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REPORT OF INVESTIGATIONS

**INVESTIGATION OF THE THOMPSON MAGNESIUM
WELL, GRAND COUNTY, UTAH**



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BY

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Figure 1. - Crescent Eagle No. 1 well, left foreground, and Brendell No. 1, right, looking southwest.



Figure 2. - Salt Creek anticline half a mile southeast of wellsite.

Twenty miles to the west lies Green River, which is a fairly large river and navigable to its junction with the Colorado River to the south. The Colorado River is navigable upstream to Moab. Twenty-five miles southwest of the well is the Colorado River, which is slightly larger than Green River. The terrain to the Colorado River is very rough and highly eroded into perpendicular cliffs of several hundred feet. The land slopes gently toward Green River. Water could be piped from Green River for working the magnesium deposits. The lift would be about 800 feet to the well.

HISTORY OF DRILLING

Many wells have been drilled on the Salt Creek anticline in search of oil and gas. The nearest one is 218 feet S. 40° E. from the Defense Plant Corporation Reeder No. 1 well. It was in this well that carnallite was first discovered, and many analyses were made of the brines and samples while drilling. This well is known as Crescent Eagle Oil Co. Reeder No. 1 well. It was started in 1920 and finished in 1925 to a depth of 3,972 feet. As it was a cable-tool test, no cores were taken. The log of this well and many others of the district are described by C. H. Dane.^{2/}

In September 1928, another well was started 400 feet south of the Crescent Eagle No. 1 Reeder well. It was drilled by the Brendell Oil and Gas Co. in the NW. 1/4, NE. 1/4, NE. 1/4 of sec. 9, T. 22 S., R. 19 E., and was carried to a depth of 4,125 feet with cable tools (fig. 1). This well was drilled principally to prospect the salt section for magnesium and potash. Brine samples were taken from the drilling water and analyzed. A considerable amount of carnallite was reported in this well. It was the showings of magnesium and potassium in the Crescent Eagle No. 1 well and the Brendell No. 1 well that aroused the interest in the area that resulted in drilling the Defense Plant well.

The Utah Magnesium Corp. assembled a block of leases and permits in the area with secs. 4 and 9 of T. 22 S., R. 19 E., as the center and interested the Defense Plant Corporation in financing the drilling of the well.

DESCRIPTION OF DEPOSITS

Figure 2 shows the Salt Creek anticline, which is the principal structural feature in the area. The rocks exposed at the surface are Mancos shales of Cretaceous age. The well started in the Mancos shales, which continued to 1,770 feet. These shales are hard, brittle, gray, and black, with calcite seams. The Dakota sandstone of Cretaceous age was encountered at 1,770 feet and extended to 1,807 feet. This sand was hard and well-cemented. There was a show of oil from 1,770 to 1,779 feet. Below the Dakota, the Morrison formation of Jurassic age was drilled from 1,807 to 2,091 feet. The upper part, from 1,807 to 1,932 feet, was mostly green shales with some purple members and some thin sandstones. From 1,932 to 2,050 feet was another extremely hard quartzite sandstone with a showing of oil and gas in the upper part. From

^{2/} Dane, C. H., Geology of the Salt Valley Anticline and Adjacent Areas, Grand County, Utah: U. S. Geol. Survey Bull. 863, 1935.

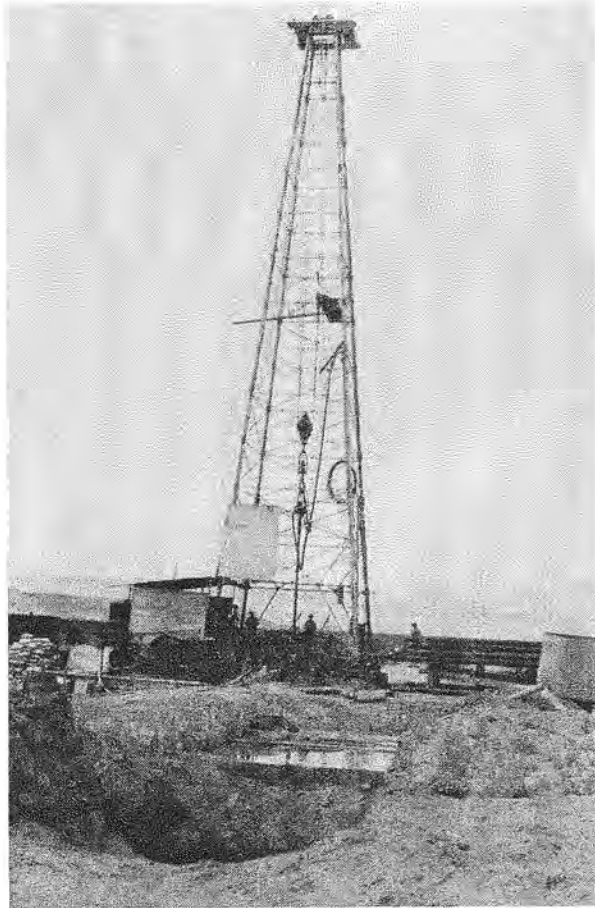


Figure 3. - Drilling set-up, showing mud pits in foreground.

