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Western Gas Sands Project Quarterly Basin Activities Report

August 31, 1979

Prepared for
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Abbreviations and Acronyms

Completed Wells

WF	unsuccessful new field wildcat	BHC	Borehole Compensated Log
WFD	new field discovery	Cp	Drilling completed
WD	unsuccessful deeper pool wildcat	DIL	Dual Induction Laterlog
WDD	deeper pool discovery	D&A	Dry and Abandoned
WS	unsuccessful shallower pool wildcat	FDC	Formation Density Log
WSD	shallow pool discovery	FR	First Report
WP	unsuccessful new pool wildcat	GR	Gamma Ray
WPD	new pool discovery	PB	Plugged back
WO	unsuccessful wildcat outpost	SDW	Shut down for weather
WOE	wildcat outpost extension	SI	Shut in
D	unsuccessful development well	Spud	Commencement of drilling
DG	development gas well	SP	Spontaneous Potential

Drilling/Staked Wells

WF	new field wildcat	SDR	Shut down for repairs
WD	deeper pool wildcat	SDW	Shut down for weather
WS	shallower pool wildcat	SN	Sidewall Neutron
WP	new pool wildcat	Swb(d)(g)	Swabbed, swabbing
WO	wildcat outpost	TD	Total Depth
D	development	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 April, May, and June, 1979. Refer to Figure 1-1 for the location of study areas in the WGSP.

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 DOE to negotiate contracts for a joint industry/government coring operation.

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 completed wells are listed and located on a map with red and blue numbers, respectively.

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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*.

Background and geologic information 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 (Figures 2-1 and 2-2, and Table 2-1). Four sites were chosen for the following reasons:

- The sites are removed from productive fields and little data is available.
- There are two or more potential reservoir intervals and adjacent source beds at the selected sites.
- The combination of these sites 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 2-3 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 - 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.

Odessa Natural Corporation reported that they are dropping their acreage on the Bowdoin Dome and would not be participating in the WGSP core program. However, CER Corporation was recently contacted by a Houston operator who plans to drill two tests just west of the Cedar Creek Anticline and may be interested in getting some core through the DOE program. This contact was made possible through an article describing the core program in a recent issue of the *Oil and Gas Journal*. The proposed Kansas-Nebraska well and coring program is still being planned for a late summer spud date.

2.2 DRILLING ACTIVITIES

During the second quarter of 1979, 76 wells were completed in horizons of interest to the WGSP in the Northern Great Plains Province. Exploratory drilling decreased by 2 wells over the previous quarter's total of 21. Development well completions decreased by 23. Forty-nine of the fifty-seven wells completed were producers (See Table 2-2).

Figure 2-1 Northern Great Plains Province

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

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 or Producing Interval	HORIZON (Projected Depth or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IPF in MCFD
Sp: 6-3-78 Cp: 11-2-78	Joseph J. C. Paine & Associates	1-0296 Federal	1	Lot 6 2/29N/36E Unnamed Field Valley Cty, MT	Eagle (536 - 857) Bowdoin (1,364 - 1,410)	1,779 PB: 1,428	13,986 gal water 40,000 lb sand	DG located in core area C. No tests. Commingle production. One additional Phillips test in this location by Paine.	85
Sp: 10-6-78 Cp: 11-2-78	Joseph J. C. Paine & Associates	1-1306 Strommen	2	nwse 13/30N/36E Unnamed Field Valley Cty, MT	Bowdoin (1,182 - 1,272)	1,595 PB: 1,272		DG located in core area C. Operator has 5 other Greenhorn tests in this locale.	720
Sp: 10-19-78 Cp: 11-2-78	Joseph J. C. Paine & Associates	1-3007 Monfort	3	swnw 30/30N/37E Unnamed Field Valley Cty, MT	Eagle (857 - 888)	1,690 PB: 940		DG located in core area C. Operator has 5 additional Green- horn tests in this locale.	20

The second quarter of 1979 continued to be active in exploring for natural gas in Montana. During this quarter, several operators planned programs for drilling wildcat areas in the northern part of Montana. CIG Exploration has planned 4 tests in Carter, Custer, Garfield and Fallon Counties. They are projected to the Niobrara Formation. Drilling depths will range from 2,500 ft to 4,000 ft. The wells should penetrate most of the Cretaceous section of interest to the WGSP.

Chevron will be active in the Miles City Arch area west of the Cedar Creek Anticline. This Custer County wildcat will be a 6,000 ft Morrison test. Chevron also plans to drill on the southeast fringe of the Williston Basin, south of Bismark, North Dakota, on the South Dakota line. Objectives include the shallow Cretaceous units as well as deeper objectives. Odessa Natural Corporation has expressed an interest in this area.

A huge, essentially untested structure (Porcupine Dome), south of the Bowdoin Dome, has generated interest recently. Red River Oil and Gas, and Century Drilling have drilled one test and plan a few more southwest of the Porcupine Dome in Rosebud County, Montana. Objectives include the Niobrara, Eagle, and Judith River Formations. Their first well may produce commercially from the Niobrara Formation. Batts Oil and Gas conducted a series of similar tests several years ago east of the Porcupine Dome in an attempt to locate gas in the updip pinchout against the structure. The stimulation techniques utilized will be the key to a successful play in this and other programs planned for southeast Montana shallow gas reservoirs.

One of the largest fracture treatments in the Northern Great Plains Province was performed by Joseph J. C. Paine and Associates on their 1-2406 KUKI well in Valley County, Montana. The Bowdoin horizon produced 905 MCFD after a treatment of 14,994 gal of water and 40,000 lb of sand.

Summaries of completed wells and active wells and new locations appear in Tables 2-3 and 2-4, respectively. Figures 2-4 and 2-5 show the locations of these wells.

