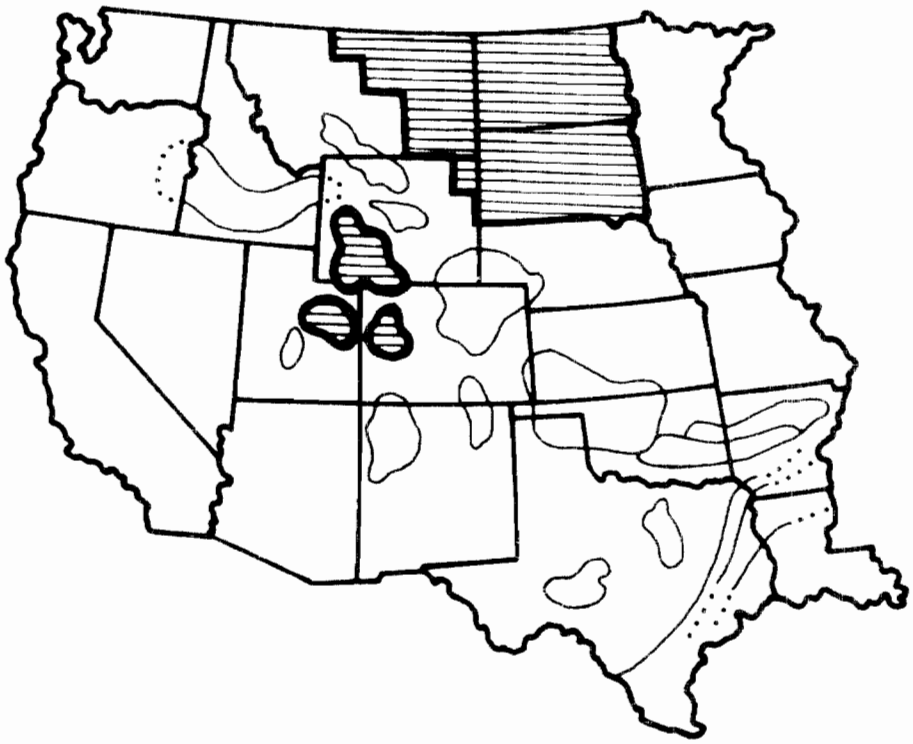
DOE/BC/10003-4

# Western Gas Sands Project
## Quarterly Basin Activities Report



October 1-December 31, 1979

Prepared for
U.S. Department of Energy
Bartlesville Energy Technology Center
Las Vegas Field Office

Compiled by CER Corporation
Las Vegas, Nevada

Contract DE-AC08-79BC10003

#C 2412/S001

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PAPER COPY PRICES EFFECTIVE JANUARY 1, 1979

| Page Range | Domestic Price |
|---|---|
| 001-025 | $4.00 |
| 026-050 | $4.50 |
| 051-075 | $5.25 |
| 076-100 | $6.00 |

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# Abbreviations and Acronyms

**Completed Wells**

| | |
|---|---|
| WF | unsuccessful new field wildcat |
| WFD | new field discovery |
| WD | unsuccessful deeper pool wildcat |
| WDD | deeper pool discovery |
| WS | unsuccessful shallower pool wildcat |
| WSD | shallow pool discovery |
| WP | unsuccessful new pool wildcat |
| WPD | new pool discovery |
| WO | unsuccessful wildcat outpost |
| WOE | wildcat outpost extension |
| D | unsuccessful development well |
| DG | development gas well |

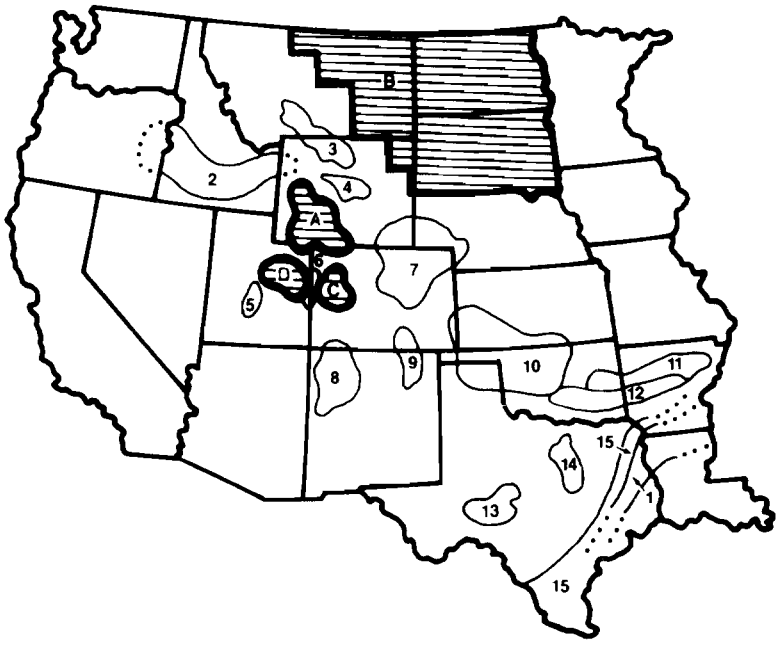
**Drilling/Staked Wells**

| | |
|---|---|
| WF | new field wildcat |
| WD | deeper pool wildcat |
| WS | shallower pool wildcat |
| WP | new pool wildcat |
| WO | wildcat outpost |
| D | development |

| | |
|---|---|
| BHC | Borehole Compensated Log |
| Cp | Drilling completed |
| DIL | Dual Induction Laterlog |
| D&A | Dry and Abandoned |
| FDC | Formation Density Log |
| Fr | First Report |
| GR | Gamma Ray |
| PB | Plugged back |
| SDR | Shut down for repairs |
| SDW | Shut down for weather |
| SI | Shut in |
| Spud | Commencement of drilling |
| Sp | Spud In |
| SP | Spontaneous Potential |
| SN | Sidewall Neutron |
| Swb(d)(g) | Swabbed, swabbing |
| TD | Total Depth |
| Tstg | Testing |
| WOCT | Waiting on completion tools |
| WOO | Waiting on orders |

# 1. Introduction

This quarterly basin activities report is a summation of three months drilling and testing activities in the four primary study areas of the WGSP. This report details information in each study area for the months of October, November and December, 1979. Refer to Figure 1-1 for the location of study areas in the WGSP.




PRIMARY STUDY AREAS

A. Greater Green River Basin
B. Northern Great Plains Province
C. Piceance Basin
D. Uinta Basin

ADDITIONAL LOW PERMEABILITY SANDSTONE AREAS

1. Cotton Valley Trend
2. Snake River Downwarp
3. Big Horn Basin
4. Wind River Basin
5. Wasatch Plateau
6. Douglas Creek Arch
7. Denver Basin
8. San Juan Basin
9. Raton Basin
10. Anadarko Basin
11. Arkoma Basin
12. Ouachita Mountains Province
13. Sonora Basin
14. Fort Worth Basin
15. Western Gulf Basin

*Figure 1-1 Map of Western United States, Showing Areas of Interest*

The monitoring of basin activities is an important part of resource assessment and promotes cooperation between industry and government. This is especially evident in the core program. Certain areas in each study area have been recommended by the USGS for obtaining core. Operators active in these specific areas are located by monitoring new activity in each area and contacted by CER Corporation to negotiate contracts for joint industry/government coring operations.

The summary of information on each study area is divided into two sections. The core program section identifies industry activity within the preferred core areas and relates the status of WGSP core acquisition developments. The second section details drilling and testing operations of interest and tabulates production figures from horizons of interest. Newly staked and active wells, and completed wells are listed and located on a map with red and blue numbers, respectively.

The drilling information used in this report was compiled primarily from *The Rocky Mountain Region Report*, published daily by Petroleum Information Corporation. Additional sources used were the *Montana Oil and Gas Journal*, *The Oil and Gas Journal* and the *Western Oil Reporter*.

The following is an excerpt from the *Western Oil Reporter, December 1979*, and is of interest to the WGSP.

*Operators Are Extending Mancos "B" and Dakota Production*
*East and West of the Douglas Creek Arch*
by Douglas Gill

Several operators are extending Mancos B and Dakota production both east and west from the Douglas Creek Arch.

About 10 miles to the east of the Douglas Creek Arch in the Piceance Basin, Dallas independent David Munson drilled five producing wells to the Mancos B and Dakota Formations from 9,000 to 12,000 ft. In November, Cities Service Gas Company and Pacific Gas Transmission Supply Company were working to the south and north of the Munson wells with the same objective in mind.

To the west of the arch in the southeast corner of the Uinta Basin, Coseka Resources USA, Ltd. found the first significant production in seven townships in the tight formation area by drilling down as deep as 10,000 ft with a 20-well program.

There is significant exploration away from the Douglas Creek Arch area. The new work is much further away from the Northwest Pipeline mainline that runs up the arch, and is 5,000 to 6,000 ft deeper that previous Douglas Creek Arch drilling. The older Wasatch Formation fields that hooked up to the mainline in the 1960s, are mostly in the 3,000 to 6,000 ft range.

Munson established about 7.5 MMCFD in deliverability among his five wells, but believes he could have done better if he knew what he does now about completion and subsurface fracturing in the area. The wells were drilled on his Sagebrush Hills II Unit on the west flank of the Piceance Basin.

Munson says he's hoping for 15 to 20 MMCFD in deliverability from his next five wells, but as of early November he was still looking for a sponsor to finance them.

Financing its own effort in the Piceance Basin, Cities Service is seeking to provide more gas for its pipeline system, either by trades involving the Northwest line or through a future direct connection with Cities' new line to Rawlins, Wyoming.

The company has taken an option to earn part of Chancellor Exploration's large Rio Blanco Exploration Unit by drilling six wells to evaluate the Mancos B and Dakota on the western flank of the basin, in the vicinity of Munson's wells. Results from the two wells now finished or being tested will guide the company's decision whether to finish the series.

Pacific Gas Transmission Supply (PGT), the producing arm of Pacific Gas & Electric Company, has a significant exploratory program in both the Uinta and Piceance Basins. It is part of an effort to justify a Uinta lateral off its proposed new line from the Overthrust Belt near Kemmerer, Wyoming, to southeast California. PGT is doing its own drilling in the Piceance Basin and is in partnership with Coseka Resources in the southeast corner of the Uinta Basin.

Coseka Resources has had success in searching for production in the Mancos B and Dakota Formations in the southeastern part of the Uinta Basin, where strata begin to slope upwards toward the Douglas Creek Arch.

Of the 20 wells drilled or drilling so far in the Uinta Basin, Coseka has or will successfully complete 19, and would have completed the twentieth except for an unexpected casing collapse. Ten of the wells are Mancos completions.

At an average 2 MMCFD from the Dakota and 200 MCFD from the Mancos, Coseka has established some 20 MMCFD of production in seven sparsely drilled previously unproductive Uinta Basin townships. There were a dozen wells which pioneered the effort in the seven townships. All were drilled in large exploratory units, very useful in tight gas sand drilling where the operator knows he will drill a number of wells over a large area.

A fracture treatment can be avoided whenever a natural flow is encountered due to better than usual permeabilities or natural fissure networks. Deliverabilities in that case can average 1 to 3 MMCFD. Coseka tries not to augment good natural flow with a fracture job.

Coseka's drilling plan typically calls for conventional mud drilling through the lowest water-bearing zone, usually the Castlegate—sometimes called the Mancos A. Casing is set to that point, then air is used to drill through the Mancos to the Dakota. If completion is not possible there, the well is plugged back and completed in the Mancos. Using air and no mud, the Mancos is not damaged while continuing on to the deeper objective.

Background and geologic information about the WGSP can be obtained from the Quarterly Basin Activities Reports, dated January 1, 1978 (NVO/0655-03), April 1, 1978 (NVO/0655-05), and July 21, 1978 (NVO/0655-06). Included in these reports are stratigraphic correlation charts, cross sections and a brief account of the geology of each area and information relating to the USGS recommended coring locations. For information on the core

program, refer to the *WGSP Core Program, January 12, 1978.* These reports may be obtained from the Technical Information Center (TIC), Post Office Box 62, Oak Ridge, Tennessee, 37830, except the Core Program document, which is available from CER Corporation, 4220 South Maryland Parkway, Suite 801, Las Vegas, Nevada, 89109.

# 2. Northern Great Plains Province

## 2.1 CORE PROGRAM

Specific areas within Montana were selected by the USGS for the initiation of the WGSP core program. These areas include:

- Powder River County — T5S, R52E to T53E.
- Custer and Prairie Counties — T10N to T11N, R48E to R49E.
- Valley County — T29N to T30N, R35E to R37E.
- Phillips County — T29N to T30N, R26E to R27E.

The four areas (refer to Figure 2-2 for location) were chosen for the following reason:

- They are removed from productive fields and little data is available in the areas.
- There are two or more potential reservoir intervals and adjacent source beds in the areas.
- The combination of these areas will test several different reservoir types, including sections with fine-grained carbonates, such as chalk, and fractured reservoirs found along lineament zones.

The objectives are Cretaceous horizons ranging from the Judith River Formation through the older Mowry Formation. Figure 2-1 is a correlation chart of Cretaceous rocks in the Northern Great Plains Province. Drilling depths to reach these objectives are shallower in the Province (2,000 to 4,000 ft) than in the basins of Wyoming, Colorado and Utah. Therefore, costs for recovering core and obtaining complete log data should be less than in basins where the objectives are deeper.

There was not much activity in the designated core areas. Dome Petroleum has two wildcat tests near Core Area B in Custer County. Falcon-Colorado Exploration had two development completions near Core Area C in Valley County. Coring was to take place for the Midlands Gas No. 2-2670 Federal in Phillips County, but was postponed until early spring.

Table 2-1 lists the wells of interest to the USGS designated core areas and Figure 2-2 shows their locations.

