

SCHEELITE IN GILLESPIE COUNTY, TEXAS

MINERAL RESOURCE SURVEY
Circular No. 56

Prepared By

The Statewide Mineral Resources Survey
Service Division
Work Projects Administration

The University of Texas
Bureau of Economic Geology
Official Sponsor

Published By

The University of Texas
Bureau of Economic Geology
December, 1942

THE UNIVERSITY OF TEXAS
BUREAU OF ECONOMIC GEOLOGY

MINERAL RESOURCE SURVEY
Circular No. 56

The information in this circular was partly obtained from work carried on by a unit of the WPA Statewide Mineral Resources Survey Project, sponsored by The University of Texas, Bureau of Economic Geology. The purpose of this survey is to assemble information concerning the mineral resources of Texas and make it available to the public. It is hoped that this information will be a contribution to the industrialization of the State. This report is based on work done by W.P.No.18926.

^{*/}
SHEELITE IN GILLESPIE COUNTY, TEXAS

By Robert W. Mathis, Supervisor

Introduction.—A geologic map and a bulletin describing the geology and mineral deposits of Gillespie County, Texas, are being prepared by the Bureau of Economic Geology. Awaiting completion of this map and bulletin, abbreviated mimeographed circulars describing the more important mineral deposits are being issued by the Bureau. The first scheelite recognized in Gillespie County was mentioned in a recent circular.^{1/} Work Project No. 18926 was first engaged in an examination of soapstone deposits ^{2/} in the county and later spent some weeks in an examination of the scheelite at the old barite prospect ^{3/} and vicinity. At the termination of the WPA project, the investigation was continued by the Bureau of Economic Geology and was extended to include the rest of the pre-Cambrian area of Gillespie County. In the preparation of this report, acknowledgment is made to Dr. V.E.Barnes under whose supervision the work was done.

Scheelite occurs in the pre-Cambrian rocks of northern Gillespie County as a vein and contact metamorphic mineral. This mineral, when viewed under an ultra-violet light source of the right wave length, fluoresces a bluish white when pure and white to yellow when it has a progressive higher molybdenum content. The discovery of scheelite in this area is directly attributable to the use of an ultra-violet mineral lamp. Since scheelite is heavy, a method of prospecting similar to that used in tracing gold to its source was tried. The streams of the area were panned, and in those containing scheelite, an effort was made to trace it to its source. In addition, scouting for areas of contact metamorphic minerals was done by day, and favorable areas were examined with the mineral lamp at night.

^{*/}

Assistance in the preparation of these materials was furnished by the personnel of Work Projects Administration Official Project No. 265-1-66-214.

^{1/}

Barnes, V. E., Parkinson, G. A., and Warren, L. E., Scheelite in Llano County, Texas: Univ. Texas, Bur. Econ. Geol., Min. Res. Cir. 20, p. 2, August, 1942.

^{2/}

Barnes, V. E., and Mathis, R. W., Soapstone in northeastern Gillespie County, Texas: Univ. Texas, Bur. Econ. Geol., Min. Res. Surv. Cir. 55, 10 pp., December, 1942.

^{3/}

Barnes, V. E., Additional notes on barite: Univ. Texas, Bur. Econ. Geol., Min. Res. Cir. 11, pp. 1-2, May, 1939.

^{4/}Paige has defined the various rock groups of the pre-Cambrian. To the formations named by Paige, Barnes ^{5/} has recently added Big Branch gneiss.

The scheelite so far as observed occurs consistently within rocks belonging to the Packsaddle series. Mineralization has apparently taken place during emplacement of adjacent igneous rocks. The occurrences are very sporadic and small, and of the ten found in Gillespie County, only two are large enough to be of any possible economic value. One of these is on the Alfred Davis property, 7 miles northeast of Willow City; the other is three-quarters of a mile east of Enchanted Rock on the Llano County line.

The scheelite deposit east of Enchanted Rock is on the Holmes Moss property and is a contact metamorphic deposit. The area consists of Packsaddle schist intruded by small granite masses probably of the same age as the Enchanted Rock granite. The scheelite occurs as crystals in an epidotized zone of Packsaddle schist near a small granite intrusion. The crystals are large, ranging up to one-half inch in diameter. The epidote band is 500 feet long and outcrops as a crescent, which is broken near its east end by numerous pegmatic dikes. Scheelite is evident in only a small area about 10 by 30 feet in size at the sharpest curve in the crescent and in a few smaller areas along it. The epidote band is honey-combed, and possibly scheelite has been removed by weathering at the surface. The WPA project terminated before this deposit was found; consequently, trenching could not be done to see if the epidote contains scheelite at depth. The scheelite has a slightly yellow fluorescent color. Some marble occurs along the epidote band but is barren of scheelite. Marble and marble-granite contacts were examined elsewhere without finding scheelite. Apparently, contact metamorphism with the introduction of minerals such as epidote and garnet was necessary in order to have scheelite deposited.