Table 2-2 Summary of Drilling Activities, Northern Great Plains Province *

	NO. OF WELLS					Producing Horizons in MCFD													
	Wildcats		Development		Total	Judith River	Eagle				Carlile	Greenhorn	Frontier	Blackleaf	Bow Island - Muddy	Commingled	Total		
	D&A	Disc.	D&A	Prod.			Undifferentiated	Vaseau	Shannon	Niobrara								Undifferentiated	Bowdoin
2nd Quarter 1977	24	7	10	34	75	0	5,345 ^{1,2}	0	700	0	0	460	2,699	4,123	5	5,529	2,768 ^{1,3}	21,629 ^{1,4}	
3rd Quarter 1977	13	6	13	40	72	0	1,249 ⁵	0	0	0	0	4,924	354	622	630 ⁹	6,280 ¹⁰	23,719 ¹¹	37,778	
4th Quarter 1977	13	6	17	50	86	340	7,068 ¹	0	1,348	0	0	1,126	1,911	227	1,417	5,373	12,359 ³	31,169	
1st Quarter 1978	13	3	13	26	55	40	6,985	0	0	0	not available	0	50	0	259	2,489	17,943 ³	27,766	
2nd Quarter 1978	9	1	4	10	24	0	5,174 ¹	0	0	0	0	0	0	0	645	0	253 ⁴	6,072	
3rd Quarter 1978	17	7	38	25	67	0	18,975 ⁵	0	0	0	0	1,406	410 ⁷	0	0	1,406	1,798 ⁶	23,995	
4th Quarter 1978	31	5	36	55	127	189	7,406 ^{1,4}	0	0	0	0	5,197	4,301 ¹	610	157	7,560 ^{1,8}	2,386 ^{1,5}	28,183	
1st Quarter 1979	12	9	13	67	101	0	4,724 ^{1,7}	0	0	0	0	3,741	0 ^{1,9}	0	0	787	3,834 ^{1,9}	13,086	
2nd Quarter 1979	13	6	8	49	76	0	3,528 ¹	0	2,037 ^{2,1}	296	0	3,678	4,290	0	267	5,621 ^{2,10}	1,446 ^{2,11}	21,163	

1. IPF not available from one well.

2. Bowdoin/Greenhorn

3. Judith River/Eagle - 60
Bowdoin/Phillips - 15,894
Bowdoin/Greenhorn/Phillips - 844
Greenhorn/Phillips - 1,145

4. Fish Scales/Bow Island

5. Natural production: 13,931

6. Bowdoin/Phillips - 284
Bowdoin/Greenhorn - 368
Blackleaf/Spike (natural) - 699
Bowdoin/Greenhorn/Phillips - 447

7. 158 natural "White Specks"

8. Natural production

9. Natural production

10. 4,245 - natural

11. Bowdoin/Greenhorn/Phillips - 14,878
Bowdoin/Greenhorn - 1,180
Bowdoin/Phillips - 3,446
Prairie/Greenhorn/Phillips - 3,690
Colorado/Blackleaf/Bow Island - 89
Colorado/2nd Bow Island - 436

12. Natural production - 4,560

13. Bowdoin/Phillips - 205
Blackleaf/Bow Island - 2,500
Judith River/Eagle - 63

14. Natural Production - 2,480

15. Bowdoin/Phillips - 1,710
Bowdoin/Greenhorn/Phillips - 676
Blackleaf/Bow Island - not available

16. IPF not available from two wells

17. IPF not available from six wells

18. IPF not available from eleven wells

19. Bowdoin/Phillips - 960
Bowdoin/Greenhorn - 711
Greenhorn/Phillips - 2,078
Eagle/Bowdoin - 85

20. Natural Production - 449

21. Bowdoin/Greenhorn/Phillips - 1,361
Bowdoin/Eagle - 85

22. IPF not available from five wells

Table 2-3 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 MCED
Sp: 5-23-79 Cp: 5-27-79	Pete Lien and Sons	1 Tonn Bros.	1	s4sw 11/2N/49E Wildcat Field Custer Cty, MT	Judith River (2,200)	1,974		WF, D&A.	
Sp: 2-19-79	Marmik Oil	16-2 Federal	2	sese 2/5S/51E Wildcat Field Powder River Cty. MT	Shannon (2,800)	2,750		WF, D&A.	
Sp: 2-28-79 Cp: 5-7-79	Orlyn Terry	36-16-2 Montana State	3	sese 26/7S/58E Wildcat Field Carter Cty, MT	Muddy (1,410-1,440)	1,440		WF, Muddy Discovery- New Field.	121
Fr: 10-2-78	Jerry McCutchan	1 State Placid	4	nwnw 16/15N/2E Wildcat Field Harding Cty, SD	Shannon (1,300)	1,327		WFX, old info: Sam G. Harrison, 1-6 State Placid, Sp: 6-23-78, no cores or tests, OTD 3,500 D&A. SI.	
Sp: 4-6-78 Cp: 4-10-78	J. Burns Brown	11-29-14 Rocky Boy	5	swne 11/29N/14E Unnamed Field Chouteau Cty, MT	Eagle (1,271-1,289)	1,348		DG, no cores.	527 natural
Sp: 3-1-79 Cp: 3-9-79	Phoenix Resources	44-5 Federal	6	sese 5/29N/33E Wildcat Field Phillips Cty, MT	Bowdoin (2,800)	2,854		WF, D&A.	
Sp: 10-23-78 Cp: 11-1-78	Joseph J. C. Paine and Associates	1-2406 KUKI	7	senw 24/30N/36E Unnamed Field Valley Cty, MT	Bowdoin (1,461-1,503)	1,770 PB: 1,590	14,994 gal water 40,000 lb sand	DG, Operator has 13 other Greenhorn tests in this locale.	905
Sp: 5-17-79 Cp: 5-22-79	Elenburg	15-32 Olson	8	swse 32/31N/17E Tiger Ridge Field Hill Cty, MT	Eagle (2,000)	1,880		D, no core or log, D&A.	
Sp: 11-9-79	Xeno, Inc.	7-3 Chouteau	9	swne 3/35N/19E Unnamed Field Blaine Cty, MT	Eagle (1,750)	1,720		D, WOO, Operator has 1 additional Eagle test in the area.	
Sp: 3-5-79 Cp: 3-8-79	Croft Petroleum; Exeter Exploratory	16-1 Garland W. Bachman	10	sese 1/36N/6E East Keith Field Liberty Cty, MT	Niobrara (2,043-2,047)	2,143		DG, no cores.	296
Fr: 11-20-78	Southland Royalty	1-8-60 NE Fee	11	swne 8/36N/30E Unnamed Field Phillips Cty, MT	Phillips (1,800)			D, Abandoned location.	
Sp: 11-7-78 Cp: 11-25-78	Joseph J. C. Paine and Associates	1-1862A Shenandoah- State	12	swnw 18/36N/32E Unnamed Field Phillips Cty, MT	Bowdoin (1,269-1,337) Greenhorn (1,456-1,468) Phillips (1,501-1,519)	1,600 PB: 1,538	14,910 gal water 40,000 lb sand	DG, commingled production, Operator has 2 other Phillips tests in the area.	738
Sp: 12-2-78 Cp: 12-9-78	Joseph J. C. Paine and Associates	1 Aasen	13	nwse 9/129N/ 106W Little Missouri Field Bowman Cty, ND	Phillips (1,151-1,161)	1,235 PB: 1,198		DG.	18

