



United States Department of the Interior



RECEIVED  
FEB 1990  
BUREAU OF LAND MANAGEMENT  
FARMINGTON RESOURCE AREA  
1235 LAPLATA HIGHWAY  
FARMINGTON, NEW MEXICO 87401

IN REPLY REFER TO:

Carson Unit (POD)  
3130 (019)

AUG 10 1990

#1085

Hixon Development Company  
P. O. Box 2810  
Farmington, NM 87499

Gentlemen:

One approved copy of your Supplemental 1990 Plan of Development for the Carson Unit area, San Juan County, New Mexico is enclosed. Such plan, proposing the drilling of two Gallup wells, was approved on this date (subject to like approval by the appropriate officials of the State of New Mexico).

The possibility of drainage by wells outside of the unit boundary may exist. You will be contacted at a later date about this possibility.

If you have any questions, please contact Kenny Howell, Petroleum Engineer, at the above address or telephone (505) 327-5344.

Sincerely,

*John L. Keller*

John L. Keller, Chief  
Branch of Mineral Resources

cc: New Mexico Oil Conservation Division, 310 Old Santa Fe Trail, Room 206,  
Santa Fe, NM 87503

Hixon Development Company

July 13, 1990

John Keller  
Bureau of Land Management  
1235 LaPlata Highway  
Farmington, New Mexico 87401

MINERALS BRANCH	
BRANCH CHIEF	_____
SOLIDS	_____
FLUIDS DEP.	1
FLUIDS ICE	_____
FSM	_____
I & S-E	_____
I & S-W	_____
ALL SURF.	_____
FILES	_____

Subject: 1990 Plan of Development and Operations  
Supplement  
Carson Unit  
San Juan County, New Mexico

Dear Mr. Keller:


Please accept this letter as a Supplement to our 1990 Plan of Development and Operations for the Carson Unit. During 1990 we will drill the following two Gallup wells in the Carson Unit:

Carson Unit Well No. 24-19  
330' FSL, 2310' FWL  
Sec. 19, Township 25 North, Range 11 West

Carson Unit Well No. 44-19  
330' FSL, 990' FEL  
Sec. 19, Township 25 North, Range 11 West

Please signify your acceptance of this Supplement by signing below and returning one copy to our office.

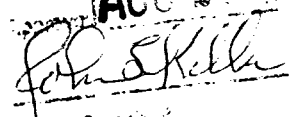
Very truly yours,

  
Aldrich L. Kuchera  
President

EJB/

Accepted this \_\_\_\_\_ day of \_\_\_\_\_, 1990.

By: \_\_\_\_\_  
Title: \_\_\_\_\_

AUG 20 1990  
  
John S. Keller  
Mineral Resources  
Farmington Resource Area

Post Office Box 2810  
Farmington, New Mexico 87499  
505/326-3325

**RECEIVED**

JAN 08 1990

#1085

Hixon Development Company

**OIL CON. DIV**  
**DIST. 3**

January 5, 1990

United States Department of the Interior - BLM  
Farmington Resource Area  
1235 La Plata Highway  
Farmington, New Mexico 87401

Commissioner of Public Lands  
State of New Mexico  
Post Office Box 1148  
Santa Fe, New Mexico 87504-1148

✓ New Mexico Oil Conservation Division  
1000 Rio Brazos Road  
Aztec, New Mexico 87410

Subject: **Carson Unit #14-08-001-3485**  
San Juan County, New Mexico  
Initial Participating Area  
Effective August 13, 1977  
First Expanded Participating Area  
Effective September 1, 1977  
Second Expanded Participating Area  
Effective October 1, 1978  
Third Expanded Participating Area  
Effective October 1, 1982  
Fourth Expanded Participating Area  
Effective March 1, 1984  
Fifth Expanded Participating Area  
Effective December 1, 1985  
Sixth Expanded Participating Area  
Effective March 1, 1986

Ladies and Gentlemen:

Pursuant to section 11 of the Carson Unit Agreement #14-08-001-3485, approved June 13, 1956, Hixon Development Company, as Unit Operator, determined on the dates indicated below that the below listed wells are capable of producing unitized substances in paying quantities from the WAW Fruitland-Pictured Cliffs Pool and that the Participating Area for the WAW Fruitland-Pictured Cliffs Pool is formed and expanded accordingly as follows:

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Post Office Box 2810  
Farmington, New Mexico 87499  
505-326-3325

Initial Participating Area - Effective August 13, 1977

<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
SE/4 Section 11-T25N-R12W, N.M.P.M. San Juan County, New Mexico	160.00	#34-11

The Carson Unit #34-11 was recompleted on June 14, 1976. The WAW Fruitland-Pictured Cliffs Pool was tested on June 14, 1976, with a cumulative gas production of 122 MMCF through October 31, 1989. The spacing unit for this well is described as the SE/4 of Section 11-T25N-R12W, N.M.P.M., San Juan County, New Mexico, containing 160.00 acres, more or less.

First Expanded Participating Area - Effective September 1, 1977

<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
NE/4 Section 14-T25N-R12W, N.M.P.M. San Juan County, New Mexico	160.00	#41-14

The Carson Unit #41-14 was recompleted on August 22, 1976. The WAW Fruitland-Pictured Cliffs Pool was tested on August 22, 1976, with a cumulative gas production of 131 MMCF through October 31, 1989. The spacing unit for this well is described as the NE/4 of Section 14-T25N-R12W, N.M.P.M., San Juan County, New Mexico, containing 160.00 acres, more or less.

Second Expanded Participating Area - Effective October 1, 1978

<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
SW/4 Section 11-T25N-R12W, N.M.P.M. San Juan County, New Mexico	160.00	#13-11

The Carson Unit #13-11 was recompleted on October 2, 1975. The WAW Fruitland-Pictured Cliffs Pool was tested on October 2, 1975, with a cumulative gas production of 94 MMCF through October 31, 1989. The spacing unit for this well is described as the SW/4 of Section 11-T25N-R12W, N.M.P.M., San Juan County, New Mexico, containing 160.00 acres, more or less.



Third Expanded Participating Area - Effective October 1, 1982

<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
NE/4 Section 10-T25N-R12W, N.M.P.M. San Juan County, New Mexico	160.00	#202

The Carson Unit #202 was recompleted on October 2, 1982. The WAW Fruitland-Pictured Cliffs Pool was tested on October 2, 1982, with a cumulative gas production of 265 MMCF through October 31, 1989. The spacing unit for this well is described as the NE/4 of Section 10-T25N-R12W, N.M.P.M., San Juan County, New Mexico, containing 160.00 acres, more or less.

Fourth Expanded Participating Area - Effective March 1, 1984

<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
W/2NW/4, SE/4NW/4 Section 11-T25N-R12W, N.M.P.M. San Juan County, New Mexico	120.00	#206

The Carson Unit #206 was completed on April 28, 1983. The WAW Fruitland-Pictured Cliffs Pool was tested on April 28, 1983, with a cumulative gas production of 199 MMCF through October 31, 1989. The spacing unit for this well is described as the NW/4 of Section 11-T25N-R12W, N.M.P.M., San Juan County, New Mexico, containing 160.00 acres, more or less

Fifth Expanded Participating Area - Effective December 1, 1985

<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
SE/4 Section 10-T25N-R12W, N.M.P.M. San Juan County, New Mexico	160.00	#207

The Carson Unit #207 was completed on September 13, 1985. The WAW Fruitland-Pictured Cliffs Pool was tested on September 13, 1985, with a cumulative gas production of 58 MMCF through October 31, 1989. The spacing unit for this well is described as the SE/4 of Section 10-T25N-R12W, San Juan County, New Mexico, N.M.P.M. containing 160.00 acres, more or less.

