

STATE OF ILLINOIS  
ADLAI E. STEVENSON, *Governor*  
DEPARTMENT OF REGISTRATION AND EDUCATION  
C. HOBART ENGLE, *Director*  
DIVISION OF THE  
STATE GEOLOGICAL SURVEY  
M. M. LEIGHTON, *Chief*  
URBANA

No. 65

ILLINOIS PETROLEUM

August 16, 1952

PRINTED BY AUTHORITY OF THE STATE OF ILLINOIS

DEVELOPMENTS IN ILLINOIS AND INDIANA IN 1951<sup>1</sup>ALFRED H. BELL<sup>2</sup> AND R. C. COOPER<sup>3</sup>

Urbana, Illinois, and Evansville, Indiana

## ABSTRACT

In all, 3,702 wells were drilled for oil and gas in Illinois and Indiana in 1951 as compared with 4,424 in 1950, a decrease of 16.5 per cent. Total oil production decreased 2.6 per cent from 72,725,000 barrels in 1950 to 70,823,000 barrels in 1951. Wildcat drilling increased from 1,334 completions in 1950 to 1,483 completions in 1951. Sixty-nine new pools, 76 extensions, and 52 new producing zones were discovered in the two states in 1951.

As in previous years, most of the discoveries in 1951 were in Mississippian formations. Six new pools were discovered in Pennsylvanian sandstones, 7 in Devonian or Silurian limestones, and 1 in Ordovician limestone.

## INTRODUCTION

In Illinois and Indiana, 3,702 wells for oil and gas were drilled in 1951 as compared with 4,424 in 1950, a decrease of 16.5 per cent. Total oil production decreased 2.6 per cent, from 72,725,000 barrels in 1950 to 70,823,000 barrels in 1951. Wildcat drilling increased from 1,334 completions in 1950 to 1,483 completions in 1951, an increase of 11 per cent. Sixty-nine new pools, 76 extensions, and 52 new producing zones were discovered in the two states in 1951.

In the Illinois basin area (southern Illinois and southwestern Indiana) 56 out of 69 discovery wells of new pools produced from Mississippian formations (23 Chester series and 33 Lower Mississippian). Of the remaining 13 discovery wells of new pools, 6 produced from Pennsylvanian sandstone, 6 from Devonian or Silurian limestone, and 1 from Ordovician limestone.

## ILLINOIS

BY ALFRED H. BELL

In Illinois 2,383 wells were drilled for oil and gas in 1951 as compared with 2,894 in 1950, a decrease of 17½ per cent. (These figures are exclusive of water- or gas-input wells, salt-water disposal wells, and old wells worked over.) Of the 2,383 wells drilled 839 are classified as wildcat wells as compared with 830 in 1950, an increase of 1 per cent. Of the wildcat wells drilled in 1951, 330 were located more than 2 miles from production ("wildcats far") of which 16, or 4.8 per cent, were successful. In 1950, 4.3 per cent were successful. Drilling in 1951 resulted in 916 oil wells, 8 gas wells, and 1,459 dry holes.

Of the 839 wildcat wells drilled, 41 discovered new pools and 53 discovered extensions to pools (Tables I and II). In addition, 24 wells, most of which can not

<sup>1</sup> Reprinted from *Bull. Amer. Assoc. Petrol. Geol.*, Vol. 36, No. 6 (June, 1952), pp. 1079-1090.

<sup>2</sup> Geologist and head, Oil and Gas Division, Illinois State Geological Survey.

<sup>3</sup> Division exploration manager, Sinclair Oil and Gas Company, Evansville, Indiana. Virginia Kline and Kathryn C. Irving, Illinois Geological Survey, and W. C. Pelley, division geologist, Sinclair Oil and Gas Company, assisted in preparation of this report. D. G. Sutton, Sun Oil Company, made available statistics on exploratory drilling for Indiana.