Table 2-4 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: 5-15-79	CIG Exploration	1 BN	1	swne 19/3N/56E Wildcat Field Carter Cty, MT	Niobrara (3,050)	WF, Operator has 1 other Niobrara test in this locale.
Fr: 6-12-79	Juniper Petroleum	22x-13 Jarrett	2	senw 13/7N/23E Wildcat Field Musselshell Cty, MT	Third Cat Creek (5,600)	WF, Operator has 3 other Cat Creek tests in this locale.
Fr: 6-11-79	Devon Corporation	1 c Olson et al	3	swse 26/23N/19E Leroy Field Fergus Cty, MT	Eagle (2,000)	D, Operator has 4 other Eagle tests in the area.
Fr: 5-7-79	Balcon Oil	2-5 Tweet	4	sese 5/29N/1W Ledger Field Pondera Cty, MT	Bow Island (665)	D, Operator has 6 additional Bow Island tests in the area.
Fr: 5-23-79	Tricentrol	United States 16-16 State	5	sese 16/30N/15E Tiger Ridge Field Hill Cty, MT	Eagle (1,800)	D, Operator has 2 additional Eagle tests in this locale.
Fr: 6-19-79 Sp: 6-18-79	J. Burns Brown	19-32-19B Mueller	6	swnw 19/32N/19E Black Coulee Field Blaine Cty, MT	Eagle (1,500)	D, Operator has 2 other Eagle tests in the area.
Fr: 6-5-79	Falcon- Colorado Exploration	2-5 Bowman	7	senw 5/32N/35E Swanson Creek Field Phillips Cty, MT	Phillips (1,600)	D, Operator has 4 additional Phillips tests in this area.
Fr: 6-7-79	Grace Petroleum	6-9 Van Dessel	8	senw 9/34N/7E Unnamed Field Liberty Cty, MT	Bow Island (2,140)	D, Operator has 4 other Bow Island tests in this locale.
Fr: 6-4-79	Joseph J. C. Paine and Associates	2-14 BLM	9	cnw 4/129N/106W Little Missouri Field Bowman Cty, ND	Eagle (1,500)	D, Operator has 20 other Eagle tests in this locale.

Figure 2-4 Northern Great Plains Province Showing Wells of Interest (refer to Tables 2-3 and 2-4)

Figure 2-5 Detail of USGS Designated Core Areas and Wells of Interest, Northern Great Plains Province (refer to Table 2-3 and 2-4)

3. Greater Green River Basin

3.1 CORE PROGRAM

To assist in the assessing of the resource potential within the Greater Green River Basin, the USGS recommended core acquisition in the following areas:

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:

B₁ West of R104W to R109W and from T22N, north to T28N

B₂ R106W to R111W and from T27N to T31N

B₃ R108W to R112W but not including development drilling, and T30N to T35N

B₄ North edge of Green River Basin; north into the Hoback Basin, R112W to R114W and T36N to T39N.

The core sites contain thick sections of tight, but generally untested gas sands with "tight gas sand" potential in Upper Cretaceous and Tertiary formations. (See Table 3-1 and Figure 3-1).

Recent operators contacted for possible core jobs include Cotton Petroleum, CIG Exploration, and Kemmerer Coal Company for the Washakie Basin; Texas Oil and Gas, Yates Petroleum, and Natural Gas Corporation (PTS) for the Red Desert Basin.

**Table 3-1 Summary of Wells Located in USGS Designated Core Areas —
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
Fr: 6-15-79	Amoco Production	8-5 Tierney II Unit	1	csw 5/19N/93W Wildcat Field Carbon Cty, WY	Mesaverde (10,230)			WF located in core area A. Operator has 7 additional Mesaverde tests in this locale.	
Sp: 2-2-79 Cp: 5-19-79	David Oil	1 Bayard- Federal	2	csw 18/20N/92W Wildcat Field Sweetwater Cty, WY	Mesaverde (10,700)	10,756		WF completed D&A, located in core area A.	
Fr: 5-16-79	Amoco Production	1 Champlin- 254 Amoco-C	3	csw 21/20N/93W Wildcat Field Sweetwater Cty, WY	Mesaverde (10,460)			WF located in core area A. Operator had 2 other tests in this locale.	
Fr: 5-16-79 Sp: 5-19-79	Husky Oil	13-17 Federal- Essex	4	sww 17/23N/ 104W Wildcat Field Sweetwater Cty, WY	Fort Union (3,207)			WF located in core area B1. Drig. 1,400. Operator has 1 additional test in the area.	
Sp: 8-16-77	Davis Oil	1 Bacon Ridge- Federal	5	csw 33/35N/114W Wildcat Field Sublette Cty, WY	Hilliard (11,800)	11,928		WF SUS, located in core area B3.	