Sixth Expanded Participating Area - Effective March 1, 1986

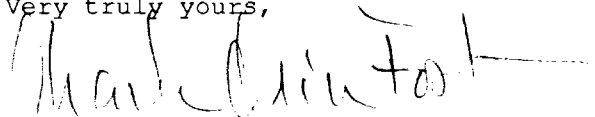
<u>Drilling Block</u>	<u>Net Acres</u>	<u>Well Number</u>
E/2SW/4 Section 10-T25N-R12W	80.00	#208
San Juan County, New Mexico		

The Carson Unit #207 was completed on September 13, 1985. The WAW Fruitland-Pictured Cliffs Pool was tested on September 13, 1985, with a cumulative gas production of 58 MMCF through October 31, 1989. The spacing unit for this well is described as the SE/4 of Section 10-T25N-R12W, N.M.P.M., San Juan County, New Mexico, containing 160.00 acres, more or less.

Additional information concerning the commerciality of each of the wells detailed above along with ownership information pertaining to each expansion is included in the pages that follow.

Should you have any questions regarding this matter, please do not hesitate to call me or Mike Haddenham at 326-3325 or write to me at the letterhead address.

Very truly yours,



Charles Orin Foster  
Vice President-Land

MDH/mdh

Hixon Development Company  
Commerciality Determination  
Initial Participating Area - Effective August 13, 1977  
Carson Unit #34-11 Well  
WAW Fruitland-Pictured Cliffs Pool  
SE/4 Section 11-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 9/1/59  
Date Completed - 6/14/76  
Date of First Delivery - 8/13/77  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$27,000

Production Taxes

	<u>Gas</u>
Severance Tax	\$.163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1977	\$0.70	1984	\$3.93
1978	\$0.72	1985	\$3.40
1979	\$2.00	1986	\$2.95
1980	\$2.85	1987	\$1.60
1981	\$3.05	1988	\$1.54
1982	\$3.89	1989	\$1.32
1983	\$4.05		

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production and Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1977	10.003	3.242
1978	2.959	3.413
1979	7.537	3.592
1980	5.759	3.782
1981	4.535	3.981
1982	9.535	4.190
1983	9.781	4.411
1984	10.291	4.643
1985	14.807	4.887
1986	7.993	5.144
1987	3.675	5.415
1988	18.239	5.700
1989	16.942	6.000

Hixon Development Company  
Commerciality Determination  
First Expanded Participating Area - Effective September 1, 1977  
Carson Unit #41-14 Well  
WAW Fruitland-Pictured Cliffs  
NE/4 Section 14-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 12/23/57  
Date Completed - 7/22/76  
Date of First Delivery - 8/17/77  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$27,000

Production Taxes

	<u>Gas</u>
Severance Tax	\$.163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1977	\$0.70	1984	\$3.93
1978	\$0.72	1985	\$3.40
1979	\$2.00	1986	\$2.95
1980	\$2.85	1987	\$1.60
1981	\$3.05	1988	\$1.54
1982	\$3.89	1989	\$1.32
1983	\$4.05		

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production and Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1977	14.573	3.242
1978	4.440	3.413
1979	9.637	3.592
1980	8.156	3.782
1981	13.097	3.981
1982	20.950	4.190
1983	8.617	4.411
1984	11.965	4.643
1985	19.242	4.887
1986	6.012	5.144
1987	1.237	5.415
1988	2.602	5.700
1989	10.513	6.000

Hixon Development Company  
Commerciality Determination  
Second Expanded Participating Area - Effective October 1, 1978  
Carson Unit #13-11 Well  
WAW Fruitland-Pictured Cliffs  
SW/4 Section 11-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 8/17/58  
Date Completed - 10/2/75  
Date of First Delivery - 10/1/78  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$29,000

Production Taxes

	<u>Gas</u>
Severance Tax	\$ .163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1978	\$0.70	1984	\$3.93
1979	\$0.72	1985	\$3.40
1980	\$2.00	1986	\$2.95
1981	\$2.85	1987	\$1.60
1982	\$3.05	1988	\$1.54
1983	\$3.89	1989	\$1.32

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production and Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1978	4.592	3.413
1979	10.511	3.592
1980	6.657	3.782
1981	6.609	3.981
1982	8.028	4.190
1983	6.581	4.411
1984	7.061	4.643
1985	3.866	4.887
1986	2.589	5.144
1987	13.797	5.415
1988	14.471	5.700
1989	9.041	6.000

Hixon Development Company  
Commerciality Determination  
Third Expanded Participating Area - Effective October 1, 1982  
Carson Unit #202 Well  
WAW Fruitland-Pictured Cliffs  
NE/4 Section 10-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 7/18/80  
Date Completed - 9/2/81  
Date of First Delivery - 9/30/82  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$34,000

Production Taxes

	<u>Gas</u>
Severance Tax	\$.163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1981	\$3.05	1986	\$2.95
1982	\$3.89	1987	\$1.60
1983	\$4.05	1988	\$1.54
1984	\$3.93	1989	\$1.32
1985	\$3.40		

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production And Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1981	2.263	1.048
1982	13.597	4.190
1983	21.084	4.411
1984	39.624	4.643
1985	38.809	4.887
1986	38.644	5.144
1987	45.056	5.415
1988	31.253	5.700
1989	34.177	6.000

Hixon Development Company  
Commerciality Determination  
Fourth Expanded Participating Area - Effective March 1, 1984  
Carson Unit #206 Well  
WAW Fruitland-Pictured Cliffs  
W/2NW/4, SE/4NW/4 Section 11-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 11/14/83  
Date Completed - 4/28/83  
Date of First Delivery - 2/27/84  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$33,996

Production Taxes

	<u>Gas</u>
Severance Tax	\$ .163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1984	\$3.93	1987	\$1.60
1985	\$3.40	1988	\$1.54
1986	\$2.95	1989	\$1.32

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production And Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1984	39.624	4.243
1985	38.809	4.887
1986	38.644	5.144
1987	45.056	5.415
1988	31.253	5.700
1989	34.177	6.000

Hixon Development Company  
Commerciality Determination  
Fifth Expanded Participating Area - Effective December 1, 1985  
Carson Unit #207 Well  
WAW Fruitland-Pictured Cliffs  
SE/4 Section 10-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 7/24/85  
Date Completed - 9/13/85  
Date of First Delivery - 11/6/85  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$57,629

Production Taxes

	<u>Gas</u>
Severance Tax	\$.163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1985	\$3.40	1988	\$1.54
1986	\$2.95	1989	\$1.32
1987	\$1.60		

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production And Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1985	4.186	1.887
1986	17.195	5.144
1987	16.796	5.415
1988	11.187	5.700
1989	8.193	6.000



Hixon Development Company  
Commerciality Determination  
Sixth Expanded Participating Area - Effective March 1, 1986  
Carson Unit #208 Well  
WAW Fruitland-Pictured Cliffs  
E/2SW/4 Section 10-T25N-R12W, N.M.P.M.  
San Juan County, New Mexico

Date Spudded - 1/7/86  
Date Completed - 1/29/86  
Date of First Delivery - 2/15/86  
Date of Commerciality Submittal - 1/5/90

Well Cost Data

Total Well Costs - \$62,087

Production Taxes

	<u>Gas</u>
Severance Tax	\$ .163 / MCF
School Tax	3.15%
Ad Valorem	1.103%
Conservation Tax	0.19%

\*Average Product Pricing (\$/MCF)

<u>Year</u>	<u>Gas</u>	<u>Year</u>	<u>Gas</u>
1986	\$2.95	1988	\$1.54
1987	\$1.60	1989	\$1.32

\*Based on gas sales for the actual months of production.