TABLE I. DISCOVERY WELLS OF NEW FIELDS

Pool	County	Company and Farm	Location	Total Depth (Feet)	Producing Formation	Depth to Top (Feet)	Initial Production (Barrels) <sup>A</sup>	Date of Completion	No. Wells Producing in Pool, Dec. 31, 1951
1. Assumption South	Christian	Texas, Kemmerer Orphanage I	14-2N-1E	2,740	Devonian	2,632	26; 1	12-31-51	1
2. Bearcreek South	Washington	Collins Bros. & Obering, Minnett I	10-2S-2W	3,060	Devonian-Silurian	3,047	50	8-7-51	1
3. Blairsville West	Washington	D. Hopkins, T. Krusk I	33-2S-4W	1,445	Bethel	1,430	103; 4	10-30-51	6
4. Blairsville West	Washington	G. E. Eason, H. Eppler I	30-2S-4W	2,847	McClosky	2,830	240	5-22-51	3
5. Boone Gap East	Edwards	C. C. Schoonmaker, R. K. Thompson I	18-4S-7E	3,422	McClosky	3,410	490	5-1-51	9
6. Boone Gap East	Edwards	B. Kidd, H. H. Covling I	4-4S-4W	3,115	Lower Ohara	2,980	70	2-13-51	1
7. Boone Gap South	Hamilton	Skitter, J. Van Winkle I	27-5S-7E	3,330	McClosky	3,277	92; 96	8-28-51	1
8. Boone Gap South	Hamilton	R. Halbert, Autten Hrs. I	20-5S-7E	3,227	McClosky	3,213	28; 30	10-2-51	1
9. Carthage North	Clinton	L. Schoenewald, D. K. Branch I	32-5S-5W	3,250	Aux Vases	3,230	253	9-4-51	6
10. Carthage South	Clinton	L. Grange Petr., B. Harrison-Old Ben	11-4N-3W	1,979	Cypress	1,970	9; 12	12-11-51	1
11. Christopher	Franklin	Griffin & Berkman, Hale I	24-6S-1E	2,825; PB 2,685	Lower Ohara	2,675	23; 10	2-27-51	0
12. Cottonwood North	Gallatin	Atlas Drig., E. Sawyer I	21-1S-9E	2,624	Cypress	2,607	39	9-25-51	7
13. Exchange North	Maron	Atlas Drig., E. Sawyer I	11-1N-3E	1,834; PB 1,735	McClosky	1,715	152; 50	7-24-51	1
14. Frogtown North	Clinton	Gulf, F. Warnecke I	6-2N-3W	1,346; PB 1,234	St. Louis	1,195	165	4-17-51	22
15. Gards Point	Wabash	Gilliam Drig., E. Miller I	25-1N-14W	2,844	Lower Ohara	2,838	312	9-25-51	1
16. Goldengate East	Wayne	C. E. Brehm, P. J. Seifert I	2-3S-9E	3,420; PB 3,310	Lower Ohara	3,291	29; 35	11-13-51	1
17. Hord South	Clay	Webster & Shirk, Roberts I	26-2N-6E	2,790	McClosky	2,781	350	9-11-51	4
18. Irvington East	Jefferson	Ervin & Bassett, Hartley 2	19-1S-1E	1,064	Pennsylvanian	1,030	24	10-23-51	1
19. Keamsville East	Wayne	Bohn & Appleby, Cleveger I	36-4S-5E	3,172	McClosky	3,127	67	8-7-51	2
20. Lexington North	Wayne	J. Rossi, E. L. Rich, J. W. Gales I	23-3S-4W	3,004	Lower Ohara	2,931	46	6-19-51	1
21. Lexington East	Madison	J. M. Zahwald, T. W. Gales I	20-6N-4W	555	Pennsylvanian	543	4,500,000 cu. ft.	11-27-51	1
22. Locust Grove	Wayne	J. M. Zanetti, W. F. Dabbs I	31-1N-9E	3,300	Lower Ohara	3,234	218; 9	2-20-51	6
23. Lynchburg	Jefferson	Peak Drig., Brown I	8-3S-4E	3,065	McClosky	3,278	175	10-23-51	1
24. Mason North	Jefferson	Texas, R. Simcikson I	10-2N-3E	2,521	Associate	2,503	53; 8	9-11-51	9
25. Mason East	White	N. H. Assoc. (Et., Truscott Hrs. "B") I	6-6S-2E	2,878	Aux Vases	2,868	20; 20	12-31-51	1
26. Noble West	Clay	J. H. Gilliam, C. Jones I	3-2N-3E	3,143	Rosclaire	3,036	42	10-9-51	1
27. Okaville	Washington	E. A. Obering, Baldwin I	15-2S-4W	2,330	Sturlian	2,323	56	5-22-51	3
28. Omaha South	Gallatin	Inland Producers, Allen I	8-5S-8E	3,077; PB 2,868	Rosclaire	2,866	34; 30	10-9-51	1
29. Oskaloosa East	Clay	National Assoc. Petr., Spiker-Setton "A" I	7-3N-6E	2,597	McClosky	2,894	297	7-31-51	2
30. Oskaloosa South	Clay	E. A. Obering, Hale I	9-3N-5E	2,883	McClosky	2,770	9	12-18-51	1
31. Pana	Christian	Collins Bros., R. T. Jones I	3-11N-1E	1,847; PB 1,483	Bethel	1,472	20; 20	5-15-51	2
32. Phillipstown South	White	Aubrey-Tennant, J. L. Brown I	11-5S-0E	2,994	Aux Vases	2,981	39; 5	10-30-51	1
33. Pinkstaff	Lawrence	Clary & Biele, W. E. Conrad I	9-4N-1W	1,797	McClosky	1,734	15; 65	5-22-51	0
34. Raymond East	Montgomery	L. Marsh, M. A. Rogg, Spout I	22-6N-4W	682	Pennsylvanian	662	50	12-11-51	1
35. Ritter North	Richard	Sanders & Fox, Phillips I	18-3N-1E	3,288	McClosky	3,200	52; 10	11-13-51	1
36. Samsell West	Edwards	Peak Drig., E. King, J. I.	27-1N-2E	3,312	Lower Ohara	3,260	200	12-4-51	2
37. Samsell South	Clay	Caover, J. E., King, J. I.	13-4N-5E	3,971	Rosclaire	3,093	85	9-11-51	2
38. Schuster East	White	Geor. Rik & W. R. Winter I	32-4S-0E	3,405	Lower Ohara	3,118	300	12-11-51	1
39. Walpole South	Hamilton	Deer Mill, H. E. Howard I	8-7S-0E	3,233	Aux Vases	3,123	350	6-26-51	2
40. Yea East	Clay	W. W. Deaton, G. G. Campbell I	11-2N-3E	4,533	Cypress	2,505	45; 24	7-17-51	4
41. Zenith North	Wayne	George & Wraithier, D. McGrew I	21-2N-6E	3,204	Rosclaire	3,083	251; 6	12-18-51	2

A Oil and water.

B Producing from 2 pays.