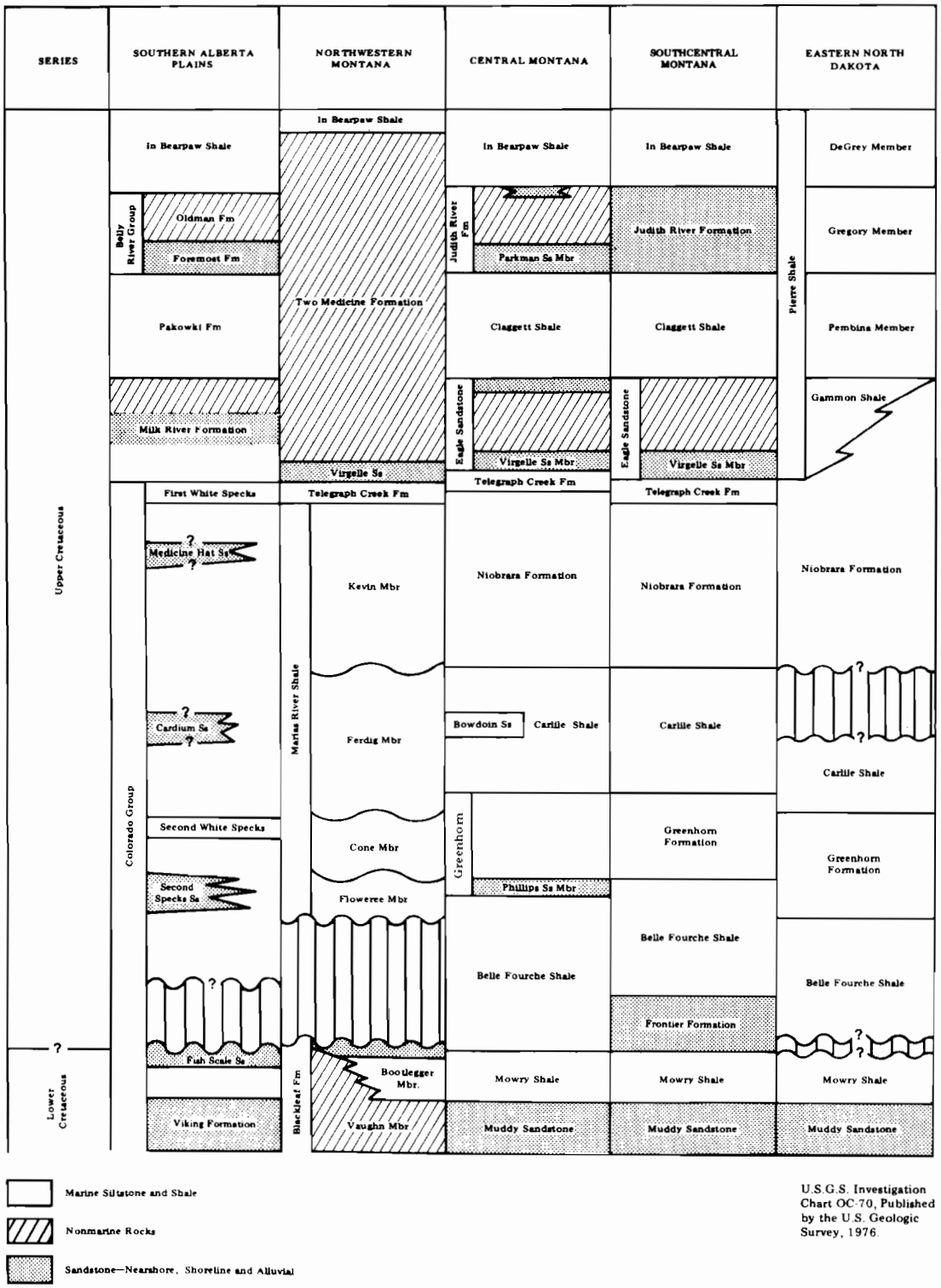



*Figure 2-1 Correlation Chart of Cretaceous Rocks of the Northern Great Plains Province*

*Table 2-1 Summary of Wells Located in USGS Designated Core Areas — Northern Great Plains Province*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 11-20-79 | Dome Petroleum | 1-21 BN | 1 | nene 21/12N/47E Wildcat Field Custer Cnty, MT | Madison 7,700 | WF, located near Core Area B. Operator has 1 additional wildcat test in locale. |
| SP: 6-4-79 CP: 8-22-79 | Falcon-Colorado Exploration | 1-4 Fisher | 2 | nesw 4/32N/35E Swanson Creek Valley Cnty, MT | Producing horizon: Phillips 1,236-1,248 TD: 1,440 | DG, located near Core Area C. Fractured w/13,000 gal fluid, 40,000 lb sand; acidized w/250 gal. IPF: 173 MCFD. Operator had additional completion in same locale. |
| FR: 10-11-79 | Midlands Gas | 2 Federal 2670 | 3 | sene 26/37N/30E Bowdoin Field Phillips Cnty, MT | Phillips 1,950 | D, to be cored in early spring. |

## 2.2 DRILLING ACTIVITY

Exploration of the shallow gas sands of interest to the WGSP continued to increase. Colorado Interstate Gas Exploration's program continued in Carter, Custer, Fallon and Garfield Counties, Montana, and included some Niobrara tests. Sugar Creek Resources had three Fallon County Eagle tests with one completed D&A. Other activity in the province included Joseph J. C. Paine's Eagle program in Bowman County, North Dakota, with significant production from a number of the wells. Other activity included Jerry McCutchin's Shannon wells in Harding County, South Dakota, and Odessa Natural's two Greenhorn tests in Carson County, South Dakota, which were completed D&A.

There was activity in new areas of the province, with one of the most interesting being the Niobrara field discovery in Phillips County, Montana (XENO No. 16-15 Wagner, Sec. 15, T32N, R28E). The pay zone perforated at 1,539 to 1,552 ft, and although its initial potential was only 34 MCFD, this new field in a different stratigraphic horizon is significant. The well was fractured, but no information about the fracture job was available.

Other new areas of shallow gas exploration included a Muddy test to 2,469 ft (D&A) by South Ranch Oil in Fergus County, Montana. Gulf Oil had a 2,050 ft Eagle test (D&A), with two additional tests planned, all in Garfield County, Montana; this illustrates that major companies are also showing interest in these shallow sands. Hilton Engineering & Geological Services currently has a 2,000 ft Mowry test in Stillwater County, Montana, which is just outside the province boundary. P&M Management drilled a D&A Parkman (Judith River) test to 4,461 ft in Powder River County, Montana. This test, however, indicated that the Parkman was probably in the higher permeability part of that facies.

Montana-Dakota Utilities is drilling an Eagle test in the area of the J. J. C. Paine program in North Dakota. South Dakota is also getting new activity: Lario Oil & Gas plans to drill three Niobrara tests and two Shannon tests in Butte County. These tests are probably designed to extend production out from the same trend that J. McCutchin established to the northwest. Drilling depth will vary from 1,000 ft (Shannon) to 2,000 ft (Niobrara).

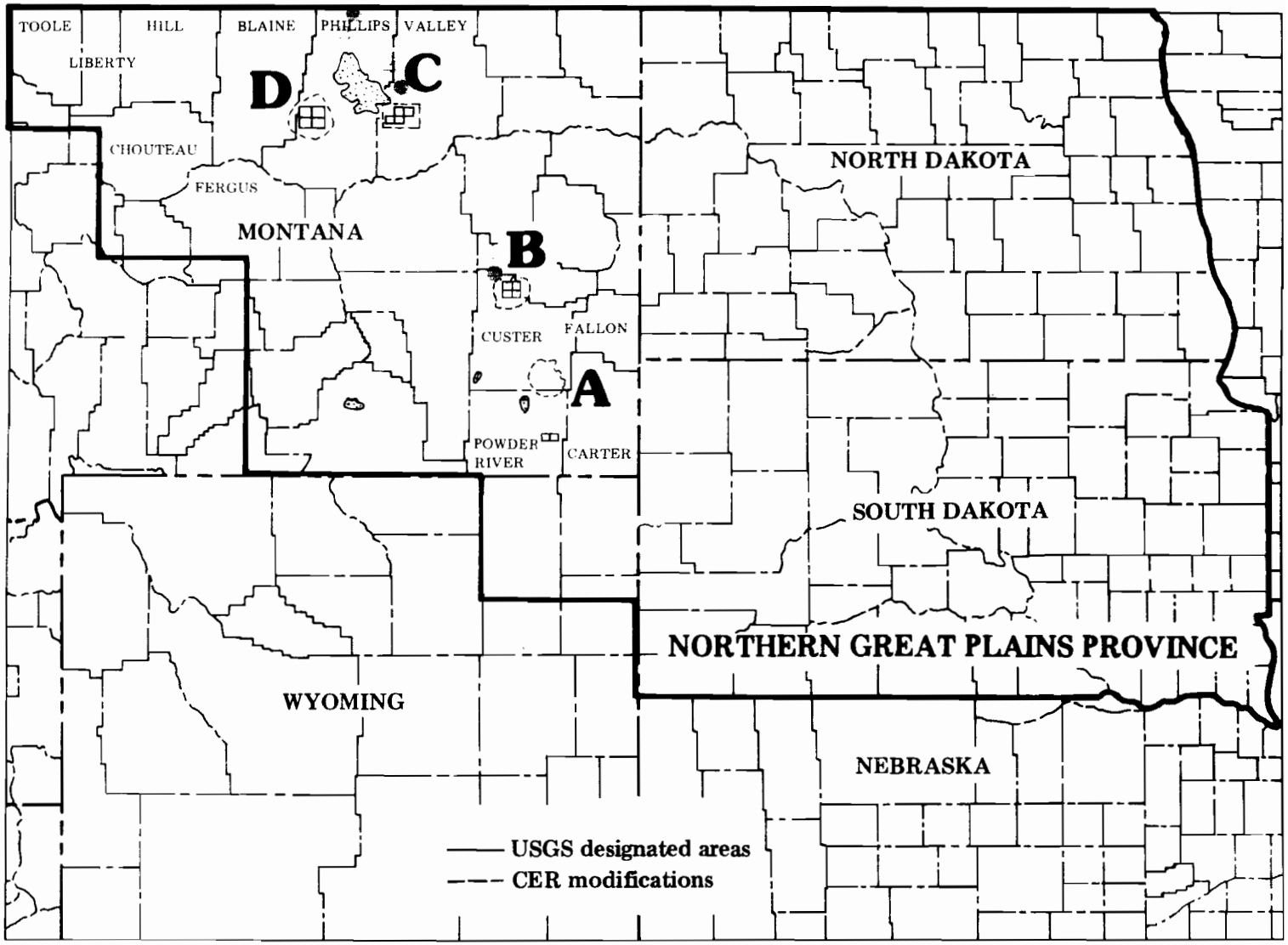



*Figure 2-2 USGS Designated Core Areas and Wells of Interest, Northern Great Plains Province (refer to Table 2-1)*

*Table 2-2 Summary of Active Wells and New Locations — Northern Great Plains Province*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 9-19-79 SP: 10-28-79 | Orlyn Terry | 28-13 Federal (changed from 28-1 Federal) | 1 | swsw 28/7S/59E Wildcat Field Carter Cnty, MT | Muddy 1,700 | WF. 1,600 TD; holding for data. Operator has 2 additional wildcat tests in locale. |
| FR: 12-5-79 | Brownlie, Wallace, Armstrong & Bander | 17-12 Miles | 2 | swnw 17/1N/54E Wildcat Field Custer Cnty, MT | Shannon 1,900 | WF. Operator has 1 additional wildcat test in locale. |
| FR: 5-15-79 SP: 7-4-79 | CIG Exploration | 1 BN | 3 | swne 19/3N/56E Wildcat Field Carter Cnty, MT | Niobrara 3,050 | WF. 4,059 TD; WOCT (tight hole). |
| FR: 10-30-79 | Lario Oil & Gas | 1-11 Federal | 4 | nwse 11/14N/2E Wildcat Field Butte Cnty, SD | Niobrara 2,150 | WF. Operator has 2 additional Niobrara tests in county. |
| FR: 8-13-79 SP: 8-11-79 | Balcron Oil | 1-10 Van Dyken | 5 | sesw 10/29N/2W Ledger Field Pondera Cnty, MT | Bow Island 700 | WOE. 809 TD; holding for data. |
| FR: 8-22-79 SP: 10-10-79 | Century Oil & Gas (changed from Stroock et al) | 23-30 Dignin (changed from Lisco & Stroock) | 6 | nesw 30/30N/3W Wildcat Field Pondera Cnty, MT | Bow Island 1,600 | WF. 1,810 TD, WOPU. |
| FR: 2-19-79 SP: 7-10-79 | Montana Dakota Utilities | 966 Smith | 7 | nenw 13/31N/43E Bowdoin Field Valley Cnty, MT | Bowdoin-Phillips 1,400 | D. 1,200 TD, 1,666 PB, tstg. Operator has 4 additional wells in locale. |
| FR: 9-4-79 SP: 10-10-79 | Marquis Petroleum | 26-1 McCarter | 8 | nene 26/32N/2E Wildcat Field Toole Cnty, MT | Bow Island 1,200 | WF. 715 TD, WOCT. Operator has 2 additional wildcat wells in locale. |
| FR: 8-30-79 SP: 10-1-79 | Webb Resources | 25-13 State | 9 | swsw 25/37N/4W Fitzpatrick Lake Field Toole Cnty, MT | Bow Island 1,860 | D. 1,866 TD, acidized, foam/sand fracture, swbg. Operator has 3 additional wells in locale. |
| FR: 6-4-79 SP: 8-26-79 | Joseph J. C. Paine & Associates | 2-14 BLM | 10 | cnw 4/129N/106W Little Missouri Field Bowman Cnty, ND | Eagle 1,500 | D. 1,410 TD, WOCT. Operator has 25 additional Eagle tests in this locale. |

There were 96 newly-staked locations in the fourth quarter: 68 development and 28 wildcat wells. A summary of active and newly staked wells is in Table 2-2 and Figure 2-3 shows the locations of the wells.

Table 2-3 is a summary of the WGSP drilling activities. These figures have been revised to the fourth quarter, 1978, and revision will continue in future quarters as statistics become available. Drilling summaries for all four primary areas of interest are being updated.

A number of wells in the province have natural production. If fractured, the treatment is usually 8,000 to 15,000 gal fluid and 40,000 lb sand. The largest fracture treatment reported during the quarter, was performed on J. J. C. Paine No. 2-23 Lowe well, Sec. 23, T129N, R106W, Bowman County, North Dakota. The well, which was fractured with 20,025 gal of fluid and 50,000 lb sand, yielded 120 MCFD from the Eagle Formation.

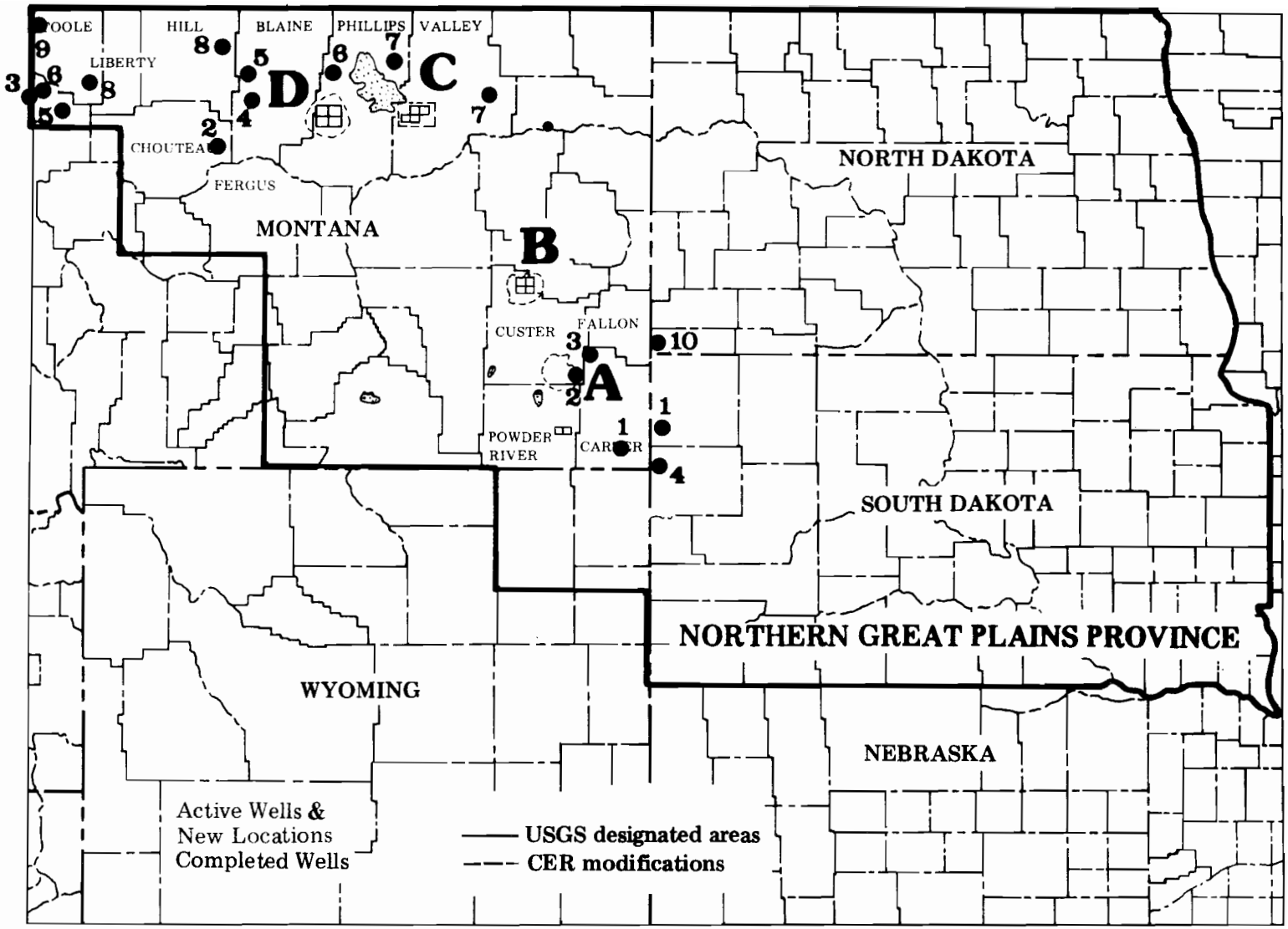



*Figure 2-3 Wells Staked and Completed, USGS Designated Core Areas, Northern Great Plains Province (refer to Tables 2-2 and 2-4)*