Estimated Gross Annual Production And Operating Expenses

<u>Year</u>	<u>Gas (MMCF)</u>	<u>Operating Expense (M\$)</u>
1986	28.142	4.144
1987	87.354	5.415
1988	88.237	5.700
1989	92.472	6.000

Hixon Development Company  
Area Ownership  
Initial Participating Area - Effective August 13, 1977  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
SE/4 Section 11-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalley	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153

Hixon Development Company  
Area Ownership  
Initial Participating Area - Effective August 13, 1977  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
SE/4 Section 11-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
Total		1.00000000	1.00000000

Hixon Development Company  
Area Ownership  
First Expanded Participating Area - Effective September 1, 1977  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
NE/4 Section 14-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalley	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153

Hixon Development Company  
Area Ownership  
First Expanded Participating Area - Effective September 1, 1977  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
NE/4 Section 14-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
Total		1.00000000	1.00000000

Hixon Development Company  
Area Ownership  
Second Expanded Participating Area - Effective October 1, 1978  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
SW/4 Section 11-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalley	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153

Hixon Development Company  
Area Ownership  
Second Expanded Participating Area - Effective October 1, 1978  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
SW/4 Section 11-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
Total		1.00000000	1.00000000

Hixon Development Company  
Area Ownership  
Third Expanded Participating Area - Effective October 1, 1982  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
NE/4 Section 10-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalle	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153



Hixon Development Company  
Area Ownership  
Third Expanded Participating Area - Effective October 1, 1982  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
NE/4 Section 10-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
	Total	1.00000000	1.00000000

Hixon Development Company  
Area Ownership  
Fourth Expanded Participating Area - Effective March 1, 1984  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
W/2NW/4, SE/4NW/4 Section 11-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalley	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153

Hixon Development Company  
Area Ownership  
Fourth Expanded Participating Area - Effective March 1, 1984  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
W/2NW/4, SE/4NW/4 Section 11-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
Total		1.00000000	1.00000000

Hixon Development Company  
Area Ownership  
Fifth Expanded Participating Area - Effective December 1, 1985  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
SE/4 Section 10-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalley	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153

Hixon Development Company  
Area Ownership  
Fifth Expanded Participating Area - Effective December 1, 1985  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
SE/4 Section 10-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
Total		1.00000000	1.00000000

Hixon Development Company  
Area Ownership  
Sixth Expanded Participating Area - Effective March 1, 1986  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
E/2SW/4 Section 10-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
1. Hixon Development Company	WI	0.83178882	0.82500000
1. United States of America	Royalty	0.12500000	0.12500000
1. Harriet M. Buchenau	PP	0.00162042	0.00187500
2. Gulf Coast Water Company	PP	0.00648168	0.00750000
3. Sally S. Mims	PP	0.00162042	0.00187500
4. John A. Pace	PP	0.00089127	0.00103125
5. Fred Thompson	PP	0.00036462	0.00042188
6. Josephine T. Williams	PP	0.00036453	0.00042188
1. Leo A. Achtschin	ORRI	0.00084020	0.00097222
2. Daniel Alagna	ORRI	0.00005254	0.00006076
3. James E. Anderson	ORRI	0.00042010	0.00048611
4. Kathryn D. Ashby	ORRI	0.00084020	0.00097222
5. Haley Aycock	ORRI	0.00021018	0.00024306
6. Cloa W. Barkley	ORRI	0.00084020	0.00097222
7. Barron Properties, Ltd.	ORRI	0.00168040	0.00194440
8. Enid Carol Barton	ORRI	0.00003932	0.00004557
9. Anne May Colwill	ORRI	0.00010500	0.00012153
10. Florence Dubilier	ORRI	0.00031510	0.00036458
11. Robert W. Duden	ORRI	0.00168048	0.00194444
12. Sidney H. Dunken	ORRI	0.00010509	0.00012153
13. Ann Emersen, Trustee	ORRI	0.00014000	0.00016200
14. Robert M. Fasken, Ind. Exec.	ORRI	0.00042010	0.00048611
15. First City Texas - Midland	ORRI	0.00084020	0.00097222
16. First City Texas - Midland	ORRI	0.00042010	0.00048611
17. First City Texas - Midland	ORRI	0.00084020	0.00097222
18. Gerald Fitz-Gerald, Jr.	ORRI	0.00084020	0.00097222
19. Nanci Lynn Fox	ORRI	0.00003932	0.00004557
20. Louis Freed	ORRI	0.00016801	0.00019444
21. Anna M. Fritz	ORRI	0.00015755	0.00018229
22. Iris Brown Gittleman	ORRI	0.00026255	0.00030382
23. Maxine Graham	ORRI	0.00042010	0.00048611
24. Edward and Pearl Grapel	ORRI	0.00005254	0.00006076
25. W. Benton Harrison, III	ORRI	0.00010500	0.00012153
26. Lee E. Hedberg, sep. prpty.	ORRI	0.00042010	0.00048611
27. Anna Lou Home	ORRI	0.00098029	0.00113430
28. Teresa Home	ORRI	0.00014000	0.00016200
29. Mary Ann Honey	ORRI	0.00084020	0.00097222
30. Margeret Jensis	ORRI	0.00010500	0.00012153
31. Montez Johnson, Trustee	ORRI	0.00126030	0.00145833
32. Lucy S. Karutz	ORRI	0.00021018	0.00024306
33. Cassandra Keyser	ORRI	0.00021009	0.00024310
34. Jean E. Keyser	ORRI	0.00010500	0.00012153
35. Sam & Sarah Kirshenbaum	ORRI	0.00005254	0.00006076
36. Murray Langfelder	ORRI	0.00005254	0.00006076
37. Lawrence L. Lavalley	ORRI	0.00021018	0.00024306
38. Marianne Weill Lester	ORRI	0.00010500	0.00012153

Hixon Development Company  
Area Ownership  
Sixth Expanded Participating Area - Effective March 1, 1986  
Carson Unit Agreement #14-08-001-3485  
WAW Fruitland-Pictured Cliffs Pool  
E/2SW/4 Section 10-T25N-12W, N.M.P.M.  
San Juan County, New Mexico