TABLE II. DISCOVERY WELLS OF EXTENSIONS TO POOLS

Pool	County	Company and Farm	Location	Total Depth (feet)	Producing Formation	Depth to Top (feet)	Initial Production (Barrels) <sup>A</sup>	Date of Completion
1. Bend	White	B. M. Heath & Inland Prod., J. L. Brown I	16-5S-14W	2,276	Tar Springs	2,250	250	8-7-51
2. Bone Gap East	Edwards	Gallagher, L. G. Smith I	18-1S-14W	3,193; PB 2,135	Waltersburg	3,110	50	8-21-51
3. Bone Gap West	Edwards	G. Wickham, Morgan I	9-1N-14W	3,141	McClosky	3,054	121	5-20-51
4. Calhoun Central	Richland	George & Wraether, M. Beach I	16-2N-10E	3,291	Rosiclare	3,247	54	5-20-51
5. Calhoun Consol.	Richland	J. B. Murvin, J. Arterberry I	8-2N-10E	2,945	McClosky	3,196	81, 50	11-20-51
6. Carmi North	White	E. F. Moran, J. Zimmerman I	10-5S-9E	3,263	Cypress	2,948	201	11-20-51
7. Clay City Consol.	Richland	Calvert Drile, J. Pictor I	28-5N-10E	2,966	McClosky	2,883	871	12-18-51
8. Clay City Consol.	Richland	Mark Twain, L. Kaske I	23-3N-9E	3,025	Rosiclare	3,007	85	3-13-51
9. Clay City Consol.	Richland	Joe Bander et al., N. Dresser 2	1-1N-9E	3,029	Rosiclare	2,976	52	3-13-51
10. Clay City Consol.	Wayne	W. H. Bears, G. Bradham I	1-1R-8E	3,174	Lower Ohara	3,110	11, 6	6-26-51
11. Clay City Consol.	Wayne	Mammoth Prod., A. Davis I	2-1S-7E	3,268	Lower Ohara	3,177	621	6-19-51
12. Clay City Consol.	Wayne	Nation, C. Mark	26-1S-5E	3,197	Aux Vases	3,082	30	1-30-51
13. Clay City Consol.	Wayne	Aurora, Bunting "A" I	35-1S-7E	3,270	Lower Ohara	3,197	334 <sup>B</sup>	1-10-51
14. Clay City Consol.	Clay	W. W. Toler, Manker I	17-3N-8E	2,924	McClosky	3,270	40	5-22-51
15. Divide East	Petersen	Perrine & Ferrine, L. C. Ellis I	30-1N-4E	2,977	Aux Vases	2,911	40	5-22-51
16. Eberle	Edingham	Robinson-Puckett, Becker I	23-6N-6E	2,086	Rosiclare	2,071	27, 10	11-20-51
17. Elery West	Wayne	McCGregor, A. Fisher I	34-2S-9E	3,400	McClosky	2,080	28	5-22-51
18. Epworth Consol.	White	Skiles, E. A. Strophlet I	28-5S-10E	3,002	Aux Vases	3,304	551, 55	5-28-51
19. Flannagan	Hamilton	Stewart Oil, J. Tate I	28-6N-5E	3,312	Aux Vases	3,294	46	9-4-51
20. Frogtown North	Clinton	E. J. Goldschmidt, Jaske Comm. I	1-2N-4W	2,286	Shuram	3,294	757, 27	12-11-51
21. Goldengate West	Wayne	N. V. Duncan, Locke I	17-2S-9E	3,459; PB 3,330	Aux Vases	2,264	440, 50	4-17-51
22. Goldengate West	Wayne	Tuley & Carter, Evans I	8-2S-9E	3,252	Lower Ohara	3,244	30, 8	8-21-51
23. Goldengate West	Wayne	Goodman Oil, K. O. Baker I	26-2S-9E	3,432; PB 3,320	Aux Vases	3,322	121	8-7-51
24. Gossett	White	G. Alton, M. Delap I	8-7S-8E	2,644	Aux Vases	3,286	81, 9	12-4-51
25. Hidalgo North	Cumberland	Kull Oil, Clark I	25-9N-9E	2,794	Cypress	2,625	35	6-12-51
26. Hord South	Clay	S. Graham, W. McCree I	27-5N-6E	2,781	Rosiclare	2,666	6	10-2-51
27. Ingraham	Clay	Sun Drile, Hinterscher A-1	9-4S-8E	3,030	McClosky	2,775	460, 5	10-23-51
28. Inman East Consol.	Gallatin	Coy Oil, H. C. Ford I	26-7S-10E	2,112	Waltersburg	3,010	275	1-10-51
29. Inman West Consol.	Gallatin	Farrall & Kiple, A. Maloney I	36-8S-10E	2,837	McClosky	2,897	20	7-3-51
30. Inman West Consol.	Gallatin	H. E. Howard, M. Mills I	20-8S-9E	2,788	Cypress	2,472	51, 5	6-5-51
31. Iola Consol.	Edingham	D. H. Bollen, Hetzel I	33-6N-5E	2,498	Aux Vases	2,766	20, 40	10-9-51
32. Irvington	Washington	Hockman, Ketchum I	25-1S-1W	1,540	McClosky	2,488	20, 40	8-28-51
33. Keensburg South	Wabash	White & Vickery, G. Garst "B" I	34-2S-1W	2,468	Cypress	1,531	281, 2	7-3-51
34. Keenville	Wayne	N. V. & W. Duncan, Blackburn I	29-1S-5E	2,959	Aux Vases	2,940	231	7-17-51
35. Lancaster South	Wabash	Burr Lambert & Kock Island, A. L. Seibert I	27-1N-13W	2,712	Lower Ohara	2,670	401, 150	6-12-51
36. Maple Grove East	Edwards	Miracle & Steber, J. M. Luther 2	13-1N-10E	2,486	Waltersburg	2,448	150, 100	1-16-51
37. Mason	Edingham	R. Luttrell, C. J. Moritz 2	23-6N-5E	2,304	Bethel	2,296	66	8-21-51
38. Maunie South	White	Farrall & Kiple, Westgard Hrs. I	36-0S-11E	2,999; PB 1,924	Pegoma	1,904	24	5-29-51
39. Mitchell	Wayne	Pappas & Ashland, Allison Hrs. I	36-2S-9E	3,388	McClosky	3,322	751, 30	8-21-51
40. Mt. Carmel	Wabash	Indiana Farm Bureau, G. H. Zimmerman I	16-1S-12W	1,993	Cypress	1,970	40	8-21-51
41. New Harmony South	White	W. C. McBride, Truscott I	28-5S-14W	3,123; PB 2,676	Cypress	2,668	144, 90	12-11-51
42. New Haven Consol.	White	Tuley & Carter, W. L. Wasson I	24-7S-10E	2,137	Cypress	2,137	50	8-11-51
43. Olney Consol.	Richland	D. Baines, G. Slange I	15-2N-10E	3,102	Tar Springs	2,137	151, 7	7-11-51
44. Parkersburg Consol.	Richland	Calvert Drile, W. O. Freeman I	21-2N-14W	3,079	McClosky	3,151	157	9-11-51
45. Parkersburg Consol.	Richland	Calvert Drile, J. McVay I	16-2N-14W	3,101	McClosky	3,072	47	7-24-51
46. Parkersburg Consol.	Richland	Ashland & Herndon, H. Hanks I	14-4S-10E	2,841	Rosiclare	3,066	250	7-17-51
47. Phillipstown Consol.	White	National Assoc. Pet., Pfeiffer "A" I	29-1S-3E	2,585	Bethel	2,836	25	9-4-51
48. Reservoir	Petersen	Sanders-Fye, Starkman I	7-2N-12W	1,866	McClosky	2,574	130	11-27-51
49. Ruark	Lawrence	Bell Bros., C. Kudd I	2-2N-10E	1,870	Waltersburg	1,863	48, 20	7-24-51
50. Ste. Marie West	Jasper	Ashland & Becker, O. Lee I	26-3N-7E	3,081	McClosky	2,847	22	11-27-51
51. Stantford	Clay	Ashland & N. V. Duncan, W. B. Hall I	36-5S-9E	2,469; PB 3,167	McClosky	3,033	60	8-21-51
52. Storms	White	J. H. Gilliam, Fitzgerrall Hrs. I	29-3S-3E	2,986; PB 2,540	Rosiclare	3,142	35, 20	9-4-51
53. Whittington	Franklin				Cypress	2,529	38	6-12-51

