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Ronald F. Broadhead

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Oil and gas discovery wells drilled in New Mexico in 1992

by *Ronald F. Broadhead*, New Mexico Bureau of Mines and Mineral Resources, Socorro, NM 87801

Introduction

Fewer wells were drilled for oil and gas in New Mexico in 1992 than in 1991. Data obtained from the New Mexico Oil Conservation Division indicate 1,110 wells were completed in 1992, down 32% from the 1,624 wells drilled in 1991. In the Permian Basin, southeast New Mexico, 736 wells were completed in 1992, down from 889 completions in 1991; 507 wells were completed as oil producers and 128 wells were completed as gas producers while 101 wells were plugged and abandoned, resulting in a success rate of 86%. In the San Juan Basin, northwest New Mexico, 374 wells were completed in 1992, down from 735 completions in 1991; 41 wells were completed as oil producers while 298 wells were completed as gas producers and 35 wells were plugged and abandoned, resulting in a success rate of 91%.

Total footage of new holes drilled in 1992 was 4.717 million ft, down 28% from 6.522 million ft drilled in 1991. The average depth per well drilled in 1992 was 4,249 ft, 233 ft more than the average well drilled in 1991.

During 1992, there was significant frontier exploratory activity in the Tucumcari Basin, the Jornada del Muerto of east Socorro County, and along the west margin of the Permian Basin. Exploratory wells were drilled in all three areas.

For purposes of this report, a *significant wildcat discovery* is defined as a well in which commercial amounts of oil or gas were discovered in a stratigraphic unit more than 5 mi from the limits of previously discovered pools with commercial production from that stratigraphic unit. A *significant wildcat dry hole* is defined as a dry hole that was drilled in a not-yet-productive basin or a part of a basin and in which petroleum reservoirs were evaluated. The locations of significant wildcat wells that were completed in 1992 are shown in Fig. 1. Table 1 summarizes the significant wildcat discoveries, and Table 2 summarizes the significant wildcat dry holes. Table 3 summarizes wildcat and development wells in which horizontal drilling took place in 1992. Table 4 lists other significant wildcat wells that were being drilled, were not completed, or were held "tight" at the end of 1991.

Each well is designated by a number in parentheses that refers to its location in Fig. 1 and its description in Tables 1, 2, 3, or 4.

Southeast New Mexico

Drilling activity decreased in 1992 in the three geologic subdivisions of the Permian Basin: the Delaware Basin, the Central Basin platform, and the Northwest shelf. Twelve significant wildcat discoveries were made in the Permian Basin in 1992 (Fig. 1, nos. 1–12; Table 1, nos. 1–12). New Mexico Bureau of Mines and Mineral Resources et al. (1993) and McKamey et al. (1988) presented stratigraphic charts of oil- and gas-producing rock units in southeast New Mexico, as well as geologic and engineering summaries of oil and gas pools.

Eight significant wildcat discoveries were made in the Delaware Basin during 1992 (1–5, 8–10). Oil was discovered in basinal Brushy Canyon sandstones of the Delaware Mountain Group (Permian) in the Nearburg Production No. 1 Diamond 31 State (5). Oil was found in allochthonous basinal sediments of the Bone Spring Formation (Permian) in the Enron Oil and Gas No. 1 Vaca 13 Federal (10). Oil was discovered in San Andres carbonates (Permian) in the Yates Petroleum No. 5 Mimosa AHS Federal (1) and in the Yates Petroleum No. 1 Eidson Ranch Unit (8). Oil was discovered in the Grayburg Formation (Permian) in the Pogo Producing No. 1 Buffalo Federal (9). Gas was discovered in Upper Pennsylvanian carbonates in the Collins and Ware No. 1 Muley Federal (4). Gas was also found in Strawn carbonates (Middle Pennsylvanian) in the ☞