3.2 DRILLING ACTIVITIES

Major objectives in the Greater Green River Basin are the Mesaverde Group in Carbon and Sweetwater Counties, and the Frontier Formation in Lincoln, Sublette, and Uinta Counties. The Lewis Formation is most often the target in the Sand Wash Basin, Moffat County, Colorado.

During April, May, and June of 1979, new gas production from Upper Cretaceous and Tertiary horizons totalled 45,958 MCFD. The Frontier Formation accounted for 33 percent of the total new production, the Lewis Formation contributed 29 percent, the Mesaverde Group (undifferentiated) contributed 26 percent and the Almond Formation contributed 12 percent.

Forty-eight wells were completed this quarter. Fourteen exploratory wells were completed with 64 percent success. Thirty-four development wells were completed with 28 being producers (82 percent success rate). The producing horizons are listed in Table 3-2. Figure 3-2 is a stratigraphic correlation chart of the Greater Green River, Piceance and Uinta Basins (See Tables 3-3 and 3-4, and Figure 3-3).

One of the largest fracture treatments performed in the basin was by Amoco Production in their 1 Champlin 293 Amoco B well in Sweetwater County, Wyoming. Treatment consisted of 40,000 gal of acid, 363,000 gal of water and 635,461 lb of sand to produce 871 MCFD from the Mesaverde horizon.

Figure 3-1 USGS Designated Core Areas and Wells of Interest, Greater Green River Basin (refer to Table 3-1)

Figure 3-2 Stratigraphic Correlation Chart of Greater Green River, Piceance and Uinta Basins

Modified from Symposium
on Deep Drilling Frontiers
in the Central Rocky Mountains,
R.M.A.G., 1975, Edited by
Dudley W. Bolyard

Table 3-2 Summary of Drilling Activities, Greater Green River Basin*

	NO. OF WELLS					Producing Horizons in MCFD												
	Wildcats		Development		Total	Fort Union	Lance	Lewis	Undifferentiated	Mesaverde			Frontier	Aspen-Mowry	Bear River	Commenced	Total	
	D&A	Disc.	D&A	Prod.						Almond	Edison	Blair						
2nd Quarter 1977	13	21	6	10	50	4,640	0	11,633	3,651	5,444	500	0	32,924	0	0	0	58,792	
3rd Quarter 1977	18	13	8	19	56	4,813	0	19,095	16,929+ 25 BC	2,871	0	0	9,016	0	0	0	53,324+ 25 BC	
4th Quarter 1977	20	13	10	31	74	450	1,026	9,218	19,156	17,001	3,982	1,298	21,189	0	760	362 ¹	74,442	
1st Quarter 1978	7	5	6	12	30	0	0	1,852	5,385 ⁷	450	0	0	8,603	400	0	1,500 ¹	18,190	
2nd Quarter 1978	7	6	3	27	43	0	0	11,020	14,304	6,994	0	0	5,179	0	0	4,239 ¹	45,595	
3rd Quarter 1978	18	15	3	27	63	449	53	5,504+ 37 BC	16,999+ 69 BC	11,432	536	0	21,268+ 26 BC	0	0	10,048 ²	66,289+ 132 BC	
4th Quarter 1978	18	12	13	26	69	1,925	0	20,388	5,070	8,690	1,199	0	20,969	0	0	789 ⁴	57,831	
1st Quarter 1979	10	12	6	30	58	994	0	9,378 ⁶	6,269 ⁷	2,029	1,320	0	21,234 ⁸	0	0	2,137 ⁵	43,371	
2nd Quarter 1979	5	9	6	28	48	0	0	13,445 ³	12,012 ⁶	5,630	0	0	14,871	0	0	0	45,958	

1. Lewis/Almond

2. Frontier/Bear River

3. IPF not available for one well

4. Lance/Lewis

5. Lewis/Lance - 789
Mesaverde/Ericson - 821
Lance/Fort Union - 499
Lewis/Hilliard - 28

6. IPF not available for two wells

7. IPF not available for three wells

8. IPF not available for four wells

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

Table 3-3 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
Fr: 3-20-79	Sun Gas	29-1 Federal Fox	1	nwnw 29/8N/90W North Craig Field Moffat Cty, CO	Lewis (3,800)			D, Abandoned location.	
Sp: 12-19-78 Cp: 3-9-79	Anadarko Production	A-1 Federal	2	sene 25/8N/91W North Craig Field Moffat Cty, CO	Lewis (3,533-3,670)	3,800 PB: 3,761	Acidized 6,100 gal.	DG, no cores.	3,212
Sp: 10-30-78	Wexpro Company	1 Unit	3	nenw 22/12N/100W Hiawatha Field Moffat Cty, CO	Chinle (15,100)	10,949		WD, WOC	
Sp: 7-31-78 Cp: 12-30-78	Sinclair Oil	2-1 Grynberg-Federal	4	cne 2/14N/92W Blue Gap Field Carbon Cty, WY	Mesaverde (7,290-7,899)	8,150 PB: 8,052	Acidized	DG	1,710 2 BC
Sp: 10-12-78 Cp: 1-19-79	Sinclair Oil	35-1 Hamilton-Federal	5	nese 34/15N/92W Blue Gap Field Carbon Cty, WY	Mesaverde (8,900)	8,500		DG	2,000
Sp: 11-3-78 Cp: 4-9-79	Amoco Production	Coal Gulch WI Unit	6	senw 15/17N/93W Coal Gulch Field Carbon Cty, WY	Mesaverde (8,860-9,168)	9,498 PB: 9,250	Acidized twice (3,486 Total) Fract (once) (178,962 gal gel) (322,500 lb sand)	WOE, No cores or tests.	1,092 25 BW
Sp: 3-13-79	Amoco Production	1 Champlin 226 Amoco-G	7	csw 33/18N/93W Unnamed Field Carbon Cty, WY	Mesaverde (9,265)	9,300		Testing.	
Sp: 8-20-78 Cp: 5-16-79	Amoco Production	1 Champlin 242 Amoco-F	8	csw 25/20N/93W Echo Springs Field Sweetwater Cty, WY	Almond (9,838-9,872)	10,505 PB: 9,920	Acidized three times (7,582 Total) Fract twice (355,320 gal water) (642,500 lb sand)	DG, No cores or tests.	1,180 28 BC
Sp: 8-27-78 Cp: 2-23-79	Amoco Production	1 Champlin 285 Amoco-C	9	nesw 33/20N/112W Fabian Ditch Field Lincoln Cty, WY	Frontier (11,186-11,246)	11,350 PB: 11,290	Fract (276,444 gal emul., 458,000 lb sand)	WOE	3,290 32 BC
Sp: 12-29-78 Cp: 4-26-79	Pacific Transmission Supply	1-8 Federal	10	swnw 8/22N/92W Wildcat Field Sweetwater Cty, WY	Mesaverde (13,400)	13,525		D&A, No cores.	
Sp: 3-29-79	Pacific Transmission Supply	3-2 Federal	11	w4sw 2/22N/94W Wildcat Field Sweetwater Cty, WY	Mesaverde (12,100)			OWDD PTS OTD 3,400 Cp: 3-12-79 D&A. Drig. 9,060.	
Sp: 2-6-79 Cp: 5-10-79	Davis Oil	27 Hay Reservoir	12	swne 10/24N/97W Hay Reservoir Sweetwater Cty, WY	Lewis (10,542-10,547)	10,953 PB: 10,570	Fract. twice (141,850 gal oil) (151,500 lb sand)	DG	1,047 12 BC
Sp: 2-23-79 Cp: 6-2-79	John J. Christmann	3-20 Red Gap	13	nenw 28/26N/113W South Hog's Back Field Lincoln Cty, WY	2nd Frontier (7,750-7,896)	8,142		DG, no cores or tests.	1,848
Sp: 2-13-78	Davis Oil	1 Bright Trail Unit.	14	swne 21/27N/108W Wildcat Field Sublette Cty, WY	Mesaverde (12,000)	17,902		Tripping.	