<sup>A</sup> Oil and water.  
<sup>B</sup> Producing from 2 pays.

TABLE III. DISCOVERY WELLS OF ADDITIONAL PRODUCING ZONES IN POOLS

Pool	County	Company and Farm	Location	Total Depth (Feet)	Producing Formation	Depth to Top (Feet)	Initial Production (Barrels) <sup>A</sup>	Date of Completion
1. Belmont	Wabash	G. Ellison, Fisher Hrs. 1	36-IS-14W	2,935; PB 2,661	Bethel	2,650	247.7	7-3-51
2. Bone Gap	Edwards	Gallagher, L. G. Smith 1	18-IS-14W	3,193; PB 2,435	Waltersburg	2,810	50	8-21-51
3. Cottonwood North	Gallatin	S. B. Griffith, Hale 6	21-7S-9E	3,056	McClosky	2,984	33	12-31-51
4. Ellery West	Wayne	Skiles, E. O'Daniel 1	26-2S-9E	3,238	Aux Vases	3,230	50 <sup>B</sup>	4-24-51
5. Ellery West	Wayne	Ill. Mid-Continent, Jones-Kendall 1	23-2S-9E	3,395; PB 3,178	Bethel	3,109	168; 8	1-30-51
6. Epworth	White	George & Wrather, Hanna 1	32-5S-10E	3,067; PB 1,866	Pennsylvanian	1,847	49; 4	6-26-51
7. Frogtown North	Clinton	E. J. Goldschmidt, Jaske Comm. 1	1-2N-4W	2,280	Slurian	2,264	440; 50	4-17-51
8. Gossett	White	H. Atha, Rabe Shaw 1	17-7S-8E	2,973	Aux Vases	2,955	20	6-12-51
9. Gossett	White	H. Atha, M. Delap 1	8-7S-8E	2,644	Cypress	2,625	35	6-12-51
10. Half Moon	Wayne	Collins Bros., Mabee "B" 2	28-IS-9E	3,310; PB 3,212	Aux Vases	3,190	9; 24	11-20-51
11. Herald	White	A. J. Slagter, S. Bayley 1	2-7S-9E	700	Pennsylvanian	694	1,600,000 cu. ft.	10-30-51
12. Irvington	Washington	Hockman, Riechman 1	25-IS-1W	1,540	Barlow	1,525	41 <sup>B</sup>	8-28-51
13. Keensburg South	Wabash	White & Vickery, Garst 1	27-2S-13W	2,416	Cypress	2,404	360	4-24-51
14. Langewisch-Kuester	Marion	W. C. Wellman, Langewisch 1	4-IN-1E	824	Pennsylvanian	798	2; 6	11-6-51
15. Locust Grove	Wayne	J. W. Rudy, Denny-Bunting 1	32-IN-9E	3,229	Aux Vases	3,218	54	4-5-51
16. Long Branch	Saline	Cullum & Lawhead, J. J. Ellis 1	20-7S-6E	2,766	Cypress	2,749	80	9-4-51
17. Loudon	Fayette	Carter, J. Dress 1-G	22-SN-3E	1,197	Tar Springs	1,103	200,000 cu. ft.	10-30-51
18. Mason	Efingham	H. Luttrell, C. J. Moritz 2	23-ON-5E	2,394	Bethel	2,296	600	8-21-51
19. Mason North	Efingham	Texas, E. Tonn 4	9-ON-5E	2,531; PB 2,361	Aux Vases	2,357	59; 75 <sup>B</sup>	12-11-51
20. Mason North	Efingham	Texas, R. Sinnickson 2	10-ON-5E	2,594; PB 2,269	Bethel	2,247	100; 30	10-2-51
21. New Harmony South	White	W. C. McBride, Truscott 1	28-5S-14W	3,123; PB 2,676	Cypress	2,668	14; 90	12-11-51
22. Orchardville	Wayne	Collins Bros., Rutherford Hrs. 1	29-IN-5E	2,858	Aux Vases	2,794	29; 20	3-27-51
23. Racoon Lake	Marion	Texas, C. Langenfeld to	3-IN-1E	3,385	Slurian	3,223	109; 101	10-23-51
24. Sumpter	White	Kingwood, R. J. Winter 1	25-4S-9E	3,325; PB 2,669	Hardinsburg	2,655	7; 20	9-18-51

<sup>A</sup> Oil and water.<sup>B</sup> Producing from 2 pays.