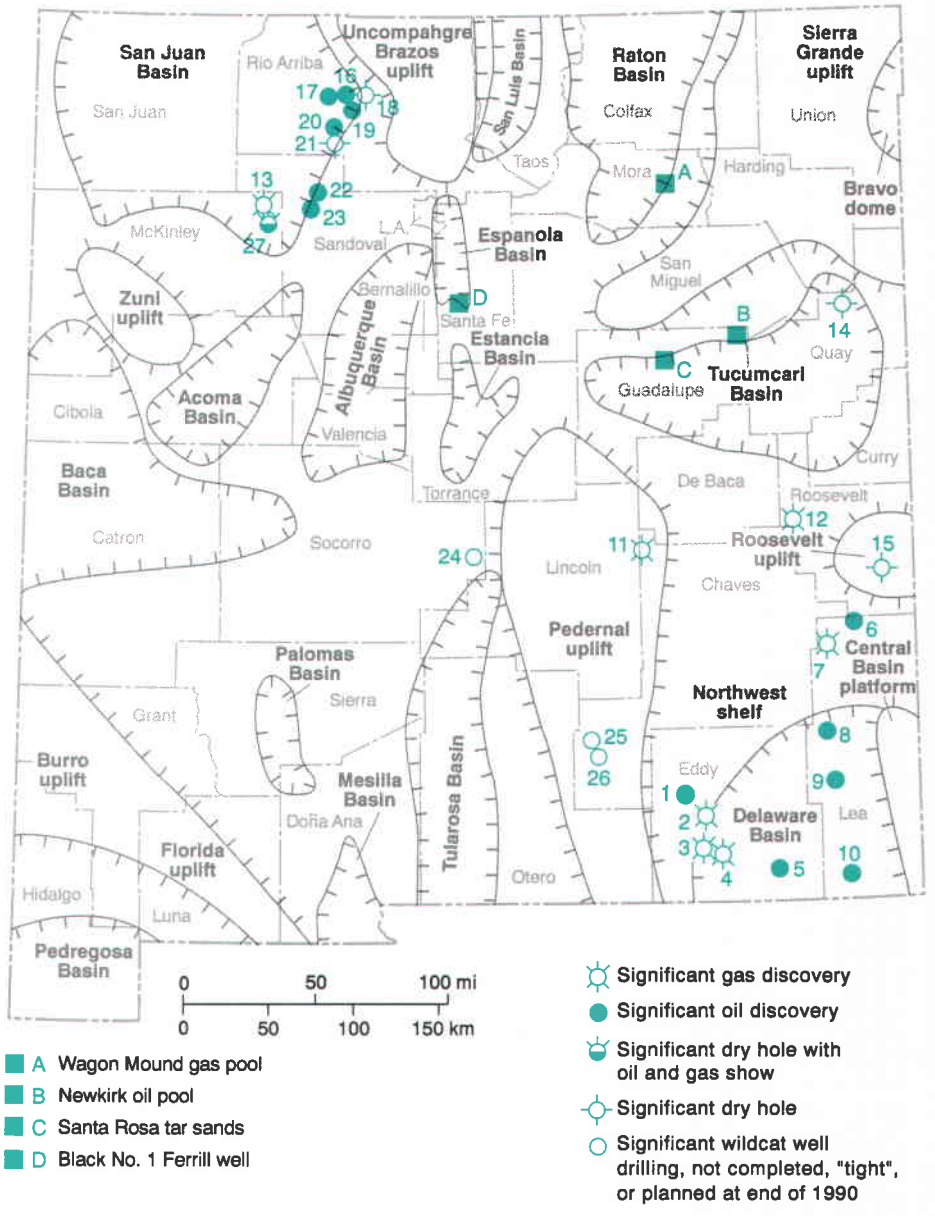

FIGURE 1—Significant oil and gas discoveries, frontier wildcat wells, and horizontal wells drilled in New Mexico during 1992. Major geologic features are from Broadhead and King (1988), Cather and Johnson (1984), Kelley (1978), Kottlowski and Stewart (1970), Meyer (1966), Molenaar (1977), Thompson and Jacka (1981), and Woodward et al. (1978).

TABLE 1—Significant wildcat discoveries in New Mexico in 1992; the term formation is used in an informal sense. **BOPD,** bbls oil per day; **MCFPD,** thousand ft^3 gas per day; **BWPD,** bbls water per day; **IPF,** initial potential flowing; **IPP,** initial potential pumping; **IPCAOF,** initial potential calculated absolute open flow; **owwo,** old well worked over.

