from NBMG OFR 83-9
See also 83-10 for geochemical results.

near Elko

Elko County-general
Item 44

1730 0002

ELKO DISTRICT

The Elko district, which takes its name from the town nearby, includes portions of the Adobe Range and Elko Mountains which surround the town. Workings in the district are mainly associated with the oil shales to the south of town.

The following description is taken from Smith (1976).

> "Oil shale and interbedded lignite were discovered in the Elko Mountains about 1870 and were explored by the Central Pacific Railroad Co., Southern Pacific Co., and others until about 1920. The oil shales were developed through inclined shafts and several thousand feet of drifts. Several types of distillation plants were tried during the years 1914 to 1920. Shale oil valued at $1,920 was produced during 1917 and 1918, and about 15,000 gal was produced in an experimental plant in 1919. Lignite was prospected in numerous pits and shafts in hope of obtaining good fuel for locomotive and domestic use but without success. Conglomerate was quarried in the Elko Hills 2½ miles south of Elko from the Diamond Peak Formation for use as building stone prior to 1923 (Winchester, 1923, p. 93). A copper prospect about 5 miles north of Elko was explored by trenching during 1957. (This prospect could not be located in 1982). Additionally, phosphorite deposits were noted (Ketner, 1970, p. B108) in the southern Adobe Range."

The oil shale deposits of the Eocene Elko Formation are well described in several reports, the most recent being Moore and others (1983). They estimate

that the total in-place shale oil is 600 million barrels. Of this total, 228 million barrels are from beds that average at least 15 gal/ton over a 15-foot thickness; the remaining 373 million barrels represent low-grade shale that averages only 5 gal/ton over a thickness of 260-280 feet.

The oil shales of the Elko Formation could be petroleum source rocks if buried deeply enough in the surrounding valleys to generate oil. An oil well was drilled near Elko by Ladd Petroleum Corp. in 1976, but no oil shows were reported (Garside and others, 1977).

Elko Hot Springs and the adjacent Hot Hole area southwest of the town of Elko have a long history of use for spas, space heating, and other low-temperature uses (Garside and Schilling, 1979). Recently, the Elko Heat Co. began supplying heat to a laundry, bank and hotel in downtown Elko. The 80°C water is supplied by a geothermal well 1 km west of downtown Elko (Garside, 1983). Other geothermal heating customers may be added to the system in the future.

Selected References:

Garside, L. J., et al (1977) Oil and gas developments in Nevada, 1968-1976: Nevada Bureau of Mines and Geology Report 29, 32p.

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Garside, L. J. (1983) Geothermal energy, in Schilling, J. H., The Nevada Mineral Industry, 1981: Nevada Bureau of Mines and Geology Special Publication MI-1982.

Ketner, K. B. (1970) Geology and mineral potential of the Adobe Range, Elko Hills and adjacent areas, Elko County, Nevada: USGS PP 700B, p. B105-B108.

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Ketner, K. B. (1979) Phosphatic Permian rocks of the Adobe Range, Nevada, and their environment of deposition: USGS open-file rpt 79-239.

Lincoln, F. C. (1923) Mining districts and mineral resources of Nevada: pub. by Nevada Newsletter Pub. Co., Reno.

Moore, S. W. et al (1983) Results of oil shale investigations in northeastern Nevada: U.S. Geol. Survey open-file rpt (in press); prepared for the Nevada Department of Energy.

Smith, R. M. (1976) Mineral resources of Elko County, Nevada: USGS open-file rpt 1976-56, p. 62-65.

Soloman, B. J. (1979) Geology and oil shale resources near Elko, Nevada: M.S. thesis, San Jose State Univ. and USGS open-file rpt 81-709, 152 p.

Solomon, B. J. et al (1979) Eocene and Oligocene lacustrine and volcanic rocks near Elko, Nevada: in RMAG - UGA - 1979 Basin and Range Symposium and Great Basin field conference, p. 325-337.

Soloman, B. J. and Moore, S. W. (1982) Geologic map and oil shale deposits of the Elko West quadrangle, Elko Co., Nevada: USGS MF-1410.

Soloman, B. J. and Moore, S. W. (1982) Geologic map and oil shale deposits of the Elko East quadrangle, Elko County, Nevada: USGS MF-1421.

Winchester, D. E. (1923) Oil shale of the Rocky Mountain region: USGS Bul 729.

Elko District

Elko Heat Co. supplied geothermal water to its first customer, Vogue Laundry, in December of 1982. The 175°F geothermal fluid is piped from a well 3/4 mile west of downtown Elko. The heat company will also supply geothermal water to the Stockman's Hotel and Henderson Bank Building. A U.S. Department of Energy grant of $830,000 gave the project its start in 1978 (Nevada State Journal, 9 Dec 82). Total cost of the project was approximately $1.5 million (Oregon Institute of Technology, Geo-heat Center Bulletin, Summer/Fall 82). The return water (at $100\frac{01}{11}$-110°F) will be stored in a pond near West River Street and will be used to irrigate city parks (Elko Daily Free Press 12 Oct 82). Elko Heat has a consumption use permit from the Nevada Division of Water Resources. Production of water from Elko Heat well and a pump test at Hot Hole just southwest of Elko have prompted complaints to the Division from other owners of geothermal wells or springs in the area. Several owners report reduced flows or temperatures which may be related to recent drilling or pumping in the area (Elko Daily Free Press, 19, 31 Aug 82; 6 Oct 82).

The City of Elko drilled several test wells in Elko in 1982 in a search for geothermal waters that could be used for a sewage plant or to heat city buildings. A well drilled by the city near the Municipal Swimming Pool in November 1982 had temperatures over 125°F at 800 feet. Water from this well may be used for the swimming pool and to heat City Hall and the Convention Center(Elko Independent, 10 Nov 82).

Taken from:

Garside, L.J. (1983) Geothermal Energy, in Schilling, John, The Nevada Mineral Industry 1982: Nevada Bureau of Mines and Geology Special Publication MI-1982.