Several of the smaller scheelite outcrops in the area are similar to the one discussed above in that the scheelite is in epidote zones near granite intrusions. One such occurrence is across the road from the ranch house south of Enchanted Rock, and another in Llano County is along a low ridge south of a large field on the M. Ricketson place southeast of Oxford. A little scheelite was found in epidote boulders on the surface of the ridge west of Crabapple Creek and west of Rudolf Holman's house. The boulders could not be traced to their source.

The scheelite on the Alfred Davis property is associated with a barite-quartz vein in a Packsaddle schist inclusion in Big Branch gneiss. The vein extends about 1000 feet northwest from the barite prospect onto the Clinton Hardin property. The scheelite is scattered sparsely along this mineralized zone as thin veinlets along the barite-quartz contact with a dark granular schist, as narrow veinlets in hornblende schist, in small quartz veins parallel to the large vein, and occasionally as crystals and groups of crystals within the barite-quartz vein. Trenches made during the course of the investigation and openings already present expose some

^{4/}

Paige, Sidney, Description of the Llano and Burnet quadrangles: U. S. Geol. Survey Geol. Atlas, Llano-Burnet folio (No. 183), pp. 3-5, 1912.

^{5/}

Barnes, V. E., Map of Cut Off Gap, Gillespie County, Texas, accompanying itinerary of Excursion 4: Geol. Soc. Amer., Excursions, 53d Annual Meeting, December, 1940.

Barnes, V. E., and Mathis, R. W., op. cit.

scheelite, but it is probably insufficient in amount to be of economic importance. The richest pockets may contain as much as 30 per cent scheelite, but the vein as a whole probably would average only a small fraction of 1 per cent. The scheelite has a bluish-white fluorescence, indicating a low molybdenum content.

The barite-quartz vein and its associated scheelite suggest a hydrothermal origin. The original source of the scheelite is not entirely clear. The vein is parallel to the predominant pegmatite direction of the later granites, but no surface outcrop of these granites is nearer than a mile. Big Branch gneiss outcrops near by and possibly could have been the source. The mineral association different in this deposit than in any other deposit examined, suggesting that the scheelite may have had a different origin, namely, from the Big Branch gneiss.

Scheelite was found 1400 feet north of the barite prospect in a few small discontinuous pods of epidote in Packsaddle schist. Two similar deposits were found elsewhere on the Alfred Davis property, one 450 feet east and 2300 north of the southeast corner of the W. O. Davis property, and the other 1000 feet east-northeast of the hunting cabin on the W. O. Davis land. A little scheelite was found in a quartz-epidote rock in an old shaft on the Nolen Althaus property near U.S.G.S. bench mark 1537, which is located at the junction of the road to the barite mine. Scheelite was found in a hornblende schist near a pegmatic dike about three-eighths of a mile northwest of the Nolen Althaus windmill. A few small crystals of scheelite were found in a dense rock on the same property along the main road near the Althaus north gate. All of these small deposits are in rocks of the Packsaddle schist series.

The entire pre-Cambrian exposure in northern Gillespie County was prospected for scheelite, and the results obtained are here given to guide future prospecting. Panning was first used in an attempt to find scheelite in the streams and trace it to its source. Scheelite has a specific gravity of approximately 6.0 and is not difficult to destroy by weathering and transportation. Hence, it should be found in the heavy mineral residue not far from the source. The theory may be good but when applied did not lead to any new deposits. All of the creeks and hollows in the pre-Cambrian of Gillespie County were panned. Scheelite was found localized in some of the larger creeks, such as Crabapple, Legion, and Big Branch, in areas which proved barren by close examination with the mineral lamp. Concentrations of scheelite were found in Big Branch at the hornblende on Ferrill Smith's property, in the west prong of Legion Creek on Harry Holman's property, in Crabapple Creek and its tributaries on Henry and Rudolf Holman's properties, and in a small tributary of Sandy Creek at the eastern margin of Louis Welgehausen's property. The rocks in these vicinities were investigated thoroughly without finding scheelite deposits. It is possible that the scheelite may be disseminated locally in schist similar to that recently found by J. L. Stratton north of Lone Grove in Llano County. Schists weather low, are usually soil covered, and consequently outcrops are scarce, and small disseminations of scheelite could be easily missed.

Conclusions.--Any attempt to develop scheelite in Gillespie County should be centered on trenching the epidote mass on the Moss property to see if scheelite is more extensive beneath the surface. The water should be pumped out of the barite prospect shaft on the Alfred Davis property to see if the scheelite may be more abundant at depth.

Panning to trace placer scheelite to its source has proven unsuccessful in locating scheelite deposits. The best method of finding scheelite, apparently, is to scout the country for contact metamorphic deposits by day and examine those found with a mineral light at night. The most fruitful areas to prospect should be in the Packsaddle schist areas adjacent to granite contacts.