## *Table 2-3 Summary of Drilling Activities — Northern Great Plains Province**

| | NO. OF WELLS | | | | | PRODUCING HORIZONS IN MCFD | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wildcat | | Develop-ment | | Total | | | | Eagle | | | | Greenhorn | | | | | |
| | D&A | Discovery | D&A | Producing | | Judith River | Claggett | Undifferentiated | Shannon | Niobrara/1st White Specs | Cadile/ Bowdoin | Undifferentiated | Phillips/2nd White Specs | Frontier | Blackleaf | Bow Island/Muddy | Commingled | Total |
| **2nd Qtr 1977 | 15 | 6 | 13 | 37 | 71 | 40 | 0 | 310[1] | 471 | 0 | 4,265 | 0 | 0 | 0 | 2,013 | 3,804 | 22,747[2] | 33,650 |
| **3rd Qtr 1977 | 12 | 6 | 7 | 40 | 65 | 340 | 0 | 8,279 | 0 | 0 | 0 | 18 | 614 | 0 | 495 | 9,524 | 9,233[3] | 28,503 |
| **4th Qtr 1977 | 23 | 3 | 14 | 36 | 76 | 0 | 0 | 10,056[1] | 87 | 0 | 1,004 | 50 | 0 | 0 | 259 | 1,965 | 23,814[4] | 37,235 |
| **1st Qtr 1978 | 9 | 2 | 5 | 6 | 22 | 0 | 0 | 150 | 0 | 0[1] | 0 | 0 | 218 | 0 | 645 | 1,152 | 0 | 2,165 |
| **2nd Qtr 1978 | 10 | 1 | 20 | 24 | 55 | 0 | 3,912 | 7,841 | 640 | 77 | 1,406 | 0 | 252 | 0 | 0 | 2,064 | 1,644[5] | 17,836 |
| **3rd Qtr 1978 | 32 | 12 | 30 | 54 | 128 | 0 | 0 | 13,638[6] | 2,087 | 0 | 4,372 | 239 | 2,140 | 0 | 136 | 8,715[6] | 4,850[7] | 36,127 |
| 4th Qtr 1978 | 31 | 5 | 36 | 55 | 127 | 189 | 0 | 7,406 | 0 | 0 | 5,197 | 0 | 4,301 | 610 | 157 | 7,560[8] | 2,386[9] | 27,617 |
| 1st Qtr 1979 | 12 | 9 | 13 | 67 | 101 | 0 | 0 | 4,724[10] | 0 | 0 | 3,741 | 0 | 0[8] | 0 | 0 | 787 | 3,834[11] | 13,086 |
| 2nd Qtr 1979 | 13 | 6 | 8 | 49 | 76 | 0 | 0 | 3,528[1] | 2,307[12] | 296 | 3,678 | 0 | 4,290 | 0 | 267 | 5,621 | 1,446[13] | 21,163 |
| 3rd Qtr 1979 | 16 | 4 | 22 | 33 | 75 | 0 | 0 | 8,674[10] | 0 | 0 | 260 | 0 | 217 | 0 | 1,064 | 5,363[1] | not[14] available | 15,578 |
| 4th Qtr 1979 | 20 | 9 | 25 | 68 | 122 | 0 | 0 | 11,186[10] | 2,275 | 34 | 1,082 | 0 | 6,715[6] | 0 | 0 | 9,525[6] | 2,213 | 33,030 |

[1] IPF not available from one well

[2] Bowdoin/Greenhorn/Phillips 14,878
Bowdoin/Greenhorn 6,015
Colorado/Bow Island 436
Dakota/Bow Island 113
Sunburst/Bow Island 680

[3] Bowdoin/Greenhorn/Phillips 1,989
Bowdoin/Greenhorn 6,015
Bow Island/Dakota 113
Bow Island/Sunburst 1,116

[4] Bowdoin/Greenhorn/Phillips 3,051
Bowdoin/Greenhorn 3,740
Bowdoin/Phillips 15,523
Bow Island/Sawtooth 1,500

[5] Bowdoin/Greenhorn 900
Bow Island/Dakota 40
Bow Island/Sunburst/Ellis 704

[6] IPF not available from two wells

[7] Bowdoin/Greenhorn/Phillips 676
Bowdoin/Phillips 909
Bow Island/Sunburst/Swift 1,881
Bow Island/Sunburst/Swift/Kootenai 175
Bow Island/Sunburst 110
Bow Island/Swift 400
Blackleaf/Spike 699

[8] IPF not available from eleven wells

[9] Bowdoin/Phillips 1,710
Bowdoin/Greenhorn/Phillips 676
Blackleaf/Bow Island N/A

[10] IPF not available from six wells

[11] Bowdoin/Phillips 960
Bowdoin/Greenhorn 711
Greenhorn/Phillips 2,078
Eagle/Bowdoin 85

[12] IPF not available from five wells

[13] Bowdoin/Greenhorn/Phillips 1,361
Bowdoin/Eagle 85

[14] Blackleaf/Bow Island

* Data compiled from P.I. Rocky Mountain Region Report "Completions"
** Revised figures

*Table 2-4 Summary of Wells Completed — Northern Great Plains Province*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | HORIZON (Projected Depth or Producing Interval) | FINAL TD | FRACTURE TREATMENT | COMMENTS | IPF in MCFD |
|---|---|---|---|---|---|---|---|---|---|
| SP: 12-3-77 CP: 6-20-79 | Jerry McCutchin | 1-5 Harrison-State | 1 | senw 5/16N/2E West Short Pine Hills Field Harding Cnty, SD | Shannon 1,867-1,918 (gross) | 1,950 | | WOE, no cores. Operator had 3 additional Shannon wells reported complete this quarter in locale. | 2,000 |
| SP: 7-20-79 CP: 7-24-79 | J. Burns Brown | 17-15 Federal | 2 | sese 17/26N/16E Unnamed Field Chouteau Cnty, MT | Eagle 2,500 | 2,012 | | D, D&A. Operator had 3 additional Eagle completions reported this quarter in locale. | |
| SP: 7-19-79 CP: 8-4-79 | Worldwide Energy | Imperial Oil 1-2 Golf | 3 | csw 2/29N/5W Wildcat Field Pondera Cnty, MT | Dakota 1,800 | 2,104 | Acidized w/250 gal, Fract w/12,500 gal fluid, 25,000 lb sand | WF, D&A. No cores or tests. Operator had 2 additional reported D&A wildcat wells this quarter in locale. | |
| SP: 7-5-79 CP: 7-7-79 | Tricentrol United States | 10-10 Hofeldt | 4 | nwse 10/30N/18E Tiger Ridge Field Blaine Cnty, MT | Eagle 1,350 | 1,500 | | D, D&A. No cores or tests. | |
| SP: 6-24-79 CP: 6-26-79 | J. Burns Brown | 25-32-18 Ramberg | 5 | sene 25/32N/18E Black Coulee Field Blaine Cnty, MT | Eagle 1,252-1,258 (open hole) | 1,258 | | DG, comp. as SIGW. No cores or tests. Operator had 5 additional reported completions during quarter this locale. | |
| SP: 8-22-79 CP: 10-24-79 | Xeno, Inc. | 16-15 Wagner | 6 | sese 15/32N/28E Unnamed Field Phillips Cnty, MT | Niobrara 1,539-1,551 (gross) | 1,594 | 30,000 lb sand | WFD, no cores or tests. | 34 |
| SP: 7-16-79 CP: 8-30-79 | Falcon-Colorado Exploration | 1-27 Bell | 7 | swsw 27/33N/34E Swanson Creek Field Phillips Cnty, MT | Phillips 1,056-1,068 | 1,250 | Acidized w/250 gal, Fract w/13,000 gal gel, 40,000 lb sand | DG, no cores or tests. Operator had 10 additional completions in locale reported this quarter. | 494 |
| SP: 8-28-79 CP: 9-1-79 | Texas Oil & Gas | 1-S Leonard A Miller | 8 | swsw 20/34N/17E Wildcat Field Hill Cnty, MT | Eagle 1,700 | 1,700 | | WF, D&A. Operator had 1 additional wildcat D&A in same locale. | |

In the Northern Great Plains Province, 122 wells were reported as completions: 68 development wells were producers and 25 were D&A; 9 wildcat wells were reported as discoveries and 20 were D&A. Potential new gas totaled 33,030 MCFD. Producing horizons included the Eagle (which usually contributes the most gas in the NGPP), Phillips, Bow Island, Shannon, Bowdoin, Greenhorn and Niobrara. Table 2-4 is a summary of completed wells and Figure 2-3 shows their locations.

# 3. Greater Green River Basin

## 3.1 CORE PROGRAM

To assist in assessing the resource potential within the Greater Green River Basin, the USGS recommended core acquisition in the following areas (see Figure 3-3):

Area A

The crest of the Wamsutter Arch in Sweetwater and Carbon Counties, the Northern edge bordering on the Red Desert Basin and the southern edge occupying part of the Washakie Basin, T17N to T21N, and R91W to R97W. The section below the commercial Almond and Ericson (Mesaverde) is of primary interest in this area;

Area B

The area east of the Big Piney/LaBarge Field in Sweetwater and Sublette Counties, running north and south through the Pinedale area, and to the northern edge of the Green River Basin. These areas skirt the edge of the Wind River Range. Production here is primarily Frontier, with some contribution from the Mesaverde and Fort Union.

Area B has been divided into four subdivisions which are:

$B_1$ West of R104W to R109W and from T22N, north to T28N;

$B_2$ R106W to R111W and from T27N to T31N;

$B_3$ R108W to R112W but not including development drilling, and T30N to T35N; and

$B_4$ North edge of Green River Basin into the Hoback Basin, R112W to R114W and T36N to T39N.

The core sites contain thick sections of tight, but generally untested, gas sands in Upper Cretaceous and Tertiary formations.

During the quarter, two DOE coring jobs took place in the Greater Green River Basin. Coring began November 9 on the Pacific Transmission Supply No. 3-10A Federal well, Sec. 10, T22N, R94W, Sweetwater County, Wyoming. Approximately 165 ft of 4 in. core was recovered and WGSP coring operations were finished on November 13. H. E. Newman, S. R. Anderson and J. M. Gromer (CER Corporation) were on site for the WGSP coring segment. Coring began at the top of the Almond Formation (of the Mesaverde Group), which was the only horizon cored. Table 3-1 has detailed core information.

*Table 3-1 Core Description for Pacific Transmission Supply No. 3-10A Federal Well, Greater Green River Basin*

| Core No. | Interval Cored | Ft Recovered | Percent Recovered | Feet | General Lithologic Description |
|---|---|---|---|---|---|
| 1 | 11,436-11,496 | 53.9 | 90 | .5 | Shale: black; silty; carbonaceous, non-calcareous |
| | | | | 18.0 | Siltstone: fine grain; ranging from shaley to sandy; lt. grey; massive bedding; non-calcareous |
| | | | | 35.4 | Sandstone: lt. grey; fine to very fine grained, massive bedding, salt and pepper, non-calcareous |
| 2 | 11,496-11,553 | 51.2 | 90 | 4.0 | Siltstone: shaley; lt. grey; very fine grain; silty shale laminations |
| | | | | 47.2 | Shale: ranging from less than 10% silt to very silty; from non-calcareous to locally calcareous; light and dark laminations; carbonaceous |
| 3 | 11,553-11,605 | 46.2 | 89 | 2.0 | Sandstone: lt. grey; silty; very fine grain, massive bedding |
| | | | | 6.5 | Shale: black; silty; some coaly black laminations |
| | | | | 37.7 | Siltstone: shaley; grey, some coaly carbonaceous inclusions; shaley laminations |
| 4 | 11,605-11,623 | 15.4 | 86 | 7.0 | Siltstone: grey; laminated w/black silty shale layers; 1-2 in. coaly seam; slightly calcareous |
| | | | | 8.4 | Shale: silty; black; scattered carb. laminations |

Samples were sent to Bartlesville Energy Technology Center (BETC), Lawrence Livermore Laboratory (LLL), Los Alamos Scientific Laboratory (LASL) and Core Laboratories (Casper, Wyoming).

Logging operations commenced November 16 and were completed November 17. G. C. Kukal (CER Corporation) assisted. Table 3-2 is a list of logs run on the well.

Coring of Rainbow Resources No. 1-3 Pacific Creek Federal well, Sec. 3, T26N, R103W, Sweetwater County, commenced during the quarter (December 29). By December 31, two Mesaverde cores were cut from 12,398 to 12,497 ft, with full recovery. The operator resumed normal drilling at that point. Coring will resume below 12,600 ft after the first of the year.

Figures 3-1 and 3-2 depict some of the activities related to coring operations of the Rainbow Resources No. 1-3 well. The first picture is Parker Drilling Company roughnecks pulling out the inner core barrel. The second photograph is H. E. Newman (CER Corporation staff geologist) taking core from the rig floor to the "doghouse" for description.

Table 3-3 is a summary of wells located in the USGS designated core areas and Figure 3-3 shows their locations.

## 3.2 DRILLING ACTIVITY

Most activity in the Greater Green River Basin was in the same general areas as the third quarter: east of the Rock Springs Uplift in and on the flanks of the Washakie and Red Desert Sub-basins. Koch and Colorado Interstate Gas Exploration are expanding their drilling programs in the same general area of the Waskakie Sub-basin, Sweetwater County. CIGE has planned three Mesaverde tests to 17,000 ft in their Haystack Unit area. Koch will drill two 18,300 ft Mesaverde wildcat tests to the northwest. Cotton Petroleum has a five well wildcat program planned in this general area. Cotton Petroleum's Shallow Creek Unit wells are all planned to 12,600 ft (Mesaverde).

The most common objective in Sweetwater County is the Mesaverde Group. The Frontier Formation is the usual target in the Lincoln and Uinta Counties (to the west of the Rock Springs Uplift area).

The Green River Basin proper (Sublette County and western Sweetwater County) has not been particularly active in WGSP horizons of interest. However, Belco Petroleum is the most active in Sublette County with the Frontier horizon as the main objective. In western Sweetwater County, Bruff gas field also has quite a bit of Frontier activity. Figure 3-4 is a stratigraphic correlation chart, showing the formations of the Greater Green River, Piceance and Uinta Basins.

During the quarter, 64 new wells were staked: 52 development and 12 wildcat wells. Most of the new wildcat wells are located in the Red Desert Sub-basin. One notable exception is Forest Oil No. 1 Jonas Gulch wildcat well, Sec. 9, T26N, R107W, Sweetwater County, Wyoming (Green River Basin proper),which is planned to 10,000 ft (Mesaverde).

The largest fracture treatment reported this quarter was performed on Amoco Production's No. 1 Champlin 222 Amoco-E well, Sec. 21, T19N, R93W, Carbon County, Wyoming. The well was acidized with 1,200 gal and fractured with 395,850 gal gel, 268,296 gal water and 1,397,500 lb sand. This Almond Formation completion produced 700 MCFD.

Seventy-eight wells were reported complete this quarter with a total potential of 76,072 MCFD new gas. Of the reported completions, 48 development wells were producers, 10 wildcat wells were discoveries, and 7 development and 13 wildcat wells were D&A.

Contributing horizons included the Fort Union, Wasatch, Lewis, Almond, Ericson, Mesaverde (undifferentiated), Frontier, Lewis/Ericson (commingled), Frontier/Muddy (commingled) and Frontier/Bear River (commingled). The producing horizons and a summary of drilling activities are listed in Table 3-4. (The figures are revised up to fourth quarter, 1978, and revision will continue in future quarters.)

