

July 22, 1974
Rm. 3306 G
Federal Power Comm
Washington DC

Mr. Ed Hare
Commerce Center
c/o P.O. Box 857
St. Charles, Mo., 63301



20426
KGS
OF
69-2

Dear Ed:

Enclosed is a copy of my notes and slides on the paper on sulfide minerals from Mississippian cores in Greenwood and Woodson counties, Kansas, which you requested by phone on July 16, 1974. I do not have the specific location of the four cores with me. They should be available from the core file at the Kansas Geological Survey.

Apparently, I failed to leave copies of this research with the Kansas Geological Survey. Therefore, I am sending to Dr. W. W. Hambleton today, copies of what I am providing you so that, should he choose, it may be placed in the KGS open file.

cc W. W. Hambleton

Cordially
Edward D. Fochel.
202-386-6238

area covered by radar imagery reveals a series of topographic and structural features remarkably well aligned with the Roselle fault. These include drainage alignments and a buried Precambrian scarp to the south, and the Platin anticline and the course of the Mississippi River north of Crystal City, to the north. These features form an almost continuous alignment extending for over 135 miles from near Piedmont, Missouri north-northwest to the vicinity of the junction of the Mississippi and Missouri Rivers. This alignment of features is termed the Roselle lineament. It is suggested that this lineament has been in existence since the Precambrian, as a major lineament of this portion of the crust and that it may have been important in localization of mineral deposition in southeast Missouri.

METALLIC SULFIDE MINERALIZATION IN SOME MID-CONTINENT PALEOZOIC CORES

Goebel, Edwin D., Truman C. Waugh and Ernest E. Angino, State Geological Survey, University of Kansas, Lawrence, Kansas 66044

Some of Acetic acid insoluble residues of Paleozoic cherty carbonate rock cores commonly include some metallic sulfide minerals. The most common minerals are pyrite and marcasite; chalcopyrite, sphalerite, bornite, and galena are present, but less common. Whole-core composite samples of two Mississippian cores from Woodson County and two Mississippian cores from Greenwood County, Kansas, were analysed by semiquantitative emission spectrography for Pb, Mo, Ni, Cu, Ag, and Zn. Measured concentrations of these elements are comparable with those reported as significant in productive jasperoid from several mining districts in western United States including Oklahoma (Lovering and Hamilton, 1962). The concentration levels of some elements in Kansas cores exceed the average concentrations of these same elements in sedimentary carbonate rocks in the earth's crust as given by Turekian and Wedepohl (1961).

The residues also contain conodonts, which are microfossils composed of apatite. The conodont faunas from the four cores are similar and give an age of late Osagian-early Meramecian. Thus, the host rock of this metallic sulfide mineralization is Middle Mississippian. Mineralization, which is of a similar nature in the four cores, probably is younger than Middle Mississippian. Only more exploratory investigation in the two counties can establish continuity of mineralization or location of ore-grade minerals.

Metallic Sulfide Mineralization of Some Mid. Cont. Paleozoic Cores: Goebel, Edwin P., Waugh, Truman C., and Argen, E. E. (Kans. Geol. Surv.) Paper - GSA, 1969, Lawrence, Kansas.

During our standard laboratory procedures of working with cores from the northern Mid-continent area we have found that acetic acid insoluble residues of many paleozoic cherty carbonate rock cores commonly include some metallic sulfide minerals. The common metallic sulfide minerals, recognizable under low magnification using a binocular microscope, are pyrite and marcasite; chalcopyrite, sphalerite, bornite, and galena are present but less common.

The insoluble residues from carbonate cores also contain conodonts which are phosphatic microfossils. Because these are composed of the mineral apatite they react as a heavy mineral and are easily separated along with the metallic sulfides in our laboratory procedures. It was logical, therefore, from the occurrences in northern mid-continent cores to suspect that conodonts would be preserved in or near the lead and zinc ore bodies in the Tri-State District. Goebel, Thompson, Waugh, and Mueller verified in 1967 in a report this association of metallic sulfide minerals and a useful conodont fauna from the Tri-State mines. That fauna gave an age of the host rock as the *Gnathodus texanus-Taphrognathus* Zone or late Osagian age. Lyden's, 1950, mineral maps of the Picher Field showed the relationship of gray dolomite and ore, and jasperoid and limestone. Lovering and Hamilton, 1962, in a study trying to establish criteria for the recognition of jasperoid associated with sulfide ore defined jasperoid as silicified carbonate rock. Their work as did our early work included samples from the Tri-State. They distinguished between barren and productive jasperoid spatially. Their samples from or adjacent to the mine workings were called productive but those taken a quarter mile away were called barren. The samples that Goebel, Thompson, Waugh and Mueller took from the Tri-State District mines were along mine walls and in pull-drifts in limestone and jasperoid between ore bodies. It is our feeling that we sampled what Lovering and Hamilton would call jasperoid.