Table 3-4 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: 5-1-79	Anadarko Production	1 Cottonwood Gulch-Federal -B	1	nene 26/8N/91W North Craig Field Moffat Cty, CO	Lewis (3,900)	D.
Fr: 5-18-79	Amoco Production	1 Champlin- 444 AMOCO -D	2	csw 5/16N/93W Wildcat Field Carbon Cty, WY	Mesaverde (9,710)	WF, Operator has 17 other Mesaverde tests in this area.
Fr: 5-29-79	Amoco Production	1 USA- AMOCO-U	3	swne 18/17N/95W Wildcat Field Sweetwater Cty, WY	Mesaverde (12,700)	WF, Operator has 10 other tests in the area.
Fr: 5-8-79	Pacific Transmission Supply	3-10 Federal	4	sesw 10/19N/93W Echo Springs Field Carbon Cty, WY	Mesaverde (9,725)	D, Operator has 3 additional Mesaverde tests in this locale.
Fr: 5-3-79	Wexpro Company	32-1 Pando- Federal	5	nwnw 12/18N/112W Bruff Field Uinta Cty, WY	Frontier (12,250)	D.
Fr: 6-14-79	Universal Resources	1-30 Lawler- Federal	6	nwnw 30/19N/112W Bruff Field Lincoln Cty, WY	Mesaverde (12,200)	D.
Fr: 5-25-79	Texaco Incorporated	1 A. M. Tripp	7	swnw 14/19N/112W Bruff Field Sweetwater Cty, WY	Frontier (11,475)	D.
Fr: 5-11-79	Marathon Oil	15 Unit	8	nesw 32/20N/112W Wilson Ranch Field Lincoln Cty, WY	Frontier (11,350)	D.
Fr: 5-10-79	Belco Petroleum	68-30 Unit	9	nesw 30/27N/112W Green River Bend Field Sublette Cty, WY	Frontier (7,400)	D.

Figure 3-3 Wells Completed and Staked, USGS Designated Core Areas, Greater Green River Basin (refer to Tables 3-3 and 3-4)

4. Uinta Basin

4.1 CORE PROGRAM

The Uinta Basin is located in northeastern Utah (Figure 4-1) 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. In the 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 and T9S and R23E to R25E.

Area D

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

These areas were selected due to their lack of core and well data, and location outside the main productive fields of the Uinta Basin. Activity is concentrated in and around the Natural Buttes and Red Wash Fields, where production is primarily from the Green River and Wasatch Formations, and Mesaverde Group.

Within the core areas, newly staked locations are monitored so that operators can be contacted concerning participation in the WGSP core program (See Table 4-1).

To date, no coring contracts have been finalized with operators in the Uinta Basin. Outside the established field areas such as Natural Buttes, Red Wash, Altamont and Cisco, the level of activity is relatively low. Wells suitable to the core program are not frequently staked.

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

During the second quarter of 1979, Coseka Resources staked locations in the southern portion of core area D, but it appeared unlikely that a cooperative effort would be possible. Mapco, Inc. was also approached during the quarter concerning wells being staked around the northwestern corner of core area D. Discussions were continuing at the end of the quarter.

Table 4-1 Summary of Wells Located in USGS Designated Core Areas — Uinta Basin

DATE	OPERATOR	WELL NAME	MAP INDEX NO.	LOCATION Sec/T/R	HORIZON (Projected Depth or Producing Interval)	FINAL TD	FRACTURE TREATMENT	COMMENTS	IFF in MCFD
Fr: 5-25-79	Gulf Oil	2-22-2C Skitzzy Canyon-Ute	1	nese 22/4S/6W Unnamed Field Duchesne Cty, UT	Wasatch (5,800)			D located in core area A. Operator has 3 additional Wasatch tests in this locale.	
Fr: 3-7-79	Koch Exploration	21 Cedar Rim	2	swne 4/4S/6W Altamont Field Duchesne Cty, UT	Wasatch (7,900)			D located in core area A. Operator has 1 additional Wasatch test in this locale.	
Fr: 6-12-79	Burton/Hawks Incorporated	27-1 Sowers Canyon-Federal	3	sene 27/6S/6W Wildcat Field Duchesne Cty, UT	Wasatch (3,900)			W located in core area A. Operator has 3 additional Wasatch tests in this locale.	
Fr: 6-12-79	Palmer Oil and Gas	29-15 Federal	4	swse 29/16S/24E Westwater Field Grand Cty, UT	Morrison (7,113)			D located in core area D. Operator has 3 additional Morrison tests in this locale.	
Fr: 6-19-79	Mountain Fuel Supply	2 Whitmore Park	5	senw 34/12S/12E Wildcat Field Carbon Cty, UT	3,200 ft.			WF located near core area A. Operator has 2 additional tests in this locale.	