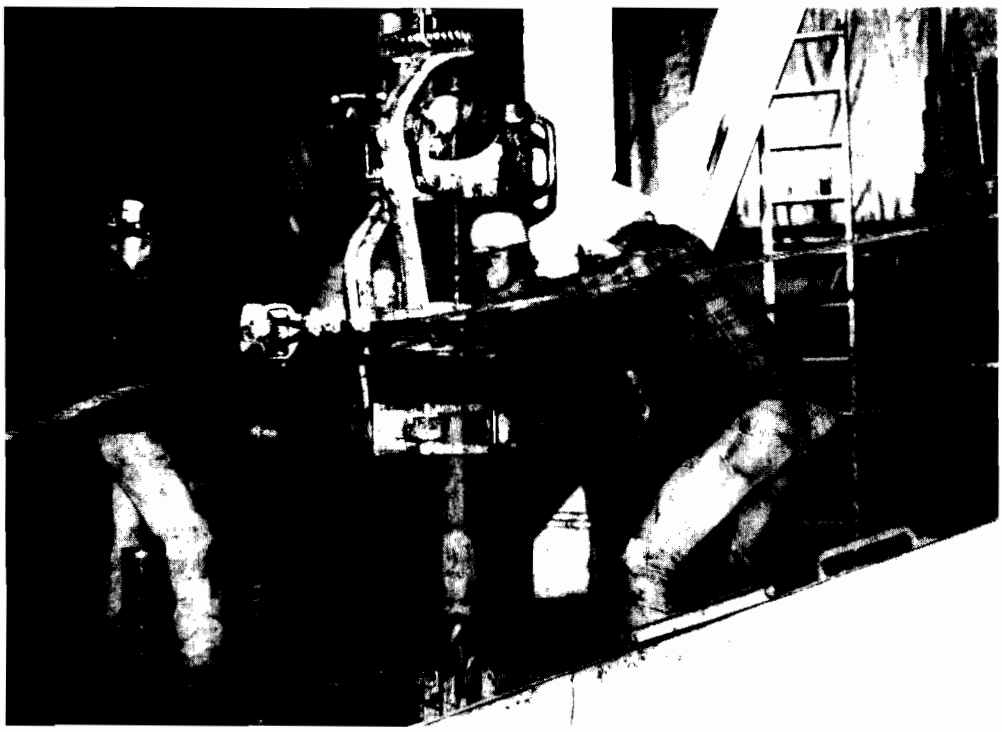


*Figure 3-1 Pulling Inner Core Barrel*

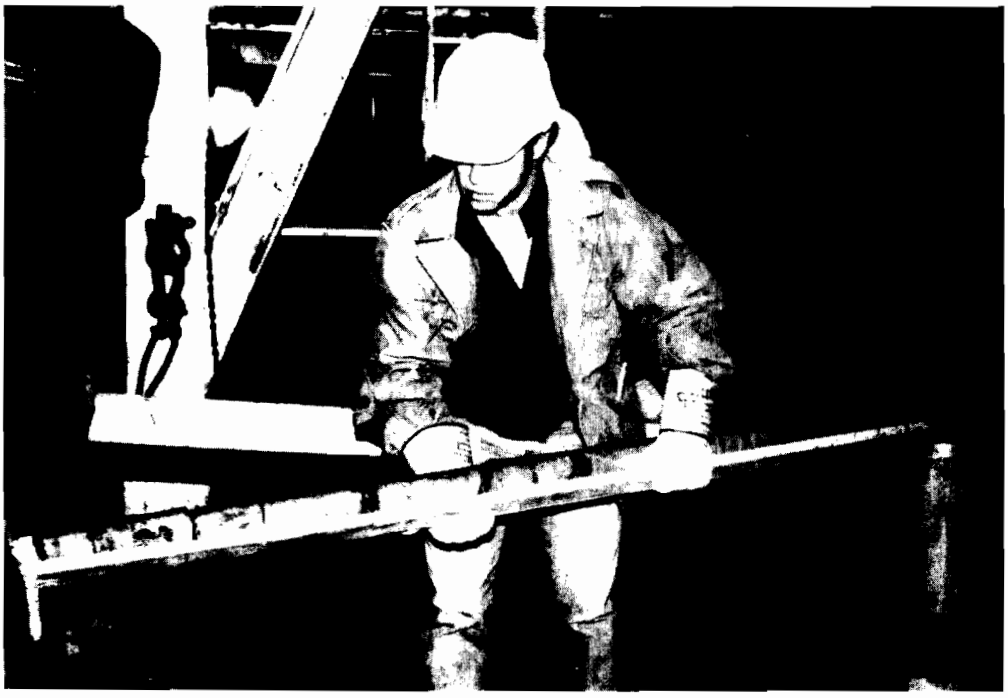


*Figure 3-2 H. E. Newman, CER Corporation Staff Geologist*

*Table 3-2 Logs Run on PTS No. 3-10A Federal Well, Greater Green River Basin*

| Service | Remarks |
|---|---|
| Dual Induction Log-SFL-SP-GR | Logged 11,966 to 9,436 ft and 9,676 to 1,544 ft. |
| Simultaneous BHC Sonic-Caliper | Logged 11,938 to 9,856 ft. |
| Variable Density Log-Full Wave Train Log-Amplitude Log | Logged 11,940 to 9,800 ft. |
| Formation Density-Caliper | Logged 11,969 to 9,857 ft and 11,969 to 11,424 ft. |
| Simultaneous Compensated Neutron Gamma Ray | Logged 11,969 to 9,857 ft and 11,969 to 11,424 ft. |
| Dual Laterolog and Simultaneous Micro-SFL-Caliper-Gamma Ray | Logged 11,971 to 9,900 ft and 11,971 to 11,514 ft. Log pad closed from 11,955 to 11,514 ft. |
| Mud Log | $R_{xo}$ closed from 10,937 to 11,960 ft. |

*Table 3-3 Summary of Wells Located in USGS Designated Core Areas — Greater Green River Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 12-6-79 | Cities Service | 1 State-H | 1 | nwnw 16/19N/91W Fillmore Field Carbon Cnty, WY | Mesaverde 9,650 | D, located in Core Area A. |
| FR: 9-12-79 | Pacific Transmission Supply Co. | 3-10A Federal | 2 | csw 10/22N/94W Siberia Ridge Field Sweetwater Cnty, WY | Mesaverde 12,000 | D, 12,000 TD, WOCT. Cored during this quarter. (See text.) |
| FR: 10-30-79 | Forest Oil | 1 Jonah Gulch | 3 | sesw 9/26N/107W Wildcat Field Sweetwater Cnty, WY | Mesaverde 10,000 | WF, located in Core Area B1. |
| FR: 11-5-79 | Energetics Incorporated | 10-32 Federal | 4 | senw 32/27N/111W Bird Canyon Field Sublette Cnty, WY | Bear River 9,950 | D, located in Core Area B2. |
| SP: 10-20-78 | Pacific Transmission Supply Co. | 24-19 Federal | 5 | sesw 19/33N/114W Wildcat Field Sublette Cnty, WY | Frontier 11,650 | WFD, comp. 11-13-79. Prod. zone: Mesaverde 5,206-5,339; IPF 347 MCFD. |
| FR: 10-10-79 | Chevron | USA 1-7 Federal | 6 | sese 7/36N/114W Wildcat Field Sublette Cnty, WY | 15,500 test | WF, located in Core Area B4. |

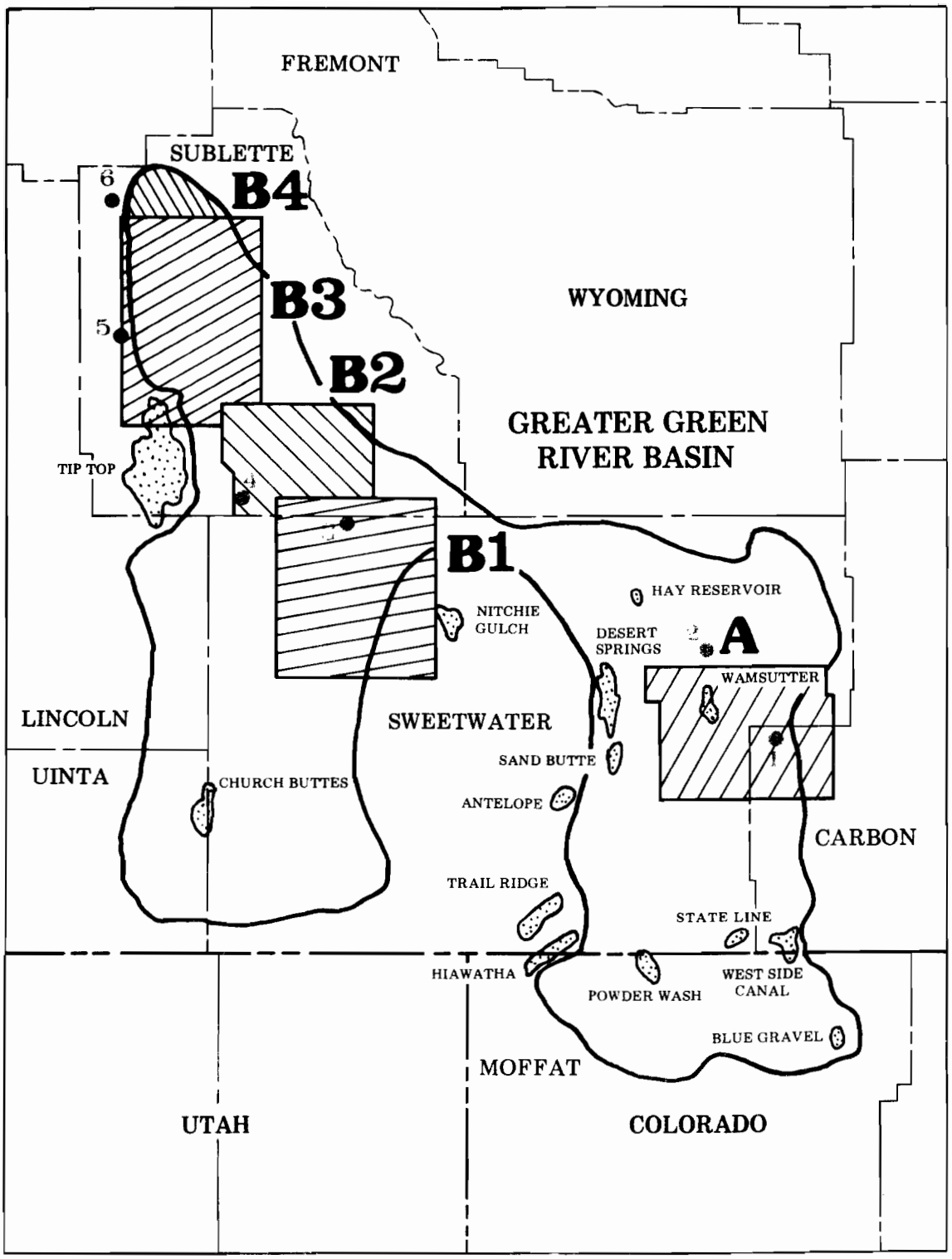



*Figure 3-3 USGS Designated Core Areas and Wells of Interest, Greater Green River Basin (refer to Table 3-3)*

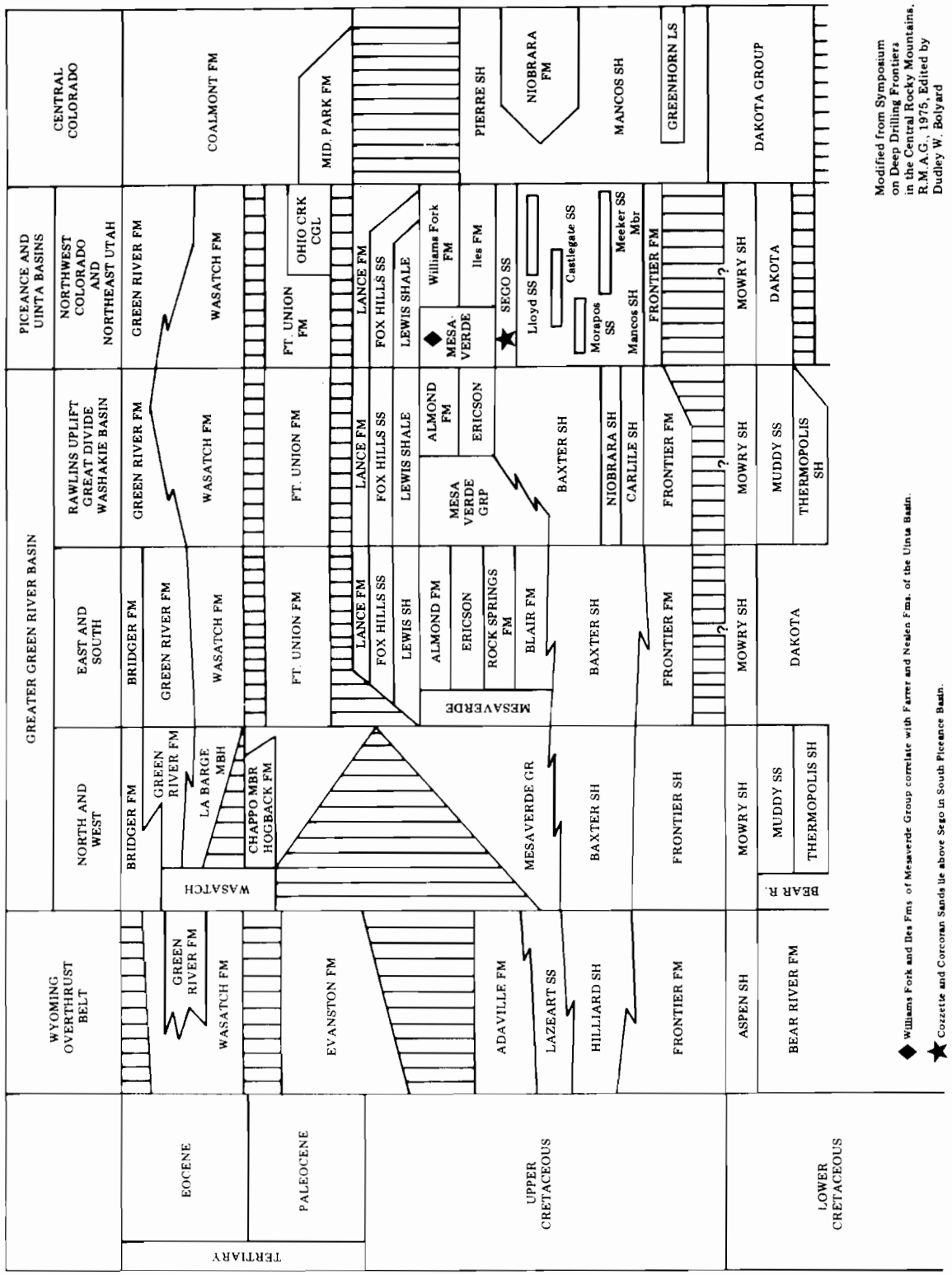



*Figure 3-4 Stratigraphic Correlation Chart of Greater Green River, Piceance and Uinta Basins*