Number on Fig. 1	Location (section-township-range, county)	Operator, well number, and lease	Completion date (mo/yr)	Total depth (ft)	Formation at total depth	Producing formation	Producing interval (ft)	Initial potential	Oil gravity (degrees API)
1	5-20S-24E, Eddy	Yates Petroleum No. 5 Mimosa AHS Federal (owwo)	6/92	3,592	Drinkard (Permian)	San Andres (Permian)	1,305–1,390	IPP 4 BOPD	34.9
2	9-21S-24E, Eddy	Barbara Fasken No. 1 Skelly Federal (owwo)	10/92	10,356	Barnett (Mississippian)	Strawn (Pennsylvanian)	9,082–9,088	IPCAOF 2,320 MCFPD	
3	9-23S-24E, Eddy	Yates Petroleum No. 1 Azotea AJZ Federal	1/92	10,920	Morrow (Pennsylvanian)	Strawn (Pennsylvanian)	8,662–9,638	IPF 320 MCFPD	
4	26-23S-25E, Eddy	Collins & Ware No. 1 Muley Federal	11/92	11,540	Morrow (Pennsylvanian)	Upper Pennsylvanian	9,680–9,690	IPCAOF 1,269 MCFPD	
5	31-24S-29E, Eddy	Nearburg Production No. 1 Diamond 31 State	1/92	9,000	Bone Spring (Permian)	Brushy Canyon (Permian)	5,082–5,110	IPP 30 BOPD +5 MCFPD +132 BWPD	
6	5-9S-34E, Lea	Bright & Co. No. 1 Apache	1/92	12,231	Devonian	Devonian	12,201–12,231	IPF 257 BOPD +25 BWPD	47
7	11-11S-32E, Lea	WOG, Inc. No. 1 State (owwo)	4/92	10,632	Mississippian	Mississippian	10,558–10,590	IPCAOF 1,070 MCFPD	
8	5-16S-33E, Lea	Yates Petroleum No. 1 Eidson Ranch Unit	4/92	13,650	Morrow (Pennsylvanian)	San Andres (Permian)	5,714–5,725	IPP 29 BOPD +4,580 MCFPD	28.4
9	11-19S-33E, Lea	Pogo Producing No. 1 Buffalo Federal (owwo)	7/92	13,450	Mississippian	Grayburg (Permian)	4,939–4,948	IPP 6 BOPD +5 MCFPD +80 BWPD	36.7
10	13-25S-33E, Lea	Enron O & G No. 1 Vaca 13 Federal	6/92	15,948	Morrow (Pennsylvanian)	Bone Spring (Permian)	12,230–12,356	IPF 129 BOPD +200 MCFPD	
11	4-4S-20E, Chaves	McKay Oil No. 1 April State	6/92	2,725	Abo (Permian)	Abo (Permian)	2,514–2,524	IPF 108 MCFPD	
12	26-2S-29E, Roosevelt	Marshall Pipe & Supply No. 1 Soltenberg (owwo)	10/92	7,290	Montoya (Ordovician)	San Andres (Permian)	2,920–2,930	IPCAOF 584 MCFPD	
13	13-20N-6W, McKinley	Merrion O & G No. 1 Chaco Wash	12/92	6,036	Entrada (Jurassic)	Gallup (Cretaceous)	3,794–3,860	IPF 20 MCFPD +1 BWPD	

Barbara Fasken No. 1 Skelly Federal (2) and in the Yates Petroleum No. 1 Azotea AJZ Federal (3).

Both oil and gas reservoirs were targets of exploratory drilling in the Delaware Basin during 1992. The main targets for oil exploration were deep-basin sandstones of the lower parts of the Delaware Mountain Group (Permian): the Brushy Canyon Formation and the Cherry Canyon Formation. Four Delaware Mountain discoveries were made in Eddy County, 13 were made in Lea County, and one of the 17, the Nearburg Production No. 1 Diamond 31 State (5), was significant as defined in this report; some discoveries were extensions of existing pools while others discovered new pools within 5 mi of existing pools. Other targets for oil exploration were Devonian carbonates, Strawn, Canyon, and Cisco carbonates (Middle–Upper Pennsylvanian), and Wolfcampian (Lower Permian) carbonates. Exploratory drilling for natural gas was concentrated mostly in Morrowan (Pennsylvanian) sandstones.

Development drilling in the Delaware Basin was predominantly for oil during 1992. As with exploratory drilling, the primary targets were shallow (4,000–6,000 ft) Delaware Mountain sandstones; approximately 130 development wells were successfully completed in Delaware sandstones during 1992. Activity was widespread, with significant numbers of wells drilled in the Lost Tank, Herradura Bend East, Cabin Lake, Livingston Ridge, Livingston Ridge East, Loving East, Sand Dunes West, Young North, Lusk East, and Ingle Wells pools. Other major targets of development drilling for oil were the moderately deep (6,000–10,000 ft) basinal Bone Spring (Permian) carbonates, the deep (10,000–11,000 ft) Wolfcampian (Permian) carbonates, and the moderately deep (7,000–10,000 ft) Middle and Upper Pennsylvanian (Strawn, Cisco–Canyon) carbonates. Canyon and Cisco reservoirs were intensively developed in the Dagger Draw North and Dagger Draw South pools of northwest Eddy County. More than 40 wells were drilled in these two reservoirs by Conoco and Yates Petroleum Corp. The intensive development in the Dagger Draw North and Dagger Draw South pools has been aimed at producing oil that was bypassed by existing wells; development in the past two years resulted in a 38% production increase during 1992, from 5.893 MMBO (million bbls oil) in 1991 to 8.132 MMBO in 1992. Morrowan and Atokan (Lower Pennsylvanian) clastics were the main targets for gas development drilling in the Delaware Basin during 1992, but development of gas reservoirs was slow.