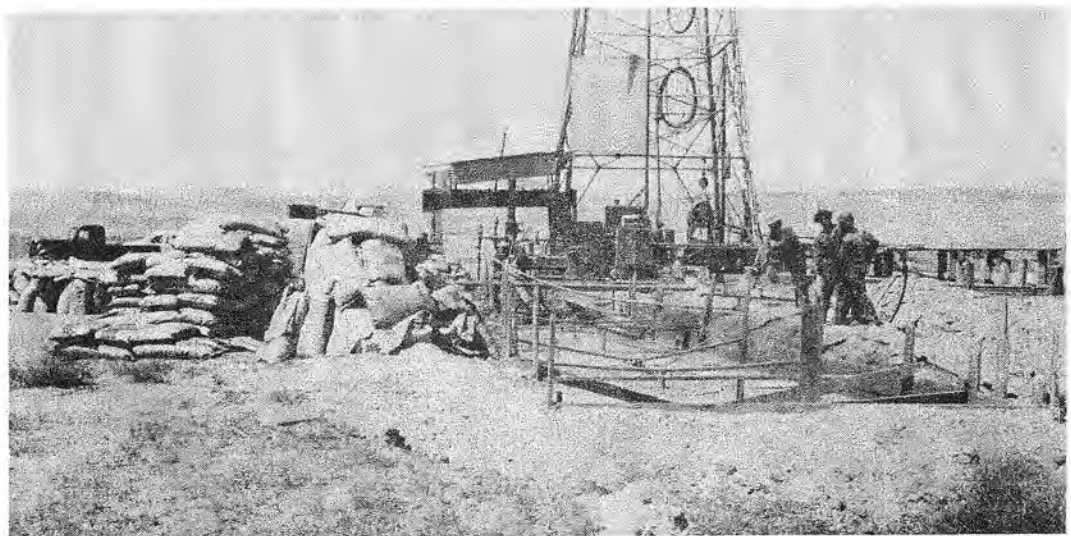


Figure 4. - Mixing special mud for coring soluble salts; stocks of Zeogel, Impermex, and magnesium chloride flake at left.

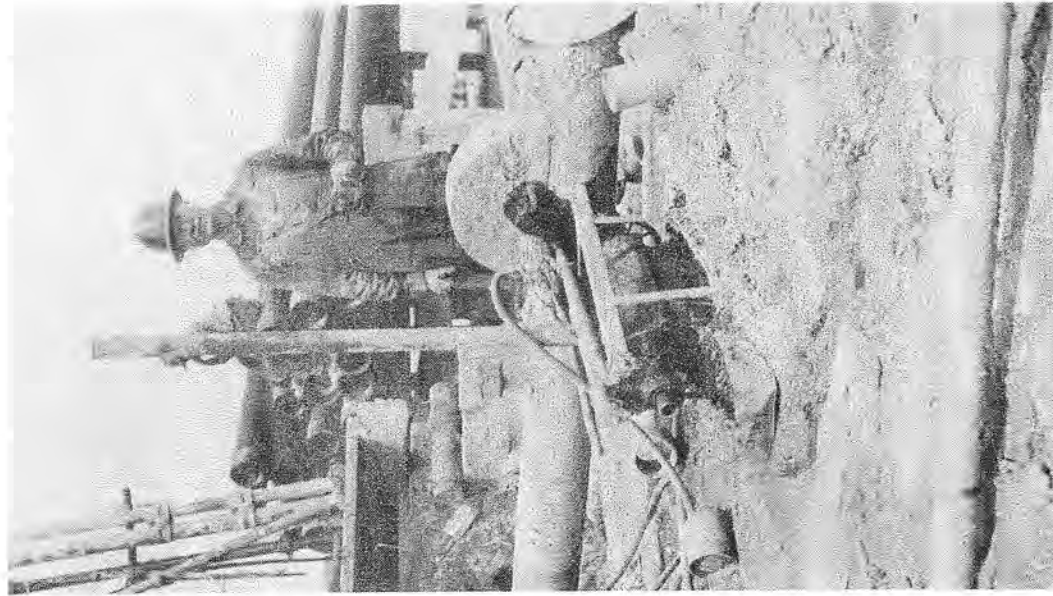


Figure 5. - Rotary sampler.