4.2 DRILLING ACTIVITIES

Twenty-seven wells were completed during the second quarter of 1979 in Upper Cretaceous and Tertiary horizons of interest to the WGSP. Eight of the 27 were wildcats with a 100 percent success rate. Seventeen of 19 development wells were productive. Production well completions decreased 8 percent over the previous quarter.

New gas production totalled 31,533 MCFD for April, May and June, 1979. Mesaverde production decreased from 662 MCFD in the first quarter, 1979 to 500 MCFD in the second quarter, 1979. The Wasatch Formation produced 3,978 MCFD less than the first quarter. The Green River Formation did not produce. A summary of drilling activities in the Uinta Basin is shown in Table 4-2.

Table 4-2 Summary of Drilling Activities, Uinta Basin *

	NO. OF WELLS					Producing Horizons in MCFD						
	Wildcats		Development		Total							Total
	D&A	Disc	D&A	Prod.								
2nd Quarter 1977	7	2	0	6	15	93	3,553	1,743	0	0	0	5,389
3rd Quarter 1977	5	2	1	8	16	not available	12,611	0	0	0	0	12,611
4th Quarter 1977	4	0	2	14	20	0	21,901	1,850	0	0	1,400 ¹	25,151
1st Quarter 1978	5	1	0	6	12	0	8,182	0	0	0	0	8,182
2nd Quarter 1978	1	1	1	15	18	0	19,411	329	314	0	750	20,804
3rd Quarter 1978	3	1	0	8	12	1,800	4,214 ²	2,918	0	288	15,742	24,962
4th Quarter 1978	1	4	1	22	28	1,692	2,084 ³	3,679	0	0	0	7,455
1st Quarter 1979	3	4	1	40	48	3,431 ²	35,011 ⁵	662 ²	0	204	3,960 ⁴	43,268
2nd Quarter 1979	0	8	2	17	27	0	31,033 ²	500 ²	0	0	0 ²	31,533

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

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

Principal development activity was centered in the Natural Buttes - Chapita Wells area with CIG Exploration and Belco Petroleum being the most active operators. The majority of production came from Wasatch zones which generally had been fractured with 40,000 to 100,000 gals of fluid and up to 250,000 lbs of sand. Initial production after fracturing ranged from approximately 8,000 MCFD to 3 MCFD. Apparently the low-range producers can still be considered commercial in this area because of the proximity to pipelines and production facilities.

CIG Exploration treated their 46-21-9-21 CIGE well in the Natural Buttes Field, Uintah County, Utah with 3,500 gal of acid, 154,200 gal of emulsion, and 250,000 lbs of sand. It was one of the largest fracture treatments performed in the basin during the second quarter, 1979 and produced 2,500 MCFD from the Wasatch Formation.

Summaries of completed wells, active wells and new locations appear in Tables 4-3 and 4-4, respectively. Figure 4-2 shows the locations of these wells.

Table 4-3 Summary of Wells Completed—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
Fr: 9-8-78	Odessa Natural	18-1 Sowers Canyon Unit	1	senw 16/6S/5W Wildcat Field Duchesne Cty, UT	Mesaverde (15,400)			WF, Abandoned location.	
Fr: 7-17-78	Energy Reserves Group	1 State of Utah	2	nwsw 29/7S/21E Brennan Bottom Field Uintah Cty, UT	Wasatch (7,000)			D, Abandoned location.	
Sp: 3-7-78 Cp: 5-16-78	Belco Petroleum	24-32B Natural Buttes Unit	3	nene 32/9S/20E Natural Buttes Field Uintah Cty, UT	Wasatch (5,420-6,625)	6,800	75,300 gal emul. 150,000 lb sand	DG, No cores or tests.	100
Sp: 2-23-79 Cp: 5-15-79	CIG Exploration	22-15-9-20 CIGE	3	swnw 15/9S/20E Natural Buttes Field Uintah Cty, UT	Wasatch (7,200)	7,000 PB: 6,970	2,600 gal acid. 70,000 gal emul. 140,000 lb sand.	DG, Operator has 10 additional Wasatch tests in this locale.	120
Sp: 1-5-79 Cp: 3-23-79	Belco Petroleum	54-2B Natural Buttes Unit	4	swsw 2/9S/21E Natural Buttes Field Uintah Cty, UT	Wasatch (6,065-6,717)	7,475 PB: 7,430	94,480 gal emul. 172,000 lb sand.	DG, No cores or tests, Operator has 12 additional Wasatch tests in this area.	4,140
Sp: 1-15-79 Cp: 3-26-79	CIG Exploration	46-21-9-21 CIGE	4	nene 21/9S/21E Natural Buttes Field Uintah Cty, UT	Wasatch (5,173-7,190)	7,350 PB: 7,307	3,500 gal acid. 154,200 gal emul. 250,000 lb sand.	DG	2,500
Sp: 11-20-78 Cp: 3-22-79	CIG Exploration	49-22-10-21 Natural Buttes Unit	5	swne 22/10S/21E Natural Buttes Field Uintah Cty, UT	Wasatch (4,479-6,372)	6,500 PB: 6,466	3,000 gal acid. 110,800 gal emul. 210,000 lb sand	DG	2,500
Sp: 5-9-79	Ensearch Exploratory	1-6 Sage HEN Federal	6	nese 6/10S/23E Natural Buttes Field Uintah Cty, UT	Mesaverde (7,000)	8,188		D, WOCT	
Sp: 5-18-79	Palmer Oil and Gas	13-9 Federal	7	nese 13/16S/25E San Arroyo Field Grand Cty, UT	Morrison (5,600)	5,237		D, located in core area D, WOCT.	