No significant wildcat discoveries were made on the Central Basin platform during 1992. Limited exploratory drilling for oil in Blinebry and San Andres (Permian) carbonates took place, however. Development drilling was mostly for oil in the shallow (2,000–5,000 ft) San Andres and Grayburg Formations (Permian). There was limited development of gas reservoirs in the Queen, Seven Rivers, and Yates Formations (Permian).

Three significant wildcat discoveries were made on the Northwest shelf in 1992. On the south part of the shelf, oil was discovered in Devonian strata in the Bright No. 1 Apache (6). Gas was found in Mississippian carbonates in the WOG, Inc. No. 1 State (7). On the north part of the shelf, gas was discovered in Abo red beds

TABLE 2—Significant wildcat dry holes in New Mexico in 1992; the term formation is used in an informal sense. **D&A,** dry and abandoned; **DST,** drill-stem test; **perf,** perforated; **MCFPD,** thousand ft³ gas per day.

Number on Fig. 1	Location (section-township-range, county)	Operator, well number, and lease	Completion date (mo/yr)	Total depth (ft)	Formation at total depth	Status	Comments
14	29-13N-33E, Quay	Tenison Oil No. 1 Stansberry–Cox	12/92	1,560	Glorieta (Permian)	D&A	Drilled to test San Andres and Glorieta (Permian).
15	27-5S-35E, Roosevelt	Strata Production No. 1 Askew	11/92	7,925	Devonian	D&A	DST 7,788–7,925 ft (Devonian). "Tight" hole.
27	27-19N-5W, McKinley	High Plains Petroleum No. 1 Mammoth Federal	12/92	2,030	Mancos (Cretaceous)	D&A	Perf 1,470–1,478 ft (Menefee), flowed 150 MCFPD + oil. Perf 1,478–1,481 ft (Menefee), flowed oil + gas + mud.

TABLE 3—Wells drilled in New Mexico in 1992 with a significant horizontal deviation. (The amount of horizontal drilling is indicated by the difference between the total depth and the true vertical depth.) The term formation is used in an informal sense. **D&A,** dry and abandoned; **perf,** perforated; **BOPD,** bbls oil per day; **MCFPD,** thousand ft³ gas per day; **BWPD,** bbls water per day; **IP,** initial potential; **IPP,** initial potential pumping.

Number on Fig. 1	Location (section-township-range, county)	Operator, well number, and lease	Completion date (mo/yr)	Total depth (ft)	True vertical depth (ft)	Pool	Objective formation	Status	Comments
16	2-27N-1W, Rio Arriba	American Hunter Exploration No. 2A-1 Jicarilla	1/92	6,632	4,852	Puerto Chiquito West (Mancos)	Niobrara (Cretaceous)	oil	Perf 4,559–6,582 ft (Niobrara); IPP 43 BOPD +168 MCFPD +18 BWPD
17	3-27N-1W, Rio Arriba	American Hunter Exploration No. 3F-1 Jicarilla	3/92	7,862	6,688	Puerto Chiquito West (Mancos)	Niobrara (Cretaceous)	oil	Perf 6,958–7,862 ft (Niobrara); IPP 323 BOPD
18	6-27N-1E, Rio Arriba	American Hunter Exploration No. 6A-1 Jicarilla	7/92	5,026	2,728	Puerto Chiquito East (Mancos)	Niobrara (Cretaceous)	D&A	Tested 2,426–5,026 ft (Niobrara) open hole
19	8-27N-1E, Rio Arriba	American Hunter Exploration No. 8I-1 Jicarilla	10/92	4,245	2,412	Puerto Chiquito East (Mancos)	Niobrara (Cretaceous)	oil	Perf 2,104–4,201 ft (Niobrara); IP not reported.
20	16-25N-1W, Rio Arriba	Benson-Montin-Greer No. 8 Canada Ojitos Unit	2/92	8,861	6,998	Puerto Chiquito West (Mancos)	Niobrara (Cretaceous)	oil	Perf 7,341–8,855 ft (Niobrara); IP 2 BOPD + 250 MCFPD
21	33-24N-1W, Rio Arriba	KLM O & G No. 33-1 Browning Federal	4/92	7,590 8,060	6,658 6,768	Puerto Chiquito West (Mancos)	Niobrara (Cretaceous)	D&A	Drilled 2 sidetrack horizontal holes. Tested Point Lookout (Cretaceous) and Niobrara (Cretaceous); recovered no fluid.
22	35-21N-2W, Sandoval	Bright & Co. No. 1 Cuba Mesa	7/92	4,886	4,255	Rio Puerco (Mancos)	Mancos (Cretaceous)	oil	Perf 4,390–4,886 ft (Mancos); IPP 210 BOPD + 43 MCFPD + 181 BWPD.
23	5-20N-2W, Sandoval	Veteran Exploration No. 14 Johnson 5	11/92	6,232		Rio Puerco (Mancos)	Mancos (Cretaceous)	oil	"Tight" hole.