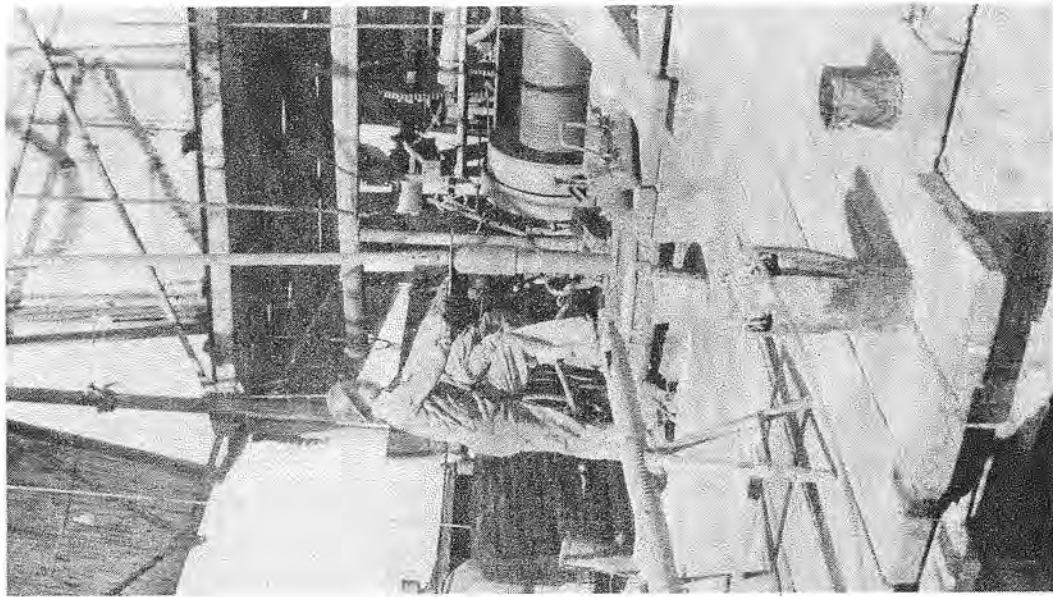


Figure 6. - Removing Reed wire line core barrel from drill pipe with overshot barrel; Reed core bit in foreground; extra barrel ready to drop into hole at left.

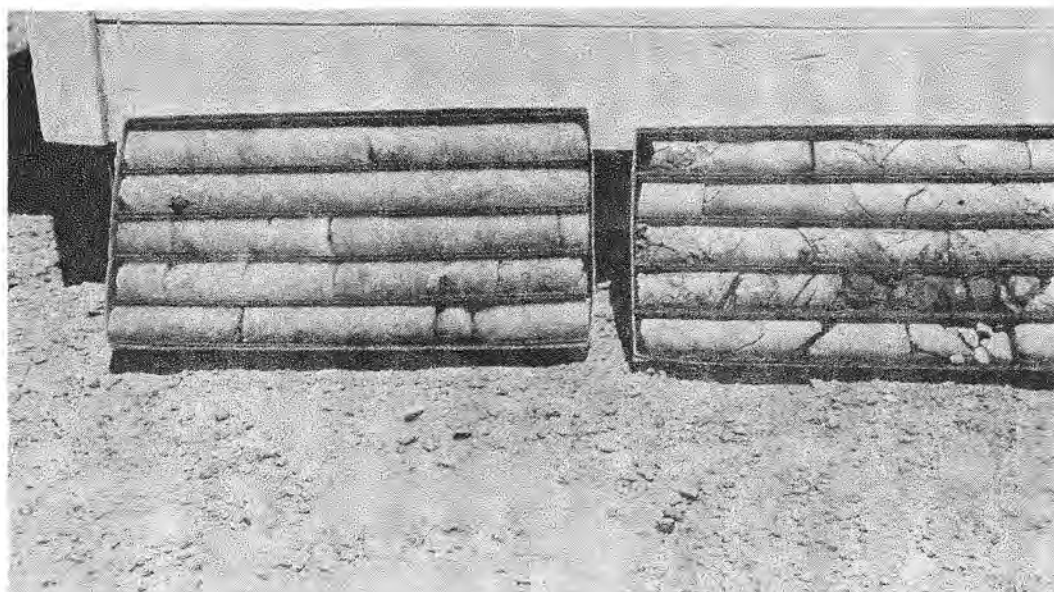


Figure 7. - Salt core left; shale with reams of salt right.



Figure 8. - Removing salt core from core barrel.