area where mines Nos. 2 and 3 are located, the seams are badly faulted. Mine No. 4 in the Huntington Canyon is fault free. Roof and floor conditions in all seams are generally regarded as good.

Mine No. 4 is mining the Blind Canyon seam, No. 2 the Castlegate A and No. 3 the Hiawatha. Mine No. 6, which will be part of No. 3, will be mining the Castlegate A.

Mining plans essentially are the same for all operations, with entries consisting of five headings driven on 80-ft centers. The major difficulty in Swisher's mining operations is coping with the faults in the Gordon Creek area. A balance must be maintained between coal production and work performed in driving through faults. Rock work, which at times involves 30 to 40 men, lowers overall productivity at these mines, but the 18.5 tons produced per manshift is still higher than the 1977 national average of 8.70 tons. The situation at Huntington Canyon is totally different because mining conditions are ideal. Productivity at this mine is about 35 tons per manshift.

GEX Is Looking to Coal for Its Future Growth

General Exploration Co. is primarily engaged in the development of natural resources, including oil, gas and coal. During 1976, coal sales accounted for 59% of revenues and 89% of operating income. During 1977, coal, as a percentage of revenue, increased substantially. Although the company also conducted a number of large earth-moving projects, this work is being de-emphasized in favor of coal mining.

The performance of GEX from 1970 to 1977 has been noteworthy in terms of growth in revenues, earnings and market share, considering its future contract sales commitments. Further dramatic growth in terms of the quantity and quality of coal reserves occurred with the Roadside, Cameo and Lizann acquisitions. These three purchases, along with that of Hardy Coal Co. in Ohio, brought total coal reserves from zero in early 1972 to an estimated 330 million tons by mid-1977. It accomplished the basic balance the company had been seeking in its eastern and western coal operations and allowed it to capitalize on the projected market growth. The Roadside acquisition, with its well-developed mining operation and preparation facilities, enhances GEX's ability to deliver on its major contracts with Mississippi Power Co. beginning in 1978.

The Lizann operation, with its large, high-quality coal reserves in the heart of the Appalachian coal fields of Kentucky, provides an excellent position for rail, truck and barge transportation to the large and growing eastern coal markets.

Since the 1972 acquisition of Hardy, GEX has increased its overall annual production capability in terms of men and machinery by over 300%. By the end of 1979, it expects to have in-place capacity, east and west, to mine over 5 million tpy if the market demand is there.

In Colorado and Utah, the company is currently engineering or constructing expanded coal preparation and

unit train loading facilities so that by mid-1978 it will be ready to meet any quality standards required by the industry. The expansion of similar facilities at its eastern operations is being engineered and will be completed as rapidly as possible.

GEX's emphasis is on high-Btu, low-sulfur steam coal that is being sought by utilities and other generators of electric power. It believes that quality steam coal will command premium prices and be less subject to price swings as demand increases.

Western operations

Expansion of western coal properties, which began in the summer of 1975 with the acquisition of the Swisher mine near Price, Utah, continued during 1976. Approximately 400,000 tons were mined by Swisher in 1976, and 475,000 in 1977. In addition, surface facilities and portals were completed at the Huntington Canyon property and the development of underground reserve blocks was started.

The Colorado property is in the old mining town of Cameo, about 15 miles from Grand Junction. The land purchased or leased in this transaction contains about 50 million tons of high-Btu, low-sulfur coal. Portions of this reserve will be mined by longwall equipment, which would increase recovery of reserves up to 70%. No coal was mined from this property during 1976.

Eastern operations

Ohio coal production continued to set the pace for the company. The Hardy Coal Co., purchased in 1972, is well-established in Ohio coal markets. Production during 1976 was about 850,000 tons from surface mines in the Sugarcreek area. About 35% of this production was sold under long-term contracts or agreements, with the remainder sold through brokers or directly to other users.

Mining equipment at all three mines has been standardized to a great extent to simplify maintenance and supply inventory. A standard section consists of a Lee Norse continuous miner; Joy face drill; Wagner scoop tram; Lee Norse and Galis roof bolter; two Joy shuttle cars or Jeffrey Ram cars; Long-Airdox feeder-breaker; and a Long-Airdox belt conveyor system.

Credit for much of Swisher's success, especially in mining the faulted areas, according to Max Robb, president and general manager, stems from the organization that GEX originally put together. The straight-line management organization consists of Jay Reynolds, general superintendent; John Poppas, Ried Olsen and Kent Pilling, mine superintendents; Paul Butler, personnel and training; and Max Robb, for a combined total of 166 years of mining experience. This wealth of experience, meshed with the young, dedicated workforce averaging 30 years, accounts for the company's overall success in mining a badly faulted property. ■

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