(Permian) in the McKay Oil No. 1 April State (11).

Exploration activity was limited on the Northwest shelf during 1992. Exploratory wells were drilled mainly for gas in Ordovician, Silurian, Devonian, Mississippian, and Cisco (Upper Pennsylvanian) carbonates. On the westmost part of the shelf, two wells were scheduled to be drilled by James C. Thompson (25, 26) to test lower Paleozoic strata at the end of 1992.

Development drilling on the Northwest shelf was slow during 1992. Drilling was concentrated on gas reservoirs in the shallow (2,000–4,000 ft) Abo red beds (Permian) of northwest Chaves County and on oil reservoirs in the shallow (2,000–6,000 ft) Paddock and San Andres reservoirs (Permian) of south Chaves County and north Eddy and north Lea Counties. Development of Paddock and San Andres reservoirs was especially strong in the Lovington and Lovington West pools. There was limited development of Devonian reservoirs in the Lone Wolf South and Chisum pools.

TABLE 4—Significant wildcat wells that were being drilled, not completed, "tight," or planned in New Mexico at the end of 1992.

Number on Fig. 1	Location (section-township-range, county)	Operator, well number, and lease	Comments
24	11-2S-6E, Socorro	Mountain States Petroleum No. 1 Hattie Lacy	Stratigraphic test. "Tight" hole. Scheduled to drill to 3,200 ft. Pennsylvanian section believed to be main objective.
25	28-16S-17E, Chaves	James C. Thompson No. 1 Federal A-28	Scheduled to drill to 4,700 ft to Ellenburger.
26	3-17S-17E, Chaves	James C. Thompson No. 1 State A-3	Scheduled to drill to 5,300 ft to Ellenburger.

The Roosevelt uplift and adjacent areas were drilled sparsely during 1992. One significant wildcat discovery was made; the Marshall Pipe & Supply No. 1 Soltenburg (12) was recompleted as a small gas discovery in the San Andres Formation (Permian) after having unsuccessfully tested the Ordovician and Pennsylvanian sections in 1986. In central Roosevelt ☞

County, the Strata Production No. 1 Askew (15) tested Devonian strata, but information was held "tight" at the end of 1992.

Development drilling in the Roosevelt uplift area was minimal in 1992. Only eight wells were drilled. Targets were carbonate reservoirs in the Cisco–Canyon (Upper Pennsylvanian) and San Andres (Permian) sections.

Northwest New Mexico

Drilling activity decreased markedly during 1992 in northwest New Mexico. Only 374 wells were drilled, a decrease of 49% from the 735 wells drilled during 1991. All drilling was in the San Juan Basin and was dominated by development of coalbed methane in the Fruitland Formation (Cretaceous).

Exploratory drilling resulted in one significant discovery in 1992. Gas was found in the Gallup sandstone (Cretaceous) in the Merrion Oil and Gas No. 1 Chaco Wash (13). The well is approximately 15 mi south of the main Gallup producing trend. Other exploratory efforts concentrated on finding new oil reserves during 1992. New pool discoveries and pool extensions were made in the Dakota and Gallup sandstones (Cretaceous). Gas discoveries were made in Dakota, Gallup, Mesaverde, and Pictured Cliffs sandstones and in the Chacra producing interval of the Lewis Shale (Cretaceous). One exploratory well, the High Plains Petroleum No. 1 Mammoth Federal (27), was drilled in the southmost part of the San Juan Basin; it was abandoned without establishing production after recovering gas and live oil from the Menefee Formation (Cretaceous). Hoppe (1992) recently discussed hydrocarbon potential of the Pictured Cliffs, Fruitland, and Ojo Alamo Formations in the northeast San Juan Basin.

Most development drilling in the San Juan Basin during 1992 was for shallow (approximately 2,000 ft) coalbed methane in the Fruitland Formation (Cretaceous). A total of 237 Fruitland wells were drilled, only two of which were plugged and abandoned. The Basin (Fruitland) coalbed methane pool has been extensively developed in the last few years to take advantage of Federal tax credits on coalbed methane production. Kelso et al. (1988) estimated that the total gas contained in Fruitland coal beds in the San Juan Basin is 50 trillion ft^3 (TCF); most of that gas is in the New Mexico part of the basin, but the most prolific coal beds appear to be concentrated mainly in the Colorado part of the basin. Similarly, Ayers and Ambrose (1990) estimated a total volume of Fruitland gas between 43 and 49 TCF. It is not known what percentage of the gas is recoverable under current economic conditions with currently employed technology, but this reservoir represents a major addition to the state's gas supplies. In 1992, the Basin (Fruitland) pool produced 357 BCF, 47% of the gas produced from the San Juan Basin and 29% of the gas produced from New Mexico. Production from the Basin (Fruitland) pool increased 61% during 1992 from the 222 BCF produced during 1991. Whitehead (1991) and Bland (1992) summarized coalbed methane in the Fruitland.

