November 1944

Gulf #1 Dolechek
Section 24-16S-12W, CN/2 NE SW
Elev. 1902'

Rotary cores from 3336-3400' TD
25 core chips examined.

Pennsylvanian Conglomerate

3334-3336 Sandy limestone with pebbles of Cotter cherts, in part oolitic, at the base. Marine conglomerate.

Sand Top 3336' Thickness 44' Subsea -1434'

3336-3348 Clayey sand. Medium and medium to fine, rounded sand grains, not recrystallized, coated by white kaolin-like clay which plugs the porosity. Abundant fragments of banded quartz geodes and quartz crystals. Two interbedded sandy red clay layers.

3348-3360 Clayey sand. Top two feet of core show medium and fine rounded sand grains with white clay coating and large quartz crystals. At about 3350', the sand is better sorted, less clayey, and partly recrystallized with some porosity. The bottom half has dark red very micaceous clayey sands and sandy clay with no porosity. Sand grains are medium and coarse, rounded to pitted, not recrystallized, and are all stained red from contact with the clay, giving a Pennsylvanian aspect.

3360-3367 Clean sand. Extensively recrystallized clay-free medium and coarse sand with excellent porosity. Interbedded layers of red and green very micaceous shales with schist-like appearance. At the base the sand is very pyritic.

3367-3379 Coarse sand with interbedded shale at the top. Top 3 feet of core consists of very micaceous schist-like shale. Sand below is coarse, extensively recrystallized, with some 3 mm mica flakes. This sand has excellent porosity and is thoroughly oil-stained. One interbedded green shale layer. A good reservoir but apparently too low to produce.

Pre-Cambrian Top 3380' Penetration 20' Subsea -1478'

Pc

3379-3389 Core shows quartzite, red and green slickensided clay, kaolin and quartz. Weathered metamorphics.

3389-3400 Core shows mica schist and coarse quartz grains in micaceous green clay. Weathered metamorphics.

Remarks: Test drilled in March 1939 and abandoned after setting pipe and testing sand. Failure to produce is due to; (1) complete lack of porosity in the clayey sand above 3350' and; (2) low structural position of the excellent porosity encountered below 3360'.

Age of Sand:

1.	Littlefield, 1942, Letter #3,	Pennsylvanian
2.	Price, 1939, Letter #14, "A possibility that the interval from 3350'- 3380' may be a phase of the Reagan (or Pre Cotter basal) sand."	Pennsylvanian
3.	Price, 1943, Letter #44	Pennsylvanian to 3350' Arbuckle 3350-3380'
4.	Walters, 1944	Arbuckle, Boyce sand

This difference in age interpretation has little economic bearing. Price, Letter #44, 1943, summarizes this by stating, "Regardless of the age of the sand, it is noted that in the vicinity of the No. 1 Case and the No. 1 Dolechek it does not have as much uniformity in porosity and permeability as is desirable in an oil reservoir."

It is Walters' interpretation that the sand section cored in our #1 Dolechek is a local phase of Boyce. It is unusually clayey due to deposition along a Boyce shore line on the flank of Krier island hill near a local source of clay, an outcrop of rotted syenite similar to that drilled in our Wells-Hofmeister lease in the SE/$\frac{1}{4}$, Section 23. The lack of recrystallization of the sand grains above 3350' is explained as due to the protective coating of kaolin-like clay which prevented the early silica bearing solutions from contacting the detrital sand grains. Lithologically similar sand has been drilled recently in a number of our nearby wells.

RFW:HL