<u>Interest Owner Name</u>	<u>Type of Interest</u>	<u>Portion of Block</u>	<u>Net Interest in Block</u>
39. Levine Trusts No. 8149/50	ORRI	0.00006300	0.00007290
40. William Levine	ORRI	0.00016801	0.00019444
41. Sidney E. Licht	ORRI	0.00005254	0.00006076
42. William V. Licht	ORRI	0.00036764	0.00042535
43. Nelly Lidell	ORRI	0.00010500	0.00012153
44. Nelly Lidell, Trustee	ORRI	0.00010500	0.00012153
45. Bruce A. Lipshy, Indep.	ORRI	0.00016801	0.00019444
46. Alexander S. Lore	ORRI	0.00010500	0.00012153
47. Erma Lowe	ORRI	0.00084020	0.00097222
48. Maralo, Inc.	ORRI	0.00084020	0.00097222
49. James Robert Martin	ORRI	0.00168040	0.00194444
50. Olive Miller	ORRI	0.00002627	0.00003038
51. Mudge Boedeker Trust	ORRI	0.00162042	0.00187500
52. Helen G. Pienkowski	ORRI	0.00010500	0.00012153
53. Etoile Postelle	ORRI	0.00168040	0.00194444
54. Frank A. Schultz	ORRI	0.00168040	0.00194444
55. Debbie Lee Shoss	ORRI	0.00002100	0.00002430
56. Shoss-Levine Trust, B. Lipshy	ORRI	0.00008400	0.00009722
57. Julia E. Simpson	ORRI	0.00010509	0.00012153
58. Viola I. Stewart	ORRI	0.00168040	0.00194444
59. Patti Peck Wood	ORRI	0.00168040	0.00194444
60. Guy A. Weill	ORRI	0.00010500	0.00012150
61. Guy A. Weill, Custodian	ORRI	0.00021018	0.00024320
62. Marie Helen Weill	ORRI	0.00042010	0.00048611
63. Sid Weiss, Sr.	ORRI	0.00016801	0.00019444
64. Alice W. Blake, W/W/A of	ORRI	0.00015755	0.00018229
65. Wm. Westerman, Rep.	ORRI	0.00084020	0.00097222
66. Jean Sammons. Executrix	ORRI	0.00015763	0.00018229
67. Anne Zacharek	ORRI	0.00010509	0.00012153
Total		1.00000000	1.00000000

Hixon Development  
COMPANY

September 14, 1988

Ron Fellows  
Area Manager  
Bureau of Land Management  
Farmington Resource Area  
1235 La Plata Highway  
Farmington, New Mexico 87401

Subject: Carson Unit Wells  
SF-078064 et. al. (WC)  
3162.3-4 (019)

Dear Mr. Fellows:

The intents to plug and abandon the seven wells addressed in your August 15, 1988 letter were submitted by Shell Oil from 1975 to 1977 who, as operator at the time, had adopted a massive plugging program in the Carson unit due to the low price of oil. Hixon Development Company purchased the Carson Unit on May 1, 1982 and assumed operatorship. Since that time the Unit has produced 180,651 barrels of oil and 182,259 mcf of casinghead gas from the Bisti Lower Gallup.

The Carson Unit has 4.8 million barrels of remaining recoverable oil. This unit has been actively waterflooded since 1962. To recover these remaining reserves it is critical that all existing wellbores be kept available for use as injection and/or producing wells. Future waterflooding and enhanced recovery operations are dependent on use of all available wellbores. To plug any wells in the unit would mean the loss of recoverable hydrocarbons and result in the loss of revenue to the producer and royalties to the Federal Government.

We are currently making an in-depth study of the Carson Unit's waterflood and production operations. Included in the study are future plans to return additional wells to production and injection as the price of oil increases.

In addition to the waterflood study, we are also initiating a study of the Fruitland Coal in the Unit. This study is the first step in evaluating the Unit's untapped coal gas potential. The study will be followed by extensive testing of the Fruitland Coal using existing wellbores in the Unit.

MINERALS BRANCH  
BRANCH CHIEF \_\_\_\_\_  
SOLIDS \_\_\_\_\_  
FLUIDS DIF \_\_\_\_\_  
FLUIDS I&E \_\_\_\_\_  
FSM \_\_\_\_\_  
I & E \_\_\_\_\_  
I & E \_\_\_\_\_  
ALL OTHER \_\_\_\_\_  
FILES \_\_\_\_\_

OIL COMPANY

*John Shell*



September 14, 1988  
Page 2

Hixon Development Company does not wish to plug the seven addressed wells and requests that the wells be kept in a shut-in status to allow them to be utilized in future production operations. *Cancel Intentions to P&A*

Please contact the undersigned at (505) 326-3325 if you have any questions.

Sincerely,

*Bruce E. Delventhal*

Bruce E. Delventhal  
Vice President - Operations

BED/das

1. Co. 22-12 Carson Unit, 22/451/4 sec. 12, T. 22 N., R. 12 E.,  
San Juan County, New Mexico, lease 22-474004, Intention to Abandon approved  
October 1, 1977.

2. Co. 24-14 Carson Unit, 24/451/4 sec. 14, T. 24 N., R. 12 E.,  
San Juan County, New Mexico, lease 24-474004, Intention to Abandon approved  
October 1, 1977.

3. Co. 26-14 Carson Unit, 26/451/4 sec. 14, T. 26 N., R. 12 E.,  
San Juan County, New Mexico, lease 26-474004, Intention to Abandon approved  
October 1, 1977.

4. Co. 28-14 Carson Unit, 28/451/4 sec. 14, T. 28 N., R. 12 E.,  
San Juan County, New Mexico, lease 28-474004, Intention to Abandon approved  
October 1, 1977.

5. Co. 30-14 Carson Unit, 30/451/4 sec. 14, T. 30 N., R. 12 E.,  
San Juan County, New Mexico, lease 30-474004, Intention to Abandon approved  
October 1, 1977.

6. Co. 32-14 Carson Unit, 32/451/4 sec. 14, T. 32 N., R. 12 E.,  
San Juan County, New Mexico, lease 32-474004, Intention to Abandon approved  
October 1, 1977.

7. Co. 34-14 Carson Unit, 34/451/4 sec. 14, T. 34 N., R. 12 E.,  
San Juan County, New Mexico, lease 34-474004, Intention to Abandon approved  
October 1, 1977.

**ILLEGIBLE**

COMPANY

RECEIVED  
JUN 16 1964  
JUN 16 PM 6:55  
FBI - NEW YORK  
FBI - NEW YORK

[illegible]

SECRET  
THE COM. OF  
NAVY

Reference is made to your August 16, 1988 letter concerning Hixon Development Company's plans for three wells located in the Carson Unit. These three wells are currently being reviewed as part of a Carson Unit waterflood and production study. The Carson Unit has 4.8 million barrels of remaining recoverable oil. To recover this oil, all existing wellbores will be needed as injection and/or producing wells. The study will include future plans to return additional wells to production and injection as the price of oil increases.

Hixon Development Company requests that the Carson Unit No. 44-10, Carson Unit No. 43-13, and Carson Unit No. 41-23 be kept in a shut-in status until they can be used to recover available reserves.

1992

5

*John H. Hall*

SEP 19 1964

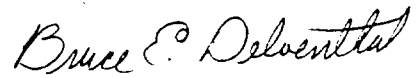
*Mr.*

FBI - MEMPHIS

September 14, 1988  
Page 2

Please contact the undersigned at (505) 326-3325 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Bruce E. Delventhal".

Bruce E. Delventhal  
Vice President - Operations

BED/das

=1085

Form 1000-1 (100)  
3/10/77

APR 07 1988

Attn: Development  
Attn: Division 1, Section  
2.0, Box 1010  
Farmington, NM 87401

Gentlemen:

An approved copy of your 1987 Plan of Development for the Largo unit area, San Juan County, New Mexico is enclosed. Such plan, proposing not to drill additional wells and to convert four wells to water injection, was approved on this date subject to the approval by the appropriate officials of the State of New Mexico.