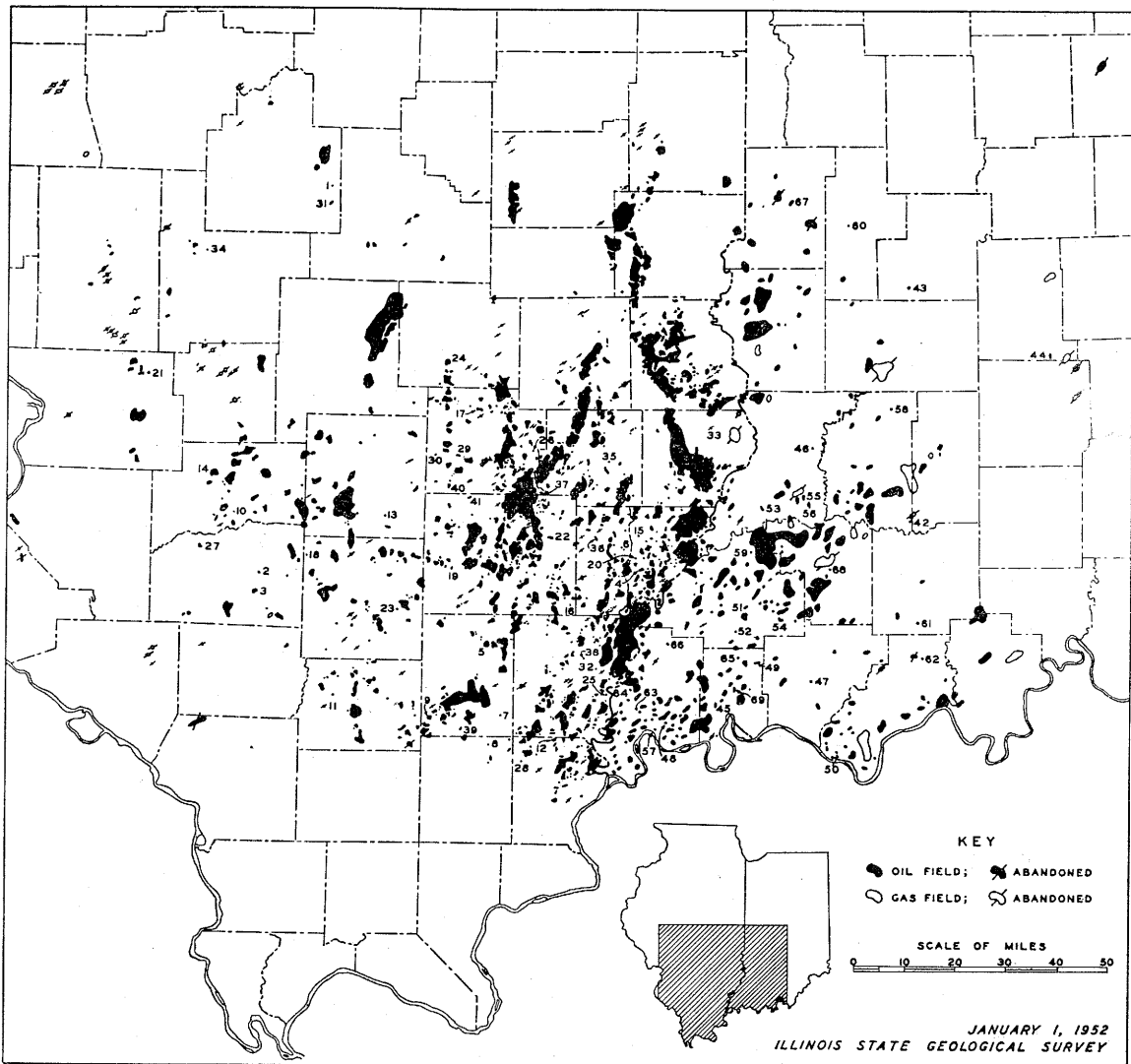


FIG. 1.—Oil and gas pools in Illinois and Indiana. Numbers indicate new pools discovered in 1951. See Tables I and VII.

be designated properly as exploratory wells, discovered additional producing zones in known producing areas (Table III).

Most of the drilling in Illinois in 1951 was in the deep-basin area of southeastern Illinois. Wells were drilled in 52 of the state's 102 counties and producing wells were drilled in 28 counties. More than half the total wells completed were located in 6 counties. The 8 counties which had more than 100 wells completed in 1951 are White, 320; Hamilton, 240; Wayne, 236; Richland, 162; Clay, 150; Wabash, 133; Clinton, 120; and Edwards, 103.

There were no major pools among the 41 discovered in Illinois in 1951. Those having the most producing wells at the end of the year are Frogtown North, Clinton County, with 22, and Blairsville West, Hamilton County, and Mason North, Effingham County, with 9 each.

Total oil production in Illinois in 1951 was 60,226,000 barrels as compared with 62,026,000 barrels in 1950, a decrease of 3 per cent. Average daily production in 1951 was 165,000 barrels as compared with 170,000 barrels in 1950.

#### EXPLORATORY DRILLING

There was exploratory drilling in 51 Illinois counties in 1951, and new pools were discovered in 19 counties. All but two of the 51 counties in which exploratory drilling was done are in the southern two-thirds of the State. Most of the new pools discovered in Illinois in 1951 are located within 2 or 3 miles of previous production, but there were three noteworthy exceptions, Beaucoup, Washington County (Table I, No. 2), 6 miles from previous production, Okawville, Washington County (Table I, No. 27), 6 miles from previous production, and Pana, Christian County (Table I, No. 31), 8 miles from previous production. Production in the Beaucoup and Okawville pools is from reefs in Silurian limestone and possibly in part from overlying Devonian limestone, as it is in the Marine pool, Madison County. Other pools discovered in 1951 in which the oil accumulation is probably associated with Silurian reefs include Beaucoup South (producing formation, Bethel) and Frogtown North (principal producing formations, Silurian and Devonian). The search for oil in or above Silurian reefs has been given considerable impetus by these discoveries.

A list of some of the most noteworthy dry holes completed in 1951 is given in Table IV. The deepest were two 5,000-foot tests in Effingham County, one of which reached the Silurian and the other the Maquoketa.

One deep test well, drilling at approximately 6,000 feet at the end of 1951, in the New Harmony Consolidated pool, White County, near the Wabash River, is of special interest because the drilling is planned to go below the St. Peter sandstone. It is located not far from the deepest part of the Illinois basin. During 1951 the St. Peter was tested in marginal areas of the basin in Adams, Monroe, Pulaski, and Schuyler counties.

