

The New Centralia Oil Field¹

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INTRODUCTION

The New Centralia oil field is of special interest at this time for several reasons. (1) It is being drilled more rapidly than any other field in the State. (2) Geologically, it is located along a well-known line of structural disturbance—the DuQuoin-Centralia monocline—and the new well data are revealing that the structure of the Chester strata differs considerably from that of the Pennsylvanian strata. (3) Economically, the rapid additions by this field to the daily production of the State have resulted in a critical condition of the oil market locally, necessitating curtailment of production by oil buyers in this field.

The writer's purpose in this paper is to describe briefly the development of the New Centralia field and to discuss some of the subsurface geologic features revealed by the new drilling.

DISCOVERY

The discovery well of the New Centralia oil field—the Adams Oil and Gas Company, Schmitz No. 1 well (SE corner, NE $\frac{1}{4}$, sec. 2, T. 1 N., R. 1 W., Clinton County, Illinois)—was completed November 30, 1937, and was put on production early in December. The initial production was 156 barrels "natural" on the pump from the Benoist sand in the Chester series 1348-1384 feet. This well is located on the northwest flank of a small closure on Coal No. 6, as shown in a map published by the Illinois State Geological Survey in 1927 (Illinois Petroleum No. 10). The Adams Oil and Gas Company made seismograph investigations in the area before choosing the location of the successful test well.

DEVELOPMENT UP TO APRIL 29, 1938

The rapidly increasing drilling activity in the New Centralia field during the past five months is shown in the following table:

Date	Producing wells	Dry* holes	Drilling wells†	Rigging up	New locations
December 1.....	1	0	0	0	0
January 1.....	2	0	0	0	0
February 1.....	5	0	4	1	5
March 1.....	12	0	13	16	3
April 5.....	64	0	56	16	3
April 29.....	102	2	92	14	5

† Includes drilling wells shut down.

* Within $\frac{1}{2}$ mile of producing wells.

The wells are drilled with rotary tools and 6 $\frac{1}{2}$ -inch casing is set on top of the Benoist sand and cemented. Average depth to top of Benoist is approximately 1,350 feet. The "pay" or oil-saturated sand is usually from 20 to 30 feet thick. A small shot of nitroglycerine (usually 10 qts.) is used in most of the wells. Initial production varies from 150 to 500 barrels.

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Up to April 29, 1938, the New Centralia field has yielded 264,000 barrels of oil. On April 19 the daily production of the field had risen to 6,200 barrels or an average per well of approximately 62 barrels daily. On April 20, production was ordered curtailed to 20 barrels per well by the pipe line companies because the storage was full at the refineries which were taking the oil.

The apparent producing area of the New Centralia field as of April 29 was 1,000 acres of which 840 acres, more or less, are outside the city limits and 160 acres, more or less, inside the city limits. Of the 102 wells producing on that date, 51 were outside the city and 51 inside. Outside the city most of the wells are spaced in a rectangular 10-acre pattern. Inside the city the average spacing was 1 well per 3 acres on April 29 with about 70 operations (including drilling wells, rigs and new locations) which would result in an average spacing of about 1.3 acres per well.

The New Centralia field brings forward in an acute form one of the problems of the oil industry—that of the proper control of well spacing in a townsite development.

CROSS-SECTION

When the discovery well was completed it was at once apparent that the interval from Coal No. 6 to the Benoist sand is much less than anywhere else in the area where the Benoist had been drilled.

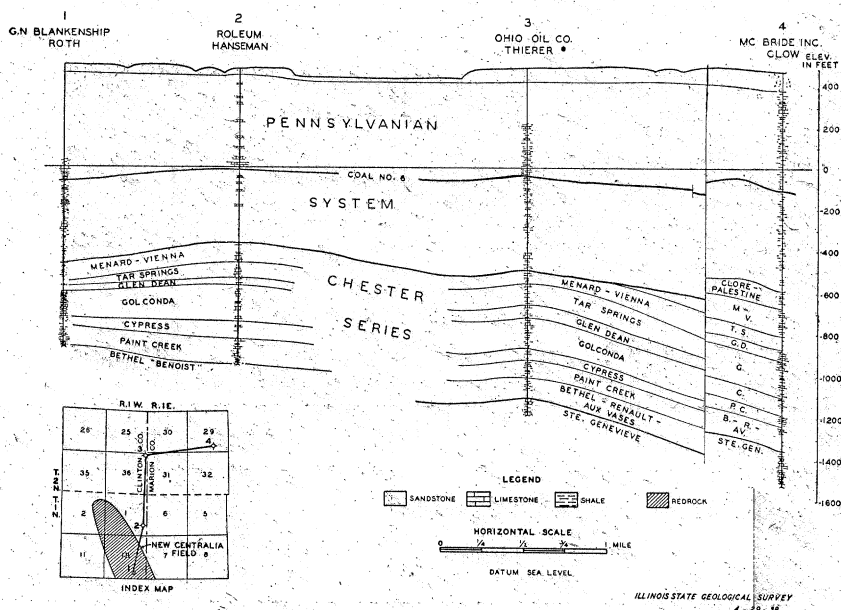


Fig. 1—Cross section in Centralia oil field area.

INTERVAL FROM COAL No. 6 TO BENOIST SAND

Well	Feet	Increase in interval from Roth well
Adams-Schmitz.....	853	18
Blankenship-Roth.....	835	-----
Poleum-Hanseman.....	955	120
Ohio-Thierer.....	990	155
McBride-Clow.....	1,105	270

An interpretation of the manner in which this interval changes from the central part of the field in a direction north and east is shown in figure 1. According to this interpretation the change in interval is principally due to the absence on top of the structure of some of the formations in the Chester which are present off structure. There is also a marked thinning on structure of several Chester formations as for example the Tar Springs, Golconda and Cypress.

A period of uplift and erosion of post-Chester, pre-Pennsylvanian age in this area is indicated. The present outline of the producing area indicates a trend west of north and east of south for the Benoist sand structure. This trend does not seem to be reflected in the structure of Coal No. 6, in which the principal structural trend—the Centralia monocline and fault—is almost due north and south.