Starting with the 1988 Plan of Development, please provide the following information in your Annual Plan of Development.

1. A summary of operations for the past year which should include up-to-date maps showing the latest geologic interpretations, oil wells and participating area boundaries. Should there be no change from one year to another, reference may be made to the most recent map submitted.
2. A list showing the status of all wells.
3. Performance curves covering the productive life of each horizon in a participating area, including injectivity curves.
4. Your plans for development within the unit area for the next year.
5. Pertinent data as to the effectiveness of the enhanced recovery project (if applicable). This information should include data on current and cumulative water injection rates, current and cumulative water, gas, and oil production and current water-oil ratios. A short discussion as to the general progress of the flood and any significant changes in any phase of the project should also be included.

All plans of development are to be filed in triplicate.

If you have any questions on this matter, please contact Bill Jellat at the above address or telephone (505) 761-4502.

Sincerely,

(Orig. Signed) - Sid Vogelpohl

For District Manager

Enclosure

ILLEGIBLE

cc: JMOCD, (w/o encl)  
MM-01)  
Comm. of Pub. Lands (w/o encl)  
015:SERvant:ja:3-29-88:40514

#1085

Carson Unit (POB)  
3130 (015)

APR 6 7 1988

Nixon Development  
ATTN: Aldrich L. Kuchera  
P.O. Box 2810  
Farmington, NM 87490

Gentlemen:

One approved copy of your 1988 Plan of Development for the Carson Unit area, San Juan County, New Mexico is enclosed. Such plan, proposing not to drill additional wells and to convert four wells to water injection, was approved on this date subject to like approval by the appropriate officials of the State of New Mexico.

Starting with the 1989 Plan of Development, please provide the following information in your annual Plan of Development.

1. A summary of operations for the past year which should include up-to-date maps showing the latest geologic interpretations, all wells and participating area boundaries. Should there be no changes from one year to another, reference may be made to the most recent map submitted.
2. A list showing the status of all wells.
3. Performance curves covering the productive life of each horizon under a participating area, including injectivity curves.
4. Your plans for development within the unit area for the next year.
5. Pertinent data as to the effectiveness of the enhanced recovery project (if applicable). This information should include data on current and cumulative water injection rates, current and cumulative water, gas, and oil production and current water-oil ratios. A short discussion as to the general progress of the flood and any significant changes in any phase of the project should also be included.

All plans of development are to be filed in triplicate.

If you have any questions on this matter, please contact Gail Keller at the above address or telephone (505) 761-4503.

Sincerely,

(Orig. Signed) - Sid Vogelwohl

For District Manager

Enclosure

cc: NM-019 NMOCB, (w/o encl)  
Comm. of Pub. Lands (w/o encl)  
015:SBryant:ja:3-29-88:4031M

NM-070322 (WC)  
3162.3-1.0 (016)

Caller Service 4104  
Farmington, New Mexico 87499

1085

Hixon Development Company  
P.O. Box 2810  
Farmington, NM 87499



NOV 20 1986

Gentlemen:

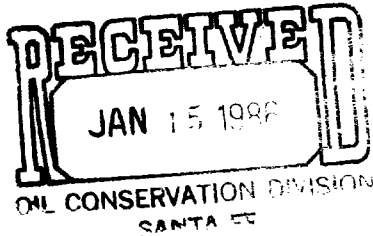
Reference is made to your well No. 44-10 Carson Unit, SE/4SE/4 sec. 10,  
T. 25 N., R. 12 W., San Juan County, New Mexico, lease NM-070322 and your  
letter dated November 11, 1986. With this letter the Sundry Notice dated  
May 16, 1985, requesting approval to run a liner and frac, is hereby  
rescinded. When your company plans to complete this work in the future, you  
will need to resubmit a new Sundry Notice (as stated in your letter).

Sincerely,

FOR Ron Fellows  
Area Manager

cc:  
NMOCD (2)

RECEIVED  
NOV 21 1986  
OIL CON. DIV.  
DIST. 3



JAN 10 1986

Carson  
Unit POD  
3100 (015)

#1085

Hixon Development Company  
Attention: Earlene J. Bickford  
P. O. Box 2810  
Farmington, New Mexico 87499

Gentlemen:

One approved copy of your 1986 Plan of Development for the Carson Unit area, San Juan County, is enclosed. Such plan, proposing the drilling of Carson Unit wells No. 13-24, 22-24, 14-19 (from amended 86 Plan), 24-12 (from amended 86 Plan) and 208 (from the amended 86 Plan), plus the conversion of two wells to water injection and the return of two Gallup wells to production, was approved this date subject to like approval by the appropriate officials of the State of New Mexico.

The possibility of drainage by wells outside of the unit boundary may exist. You will be contacted at a later date about this possibility.

If you have any questions, please contact Gail Keller at the above address or telephone (505) 766-2841.

Sincerely,

(Orig. Signed) - Sid Vogelpohl

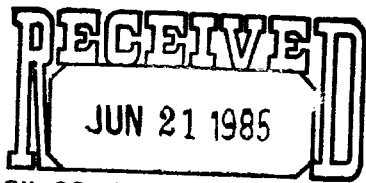
For District Manager

Enclosure(s)

cc:

✓ NMOCD, Santa Fe  
Comm. of Pub. Lands, Santa Fe  
Micrographics 943B-1  
Fluids Section FRAH  
File: Carson Unit POD  
O&G Chron

015:G. KELLER/ms/01-03-86/1363M



OIL CONSERVATION DIVISION  
SANTA FE

Bureau of Land Management  
Albuquerque District Office  
Minerals Division  
P.O. Box 6770  
Albuquerque, NM 87197-6770

Carson Unit  
3100 (015)

JUN 18 1985

#1085

Hixon Development Company  
Attention: Earlene J. Hixford  
P.O. Box 2810  
Farmington, NM 87499

Gentlemen:

An approved copy of your amended 1985 Plan of Development for the Carson Unit area, San Juan County, New Mexico is enclosed. Such plan, proposing to drill the Carson Unit Well No. 33-19, is approved this date subject to like approval by the appropriate officials of the State of New Mexico. As discussed with Ken Townsend of the BLM Farmington Resource Area Office, the correct location is the NW $\frac{1}{4}$ SE $\frac{1}{4}$  section 19, T. 25 N., R. 11 W., NMPM.

If you have any questions, please contact Ron Bartel at the above address or telephone (505) 766-2341.

Sincerely,

(Orig. Signed) - Sid Vogelpohl

For District Manager

Enclosure(s)

~~cc~~  
OCCU, Santa Fe  
Comm. of Pub. Lands, Santa Fe  
Micrographics 943B-1  
Fluids Section FRAH  
File: Carson Unit POD  
O&G Chron

015:RBartel:tt:6/17/85:0805M



BEST AVAILABLE COPY

FILE COPY  
Summa

APR 19 1983

1085

NOTED: GARY CUMMINGS

Hinkle, Cox, Eaton, Coffield & Mensley  
Attention: John Nelson  
P. O. Box 10  
Roswell, NM 88201

Gentlemen:

Your letter of March 31, 1983, transmitted 4 copies of a "Change in Unit Operator" by which Shell Oil Company resigns as unit operator and Nixon Development Company is designated as unit operator of the Carson Unit, San Juan County, New Mexico, effective as of July 27, 1982.