## *Table 3-4 Summary of Drilling Activities — Greater Green River Basin**

| | NO. OF WELLS | | | | | PRODUCING HORIZONS IN MCFD | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wildcats | | Develop - ment | | Total | | | | | | | Mesaverde | | | | | | |
| | D&A | Discovery | D&A | Producing | | Wasatch | Fort Union (Almy) | Lance | Lewis | Transition Zone | Undifferentiated | Almond | Ericson | Blair | Frontier | Bear River | Commingled | Total |
| **2nd Qtr 1977 | 18 | 23 | 6 | 20 | 67 | 0 | 6,168 | 0 | 14,703 | 0 | 8,573 | 9,180 | 580 | 0 | 14,219 | 0 | 2,556[1] | 55,979 |
| **3rd Qtr 1977 | 14 | 8 | 5 | 24 | 51 | 0 | 25 | 231 | 7,361 | 0 | 9,413 | 8,477 | 0 | 0 | 12,180 | 0 | 0 | 37,687 |
| **4th Qtr 1977 | 24 | 5 | 8 | 23 | 60 | 0 | 0 | 0 | 7,405 | 0 | 20,282 | 8,372 | 3,982 | 1,298 | 13,851 | 0 | 0 | 55,190 |
| **1st Qtr 1978 | 8 | 9 | 5 | 22 | 44 | 0 | 725 | 0 | 11,100 | 2,191 | 4,292 | 2,999 | 0 | 0 | 7,455 | 0 | 14,650[2] | 43,412 |
| **2nd Qtr 1978 | 9 | 7 | 7 | 31 | 54 | 0 | 532 | 53 | 16,061[3] | 1,677 | 8,532 | 14,044 | 0 | 0 | 18,703 | 0 | 12,306[4] | 71,908 |
| **3rd Qtr 1978 | 15 | 8 | 4 | 31 | 58 | 0 | 628 | 0 | 16,110 | 0 | 12,122 | 4,327 | 1,389[3] | 0 | 16,167 | 0 | 1,064[2] | 51,807 |
| 4th Qtr 1978 | 18 | 12 | 13 | 26 | 69 | 0 | 1,925 | 0 | 20,388 | 0 | 5,070 | 8,690 | 1,199 | 0 | 20,969 | 0 | 789[5] | 57,831 |
| 1st Qtr 1979 | 10 | 12 | 6 | 30 | 58 | 0 | 994 | 0 | 9,378[6] | 0 | 6,269[7] | 2,029 | 1,320 | 0 | 21,234[8] | 0 | 2,137[9] | 43,371 |
| 2nd Qtr 1979 | 5 | 9 | 6 | 28 | 48 | 0 | 0 | 0 | 13,445[3] | 0 | 12,012[8] | 5,630 | 0 | 0 | 14,871 | 0 | 0 | 45,958 |
| 3rd Qtr 1979 | 8 | 4 | 5 | 33 | 50 | 0 | 0 | 0 | 10,745 | 0 | 10,874 | 10,040 | 1,643 | 0 | 14,182 | 5,896 | 0 | 53,380 |
| 4th Qtr 1979 | 13 | 10 | 7 | 48 | 78 | 156 | 2,168 | 0 | 7,486 | 0 | 16,207 | 25,227 | 870 | 0 | 22,339 | 0 | 1,619[10] | 76,072 |

[1] Almond/Ericson/Table Rock/Rock Springs 2,194
Lewis/Almond 362

[2] Frontier/Bear River

[3] IPF not available from one well

[4] Frontier/Bear River 11,457
Frontier/Hilliard 28
Mesaverde/Ericson 821

[5] Lewis/Lance

[6] IPF not available from two wells

[7] IPF not available from three wells

[8] IPF not available from four wells

[9] Lewis/Lance 789
Mesaverde/Ericson 821
Lance/Fort Union 499
Lewis/Hilliard 28

[10] Lewis/Ericson 193
Frontier/Muddy 800
Frontier/Bear River 626

* Data compiled from P.I. Rocky Mountain Region Report "Completions"
** Revised figures

*Table 3-5 Summary of Active Wells and New Locations — Greater Green River Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 5-29-79 SP: 8-11-79 | Amoco Production | 1 USA-Amoco-U | 1 | swne 18/17N/95W Wildcat Field Sweetwater Cnty, WY | Mesaverde 12,700 | WF, 12,352 TD; prep to frac. |
| FR: 11-14-78 SP: 3-13-79 | Amoco Production | 1 Champlin 226 Amoco-G | 2 | csw 33/18N/93W Unnamed Field Carbon Cnty, WY | Mesaverde 9,265 | WO, 9,300 TD; sand/fluid frac, holding for data. |
| FR: 5-8-79 SP: 9-3-79 | Pacific Transmission Supply Co. | 3-10 Federal | 3 | sesw 10/19N/93W Echo Springs Field Carbon Cnty, WY | Mesaverde 9,725 | D. 9,730 TD, PB 9,691; ran prod csg; WOCT. |
| FR: 6-14-79 SP: 10-17-79 | Univerdal Resources | 1-30 Lawler-Federal | 4 | nwnw 30/19N/112W Bruff Field Lincoln Cnty, WY | Mesaverde 12,200 | D. 12,000 TD; WOCT. |
| FR: 5-11-79 SP: 7-3-79 | Marathon Oil | 15 Unit | 5 | nesw 32/20N/112W Wilson Ranch Field Lincoln Cnty, WY | Frontier 11,350 | D. 11,490 TD; WOCT. Operator has 2 additional Frontier tests in locale. |
| FR: 9-17-79 SP: 10-25-79 | Rainbow Resources | 1-10 Federal | 6 | nesw 10/23N/114W Wildcat Field Lincoln Cnty, WY | Hilliard 6,500 | WF. 6,506 TD; holding for data. |
| FR: 9-18-79 SP: 10-22-79 | Woods Petroleum | 3 Lost Valley Unit | 7 | nesw 20/25N/99W Wildcat Field Sweetwater Cnty, WY | Mesaverde 13,000 | WF. 12,738 TD; holding for data. |
| FR: 5-10-79 | Belco Petroleum | 68-30 Unit | 8 | nesw 30/27N/112W Green River Bend Field Sublette Cnty, WY | Frontier 7,450 | D. 7,450 TD; fluid/sand frac; swbg. |

Summaries of the Greater Green River active and newly staked wells, and completed wells, are in Tables 3-5 and 3-6, respectively. Figure 3-5 shows the locations of these wells.

## *Table 3-6 Summary of Wells Completed — Greater Green River Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | HORIZON (Projected Depth or Producing Interval) | FINAL TD | FRACTURE TREATMENT | COMMENTS | IPF in MCFD |
|---|---|---|---|---|---|---|---|---|---|
| SP: 11-8-79 CP: 12-1-79 | Conoco Incorporated | 1 Government | 1 | swsw 21/9N/89W Wildcat Field Moffat Cnty, CO | Lewis 4,165 | 2,507 | | WF, J&A. No cores or tests, no logs run. | |
| SP: 10-18-78 CP: 3-26-79 | Energy Resources Group | 4 USA Joyce Wolf | 2 | nesw 18/11N/97W Powder Wash Field Moffat Cnty, CO | Fort Union 6,942-6,962 (gross) | 7,636 PB: 7,015 | Acidized w/2,400 gal, Fract w/135,000 gal fluid, 220,000 lb sand | DG, no cores or tests. | 160 |
| SP: 10-2-79 CP: 11-28-79 | Houston Oil & Minerals | 34-33 Hom-Amoco-Champlin | 3 | sesw 33/18N/102W Camel Rock Field Sweetwater Cnty, WY | Frontier 5,138-5,155 | 8,650 PB: 5,626 | 52,962 gal gel, 90,750 lb sand | WSD, no cores or tests. OWWO: Prod. zone: Dakota, 345 MCFD | 3,000 |
| SP: 4-1-79 CP: 10-6-79 | Amoco Production | 1 Champlin 222 Amoco-E | 4 | csw 21/19N/93W Standard Draw Field Carbon Cnty, WY | Almond 9,140-9,213 (gross) | 9,760 PB: 9,260 | Acidized w/1,200 gal, Fract w/395,850 gal, 268,296 gal fluid, 1,397,500 lb sand | DG, no cores or tests. Largest fracture reported during quarter. | 700 |
| SP: 9-8-78 CP: 9-23-79 | Amoco Production | 18 Unit | 5 | nesw 13⅞/21N/112W Whiskey Buttes Field Lincoln Cnty, WY | 2nd Frontier 11,090-11,126 (gross) | 11,240 | 288,345 gal gel, 790,000 lb sand | DG, cored 11,027-11,087 ft. Operator had 5 additional completions reported during quarter in locale. | 825 |
| SP: 5-25-79 CP: 9-26-79 | Davis Oil | 2 Picket Lake Unit | 6 | swnw 19/26N/96W Picket Lake Field Sweetwater Cnty, WY | Lewis 13,368-13,418 (gross) | 13,637 PB: 13,514 | 152,640 gal condensate, 120,000 lb sand | WOE, no cores or tests. | 57 |
| SP: 7-22-79 CP: 10-8-79 | Davis Oil | 1 Honeycomb Buttes Unit | 7 | nwse 25/27N/99W Wildcat Field Fremont Cnty, WY | Mesaverde 13,000 | 13,984 | | WF, D&A. No cores. | |
| SP: 5-12-79 CP: 11-9-79 | Energetics Incorporated | 40-29 Federal | 8 | n½se 29/27N/111W Bird Canyon Field Sublette Cnty, WY | Frontier 9,230-9,320 Bear River 9,812-9,860 (commingled) | 10,010 | | DG, cored 9,811-9,863 ft. | 626 |
| SP: 7-24-79 CP: 9-10-79 | Belco Petroleum | 1-22 Mills | 9 | sese 22/28N/113W Big Piney Field Sublette Cnty, WY | Frontier 6,936-7,126 (gross) | 7,300 | 29,750 gal emulsion, 108,000 lb sand | DG, no cores. | 4,621 |

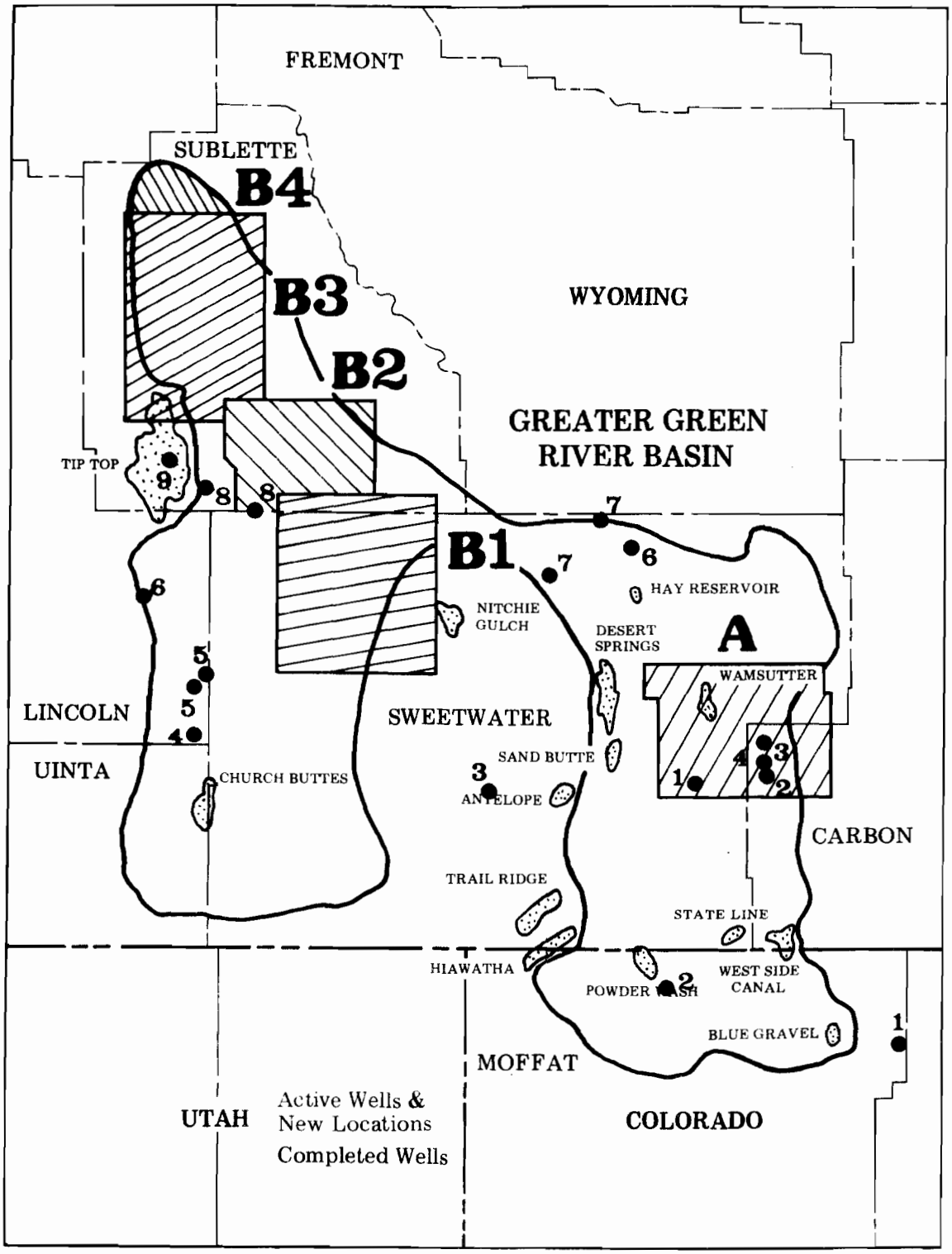



*Figure 3-5 Wells Staked and Completed, USGS Designated Core Areas, Greater Green River Basin (refer to Tables 3-5 and 3-6)*

# 4. Uinta Basin

## 4.1 CORE PROGRAM

The Uinta Basin is located in northeastern Utah and has potential production from "tight gas sands" in a thick section of Upper Cretaceous through Tertiary sediments. Cretaceous tight horizons include the Castlegate and Sego sandstones and the Blackhawk, Price River, Neslen and Farrer Formations. Tertiary tight gas sands are found in the Tuscher, North Horn, Wasatch and Green River Formations.

Areas recommended by the USGS for the acquisition of core for the WGSP core program are listed below (See Figure 4-1).

Area A

Wasatch and Duchesne Counties — T4S to T7S, R5W to R11W; in Wasatch County, T9S to T11S, R7E to R9E; in Carbon County, T11S and T12S, R7E to R13E.

Area B

Duchesne and Uintah Counties — T3S to T4S, R2E to R2W and parts of T8S, R16N to R18W.

Area C

Uintah County — T8S to T9S and R23E to R25E.

Area D

Uintah and Grand Counties — T10S, R18E, T11S to T16S, R18E to R25E; and T17S to T19S, R21E and R22E.

These areas were selected due to the lack of core and well data, and location being outside the main productive fields of the Uinta Basin. Within the core areas, newly staked locations are monitored so that operators can be contacted concerning participation in the WGSP core program.

During the fourth quarter 1979, discussions with Mapco, Inc., resulted in the coring of selected Wasatch and Mesaverde intervals from their No. 11-17F River Bend Unit, Sec. 17, T10S, R20E, Uintah County. This was the first coring agreement reached in the Uinta Basin as part of the WGSP Core Program.

The coring operation commenced November 13 in the lower portion of the Wasatch Formation, locally named the Uteland Buttes Unit by Mapco. D. C. Bleakly, W. J. Brown and J. Baltes (CER Corporation) were present to process the core on location for the WGSP. By the end of the operation on November 27, seven cores had been cut, two in the Wasatch and five in the upper 1,000 ft of the Mesaverde. (See Table 4-1).

Whole core samples were sent to BETC and LASL. Chip samples, taken every foot through the sands, were sent to Sandia Laboratories. All remaining core was sent to Core Laboratories for additional analysis.

Logging operations commenced November 29 and were completed on December 1 for the Mapco No. 11-17F well. G. C. Kukal and S. R. Anderson (CER Corporation) were on location to assist. Table 4-2 is a list of logs run for the well.

Table 4-3 is a summary of Uinta Basin core area wells and Figure 4-1 shows their locations and the WGSP designated core areas.

## 4.2 DRILLING ACTIVITY

The focal point of the Uinta Basin activity is the Natural Buttes area, T8S to T11S, R19E to R24E. Belco Development Corporation, Colorado Interstate Gas Exploration/Gas Producing Enterprises were very active during the quarter staking new locations, drilling and completing wells. Other operators active in the Natural Buttes and surrounding areas were Conoco, Enserch, Pacific Transmission Supply, Mapco and Cotton Petroleum.