#### METHODS OF EXPLORATION

The principal methods used in locating exploratory wells continued to be



TABLE VII. DISCOVERY WELLS OF NEW FIELDS IN INDIANA IN 1951

Pool	County	Company and Farm	Location	Total Depth (feet)	Producing Formation	Initial Production (Barrels)	Date of Completion
42. Alfordville South	Daviess	Allmore Oil, Burris I	11-1-N-5W	681	Salem	P. 25	7-25
43. Arney	Owen	W. G. Burrage, Stahl I	22-9-N-5W	1,355	Devonian	F. 1,000,000 C.F.	3-7
44. Bartlesville	Monroe	J. L. Easter, Deckard I	33-7-N-1E	1,746	Trenton	P. 7	5-2
45. Belknap East	Vanderburgh	Indiana Farm Bur., Phillips I	16-6S-11W	1,529	Biehl	P. 91	10-31
46. Bicknell	Knox	W. G. R. Drig. Co., Wampler 2	MD 152-4-N-8W	1,384	Ste. Gen.	P. 40-100W	3-28
47. Boonville	Warrick	Sunlight Coal Co., M. Carter 61	22-5S-8W	1,763	Ste. Gen.	P. 240	5-1
48. Caborn South	Posey	W. W. Dayton, Rueger I	36-6S-13W	2,377	Cypress	P. 30	6-20
49. Elliott	Vanderburgh	Slagter, Chandler I	35-4S-10W	1,895	Cypress	P. 54-30W	8-1
50. Eureka	Spencer	H. W. Patterson, Richardson I	33-7S-7W	1,639	Ste. Gen.	P. 28-6W	1-24
51. Fort Branch North	Gibson	Ryan & Sharp, Black I	4-3S-10W	2,170	Aux Vases	P. 40	7-18
52. Haubstadt	Gibson	Slagter, Pohl I	31-3S-10W	2,317	Jackson	P. 9-20W	6-6
53. Iona	Knox	Slagter, Deems I	Sur. 36-2-N-10W	1,861	Benoist	P. 2	11-26
54. Mackey West	Gibson	Cline & Lambert, Conrad I	16-3S-9W	1,864	Cypress	F. 85	10-24
55. Monroe City East	Knox	J. W. McClurg, Mize I	MD 230-2-N-8W	1,512	Ste. Gen.	P. 3-7W	8-22
56. Monroe City South	Knox	Jarvis, Helderman I	21-2-N-8W	1,329	Aux Vases	P. 39	8-22
57. Mt. Vernon South	Posey	Superior, Brener I	19-5N-5W	2,810	Walls & T. S.	P. 60	9-3
58. Odon	Daviess	E. Michel, Ketchum I	10-7S-13W	533	Aux Vases	P. 20-1W	9-26
59. Patoka North	Gibson	Clark & Ashland, Sanders I	MD 74-1-S-10W	1,012	Hardinsburg	P. 10-114W	6-27
60. Saline City	Clay	Clark Oil Research, Long I	23-11N-7W	1,494	Devonian	P. 15	3-28
61. St. Henry	Dubois	Natl. Assoc. Pet., Beagle I	24-3S-5W	1,200	Jackson	F. 476,160 C.F.	2-28
62. Santa Claus	Spencer	E. Groeninger, Wirthwein I	30-4S-4W	2,066	Ste. Gen.	P. 12	12-12
63. Solitude South	Posey	Indiana Farm Bur., Reese I	18-6S-13W	935	Ste. Gen.	P. 8	7-18
64. Solitude West	Posey	Kush Creek Oil, Luke-Cox Comm. I	35-5S-14W	1,440	Penn.	P. 90-90W	7-25
65. Stacer West	Vanderburgh	Slagter, Kissell I	30-4S-10W	2,389	Jackson	P. 38-125W	5-16
66. Stewartville	Posey	Calvert Drig. Co., Spencer I	13-4S-13W	2,879	Aux Vases	P. 28-4W	8-8
67. Terre Haute East	Pike	T. & H. Corp., Bettenbrock I	36-12N-0W	1,553	Devonian	P. 152-7W	5-9
68. Winslow	Pike	Cline & Lambert, Charity Farm I	31-4S-7W	1,388	Cypress	P. 8-35W	7-18
69. Zipp	Vanderburgh	Calvert Drig. Co., Murphy-Colbert I	30-5S-10W	1,010	Penn.	P. 20	4-4



subsurface geology and the reflection seismograph (Table V). The amount of seismograph work during 1951 was 44 crew months, the same as in 1950. Gravity-meter work decreased from 28 crew months in 1950 to 13 crew months in 1951.

## INDIANA

BY R. C. COOPER

Indiana oil production during 1951 totaled 10,597,000 barrels. This is comparable with a total of 10,699,000 barrels produced during 1950 and represents a decrease of 1 per cent. The total of all oil and gas tests drilled during 1951, excluding water- and gas-input wells, was 1,319, of which 877 were dry holes and 442 were producers. This compared with a total of 1,530 tests drilled in 1950 and represents a decrease of 14 per cent. Tests were drilled in 48 counties, 7 less than in 1950. This retreat of the frontiers of exploration was due in part to a decline of interest in reef exploration, a factor which had been responsible for a wider distribution of tests during the two previous years. The center of attention is shifting back to southwestern Indiana where the Pennsylvanian and Chester sandstones, together with McClosky limestone, offer a greater number of pay possibilities at greater depth. This change is reflected in the fact that while the number of tests declined 14 per cent, the total footage drilled declined only  $6\frac{1}{2}$  per cent. Total footage drilled during 1951 was 2,466,089 feet which compared with 2,637,597 feet drilled in 1950. The average depth of all tests drilled in 1951 was 1,869 feet. This compares to an average depth of 1,724 feet for all tests drilled during 1950.

The total initial production of all oil wells completed in 1951 was 30,273 barrels, compared with 41,236 barrels for 1950, a decline of 27 per cent. The total initial production of all gas well completions was 18,470 MCF as against 70,219 MCF for 1950 completions. This represents a decrease of 74 per cent.

Discoveries include 28 new fields, 23 extensions, and 28 discoveries of new pay zones in producing areas. The Pocket area of southwestern Indiana, which includes Posey, Gibson, and Vanderburgh counties, had 13 new-field discoveries, 14 extensions, and 19 new pay discoveries. Ranking the counties by total discoveries of all types, Posey County is first with 27; Knox second with 15; Gibson third with 11; Daviess fourth with 8; Vanderburgh fifth with 6; Dubois sixth with 3; and Pike and Spencer counties tied for seventh with 2 each. Warrick, Clay, Monroe, Owen, and Vigo counties had one discovery each.