Development drilling for gas in reservoirs other than the Fruitland was sluggish in 1992. Almost 30 gas wells were completed in the Dakota Sandstone (Cretaceous) in Rio Arriba and San Juan Counties. Lesser numbers of development gas wells were completed in Gallup, Mesaverde, and Pictured Cliffs sandstones (Cretaceous).

Development drilling for oil was subordinate to development drilling for gas. Only 41 oil wells were completed in the San Juan Basin during 1992, a 28% decrease from the 57 wells completed during 1991. Gallup sandstone reservoirs were the main targets with most drilling in the Bisti and South Bisti pools of San Juan County. There was also development of oil reservoirs in Dakota, Hospah, Point Lookout, and Menefee sandstones (Cretaceous).

Eight wells drilled in the San Juan Basin during 1992 with a significant horizontal deviation are listed in Table 3. Six of those wells (16–21) were drilled to test fractured Niobrara shale (Cretaceous) in the East Puerto Chiquito and West Puerto Chiquito pools. Four of those wells (16, 17, 19, 20) were successfully completed as oil producers. To the south in the Rio Puerco Mancos pool, two wells (22, 23) with horizontal deviation were completed as oil producers in fractured Mancos shale (Cretaceous).

Northeast New Mexico

Relatively little, but nevertheless significant, petroleum exploration took place in northeast New Mexico during 1992. One exploratory test was drilled in the Tucumcari Basin. The Newkirk heavy oil pool was abandoned. Plans were made to produce hydrocarbons from the Santa Rosa tar sands with a novel thermal recovery technique.

Petroleum has not been produced commercially in northeast New Mexico except from relatively small and isolated operations. In the 1970s, marginally commercial amounts of gas were produced from the Morrison Formation (Jurassic) and the Dakota Sandstone (Cretaceous) at the currently inactive Wagon Mound pool in Mora County (Fig. 1, letter A). Since the 1980s, the Newkirk pool (Fig. 1, letter B) has produced 597 bbls heavy oil from sandstone in the Santa Rosa Formation (Triassic); a pilot steamflood operation aided production during the mid-1980s. All 22 wells in the Newkirk pool were plugged during 1992; those wells were unable to sustain economic production with the conventional recovery techniques employed. In the 1930s, approximately 153,000 tons of tar sand were quarried from the Santa Rosa Formation near the town of Santa Rosa in Guadalupe County (Gorman and Robeck, 1946; Fig. 1, letter C); the tar sands were used for road-surfacing material in New Mexico and neighboring states. In south Santa Fe County, the Black Oil No. 1 Ferrill (Fig. 1, letter D) has produced 728 bbls oil from the Niobrara and lower Mancos shales (Cretaceous) since the well was drilled in 1985. In the Raton Basin, a pilot project initiated by Pennzoil has produced gas from coalbed methane reservoirs in the Vermejo Formation (Cretaceous); development and commercial production are on hold until the natural gas market improves. The Gas Research Institute (1988) and Close and Dutcher (1990) discussed coalbed methane in the Raton Basin.

Elsewhere in northeast New Mexico, CO_2 gas is produced from the Bravo dome field of south Union and east Harding Counties. The CO_2 is used primarily for enhanced oil recovery in the Permian Basin. Small quantities of CO_2 were produced from the Des Moines field of northwest Union County from 1935 until 1966.

One exploratory well was drilled in the Tucumcari Basin during 1992. The Tenison Oil Co. No. 1 Stansberry–Cox (14) was drilled on the northeast margin of the basin to test San Andres carbonates and the Glorieta Sandstone (Permian:Leonardian). No shows were reported, but the well did not penetrate the deeper Wolfcampian and Pennsylvanian sections, which are primary exploration targets in the basin (Broadhead and King, 1988; Broadhead, 1990).

Elsewhere in the Tucumcari Basin, Forefront Ventures, Loumic Resources, and partners announced initiation of a project for in situ recovery of heavy oil from the Santa Rosa tar sands. A novel thermal recovery technique will be used to produce the heavy oil. This technique involves placing downhole microwave transmitters in shallow boreholes. Microwaves will mobilize the oil by heating it. A pilot project consisting of four boreholes will commence operations during 1993. If oil is recovered economically, additional wells will be drilled.

Finally, leasing activity in the Tucumcari Basin continued during 1992, but at a diminished rate from the previous two years. During the October state lease sale, Lucille Pipkin bid successfully on 160 acres of State Trust Land in north Quay County.