The Wasatch Formation is the principal pay horizon in the Natural Buttes area but there are indications that interest is increasing in the Mesaverde horizon. Gas production from the two horizons was commingled in some wells. Fracture treatments are standard completion procedures, with the size of the treatments during the quarter varying from 25,000 to 500,000 lbs of sand.

The largest fracture treatment reported during the quarter was performed on Enserch Exploration No. 1-14 White River-Federal, Sec. 14, T10S, R23E, Uintah County, Utah. The well yielded 2,300 MCFD from the Mesaverde Group (undifferentiated) after being fractured with 260,000 gal gel and 480,000 lb sand.

In other areas of the Uinta Basin, operators continued to be active in the oil-productive regions around Red Wash and Altamont fields where the Tertiary, Green River and Wasatch Formations are the primary pays.

In the southern portion of the basin, there has been an increase in drilling for gas in the Cisco Dome area. However, objectives lie below horizons of interest to the WGSP, with drilling depths to these objectives shallow (1,000 to 5,000 ft), because the Upper Cretaceous-Tertiary section has been partially or totally removed.

Amoco Production spudded a 13,000 ft Cretaceous test on the western edge of the basin in a little-drilled area of Utah County (see Table 4-5). This wildcat test, located in Sec. 7, T9S, R6E, is in the same section as a Mountain Fuel Supply D&A wildcat drilled to 8,207 ft.

*Table 4-1 Core Description for Mapco River Bend Unit No. 11-17F Well, Uinta Basin*

| Core No. | Interval Cored | Ft Recovered | Percent Recovered | Feet | General Lithologic Description |
|---|---|---|---|---|---|
| 1 | 7,286-7,294.6 | 3.6 | 42 | | Sandstone: medium grained, salt and pepper; medium grey; calcareous |
| 2 | 7,607-7,618 | no recovery | — | | |
| 3 | 8,089-8,094 | 2 | 40 | .8 | Siltstone: mottled; argillaceous; non-calcareous |
| | | | | 1.2 | Shale: dark grey to black; carbonaceous; calcareous |
| 4 | 8,229-8,262 | 26.8 | 81 | 2.9 | Shale: medium to dark grey; slightly calcareous |
| | | | | 19.6 | Sandstone: ranging from light to medium to dark grey; from fine to medium grained; from calcareous to non-calcareous; salt and pepper |
| | | | | 4.3 | Siltstone: medium to dark grey; slightly calcareous |
| 5 | 8,281-8,308 | 26.5 | 98 | 3.8 | Shale: dark grey to black; carbonaceous; fine grain |
| | | | | 22.7 | Sandstone: from light to medium grey; salt and pepper; fine grain; increasing calcareous w/depth; interbedded .2 ft w/siltstone and shale |
| 6 | 8,355-8,393.5 | 24.9 | 65 | 2.2 | Siltstone: medium grey; brecciated |
| | | | | 10.6 | Shale: medium to dark grey; carbonaceous; noncalcareous |
| | | | | 12.1 | Sandstone: light to medium grey; salt and pepper; fine grain; slightly calcareous |
| 7 | 8,443 8,461 | 15 | 83 | 1.0 | Siltstone: grey to dark grey; noncalcareous |
| | | | | 2.8 | Shale: dark grey to black; silty |
| | | | | 11.2 | Sandstone: very fine to fine grain; light to medium grain; increasing calcareous w/depth; silty; .6 ft interbedded w/shale |

*Table 4-2 Logs Run on Mapco River Bend Unit No. 11-17F Well, Uinta Basin*

| Service | Remarks |
|---|---|
| Dual Laterolog Microlaterolog-Caliper Gamma Ray | Microlaterolog failed; SP could not be recorded with DIL -- planned to get on Variable Density Log run. Logged DIL/GR 8,680 to 3,764 ft and 8,506 to 8,186 ft. |
| Compensated Densilog-Caliper-Simultaneous Compensated Neutron Log-Gamma Ray | Hit bridge at 5,047 ft; rig short tripped hole to 5,800 ft; hit bridge at 5,800 ft; rig reconditioned hole. Hit bridge at 8,540 ft (through core interval); logged CDLC/CN/GR 8,540 ft to 3,762 ft, 8,536 to 8,220 and 8,540 to 8,208 ft. |
| BHC Acoustilog-Caliper-Gamma Ray | Hit bridge at 8,544 ft; logged BHC/GR 8,553 to 3,762 ft and 8,536 to 8,164 ft. |
| Spectralog | Hit bridge at 8,100 ft; due to poor hole conditions, log will be run in casing. |

*Table 4-3 Summary of Wells Located in USGS Designated Core Areas — Uinta Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 6-1-79 SP: 10-19-79 | Mapco Production | 11-17F River Bend Unit | 1 | nesw 17/10S/20E River Bend Field Uintah Cnty, UT | Mesaverde 8,495 | D, 8,700 TD, WOCT. Cored during 4th quarter (refer to text). |
| FR: 9-26-79 | Cotton Petroleum | 1 Love Unit | 2 | csw 11/11S/21E Wildcat Field Uintah Cnty, UT | Mesaverde 8,000 | WF, located in Core Area D. Operator has 2 additional wildcat tests in immediate locale. |
| FR: 9-26-79 | Coseka Resources | 2X-16-14-22 Pine Springs Unit | 3 | swse 16/14S/22E Sweetwater Creek Field Uintah Cnty, UT | Morrison 9,693 | WD, located in Core Area D. |
| FR: 11-26-79 | Pacific Transmission Supply Co. | 11-32 Winter Ridge Unit-State | 4 | nwnw 32/15S/22E Unnamed Field Uintah Cnty, UT | Morrison 10,000 | WO, located in Core Area D. |

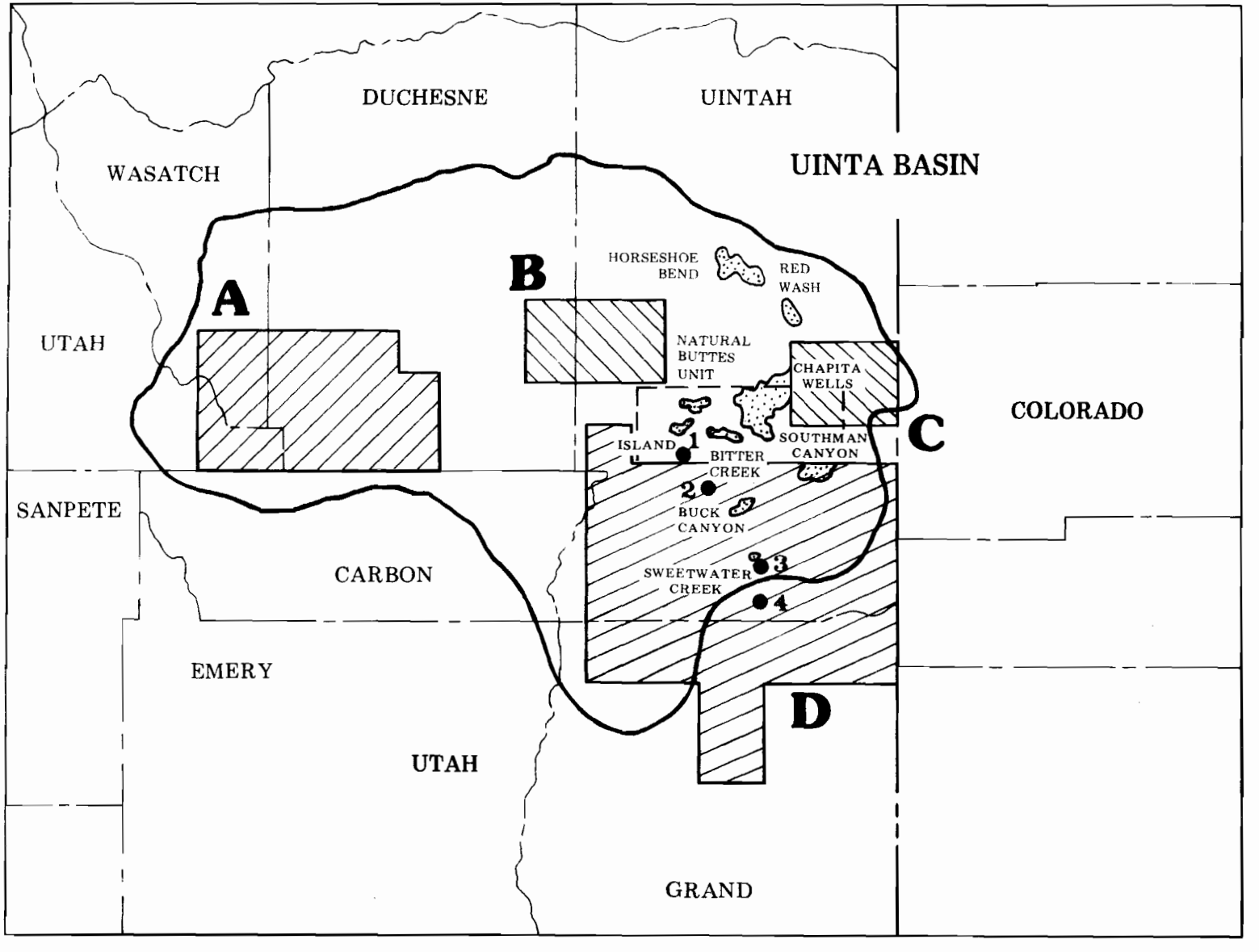



*Figure 4-1 USGS Designated Core Areas and Wells of Interest, Uinta Basin (refer to Table 4-3)*

Elsewhere in the Uinta Basin, there was little activity of note during the fourth quarter, 1979. The high level of activity in and around the Natural Buttes Unit is expected to continue with further infill drilling and gradual enlargement of the Wasatch-Mesaverde productive area.

Table 4-4 is a summary of drilling activities in the basin. Up to the fourth quarter, 1978, the figures have been revised, and revision will continue in future quarters.

Fifteen development wells were reported complete during the quarter and 9 wildcat wells were reported D&A. Potential new gas totaled 12,201 MCFD with the Mesaverde undifferentiated contributing the most new gas. Twenty-six developments and 3 wildcat wells were staked during the quarter. Tables 4-5 and 4-6 are summaries of active wells and new locations, and completed wells, respectively. Figure 4-2 shows the location of these wells.

*Table 4-4 Summary of Drilling Activities — Uinta Basin**

| | NO. OF WELLS | | | | | PRODUCING HORIZONS IN MCFD | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wildcats | | Development | | Total | | | | | Mancos | | |
| | D&A | Discovery | D&A | Producing | | Green River | Wasatch | Mesaverde | Undifferentiated | Mancos B/Emery | Commingled | Total |
| **2nd Qtr 1977 | 3 | 0 | 0 | 6 | 9 | 435 | 4,794 | 0 | 0 | 0 | 0 | 5,229 |
| **3rd Qtr 1977 | 3 | 2 | 2 | 14 | 21 | 0 | 23,138 | 1,079 | 0 | 0 | 0 | 24,217 |
| **4th Qtr 1977 | 0 | 1 | 0 | 8 | 9 | 0 | 13,264 | 0 | 314 | 0 | 0 | 13,578 |
| **1st Qtr 1978 | 0 | 0 | 0 | 12 | 12 | 0 | 13,985[1] | 697 | 0 | 0 | 750[2] | 15,432 |
| **2nd Qtr 1978 | 1 | 2 | 0 | 16 | 19 | 963[1] | 14,837 | 1,612 | 0 | 288 | 7,750[2] | 25,450 |
| **3rd Qtr 1978 | 1 | 1 | 0 | 16 | 18 | 1,786 | 10,663[1] | 3,367 | 0 | 0 | 0 | 15,816 |
| 4th Qtr 1978 | 1 | 4 | 1 | 22 | 28 | 1,692 | 2,084[3] | 3,679 | 0 | 0 | 0 | 7,455 |
| 1st Qtr 1979 | 3 | 4 | 1 | 40 | 48 | 3,431[1] | 35,011[4] | 662[1] | 0 | 204 | 3,960[5] | 43,268 |
| 2nd Qtr 1979 | 0 | 8 | 2 | 17 | 27 | 0 | 31,033[1] | 500[1] | 0 | 0 | 0[1] | 31,533 |
| 3rd Qtr 1979 | 3 | 1 | 0 | 12 | 16 | 0 | 22,571[1] | 0 | 0 | 0 | 0 | 22,571 |
| 4th Qtr 1979 | 9 | 0 | 0 | 15 | 24 | 50 | 2,692[1] | 6,250 | 0 | 0 | 3,209[5] | 12,201 |

[1] IPF not available from one well
[2] Wasatch/Mesaverde
[3] IPF not available for eight wells
[4] IPF not available for four wells
[5] Mesaverde/Castlegate - 410
Mesaverde/Wasatch - 3,500
[6] Wasatch/Mesaverde

* Data compiled from P.I. Rocky Mountain Region Report "Completions"
** Revised figures

## *Table 4-5 Summary of Active Wells and New Locations — Uinta Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 9-4-79 SP: 10-9-79 | Pacific Transmission Supply Co. | 24-22 Federal | 1 | sesw 22/8S/22E Chapita Wells Field Uintah Cnty, UT | Mesaverde 8,400 | WO, TD 8,808, WOCT. Operator has 1 additional Mesaverde test in immediate locale. |
| FR: 7-24-78 SP: 11-28-79 | Amoco Production | 1 Cottonwood Canyon USA | 2 | swnw 7/9S/6E Wildcat Field Utah Cnty, UT | 13,000 ft Cretaceous test | WF, TD 910, circ. |
| FR: 9-24-79 SP: 11-20-79 | Mapco Production | 7-25A Federal | 3 | swne 25/9S/18E Wildcat Field Uintah Cnty, UT | Wasatch 9,300 | WF, drlg. 4,598. |
| FR: 4-26-78 SP: 7-22-79 | Mapco Production | 7-25B Federal (Well name chgd from RBU) | 3 | swne 25/9S/18E Natural Buttes Field Uintah Cnty, UT | Mesaverde 8,730 | D, TD 9,232, tstg. |
| FR: 4-26-78 SP: 9-17-79 | Mapco Incorporated | 5-11D RBU | 4 | swnw 11/10S/18E Uteland Butte Field Uintah Cnty, UT | Mesaverde 8,455 | D, TD 9,100, WOCT. Operator has 8 additional Mesaverde tests in locale. |
| FR: 11-1-78 SP: 12-15-79 | Ensearch Exploration | 1-3 Bitter Creek-Federal | 5 | swne 3/11S/22E Natural Buttes Field Uintah Cnty, UT | Mesaverde 7,500 | D, drlg, tight hole. |

## *Table 4-6 Summary of Completed Wells — Uinta Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | HORIZON (Projected Depth or Producing Interval) | FINAL TD | FRACTURE TREATMENT | COMMENTS | IPF in MCFD |
|---|---|---|---|---|---|---|---|---|---|
| SP: 6-12-79 CP: 8-25-79 | Carmack Drilling | 2 Dunlap-Federal | 1 | sese 7/6S/24E Wildcat Field Uintah Cnty, UT | Mancos 1,000 | 820 | | WF, D&A. Operator had 7 additional Mancos tests D&A reported during quarter. | |
| SP: 5-16-78 CP: 6-14-79 | Gas Producing Enterprises | 7 Natural Buttes Unit | 2 | nene 23/9S/20E Natural Buttes Field Uintah Cnty, UT | Green River 3,015-3,516 (gross) | 8,297 PB: 3,900 | Acidized w/10,000 gal | DG. OWWO, cp. 8-15-70; Wasatch former prod. zone. | 50 |
| SP: 2-9-79 CP: 6-27-79 | Belco Petroleum | 49-12B Natural Buttes Unit | 2 | swse 12/9S/20E Natural Buttes Field Uintah Cnty, UT | Wasatch 5,990-7,337 (gross) | 7,400 PB: 7,373 | 85,500 gal fluid 150,000 lb sand | DG. Operator had 7 additional completions reported this quarter. | 1,020 |
| SP: 7-5-79 CP: 9-21-79 | Continental Oil | 2-6 Ankerpont et al | 3 | nenw 2/9S/21E Natural Buttes Field Uintah Cnty, UT | Wasatch 5,699-6,482 (gross) | 7,261 PB: 6,710 | Acidized w/1,300 gal, fract w/sand/water. | DG, comp. as SIGW. | N/A |
| SP: 5-20-79 CP: 10-20-79 | Ensearch Exploration | 1-14 White River-Federal | 4 | nenw 14/10S/23E Natural Buttes Field Uintah Cnty, UT | Mesaverde 6,456-7,929 (gross) | 8,205 PB: 8,214 | 260,000 gal gel 480,000 lb sand | DG, no cores or tests. Largest fracture reported this quarter. | 2,300 |