Most of the discoveries resulted in fewer than 5 development wells and many appear to be one- and two-well pools. One optimistic note is the fact that the average initial potential of all oil wells completed during 1951 was 68 barrels as compared with the 1950 average of 67 barrels per well.

One of the most important of the 1951 discoveries was the Terre Haute East pool of Vigo County which produced from the Devonian limestone. This pool was discovered on May 9. At the end of 1951 it had 7 producing wells with a daily average production of 535 barrels, and development was not complete. Estimated

TABLE VIII. DISCOVERY WELLS OF ADDITIONAL PRODUCING ZONES IN POOLS IN INDIANA IN 1951

Pool	County	Company and Farm	Location	Producing Formation	Initial Production (Barrels)	Date of Completion
1. Birdseye	Dubois	Kingwood, Boeckman 1	15-3S-3W	Warsaw	P. 27-21W	11-8
2. Bufkin West	Posey	Ryan Oil Co., Wallace 1	21-6S-13W	Ste. Genevieve	P. 50 (A. V. & Ste. Gen.)	12-20
3. Caborn	Posey	Noah Drlg. Co., Droege 1	5-6S-12W	Clore	F. 1100	8-15
4. Caborn South	Posey	Slagter, Lurker 1	36-6S-13W	Degonia	P. 22-22W	9-13
5. Claypole Hills	Knox	Carter Oil, Steckler 4	36-1N-12W	Benoist	P. 76-13W	8-30
6. Cumback West	Daviess	Eidson & Gwaltney, Allison Hrs. 1	26-2N-7W	Aux Vases	P. 28-3W	11-15
7. Elnora	Daviess	E. Michel, Woodruff 2	34-5N-6W	Ste. Genevieve	P. 100-4W	1-11
8. Elnora	Daviess	Colby, Audis 2	4-4N-6W	Aux Vases	P. 5-14W	11-14
9. Farmersville	Posey	Schuller, Mattingly 1	31-6S-13W	Aux Vases	P. 120	2-8
10. Ford	Posey	Cherry & Kidd, Fischer 3	15-6S-12W	Biehl	P. 50 (Cyp. & Biehl)	2-22
11. Ford South	Posey	Ashland—D. Miller, Dirschauer 1	27-6S-12W	Aux Vases	P. 168- trace water	8-30
12. Ford South	Posey	Dee Miller, Appel 12	27-6S-12W	Ste. Genevieve	P. 225	11-1
13. Ft. Branch North	Gibson	Ryan & Sharp, Stevens 1	5-3S-10W	Ste. Genevieve	P. 7-15W	12-13
14. Huntingburg	Dubois	Dale, Mehne 2	8-3S-5W	Cypress	P. 25-25W	9-13
15. Iona	Knox	Cline & Lambert, Rea 1	Sur. 41-2N-10W	Aux Vases	P. 6-12W	12-19
16. Lamott	Posey	Heppard, Thomas Est. 6	24-7S-13W	Hardinsburg	P. 67-20W (T. S. & Hard.)	7-26
17. Lamott	Posey	Calvert Drlg. Co., Keck 1	18-7S-12W	Ste. Genevieve	P. 41	4-4
18. Mackey West	Gibson	Cline & Lambert, Zint 1	8-3S-9W	Aux Vases	P. 17-30W	10-18
19. Monroe City South	Knox	Jarvis, Helderman 2	21-2N-8W	Ste. Genevieve	P. 85	8-30
20. Monroe City West	Knox	Clark & Clark, O'Meyers 1	MD 179-2N-9W	Aux Vases ls.	P. 73-3W	11-7
21. Monroe City West	Knox	Morton, Carter 1	MD 11-2N-9W	Ste. Genevieve	P. 5-25W	3-28
22. Owensville	Gibson	Tuley & Carter, Wither- spoon 2	20-3S-11W	Waltersburg	P. 18-40W	7-11
23. Plainville	Daviess	B. L. & S. Drlg. Co., Unit 14-3	2-4N-7W	Devonian	P. 14-16W	2-8
24. St. James	Gibson	A. Cherry, Lutz 1	13-4S-11W	Aux Vases	P. 187	8-8
25. St. Phillips	Posey	Skiles Oil Co., Seiler 1	24-6S-12W	Biehl	P. 500	6-6
26. Vienna North	Vanderburgh	B. Kidd, Harris 1	18-5S-11W	Ste. Genevieve	P. 70	2-8
27. Welborn	Posey	H. Atha, Hoehn 1	20-6S-14W	Degonia	P. 25	6-6
28. Welborn	Posey	Sturbois, Bundy 1	17-6S-14W	Palestine	P. 100-3W	6-14