Table 4-4 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: 5-25-79	Gulf Oil	3-22-1C Skitz Canyon- Ute	1	nenw 22/4S/6W Unnamed Field Duchesne Cty, UT	Wasatch (5,800)	D, Operator has 3 additional Wasatch tests in the area.
Fr: 5-30-79	Carmack Drilling	2 Dunlap- Federal	2	sese 7/6S/24E Wildcat Field Uintah Cty, UT	Mancos (1,000)	WF, Operator has 7 additional Mancos tests in the area.
Fr: 5-25-79	Continental Oil Company	Ankerpont et al 2-6	3	senw 2/9S/21E Ouray Field Uintah Cty, UT	Wasatch (7,250)	D.
Fr: 5-8-79	Belco Development	68-25B Natural Buttes Unit	4	nene 25/10S/21E Natural Buttes Field Uintah Cty, UT	Wasatch (6,200)	D, Operator has 4 other Wasatch tests in the area.
Fr: 5-22-79	Coseka Resources	4-25-14-23 Trap Springs Unit	5	swsw 25/14S/23E Wildcat Field Uintah Cty, UT	Entrada (9,233)	D, located in core area D.

Figure 4-2 Wells Completed and Staked, USGS Designated Core Areas, Uinta Basin (refer to Tables 4-3 and 4-4)

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5. Piceance Basin

5.1 CORE PROGRAM

The Piceance Basin of northwestern Colorado (Figure 5-1) 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 all 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:

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.

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, see Table 5-1, and Figure 5-1).

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

Operators are contacted to discuss WGSP core program participation whenever a new well is staked in a designated core area and the well is scheduled to penetrate program objectives. During the second quarter of 1979, several companies in the Piceance Basin were approached, including Fuel Resources Development Company, David M. Munson, and Chandler and Associates. Although no coring contracts were finalized during this period, serious discussions were continuing with Pacific Transmission Supply (Natural Gas Corporation) and Exxon U.S.A.

Table 5-1 Summary of Wells Located in USGS Designated Core Areas — 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
Fr: 6-1-79	Pacific Transmission Supply Company	22-12 Federal	1	senw 12/1N/99W Wildcat Field Rio Blanco Cty, CO	Dakota (14,500)			WF located in core area A.	
Fr: 6-18-79	David M. Munson	31-1-93 Federal	2	nwse 31/1S/99W Corral Creek Field Rio Blanco Cty, CO	Mancos (9,200)			D located in core area A.	
Sp: 2-4-79	CSG Exploration	298-29-2 Govt.	3	senw 29/2S/98W Sulphur Creek Field Rio Blanco Cty, CO	Mancos B (11,364- 11,596)	11,750		WD WOCT, located near core area B. Originally staked to 17,800 ft.	1,560
Fr: 5-25-79	Coseka Resources	12-15-4-103 Federal	4	swnw 15/4S/103W Boondocks Field Rio Blanco Cty, CO	Mancos (1,500)			WS located near core area C.	
Sp: 12-19-77 Cp: 1-12-78	Teton Energy	1 Fee	5	nwse 25/8S/97W Wildcat Field Mesa Cty, CO	Dakota (9,100)	9,002	Acidized 750 gal	WF temp abd, located in core area C. Operator has 1 additional test in the area.	
Sp: 4-29-78 Cp: 9-15-78	Exxon Corp.	2 Vega Unit	6	nwsW 34/9S/93W Unnamed Field Mesa Cty, CO	Mesaverde (7,847-8,052)		152,400 gal emul. 274,900 lb sand 250 gal acid	WOE located in core area D. Operator has 1 additional test in the area.	440

5.2 DRILLING ACTIVITIES

The Mancos B and Wasatch Formations in Rio Blanco County, the Cozzette and Corcoran Members of the Mesaverde Group in Mesa County, and the Dakota and Morrison Formations in the Douglas Creek Arch area of Garfield County are the major objectives in the Piceance Basin. Dakota and Morrison wells are not closely monitored for the Western Gas Sands Project.

Twenty-two wells were completed in Upper Cretaceous and Tertiary horizons during the second quarter, 1979 in the Piceance Basin. Fifteen of the wells completed were development, an appreciable decrease from 27 in the previous quarter. There was a 300 percent increase in wildcat discoveries and completions over the first quarter, 1979. Only 1 of 7 wildcats was completed D&A.

Table 5-2 Summary of Drilling Activities, Piceance Basin*

	NO. OF WELLS					Producing Horizons in MCFD										
	Wildcats		Development		Total	Doodie Creek	Wasatch	Fort Union	Undifferentiated	Corcoran	Mesaverde		Mancos		Total	
	D&A	Disc.	D&A	Prod.							Undifferentiated	Castlegate/Rollins	Mancos B			
2nd Quarter 1977	0	0	4	13	17	0	0	0	0	0	1,232	0	555	5,391 ⁵	7,178	
3rd Quarter 1977	2	0	5	9	16	0	2	0	0	0	2,585	0	157	183 ⁵	2,927	
4th Quarter 1977	1	3	8	41	53	2,000	3,816 ¹	0	1,000	0	4,627	0	4,753 ²	6,657 ^{3a}	22,853	
1st Quarter 1978	2	1	0	27	30	0	0	9	3,132	140	3,311	0	2,239 ¹	0	8,831	
2nd Quarter 1978	2	1	2	12	17	0	0	0	0	0	0	0	4,491	0	4,491	
3rd Quarter 1978	2	4	3	17	26	0	2,151	0	0	0	1,949 ¹	335	3,866	1,774 ⁴	10,075	
4th Quarter 1978	12	0	6	22	40	0 ¹	11,891	0	0	0	1,271	1,491	992	3,017 ⁵	18,663	
1st Quarter 1979	0	2	5	42	49	0	6,730	0	0	0	5,171 ⁶	0	8,307 ¹	4,004 ^{3b}	24,212	
2nd Quarter 1979	1	6	0	15	22	0	0	0	440 ⁷	0	439	0	5,683 ⁷⁻⁸	0	6,562	