The resignation of Shell Oil Company as unit operator and the designation of Nixon Development Company as successor unit operator are hereby accepted for record purposes.

Sincerely yours,

(ORIG. SCD.) JAMES W. SHELTON

Assistant District Manager  
for Minerals

Enclosure

cc:

BLM, Santa Fe (w/cy)  
BIA, Navajo Area Office, Window Rock, AZ  
DS, Farmington (w/cy)  
File: Carson Unit  
O&G Chrono

RAKent:bm 4-14-83

RECEIVED  
JAN 09 1984  
OIL CONSERVATION DIVISION  
SANTA FE

LAW OFFICES  
HINKLE, COX, EATON, COFFIELD & HENSLEY

600 HINKLE BUILDING  
POST OFFICE BOX 10  
ROSWELL, NEW MEXICO 88201  
(505) 622-6510

LEWIS C. COX	RICHARD A. SIMMS
PAUL W. EATON	DEBORAH NORWOOD*
CONRAD E. COFFIELD	ANDERSON CARTER, II
HAROLD L. HENSLEY, JR.	STEVEN D. ARNOLD
STUART D. SHANOR	JEFFREY L. BOWMAN
C. D. MARTIN	JOHN C. HARRISON
PAUL J. KELLY, JR.	DAVID L. SPOEDE
OWEN M. LOPEZ	JEFFREY D. HEWETT*
DOUGLAS L. LUNSFORD	JAMES BRUCE
PAUL M. BOHANNON	MICHELE A. DREXLER
ERNEST R. FINNEY, JR.*	CRANFORD O. PLYLER, III*
J. DOUGLAS FOSTER	DAVID G. REYNOLDS
T. CALDER EZZELL, JR.	T. MARK TISDALE*
WILLIAM B. BURFORD*	THOMAS D. HAINES, JR.*
JOHN S. NELSON	THOMAS M. HNASKO
RICHARD E. OLSON	MICHAEL F. MILLERICK

\*NOT LICENSED IN NEW MEXICO

March 31, 1983

OF COUNSEL  
CLARENCE E. HINKLE  
ROY C. SNODGRASS, JR.  
O. M. CALHOUN  
W. E. BONDURANT, JR. (1913-1973)  
ROBERT A. STONE (1905-1981)

MIDLAND, TEXAS OFFICE  
1000 FIRST NATIONAL BANK BUILDING  
POST OFFICE BOX 3580  
(915) 683-4691

AMARILLO, TEXAS OFFICE  
1700 AMERICAN NATIONAL BANK BUILDING  
POST OFFICE BOX 12118  
(806) 372-5569

SANTA FE, NEW MEXICO OFFICE  
500 DON GASPAR  
POST OFFICE BOX 2068  
(505) 982-4554

Mr. Joe Lara  
Bureau of Land Management  
505 Marquette Avenue, N.W., Suite 815  
Albuquerque, New Mexico 87102

Re: Change in Unit Operator  
Carson Unit Area, San Juan County,  
New Mexico

Dear Mr. Lara:

Pursuant to our recent telephone conversation, enclosed are two originals and two copies of a Change in Unit Operator for the Carson Unit Area in San Juan County, New Mexico. This document evidences the change from Shell Oil Company to Hixon Development Company. If you require any additional documentation or information, please do not hesitate to contact me.

Yours truly,

HINKLE, COX, EATON, COFFIELD & HENSLEY

  
John Nelson

JN/rlm

Enc.

xc: Ms. Barbara Benavides

CHANGE IN UNIT OPERATOR  
CARSON UNIT AREA  
SAN JUAN COUNTY, NEW MEXICO

WHEREAS, under the provisions of the Act of February 25, 1920, 41 Stat. 437, 30 U.S.C. §§ 181, et seq., as amended, the Secretary of the Interior approved that certain Unit Agreement for the Development and Operation of the Carson Unit Area, San Juan County, New Mexico, dated June 13, 1956, in which Shell Oil Company is designated as Unit Operator; and

WHEREAS, Shell Oil Company desires to transfer to Hixon Development Company, and Hixon Development Company desires to assume, all the rights, duties and obligations of Unit Operator under the terms and provisions of the above described Unit Agreement, as amended, and the Unit Operating Agreement dated August 1, 1956, as amended; and,

WHEREAS, Hixon Development Company has acquired from Shell Oil Company all of the working interests and operating rights in the lands contained in the Carson Unit Area and is now the sole owner of said working interests and operating rights;

NOW, THEREFORE, Shell Oil Company transfers, assigns, releases and quitclaims to Hixon Development Company all of its rights, duties and obligations as Unit Operator under the terms of the above described Unit Agreement and Unit Operating Agreement. Hixon Development Company hereby accepts this assignment and agrees to fulfill, and hereby assumes, the duties and obligations of the Unit Operator under and pursuant to all the terms of the above described Unit Agreement and Unit Operating Agreement.

This change in Unit Operator shall be effective as of

July 27, 1982.

SHELL OIL COMPANY

BY



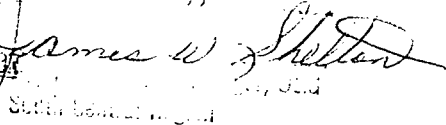
R. L. BLAYLOCK, JR., ATTORNEY IN FACT  
HIXON DEVELOPMENT COMPANY

BY



T. Ray Bridges, Vice President

APR 1983



James W. Shelton  
Secretary



# United States Department of the Interior

GEOLOGICAL SURVEY  
16th Floor, Suite 1608  
505 Marquette, NW  
Albuquerque, New Mexico 87102

Shell Oil Company  
Attention: Mr. R. J. Coenen  
P. O. Box 831  
Houston, Texas 77001

Gentlemen:

The 1976 plan of development submitted for the Carson unit area, San Juan County, New Mexico, was approved on this date subject to like approval by the appropriate State officials.

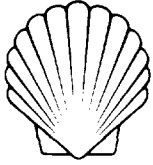
Such plan proposes continuation of waterflood production operations to the economic limit and testing of the Pictured Cliffs for possible recompletions. One approved copy is enclosed.

Sincerely yours,

JAMES W. SUTHERLAND  
Area Oil and Gas Supervisor

cc:

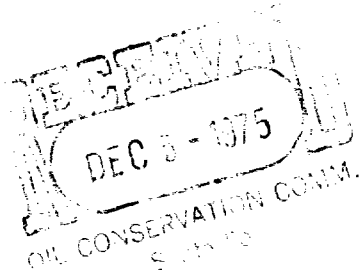
Farmington (w/cy plan)  
NMOCC, Santa Fe (ltr. only) ← This Copy for  
Com. Pub. Lands, Santa Fe (ltr. only)  
Albuquerque (ltr. only)  
Roswell (w/cy plan)  
JAGillham:dlk



# SHELL OIL COMPANY

P.O. BOX 831  
HOUSTON, TEXAS 77001

December 3, 1975



Subject: Participating Area -  
Dakota Formation  
Bisti Field  
San Juan County, New Mexico

New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Gentlemen:

Attached is an approved copy of the application to the U.S.G.S.  
for initial participating area - Dakota formation, Bisti Field, San Juan  
County, New Mexico.

