State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

MEMORANDUM ON EASTMAN "OIL SEEP", YAMHILL COUNTY, OREGON

Owner: John L. Eastman, Route 2, Box 112, Yamhill, Oregon

Location: 11 acres in M. Vaugn claim in sec. 16 and 17, T. 2 S., R. 4 W.

Geology: According to Warren, et al (1945) the country rock in this general area is composed of middle Eocene tuffaceous shales. These shales occur as a rather narrow belt of marine sediments between the overlying Cowlitz formation of upper Eocene - lower Oligocene age approximately 2 miles east and the underlying lavas and tuffs of the Tillamook volcanic series approximately 2 miles west. This sedimentary unit is apparently a shaly facies of the Tillamook volcanic series that has been mapped separately here in the valley of the North Yamhill River.

General: Mr. Eastman had a core hole drilled on his property to a depth of 100 feet on the basis of a supposed oil seep coming from the shales cropping out in the hillside beneath his house. His method was to grind up a sample of shale in a can of water and then to pour in a quantity of CCl_4. He showed me mixtures of sediment, water, and CCl_4 from the shale as well as various core specimens, in which a faint iridescent film on the surface of the liquid was visible. Under the blacklight, however, no fluorescence was apparent in any of the samples tested. A piece of grayish tuffaceous sandstone core taken from the bottom of the hole (100') was sent to the Pittsburgh Testing Laboratories by Mr. Eastman. Ether extraction analysis indicated that there was .07 percent "oil" in the sample. I talked to the chemist at the Pittsburgh Laboratories concerning the sample submitted by Mr. Eastman and his conclusion was that the residue was so small it was almost impossible to determine what the material really was. A sample of this same core was given to L. L. Hoagland for checking. He, too, used the ether-benzene extraction method and found .004 percent residue.

The hole was drilled during the month of May 1954 and by the time the inspection was made (August) the cores, having been laid out on the ground, had all been badly weathered. The entire section, except for a few thin sandstone stringers, was composed of gray shale. None of this core material, sandstone or shale, had the slightest petroliferous odor or fluorescence when freshly broken. I was also unable to get any iridescent films on the samples of shale or cores taken from Mr. Eastman's property after mixing the rock with water and CCl_4.

Conclusions: Discussion of the problem with both L. L. Hoagland and Pittsburgh Laboratories concerning the nature of the "oily residue" from the core sample is inconclusive. The consensus was that although there was some ether-soluble residue present in the sample, the amount was so small that it was impossible to determine whether it was a waxy type or true oil, much less whether it was crude or refined. The amount present would not be sufficient to fluoresce or even give any odor except perhaps when the core was first brought to the surface.

If the residue is indeed oil rather than some sort of waxy vegetable matter its presence could have two possible explanations: (1) the residue could actually be crude oil, and (2) the residue is refined oil that has somehow contaminated the core sample. The first possibility is not too unlikely since small amounts of oil are being found at present in recent marine sediments as well as in older sedimentary rocks where there is not as yet any petroleum production. The dark gray shales present in the section above and below the sandstone may perhaps be source rocks for petroleum in very small quantities although because of their weathered condition when inspected no petroliferous odor could be detected. The second possibility could also account for the residue since the hole was cored by a rotary type of drilling rig. Such rigs require mud to be circulated through the drill stem while drilling to act as a lubricant and to flush the rock cuttings to the surface to keep them from jamming the core bit. Oil from the engines often flows into the surface mud pits and is subsequently pumped, along with the mud, through the drill stem. It is possible, then, that some of this oil-contaminated mud could have impregnated the core. At the present time, until sufficient "oil" can be obtained to determine its exact nature and origin the writer does not feel that the material can be considered particularly significant as a possible source of petroleum.

Report by: R.E.C.
Date: 9-24-54