TABLE IX. DISCOVERY WELLS OF EXTENSIONS TO FIELDS IN INDIANA IN 1951

Pool	County	Company and Farm	Location	Total Depth (Feet)	Producing Formation	Initial Production (Barrels)	Date of Completion
1. Caborn	Posey	Noah Drlg. Co., Droege 1	5-6S-12W	1,725	Clore	F. 1100	8-15
2. Elnora	Daviess	Morgan Coal Co., Simms 1	35-5N-6W	1,090	Salem	P. 30-25W	3-14
3. Elnora	Daviess	Colby, Audis 2	4-4N-6W	812	Aux Vases	P. 5-14W	11-14
4. Iona	Knox	Cline & Lambert, Rea 1	Sur. 41-2N-10W	1,827	Aux Vases	P. 6-12W	12-19
5. Lamott	Posey	Calvert Drlg. Co., Keck 1	18-7S-12W	2,696	Ste. Genevieve	P. 45	4-4
6. Lamott	Posey	Stanford Oil, Oeth 1	25-7S-13W	2,771	Ste. Genevieve	P. 30	11-14
7. Martin	Vanderburgh	B. Kidd, Martin 1	5-5S-11W	2,552	Cypress	P. 20-125W	1-4
8. Union-Bowman	Pike	Juan Drlg. Co., Wilkerson 1	7-1N-8W	1,220	Jackson	P. 20	12-12
9. Monroe City	Knox	Cline & Lambert, Stewart 1	MD 105-2N-8W	1,327	Cypress	P. 8	11-21
10. Monroe City North	Knox	Morgan Coal Co., Powell 1	MD 81-3N-8W	1,454	Ste. Genevieve	P. 5-72W	10-24
11. Monroe City West	Knox	Morton, Carter 1	MD 11-2N-9W	1,542	Ste. Genevieve	P. 5-25W	3-28
12. Monroe City West	Knox	Cline & Lambert, Drieman 1	MD 178-2N-9W	1,667	Ste. Genevieve	P. 15	9-12
13. Monroe City West	Knox	Hugh & Murphy, Arterburn 1	MD 15-2N-9W	1,504	Aux Vases	P. 4	12-5
14. Mumford	Posey	Schoonmaker, Mumford 2	7-4S-13W	2,563	Cypress	P. 60-4W	7-5
15. New Haven Cons.	Posey	Ryan Oil Co., Flesher 1	29-6S-14W	3,001	Aux Vases	P. 5-6W	11-8
16. New Haven Cons.	Posey	C. E. Brehm, Sipp 1	32-6S-14W	2,992	Ste. Genevieve	P. 48	7-18
17. Owensville North	Gibson	Lovelace, Blair 1	14-2S-12W	2,381	Ste. Genevieve	P. 15	1-31
18. Parker	Posey	Reznick, Felthaus 1	2-6S-12W	2,662	Ste. Genevieve	P. 165-30W	11-14
19. Princeton	Gibson	Ashland, Woods Comm. 1	13-2S-11W	2,193	Ste. Genevieve	P. 62	1-4
20. St. James	Gibson	A. Cherry, Lutz 1	13-4S-11W	2,297	Aux Vases	P. 187	8-8
21. St. Phillips	Posey	Skiles Oil Co., Seiler 1	24-6S-12W	2,305	Biehl	P. 500	6-6
22. Welborn	Posey	H. Atha, Hoehn 1	20-6S-14W	2,963	Degonia	P. 25	6-6
23. Welborn	Posey	Tuley & Carter, Wilson 1	17-6S-14W	2,903	Tar Springs	P. 18	9-3

reserves as of that date were 316,000 barrels (A.P.I. Reserves Committee). This discovery has been attributed to subsurface studies and is probably related to an underlying reef.

In the Monroe City producing area of Knox County 2 new fields and 5 new extensions of fields were discovered. This broadens the producing area to include parts of three different townships in five separate producing fields with a total of 69 wells completed as of December 31, 1951. Production is established in the Cypress sandstone, the Aux Vases sandstone and limestone, and the Ste. Genevieve limestone. The most significant addition to the area during 1951 was the

TABLE X. SELECTED LIST OF DRY TESTS IN INDIANA IN 1951

County	Company and Farm	Location	Total Depth (Feet)	Deepest Formation Tested
1. Boone	W. R. Moss, Little 1	15-19N-2E	1,052	Trenton
2. Carroll	D. P. Calvert, G. Calvert 1	17-24N-2W	1,016	Trenton
3. Cass	Fredenhagen, Casepeer 1	28-27N-3E	1,010	Trenton
4. Clark	Stoll, Walters 1	7-1N-9E	1,400	Trenton
5. Dearborn	Regional Dev., Fox 1	28-6N-1W	2,415	Eau Claire
6. Floyd	Stoll, Scherziner 1	16-3S-6E	1,730	St. Peter
7. Harrison	Stoll, Hess 1	6-4S-5E	2,290	Trenton
8. Jennings	Stud, Maschino 1	29-6N-7E	1,480	Trenton
9. LaGrange	Sigrist, Hunt 1	19-37N-11E	2,357	Trenton
10. Lawrence	Regional Dev., Lewis 1	34-4N-2W	2,555	Trenton
11. Montgomery	VanHorn, Foster <i>et al.</i> 1	19-17N-5W	2,315	St. Peter
12. Owen	Michel, Ritter 1	35-11N-3W	1,926	Trenton
13. Putnam	Hays Drig. Co., Nichols 1	17-14N-3W	2,376	Trenton

TABLE XI. NUMBER OF GEOPHYSICAL CREWS ACTIVE IN INDIANA DURING 1951 BY MONTHS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Seismograph	3	2	2	1	1	1	1	0	0	0	0	0
Gravity meter	0	0	0	0	0	0	0	0	0	0	0	0

Monroe City South field which produces from Aux Vases sandstone and the Ste. Genevieve limestone. Estimated reserves (A.P.I. Reserves Committee) for the Monroe City area are 1,420,000 barrels as of December 31, 1951. These fields were discovered by subsurface structural and stratigraphic studies.

Geophysical exploration declined sharply in 1951 beginning in February and by August all activity was at a standstill. There were no known gravity-meter parties active in Indiana in 1951. Although some increased activity can be expected in 1952, it is unlikely that it will reach the peak attained during the years of 1949 and 1950. Subsurface information is expected to be the principal tool of exploration in 1952.

Leasing continued through 1951 although it was on a more selective basis and did not involve as many broad lease plays in the more remote parts of the state as in the two previous years. A continuation of this selective leasing is to be expected in 1952 but will probably be more active in the southwestern counties. There are several strong limiting factors which will affect this program. Few desirable lands remain unleased. Bonuses are high and restrictive clauses

commonly render other leases impractical. Titles are a problem although many adventurous operators are inclined to disregard this factor.

There are parts of Warrick, Pike, Vigo, and Gibson counties which offer promise of further development in the Pennsylvanian and Chester sands and the oölitic porosity zones of the Ste. Genevieve formation. Subsurface studies of structural trends and porosity trap possibilities seem to be the most effective and certainly the most economical mode of exploration in this area. A further decline of reef exploration is anticipated in 1952. There is a deep test now drilling along the Wabash River in White County, Illinois, a short distance from Posey County, which could change the outlook in Indiana very suddenly if important Devonian or Ordovician production should be encountered. This test is projected to the St. Peter sandstone and possibly deeper.

Although exploration for and primary exploitation of oil fields in Indiana are definitely on the downgrade, there is one source of optimism for Indiana as an oil-producing state. Secondary recovery from reservoirs depleted by gas expansion methods is increasing rapidly in importance. Several water-flood projects are under way and more can be expected in the near future. It does not seem too optimistic to expect these projects to compensate for much of the expected decline in primary production.