Southwest New Mexico

One petroleum exploration well was drilled in southwest New Mexico during 1992. In east Socorro County, the Mountain States Petroleum No. 1 Hattie Lacy (24) was drilled as a stratigraphic test on an anticline on the east side of the Jornada del Muerto. The well is considered "tight" but was scheduled to be drilled to 3,200

ft. The Pennsylvanian section is believed to be the main objective. At least one additional stratigraphic test may be drilled in the area during 1993.

No other wells were drilled in southwest New Mexico during 1992. Considerable petroleum potential exists in several basins, however, including the Tularosa Basin (King and Harder, 1985), the Pedregosa Basin (Thompson, 1981; Thompson and Jacka, 1981), and the Baca Basin (Wengerd, 1959; Foster, 1964; Woodward and Grant, 1986; Broadhead and Black, 1989).

Production and economics

In 1991, New Mexico was the seventh largest producer of crude oil and the fourth largest producer of natural gas in the United States (Energy Information Administration, 1992). Production of crude oil and lease condensate in 1992 was approximately 70.8 million bbls, an increase of 0.57% from the 70.4 million bbls produced during 1991 (New Mexico Oil Conservation Division data). Production of natural gas in 1992 was 1,246 billion ft^3 (BCF), an increase of 22% from the 1,019 BCF produced in 1991. In 1992, 93% of the state's oil and 39% of the state's gas were produced from the Permian Basin and adjoining areas of southeast New Mexico; 7% of the state's oil and 61% of the state's gas were produced from the San Juan Basin of northwest New Mexico.

As of December 31, 1991, New Mexico had proved crude oil reserves of 721 million bbls (Energy Information Administration, 1992); the Permian Basin contains 96% of the state's proved oil reserves and the San Juan Basin contains 4% of the state's proved oil reserves. Additionally, New Mexico had proved reserves of 68 million bbls of lease condensate (Energy Information Administration, 1992); 74% of the condensate reserves are in the San Juan Basin and 26% of the condensate reserves are in the Permian Basin. Furthermore, there are an additional 275 million bbls of crude oil reserves in existing reservoirs that may be economically recoverable through implementation of existing enhanced-recovery technology (Energy Information Administration, 1992); 100% of those reserves are in the Permian Basin. As of December 31, 1991, New Mexico had proved natural gas reserves of 19.8 TCF (Energy Information Administration, 1992); the San Juan Basin contains 82% of the state's proved gas reserves and the Permian Basin contains 18% of the state's proved gas reserves.

The estimated value of oil produced in New Mexico during 1992 was approximately $1.3 billion (New Mexico Oil Conservation Division data). The estimated value of produced gas was approximately $2.0 billion. The state derives a large amount of revenues from taxes and royalties levied on oil and gas production (Table 5). In 1992, New Mexico received $335 million from oil and gas taxes and from oil and gas royalties on state trust land. In addition, New Mexico received approximately $111 million as its share of revenues from leases on federal lands in the state; this value includes bonuses, royalties, and rentals derived from leases and production of oil, gas, and coal.

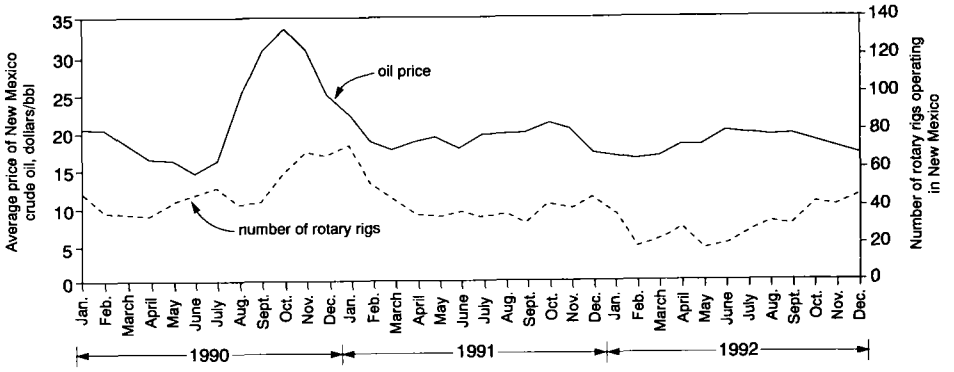

FIGURE 2—Average monthly crude oil price and number of active rotary drilling rigs in New Mexico during 1990, 1991, and 1992. Data from New Mexico Taxation and Revenue Dept. and Oil and Gas Journal (1990, 1991, 1992).