Yours very truly,

R. J. Coenen  
Division Engineer -  
Business Coordination  
Western Division

BJL:mls

Attachment



# United States Department of the Interior

GEOLOGICAL SURVEY

Drawer 1857  
Roswell, New Mexico 88201

1085  
October 20, 1975

Shell Oil Company  
Attention: Mr. J. D. Loren  
P.O. Box 631  
Houston, Texas 77001

Gentlemen:

Your application requesting approval of the initial Dakota participating area of the Carson unit agreement, San Juan County, New Mexico, was approved on October 20, 1975, by the Acting Area Oil and Gas Supervisor, U. S. Geological Survey, effective as of July 25, 1973.

The initial Dakota participating area embraces 360 acres described as the S $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$  sec. 17, and the SE $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$  sec. 18, T. 25 N., R. 11 W., N.M.P.M. Such revision is based on the recompletion of unit well No. 113-17 located in the NW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 17 as a commercial Dakota well. Unit well No. 113-17 was recompleted on July 25, 1973, for a calculated absolute open flow potential of 5,056 MCFGPD from the Dakota interval 5,807 to 5,826 feet.

Copies of the approved application are being distributed to the appropriate Federal offices and four copies are returned herewith. You are requested to furnish the State of New Mexico and all other interested parties with appropriate evidence of this approval.

Sincerely yours,

CARL C. TRAYWICK  
Acting Area Oil and Gas Supervisor

cc:  
BIA, Window Rock (ltr only)  
BLM, Santa Fe (ltr only)  
✓ NMOCC, Santa Fe (ltr only)  
Farmington (w/cy appln)

ARStall:ds

MAIN OFFICE OCC

1962 JAN 23 PM 1:19

NOTICE OF AUTOMATIC CONTRACTION  
CARSON UNIT AREA  
SAN JUAN COUNTY, NEW MEXICO  
No. 14-08-001-3485

TO THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY, THE DIRECTOR OF THE BUREAU OF INDIAN AFFAIRS, THE STATE OF NEW MEXICO AND THE LESSEES, LESSORS, WORKING INTEREST OWNERS AND OTHER PARTIES WHO HAVE EXECUTED THE UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE CARSON UNIT AREA, AND WHO HAVE AN INTEREST IN THE BELOW DESCRIBED LANDS.

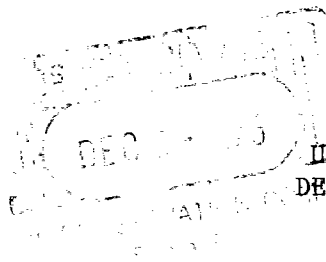
On January 8, 1962, SHELL OIL COMPANY, as UNIT OPERATOR of the CARSON UNIT, SAN JUAN COUNTY, NEW MEXICO, gave notice of automatic elimination of certain lands from the Unit Area. Exhibit "A" of said Notice is hereby amended to show the following described lands also eliminated from the Unit Area:

<u>Tract No.</u> <u>per original</u> <u>Exhibit "B"</u>	<u>State Lease</u> <u>Number</u>	<u>Description of</u> <u>Lands Eliminated</u>
23.	E-6597	<u>T. 25 N., R. 12 W., N.M.P.M.</u> <u>Section 36: S/2</u>

SHELL OIL COMPANY

By: LC Weels

Dated: January 18, 1962.

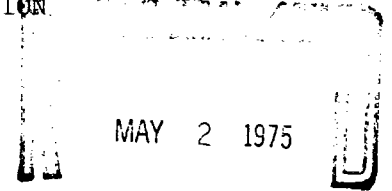


UNITED STATES OF AMERICA  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

CARSON UNIT AGREEMENT  
NO. 14-08-001-3485  
SAN JUAN COUNTY, NEW MEXICO

APPLICATION FOR APPROVAL OF  
INITIAL PARTICIPATING AREA -  
DAKOTA FORMATION

U.S. GEOLOGICAL SURVEY  
U.S. DEPARTMENT OF INTERIOR  
P. O. BOX 1857  
ROSWELL, NEW MEXICO 88201



U. S. GEOLOGICAL SURVEY,  
ROSWELL, NEW MEXICO

SHELL OIL COMPANY, as unit operator for the Carson Unit Agreement, approved by the United States Geological Survey, effective November 15, 1956, and pursuant to provisions of Section 11 and Section 12 thereof, respectively submits for approval the following described lands as the Initial Participating Area for the Dakota Formation:

TOWNSHIP 25 NORTH, RANGE 11 WEST  
SAN JUAN COUNTY, NEW MEXICO

S/2	NW/4	Section 17	80 acres
	SW/4	Section 17	160 acres
SE/4	NE/4	Section 18	40 acres
E/2	SE/4	Section 18	80 acres
		Total	360 acres

Approved: 001 23 075  
*Carl C. T. R. R. R.*  
CHIEF, FIELD OPERATIONS  
U. S. GEOLOGICAL SURVEY

In support of this application, the following items are attached:

- 1) An ownership map, Exhibit "A", illustrating the Carson Unit outline and the proposed Initial Participating Area - Dakota Formation within the Carson Unit.
- 2) A schedule, Exhibit "B", listing tracts included in the proposed Participating Area and the percentage of participation of each tract.

In addition, a report, supporting the selection of tracts included in the Participating Area, is enclosed.

The proposed Initial Participating Area - Dakota Formation is based on 1) information obtained during July 1973, when the Carson Unit 113-17 was recompleted in the Dakota formation, and 2) data on Dakota control wells in the immediate vicinity. First gas was tested on recompletion of the Carson Unit 113-17 July 11, 1973, from casing perforations 5,807-5,826 feet opposite the Dakota sandstone. A potential test conducted July 20, 1973, resulted in a calculated open flow potential of 5,056,000 cfpd. The Carson Unit 113-17 was subsequently completed July 25, 1973, as a shut-in gas well pending pipeline connection. Accordingly, the proposed effective date of the Initial Participating Area - Dakota Formation is July 25, 1973, pursuant to the "Participation After Discovery" section of the Carson Unit Agreement.



Applicant respectfully requests approval of 1) the above-proposed lands as the Initial Participating Area - Dakota Formation and 2) the establishment of July 25, 1973, as the effective date of the Participating Area.

SHELL OIL COMPANY

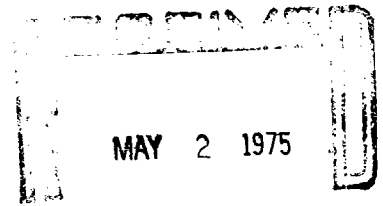
By J. D. Loren In the absence of  
Division Production Manager  
Western Division  
Houston, Texas  
Dated 4/9/75

GER:sp

Attachments (2)

Enclosure (1)

GEOLOGIC AND ENGINEERING REPORT  
PROPOSED INITIAL PARTICIPATING AREA  
CARSON UNIT - DAKOTA FORMATION  
BISTI FIELD - BASIN DAKOTA GAS POOL  
SAN JUAN COUNTY, NEW MEXICO



U. S. GEOLOGICAL SURVEY  
ROSWELL, NEW MEXICO

The following information is submitted in support of the application for Initial Participating Area - Dakota Formation in the Carson Unit, San Juan County, New Mexico. Lands proposed for inclusion in the Initial Participating Area total 360 acres and include the S/2 NW/4 and SW/4 Section 17 and SE/4 NE/4 and E/2 SE/4 Section 18-T25N-R11W.