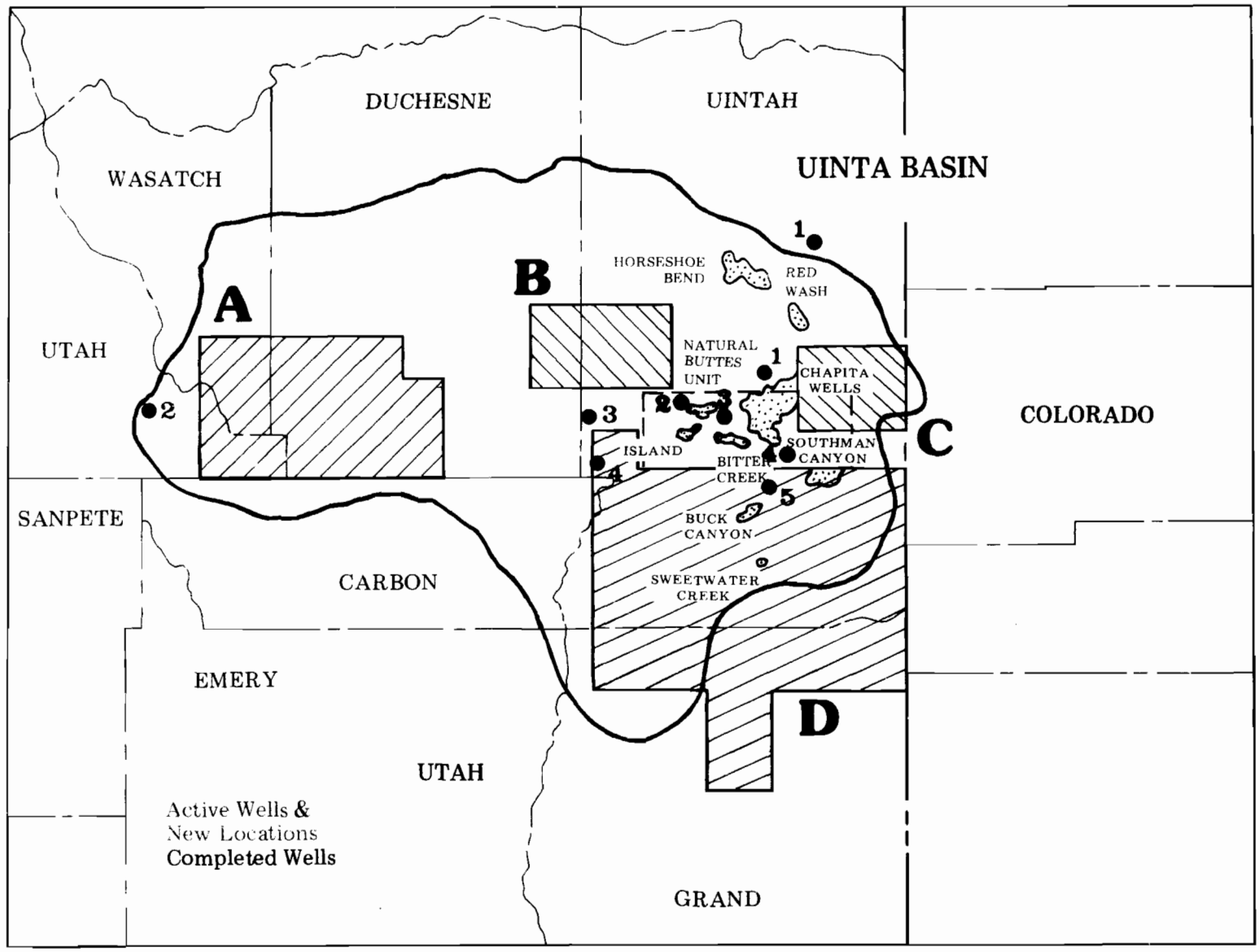



*Figure 4-2 Wells Staked and Completed, USGS Designated Core Areas, Uinta Basin (refer to Tables 4-5 and 4-6)*

# 5. Piceance Basin

## 5.1 CORE PROGRAM

The Piceance Basin has numerous tight Upper Cretaceous and Tertiary gas sands. Within the Mancos Formation, the Castlegate (Rollins) and the Mancos B sands are the principal objectives. The Iles Formation of the Mesaverde Group contains the Corcoran, Cozzette, Sego and Trout Creek sand units which have gas potential. Within the continental portion of the Mesaverde Group (Williams Fork Formation) and the continental Fort Union and Wasatch Formations, potential is present in both lenticular and blanket sand deposits. Most of these units are productive somewhere within the Piceance Basin. Actively producing gas fields include the Cathedral, Piceance Creek, Trail Canyon, Thunder, Dragon Trail, and Texas Mountain. However, in areas removed from productive fields, or in horizons below known producing zones, very little information is available. For example, in the Piceance Creek Field, very few wells have penetrated below the commercial Wasatch and therefore data is limited.

In an effort to better understand areas or horizons with minimal control, the USGS has recommended several key areas from which cores should be obtained. Within the Piceance Basin these areas are (see Figure 5-1):

Area A

East of Rangely Field in Rio Blanco County, T1S to T2N, R98W to R99W;

Area B

Piceance Creek Field area, Rio Blanco County, T2S, R96W and R97W (below the Wasatch;

Area C

Garfield and Mesa Counties, T5S to T8S, R95W in the north tapering down to R98W to R99W on the southern part of the area; and

Area D

Garfield and Mesa Counties, T8S to T10S, R92W to R94W (this area is flanked on the northwest and southeast by the Grand Mesa National Forest).

As new locations are staked in areas of interest to the WGSP Core Program, operators are contacted to discuss possible joint coring operations. No new ventures were discussed with operators during the fourth quarter. However, the second stage of a coring program continued at Pacific Transmission Supply No. 22-12 Federal Barcus Creek well, Sec. 12, T1N, R99W, Rio Blanco County, Colorado.

The initial stage of the effort, as reported in the third quarter, commenced in mid-August. Approximately 280 ft of Mesaverde (Williams Fork Formation) core was cut in seven runs with 98 percent recovery. The second stage commenced October 1. Two 60-ft cores were cut in the deltaic Mancos B sand beginning at 11,669 ft. Background gas readings of 750 to 1,000 units were recorded by the mudlogger throughout the interval. Table 5-1 gives a summary of core data for the well.

Core was processed on location by CER personnel D. C. Bleakly, S. R. Anderson and J. M. Gromer. Limited samples were sent to BETC and LLL, with the remaining core being sent to Core Laboratories in Casper, Wyoming, for routine analysis. WGSP coring was completed on October 3, although PTS obtained additional Mancos B core later in the month.

Logging operations, covering the Mesaverde and Mancos interval, commenced October 17 and were completed on October 19. G. C. Kukal (CER Corporation) was on location during that period. Table 5-2 outlines the logging for the well.

Table 5-3 is a sample of Piceance Basin wells located in the WGSP designated core areas; Figure 5-1 shows their locations.

## 5.2 DRILLING ACTIVITY

During the quarter, 52 new wells were staked in the Piceance Basin: 42 development and 10 wildcat wells. Two areas continued to attract most of the drilling activity. Along the western margin in the Douglas Creek Arch area, the Mancos B (Emery equivalent) sand has been the primary objective, found at shallow depths ranging from 2,000 to 6,000 ft. In the southern portion of the basin, east of Grand Junction and principally south of the Colorado River, operators are drilling wells to tap the Mesaverde-Mancos transition sands. Such sands include the Rollins (Castlegate equivalent), Corcoran and Cozzette, found at depths ranging from 3,000 to 8,000 ft.

Wells in both areas are usually fractured and sometimes the Mancos B is acidized to improve production. Fracture treatments during the quarter were moderate to large in size, ranging from 90,000 to 600,000 lbs of sand. The largest treatment reported during the quarter was performed on Adolph Coors No. 1-31 Acco-Nichols et al well, Sec. 31, T10S, R95W, Mesa County, Colorado. The well produced 850 MCFD of gas after being fractured three times with a total of 344,440 gal fluid and 652,000 lb sand.

The Mancos accounted for 53 percent of the new gas production reported during the fourth quarter. The majority of this production was from the Douglas Creek Arch area, but operators are in the process of extending the Mancos play eastward into the Piceance Basin proper.

Among the significant Mancos wells reported during the quarter were two Teton Energy wildcat wells drilled in Sec. 8, T1S, R98W and Sec. 14, T1S, R99W. Both were reported testing Mancos B during the quarter at approximately 11,200 ft. Although they are "tight-holed", it is thought that both are productive. To the south, CSG Exploration was also testing the Mancos B at approximately 11,500 ft in the Sulphur Creek Field (see Table 5-5).

*Table 5-1 Core Description for Pacific Transmission Supply No. 22-12 Federal Well, Piceance Basin*

| Core No. | Interval Cored | Ft Recovered | Percent Recovered | Feet | General Lithologic Description |
|---|---|---|---|---|---|
| 1 | 6,258-6,318 | 51.6 | 86 | .7 | Siltstone: dk. grey to green. |
| | | | | 50.9 | Sandstone: fine to very fine grain; occasional siltstone inclusions; lt. grey to green; some salt & pepper, non-calcareous to slightly calcareous, some contorted bedding. |
| 2 | 6,318-6,369 | 51 (plus 9 ft of bottom of first core) | 100 | | Sandstone: fine to medium grain; salt & pepper; noncalcareous; some coal inclusions; silty & shale inclusions; some green & brownish inclusions. |
| 3 | 6,369-6,379.8 | 7.6 | 70 | | Siltstone: massive bedding; dark grey to green, noncalcareous to calcareous w/inclusions. |
| 4 | 6,379.8-6,401.4 | 19 | 88 | | Siltstone: dk. grey w/some salt & pepper; noncalcareous w/calcareous inclusions; dk. grey shaley siltstone. |
| 5 | 6,401.4 6,460.4 | 57.8 | 96 | 14.8 | Siltstone: med. to dk. grey; massive bedding, calcareous in places; some rubble. |
| | | | | 43.0 | Sandstone: very fine to fine grain; lt. to med. grey; some crossbedding; salt & pepper; slightly calcareous; some carbonaceous stringers & inclusions. |
| 6 | 6,460.4 6,494.4 | 34 | 100 | 3.7 | Siltstone: med. grey; massive w/some carbonaceous inclusions; calcareous. |
| | | | | 7.6 | Shale: range from med. to dk. grey to black; calcareous; some silty; some rubble. |
| | | | | 8.2 | Silt-sandstone sequence: lt. to med. grey; some contorted bedding. |
| | | | | 14.5 | Sandstone: fine grain; lt. to med. grey; slightly calcareous; some salt & pepper. |
| 7 | 6,494.4 6,538.7 | 44.3 | 100 | 5.7 | Siltstone: med. grey; mottled bedding; not calcareous. |
| | | | | 11.3 | Shale: dk. grey to black; carbonaceous inclusions; calcareous. |
| | | | | 27.3 | Sandstone: fine grain; lt. to med. grey; some crossbedding w/carbonaceous lamination; some salt & pepper; grades to silty-shale w/laminar bedding; calcareous. |

*Table 5-2 Logs Run on PTS No. 22-12 Federal Well, Piceance Basin*

| Service | Remarks |
|---|---|
| Dual Induction Log-Laterolog 8-SP-GR | Logged 12,201 to 2,566 ft. Log adversely affected by enlarged borehole. |
| Formation Density Log-Compensated Neutron-Caliper-GR | Logged 12,204 to 2,568 ft. Repeated interval 6,550 to 6,256 ft. |
| Dual Laterolog-$\mu$SFL-Caliper-SP | Ran Mud Log 3,000 to 6,660 ft. Repeated interval 6,500 to 6,200 ft. Logged 12,006 to 4,40 ft. |
| BHC Sonic-GR-Caliper | Logged 12,200 to 2,566 ft. Repeated interval 12,200 to 12,000 ft. Log invalid from 12,200 to 11,992 ft. Repeat section provided reliable data over interval. Caliper failed at 9,400 ft. |
| Variable Density Log-Sonic Amplitude | Logged from 12,000 to 5,520 ft. |

*Table 5-3 Summary of Wells Located in USGS Designated Core Areas — Piceance Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 9-25-79 | Adolph Coors | 1-29 DF | 1 | swne 29/7S/99W Wildcat Field Garfield Cnty, CO | 7,675 test | WF, located in Core Area C. |
| FR: 11-19-79 | Teton Energy | 1 Anderson Ranches | 2 | swsw 7/10S/94W Wildcat Field Mesa Cnty, CO | Corcoran 5,800 | WF, located in Core Area D. Operator has 1 additional test in core area. |
| FR: 6-1-79 SP: 7-10-79 | Pacific Transmission Supply Co. | 22-12 Federal | 3 | senw 12/1N/99W Wildcat Field Rio Blanco Cnty, CO | Dakota 14,500 | WF, TD 15,686, WOCT. Located in Core Area A; cored during 4th quarter (see text). |

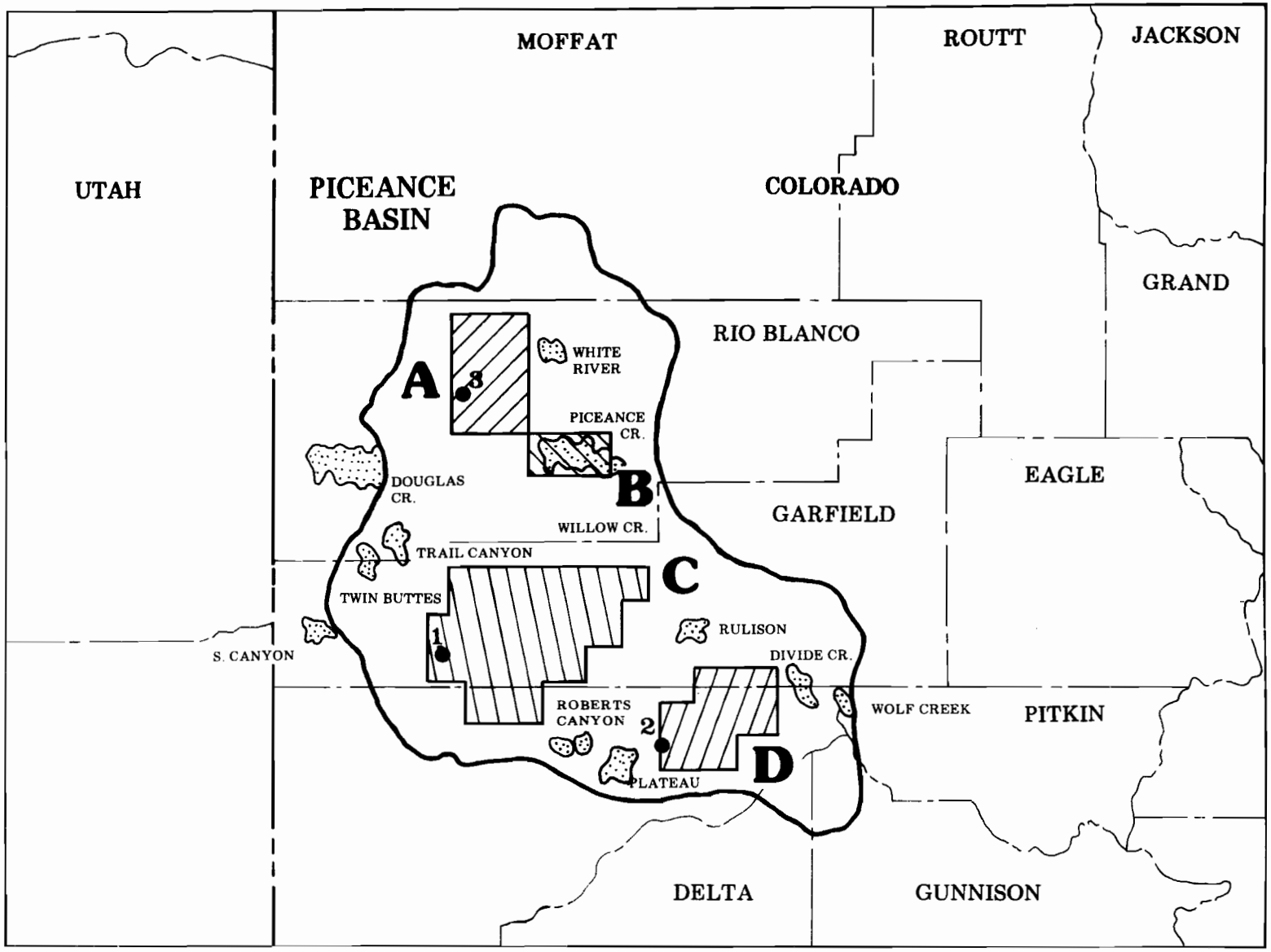



*Figure 5-1 USGS Designated Core Areas and Wells of Interest, Piceance Basin (refer to Table 5-3)*

Amoco Production staked a noteable location, Sec. 15, T12S, R91W, Delta County, in the southern most portion of the basin (see Table 5-5). The No. 1 Bowie Unit is located in an undrilled township approximately 24 mi south of the producing Divide Creek Field. The well is expected to test Corcoran and Cozzette potential in that unexplored area.