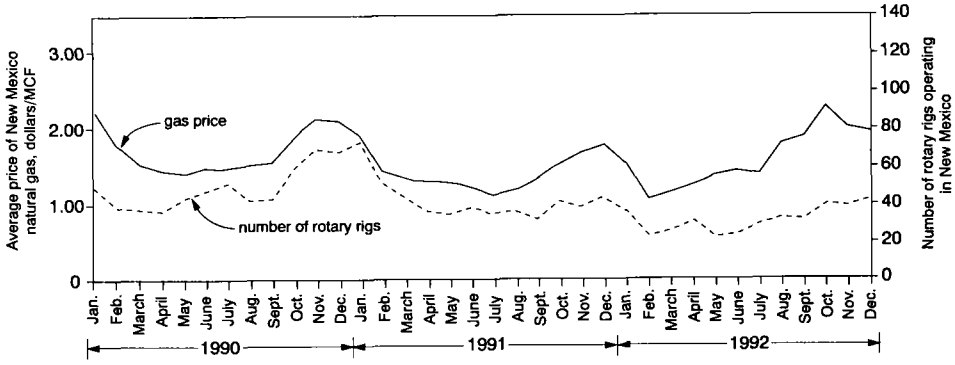

FIGURE 3—Average monthly natural gas price and number of active rotary drilling rigs in New Mexico during 1990, 1991, and 1992. Data from New Mexico Taxation and Revenue Dept. and Oil and Gas Journal (1990, 1991, 1992).

TABLE 5—State oil and gas production taxes and royalties collected in 1992. Data from New Mexico Taxation and Revenue Dept., Oil and Gas Accounting Division.

Tax or royalty	Amount collected in 1992
Severance tax	$108,976,723
School tax	91,162,968
Ad valorem tax	29,584,007
Conservation tax	5,212,808
Royalty from state trust land	100,203,024
TOTAL	$335,139,530

The decrease in oil production during 1992 resulted mostly from a decrease in oil prices. The average sales price of crude oil decreased from $19.28/bbl in 1991 to $18.29/bbl in 1992 (Fig. 2). The decrease in oil prices resulted in decreased drilling activity; as a result, new oil sources were not developed quickly enough to replace waning production from older wells. Also, the lower prices did not provide incentive to maintain maximum production from some older wells. Oil production in New Mexico will increase if favorable economic changes lead to increased drilling and increased implementation of enhanced recovery techniques. Oil production will decrease if economic changes are unfavorable. Sustained low oil prices will lead to decreased exploration for, and development of, new reserves. Fewer enhanced recovery projects will be started in older oil reservoirs. Production will therefore decrease gradually unless prices rise moderately or unless a major discovery is made.

The increase in natural gas production in 1992 was caused by an increased demand for gas, as well as by increased productive capacity. Productive capacity rose primarily as a result of extensive development of coalbed methane reservoirs in the San Juan Basin. Primary markets for New Mexico gas are in California, but New Mexico gas faces stiff competition there from fuel oil, Wyoming gas, and imported subsidized Canadian gas. Natural gas may replace fuel oil in many markets because it is a more environmentally desirable fuel.

The average wellhead price of New Mexico gas in 1992 was $1.62/MCF, an increase from the average price of $1.42/MCF in 1991. The average gas price reached a maximum of $2.29/MCF in October 1992 (Fig. 3). The increase in gas prices during 1992 was a nationwide phenomenon (Koen, 1993). The price increase in 1992 ☞

may be due to a balancing of gas markets and a long-awaited reduction in the gas surplus. Both national proved reserves and national productive capacity have been decreasing for the last several years because of a decline in gas drilling (Koen, 1993). Concurrently, national gas demand has increased. During 1993, demand is expected to increase 3.4% to 20.38 TCF (Energy Information Administration, 1993). Growth will be most pronounced in the industrial and electric utilities sectors of the gas market. Demand is expected to increase another 2.0% to 20.78 TCF during 1994. Demand for New Mexico gas may increase if the North American Free Trade Agreement is signed, and additional markets for U.S. gas are developed in the industrial areas of north Mexico.

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New Mexico Geological Society
1994 Spring Meeting
Call for papers

The annual spring meeting will be held on Friday, April 8, 1994, at Macey Center on the campus of New Mexico Tech in Socorro. Talks that focus on the geology of New Mexico or adjacent areas are being solicited for oral and poster presentation. Camera-ready abstracts must be received by **February 11, 1994**. The abstracts should be in GSA style and may include simple line drawings or graphs, but everything must fit on a single 8½ × 11" page. Abstracts will appear in a proceedings volume and later will be published (without illustrations) in *New Mexico Geology*. A $50 award will be presented to the winner of the best student paper competition (a voluntary competition, poster presentations are not eligible). Abstracts should be mailed to Andrew Campbell, Geoscience Dept., New Mexico Tech, Socorro, NM 87801 (505/835–5327). Meeting programs and registration forms will be mailed in early March. For registration information, contact Glenn Jones, New Mexico Bureau of Mines and Mineral Resources, Socorro, NM 87801 (505/835–5243). For general information, contact general chairpersons Andrew Campbell or Nelia Dunbar (505/835–5783).