1. IPF not available for one well.

2. IPF not available for two wells.

3a. Rollins/Cozzette/Corcoran - 4,422
Cozzette/Corcoran - 2,235

3b. Rollins/Corcoran/Cozzette - 1,284
Corcoran/Cozzette - 2,720

4. Cameo/Cozzette/Corcoran - 460
Morapos/Mancos - 481
Rollins/Cozzette/Corcoran - 833

5. Rollins/Cozzette/Corcoran - 183

6. IPF not available for five wells.

7. IPF not available for three wells.

8. Natural Production 2,675

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

New production for the quarter totalled 6,562 MCFD. Low Mesaverde production and zero production from the Wasatch Formation accounted for the severe decrease compared to the previous quarter. The Mancos B provided 93 percent of the total production with 6,122 MCFD while the Mesaverde Group contributed 440 MCFD for the remaining 7 percent. The quarterly tabulation of production is summarized in Table 5-2.

As in previous quarters, the most active area in the Piceance Basin was the Douglas Creek Arch, with the main objectives being the Mancos B (Emery). Mancos production in the Arch area is shallow (above 5,000 ft), generally low pressure and related to naturally fractured zones. Most completions include moderate fracture treatments.

Operators have been active recently extending the Mancos productive area eastward from the Arch into the Piceance Basin. The Mancos B has shown the best production potential in the area. It has been found that roughly 1,500 ft below the top of the formation, the unit is about 300 ft thick and characterized by an intertonguing series of thin shaley, silty sandstones with a clay-dominated matrix.

David M. Munson and CSG Exploration have drilled five Mancos B discoveries in the northern portion of the Basin since the beginning of 1978. The B zone is found at greater depths than on the Arch, (below 8,000 ft), and this has resulted in increased pressures and productive rates. Large fracture treatments using up to 500,000 lbs of sand have been carried out on three of the wells with post-frac IPFs averaging about 600 MCFD. The two natural producers (CSG Exploration's 298-29-2 Govt. and David M. Munson's 30-1-99 Cities Service) have had significantly higher IPFs of 1,560 MCFD and 2,091 MCFD, respectively, and are probably associated with naturally fractured zones.

More tests to the Mancos B are planned in the near future. It is possible that this horizon will prove to be as productive within the Basin as it presently is on the Douglas Creek Arch.

The largest fracture job during the quarter was in the Exxon Corporation Vega Unit No. 2 well in an unnamed field in Mesa County. The well produced 440 MCFD from the Mesaverde horizon after being acidized with 250 gal and stimulated with 152,400 gal of emulsion and 274,900 lbs of sand.

Summaries of completed wells, and active wells and new locations appear in Tables 5-3 and 5-4, respectively. Figure 5-3 shows the locations of these wells.

Table 5-3 Summary of Wells Completed—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: 2-4-79	CSG Exploration	298-29-2 Govt.	1	senw 29-2S-98W Sulphur Creek Field Rio Blanco Cty, CO	Mancos (17,800)	11,750		WD located near core area B, WOCT.	
Sp: 1-8-78 Cp: 6-13-78	Twin Arrow	3-23x Coors	2	nesw 23/3S/100W Cathedral Field Rio Blanco Cty, CO	Mancos (4,752-4,870)	5,185		WOE, No cores or tests, SIGW, Mancos exten- tion-Cathedral Field.	Not avail- able.
Sp: 9-20-78 Cp: 1-15-79	Adolph Coors Company	1-19 USAC 7867	3	nene 19/3S/103W Unnamed Field Rio Blanco Cty, CO	Mancos (3,147-3,841)	3,841		WFD, no cores or tests, Mancos Discovery-New Field.	55 1BC
Sp: 12-13-77 Cp: 8-4-78	Coseka Resources	19-G-13 Taiga-Federal	4	swne 13/3S/104W Unnamed Field Rio Blanco Cty, CO	Mancos (3,742-4,201)	4,302 PB: 4,247	3,300 gal acid. 75,000 gal water. 255,000 lb sand.	no cores tests, Mancos Discovery-New Field.	53
Sp: 4-29-78 Cp: 9-15-78	Exxon Corporation	2 Vega Unit	5	nws 34/9S/93W Unnamed Field Mesa Cty, CO	Mesaverde (7,847-8,052)	8,894 PB: 8,140	152,400 gal emul. 274,900 lb sand. acidized 250 gal.	WOE, no tests, Mesaverde Extension	440

Table 5-4 Summary of Active Wells and New Locations—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
Fr: 6-15-79	Northwest Exploration	37 Federal	1	nws 36/1S/101W Philadelphia Creek Field Rio Blanco Cty, CO	Mancos (3,375)			D, Operator has 19 other Mancos tests in the area.	
Fr: 6-22-79	Wexpro	10-2 Federal	2	sese 10/2S/103W Lower Horse Draw Field Rio Blanco Cty, CO	Mancos (3,150)			D, Operator has 2 additional Mancos tests in this locale.	
Fr: 5-18-79	Fuel Resources Development	P23-3-101S Federal	3	sese 23/3S/101W Cathedral Field Rio Blanco Cty, CO	Emery (3,892)			D, Operator has 7 additional Emery tests in this locale.	
Fr: 6-7-79	Provident Resources	13-29 - 4-102 Govt.	4	nwnw 29/4S/102W Thunder Field Rio Blanco Cty, CO	Mancos (5,200)			D, Operator has 1 other Mancos test in Foundation Creek Field.	
Fr: 6-20-79	Chandler and Associates	15-31 Shire Gulch	5	swse 31/9S/96W Shire Gulch Field Mesa Cty, CO	Corcoran (3,380)			D.

Figure 5-2 Wells Completed and Staked, USGS Designated Core Areas, Piceance Basin (refer to Tables 5-3 and 5-4)

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