Twelve miles north of Divide Creek, operations were suspended for the winter months on another interesting Mesaverde test in a previously undrilled township. Rio Colorado & Gas set casing at 4,393 ft on No. 1 Cactus 23-6-70, Sec. 23, T6S, R90W, Garfield County. This location, which is situated on the eastern edge of the basin, is over the Basin Axis, a trend which has had few tests penetrating the Mesaverde interval.

By the quarter's end, 45 wells were reported complete. Thirty-three development wells were reported as producers and 7 wildcat wells were reported as discoveries. Two development and 3 wildcat wells were D&A. The Mancos B/Emery horizons contributed the most potential new gas (8,751 MCFD). Other contributors included Mancos (undifferentiated), Mesaverde (undifferentiated), Corcoran and Wasatch. Commingled potential included Rollins/Corcoran, Corcoran/Cozzette and Rollins/Corcoran/Cozzette. Total potential new gas was 17,434 MCFD.

Table 5-4 shows the drilling activity of the WGSP since monitoring began. The figures are in the process of being updated. Tables 5-5 and 5-6 give a sample of active wells and new locations, and completed wells, respectively. Figure 5-2 shows the locations of these wells.

## *Table 5-4 Summary of Drilling Activities — Piceance Basin**

| | NO. OF WELLS | | | | | PRODUCING HORIZONS IN MCFD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wildcats | | Development | | Total | | | | Mesaverde | | Mancos | | | |
| | D&A | Discovery | D&A | Producing | | Green River (Douglas Creek) | Wasatch | Undifferentiated | Corcoran | Undifferentiated | Castlegate/Rollins | Mancos B/Emery | Commingled | Total |
| **2nd Qtr 1977 | 0 | 2 | 2 | 17 | 21 | 0 | 3,815 | 0 | 0 | 0 | 0 | 4,490[1] | 634[2] | 8,939 |
| **3rd Qtr 1977 | 8 | 1 | 3 | 20 | 32 | 2,000 | 3 | 0 | 0 | 1,159 | 0 | 2,839 | 4,605[2] | 10,606 |
| **4th Qtr 1977 | 2 | 0 | 3 | 40 | 45 | 0 | 2,108 | 3,132 | 0 | 2,267[3] | 0 | 6,288 | 850[2] | 14,645 |
| **1st Qtr 1978 | 5 | 2 | 1 | 12 | 20 | 0 | 0 | 0 | 140 | 0 | 0 | 3,509 | 2,336[4] | 5,985 |
| **2nd Qtr 1978 | 6 | 3 | 2 | 15 | 26 | 0 | 250 | 0 | 1,167 | 489[3] | 0 | 4,558 | 1,809[2] | 5,982 |
| **3rd Qtr 1978 | 2 | 3 | 2 | 27 | 34 | 775 | 7,062 | 610 | 0 | 1,002[1] | 0 | 4,418[3] | 1,787[5] | 15,654 |
| 4th Qtr 1978 | 12 | 0 | 6 | 22 | 40 | 0[3] | 11,891 | 0 | 0 | 1,271 | 1,491 | 992 | 1,734[2] | 17,379 |
| 1st Qtr 1979 | 0 | 2 | 5 | 42 | 49 | 0 | 6,730 | 0 | 0 | 5,161[6] | 0 | 8,307[3] | 4,004[7] | 24,212 |
| 2nd Qtr 1979 | 1 | 6 | 0 | 15 | 22 | 0 | 0 | 440[8] | 0 | 439 | 0 | 5,683[8] | 0 | 6,562 |
| 3rd Qtr 1979 | 3 | 1 | 2 | 25 | 31 | 0 | 0 | 8,947 | 0 | 1,050 | 0 | 6,803[3] | 6,066[9] | 22,866 |
| 4th Qtr 1979 | 3 | 7 | 2 | 33 | 45 | 0 | 1,278[8] | 490 | 3,822 | 552[3] | 0 | 8,751 | 2,541[10] | 17,434 |

[1] IPF not available for two wells

[2] Rollins/Cozzette/Corcoran

[3] IPF not available for one well

[4] Merapos/Alamos 481
Cameo/Cozzette/Corcoran 460
Rollins/Cozzette/Corcoran 1,395

[5] Rollins/Cozzette/Corcoran 1,734
Castlegate/Mancos B 53

[6] IPF not available for five wells

[7] Rollins/Cozzette/Corcoran 1,284
Cozzette/Corcoran 2,720

[8] IPF not available for three wells

[9] Cozzette/Corcoran 2,537
Rollins/Cozzette/Corcoran 1,087
Mancos B/Dakota 2,428
Mancos/Mesaverde 14

[10] Rollins/Corcoran 325
Cozzette/Corcoran 1,033
Rollins/Cozzette/Corcoran 1,183

* Data compiled from P.I. Rocky Mountain Region Report "Completions"
** Revised figures

*Table 5-5 Summary of Active Wells and New Locations — Piceance Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | PROJECTED HORIZON (Depth in ft) | COMMENTS |
|---|---|---|---|---|---|---|
| FR: 9-28-79 SP: 9-29-79 | Adolph Coors | 1-20 USA-Philadelphia Creek | 1 | swnw 20/1S/100W Wildcat Field Rio Blanco Cnty, CO | Mancos 5,500 | WF, TD 5,649, WOCT. |
| FR: 1-8-79 SP: 2-4-79 | CSG Exploration | 298-29-2 Government | 2 | senw 29/2S/98W Sulphur Creek Field Rio Blanco Cnty, CO | Mancos 17,800 | WD, TD 11,750; acidized/fract; prep. to perf. |
| FR: 6-22-79 SP: 12-7-79 | Wexpro | 10-2 Federal | 3 | sese 10/2S/103W Lower Horse Draw Field Rio Blanco Cnty, CO | Mancos 3,150 | D, TD 3,100, WOCT. Operator has 2 additional Mancos tests in locale. |
| FR: 6-7-79 SP: 9-30-79 | Provident Resources | 13-29-4-102 Government | 4 | nwnw 29/4S/102W Trail Canyon Field Rio Blanco Cnty, CO | Mancos 5,200 | D, TD 5,200, WOCT. Operator has 2 additional tests in locale. |
| FR: 11-6-79 | Northwest Exploration | 11 Clough | 5 | senw 7/6S/94W Rulison Field Garfield Cnty, CO | Wasatch 2,550 | WO. Operator has 20 additional tests in county. |
| FR: 11-9-78 SP: 11-2-79 | Norris Oil | 36-3 Federal | 6 | nene 36/9S/97W Shire Gulch Field Mesa Cnty, CO | Corcoran 3,400 | D, TD 3,422; acidized/fract; tstg. |
| FR: 12-7-79 | Amoco Production | 1 Bowie Unit | 7 | swne 15/12S/91W Wildcat Field Delta Cnty, CO | Mesaverde test | WF; first drilling within township, closest drilling 8 mi. west. |

## *Table 5-6 Summary of Completed Wells — Piceance Basin*

| DATE | OPERATOR | WELL NAME | MAP INDEX NO. | LOCATION Sec/T/R | HORIZON (Projected Depth or Producing Interval) | FINAL TD | FRACTURE TREATMENT | COMMENTS | IPF in MCFD |
|---|---|---|---|---|---|---|---|---|---|
| SP: 5-17-79 CP: 11-1-79 | Great Eastern Energy | 14-2-95 Federal | 1 | swsw 14/2S/95W Piceance Creek Field Rio Blanco Cnty, CO | Green River 3,500 | 3,700 | Acidized w/1,588 gal | WO, D&A. No cores or tests. | |
| SP: 7-30-79 CP: 9-18-79 | Fuel Resources Development | P23-3-101S Federal | 2 | sese 13/3S/101W Cathedral Field Rio Blanco Cnty, CO | Emery 3,327-3,563 (gross) | 3,823 PB: 3,688 | 89,000 gal gel 400,000 lb sand | DG, no cores or tests. Operator had 3 additional completion reported during quarter in locale. | 805 |
| SP: 10-8-78 CP: 9-13-79 | Coseka Resources | 16-6-5-103 Gentry | 3 | nene 6/5S/103W Unnamed Field Garfield Cnty, CO | Mancos 3,191-3,709 (gross) | 3,795 PB: 3,755 | 44,646 gal emul 145,300 lb sand | WFD-new field; no cores or tests. Operator has 3 additional wildcat Mancos tests in locale. | 127 |
| SP: 2-24-79 CP: 6-6-79 | Northwest Exploration | 2 Clough | 4 | sesw 21/6S/94W Rulison Field Garfield Cnty, CO | Mesaverde | 8,600 | Acidized | WOE. Operator had 1 additional reported completion during quarter in locale. | 450 |
| SP: 10-21-78 CP: 9-25-79 | Dome Petroleum | 1-17 Baldy Creek Unit | 5 | senw 17/7S/90W Baldy Creek Field Garfield Cnty, CO | Corcoran 9,974-10,146 | 10,355 | Fractured | WOE, no cores. | 1,406 |
| SP: 7-18-79 CP: 8-29-79 | Chandler & Associates | 15-31 Shire Gulch | 6 | swse 31/9S/96W Shire Gulch Field Mesa Cnty, CO | Mesaverde 2,602-2,608 | 3,475 PB: 2,940 | Acidized w/250 gal; fract 4 times, w/ total: 48,040 gal water, 19,000 gal foam, 208,500 lb sand | DG, no cores or tests. Operator had 1 additional completion reported during quarter in locale. | 40 |
| SP: 7-8-77 CP: 11-29-77 | Adolph Coors Corporation | 1-31 Acco-Nichols et al | 7 | nwse 31/10S/95W Plateau Field Mesa Cnty, CO | Rollins 4,306-4,330 Cozzette 4,635-4,701 Corcoran 4,780-4,806 (commingled) | 4,975 PB: 4,830 | Fractured 3 times w/total: 344,400 gal water, 652,000 lb sand | DG, no cores or tests. Largest fracture reported this quarter. | |

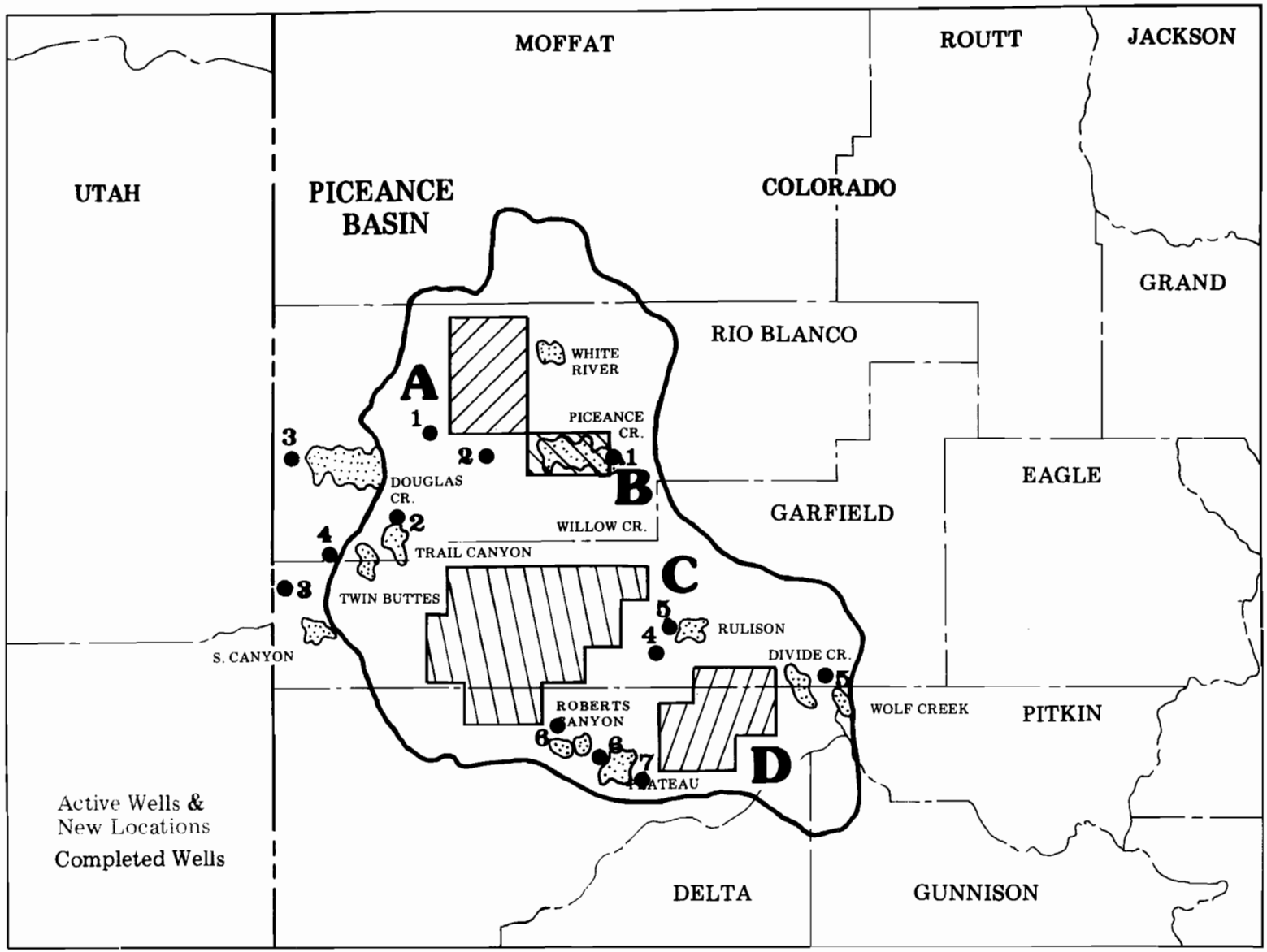



*Figure 5-2 Wells Staked and Completed, USGS Designated Core Areas, Piceance Basin (refer to Tables 5-5 and 5-6)*