Lovering and Hamilton work included a number of productive jasperoid samples in the western conterminous United States from ore districts. They concluded that a number of hand specimen

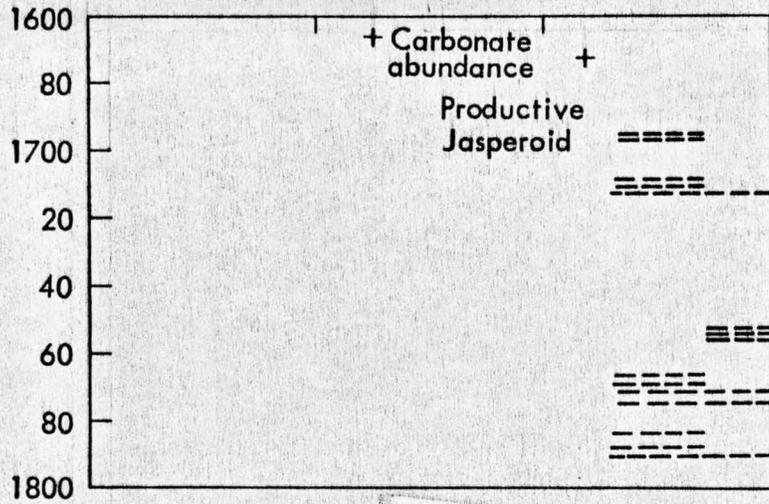
Collins
Headley
Dalton B

Zn
PPM

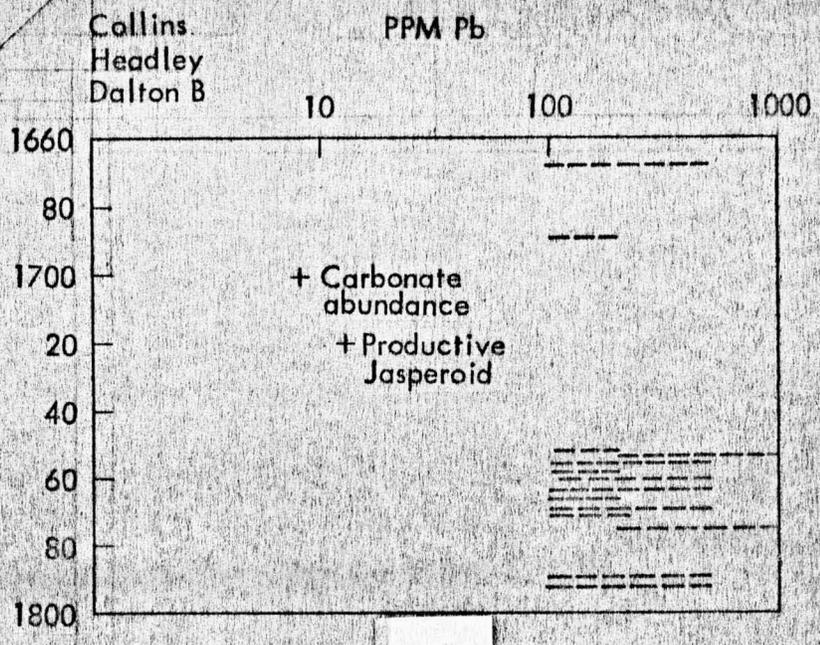
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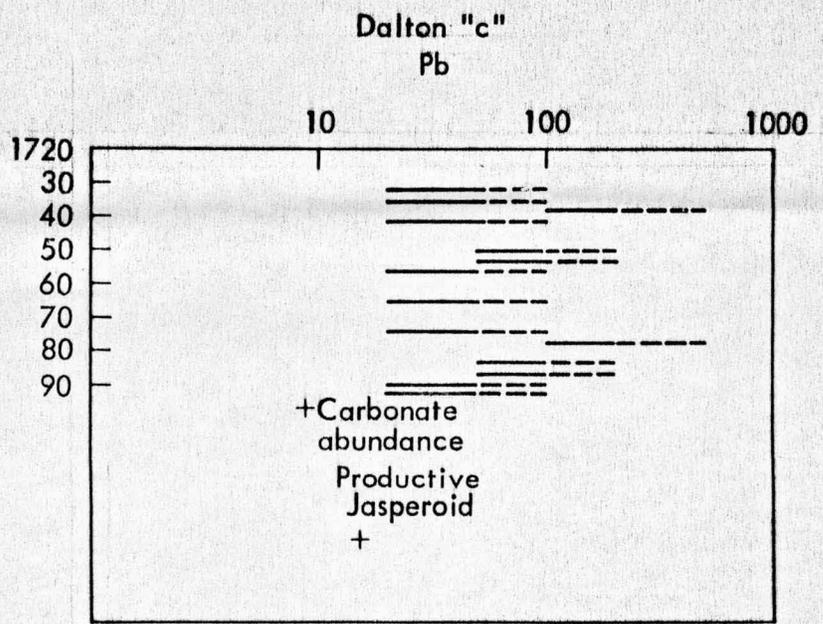
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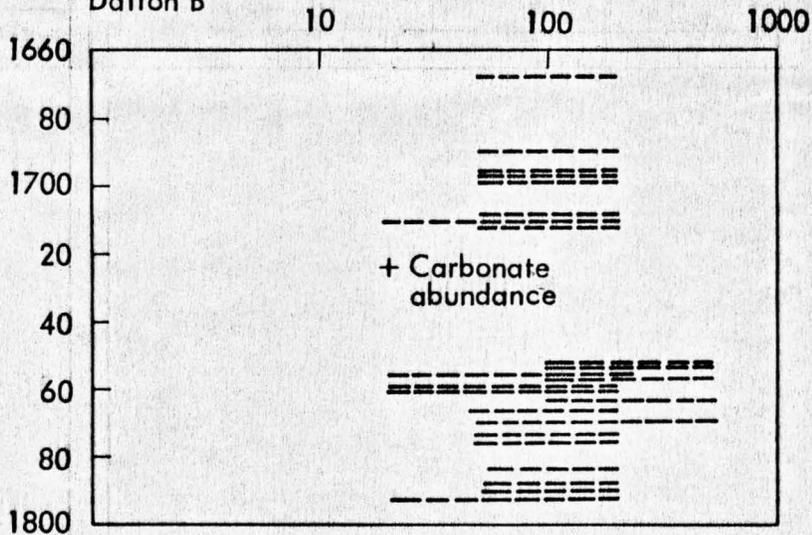
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Collins
Headley
Dalton B

PPM Ni



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