Well Data - Carson Unit No. 113-17

Carson Unit No. 113-17, located 1,980 feet north and 660 feet east of southwest corner Section 17-T25N-R11W, was initially completed August 30, 1959, as a Gallup oil well (gross perforated interval 4,918-4,950 feet) after reaching a total depth of 11,430 feet. Subsequently the well was converted to a water injection well and still later all operations were suspended.

Recompletion operations were commenced on the Carson Unit 113-17 on June 25, 1973, and the well was recompleted July 25, 1973, as a shut-in gas well from the Dakota formation. The recompleted interval in the Carson Unit 113-17 is 5,807-5,826 feet opposite a sandstone within the Dakota formation. Although the well was recompleted in July 1973, a pipeline connection was not obtained until April 1974. Date of first delivery to the pipeline was April 19, 1974. Cumulative production for this well to the end of 1974 was 1,184 barrels of condensate, 7,458 barrels of water, and 81,855,000 cfm. The average December 1974 daily rate was approximately 4 barrels of condensate, 23 barrels of water, and 185,000 cfm.

Dakota Sandstone Reservoir

Available control on the Dakota formation indicates that the Carson Unit 113-17 is near the southwest limit of the Dakota reservoir. The productive Dakota sandstone present in the 113-17 well terminates nearby westward and is absent in the Carson Unit No. 1, NE NE Section 24-T25N-R12W. Carson Unit No. 1 is approximately one and one-half miles southwest of the 113-17 and is the nearest westward Dakota control well. Furthermore, the Shell, Mudge 2 No. 300 and Mudge 8 No. 301 (about one and one-half miles northeast of 113-17 in NE/4 Section 8 and SW/4 Section 9-T25N-R11, respectively) encountered noncommercial shows of gas in the Dakota and are currently shut in.

A generalized lithologic description of the Carson Unit 113-17 productive Dakota sandstone is as follows: white to grey, fine grained and in part calcareous with carbonaceous material. Although the productive Dakota sandstone was not conventionally cored in the 113-17 well, core analysis of a correlative Dakota sandstone in other wells in this vicinity demonstrates a characteristically low permeability of usually less than 1.0 millidarcy. A pressure buildup analysis of the 113-17 Dakota reservoir

indicates a permeability of about 0.25 millidarcy. Analyses of logs run in 1958 (Electrical and Micro-Log), suggest an average porosity of about 12.5 percent over a 17-foot pay interval.

#### Participating Area

In view of 1) close proximity to the southwest extent of the Dakota reservoir, 2) nearby noncommercial wells, and 3) the characteristically low permeability of the reservoir, a limited area surrounding the Carson Unit 113-17 well is believed reasonably proven productive in paying quantities. The lands selected for inclusion in the proposed participating area cover 360 acres with the boundary of the selected area nearly equi-distant from the 113-17 well. It is our opinion that the proposed Initial Participating Area - Dakota Formation is equitable for all interested royalty owners.

GER:w1

Attachment

EXHIBIT "B"  
 INITIAL PARTICIPATING AREA - DAKOTA FORMATION  
 CARSON UNIT - SAN JUAN COUNTY, NEW MEXICO  
 TOWNSHIP 25 NORTH-RANGE 11 WEST

Lease	Land Type	Working Interest Owner	Serial Number	Participating Acres	Percent of Participation	Description
Navajo No. 3	Indian	Shell	14-20-603-1435	80	22.22222	S/2 NW/4 Section 17
Mudge No. 1	Federal	Shell	SF-078061	160	44.44444	SW/4 Section 17
Phillips Pet. No. 1	Indian	Shell	14-20-603-1283	40	11.11111	SE/4 NE/4 Section 18
Mudge No. 2	Federal	Shell	SF-078062	<u>80</u>	<u>22.22222</u>	E/2 SE/4 Section 18
Total				360 acres	99.99999 percent	



# SHELL OIL COMPANY

Post Office Box 1200  
Farmington, New Mexico

December 26, 1961

Subject: Carson Unit  
14-08-001-3485  
San Juan County, New Mexico  
Twelfth Revision of the  
Participating Area

Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

New Mexico Oil Conservation Commission  
Post Office Box 871  
Santa Fe, New Mexico

Gentlemen:

We are enclosing for your information and files a copy of the United States Geological Survey's letter dated December 11, 1961, advising of their approval of the Twelfth Revision of the Participating Area for the Carson Unit.

Very truly yours,

*M. L. Mayer*  
For F. W. Nantker  
Division Land Manager

MLM:MPD

Enclosure

- cc - El Paso Natural Gas Products Company  
El Paso, Texas
- Humble Oil and Refining Company  
Denver, Colorado
- Humble Oil and Refining Company  
Durango, Colorado





# SHELL OIL COMPANY

Post Office Box 117  
Farmington, New Mexico

December 8, 1961

*Case # 1-85*

Subject: State Lands  
Carrizo

Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

New Mexico Oil Conservation Commission  
Post Office Box 871  
Santa Fe, New Mexico

Gentlemen:

We are enclosing for your files a copy of a letter dated November 29, 1961, from the United States Geological Survey, advising of their approval of the Expansion of the Carrizo National Monument as of December 1, 1961.

Very truly yours,

*776-116*  
for E. W. Lautner  
Division Land Manager

MLM:EG

Enclosure

- cc - Humble Oil and Refining Company (w/enc.)  
Denver, Colorado
- Humble Oil and Refining Company (w/enc.)  
Durango, Colorado
- El Paso Natural Gas Products Company (w/enc.)  
El Paso, Texas

**ILLEGIBLE**



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

NOV 29 1961

Shell Oil Company  
Post Office Box 1200  
Farmington, New Mexico

Gentlemen:

On November 28, 1961, Arthur A. Baker, Acting Director of the Geological Survey, approved the application filed by your company as unit operator requesting the expansion of the Carson unit area, San Juan County, New Mexico, No. 14-00-001-3485, approved November 15, 1956.

Approval of the expansion, effective as of December 1, 1961, increases the unit area by the addition of 1,000 acres, making a total of 10,365.6 acres, more or less, in the unit area.

Enclosed are three copies of the approved application for your records. It is requested that you furnish the State of New Mexico and any other interested principal with whatever evidence of this approval is deemed appropriate.

Very truly yours,

*R. D. Pratt*  
For the Director

Enclosures 3

FARMINGTON LAND  
DIVISION  
DEC 7 1961

**ILLEGIBLE**

Manager	
M. L. M.	
P. J. C.	
P. L. H.	
Dist. Dist.	
Farm. Dist.	
S. L. Dist.	
File	



October 25, 1961

Shell Oil Company  
P. O. Box 1200  
Farmington, New Mexico

Re: Twelfth Revision  
Participating Area, Gallup  
Formation  
Application for Approval of  
Expansion - Carson Unit Area,  
San Juan County, New Mexico

Attention: Mr. F. W. Nantker

Gentlemen:

The Commissioner of Public Lands has approved  
the above designated as of October 25, 1961.

We are retaining one copy of each document and  
handing to Mr. Nantker 10 copies of the Twelfth Re-  
vision of the Gallup Participating Area and 11 copies  
of the Expansion to the Carson Unit.

We will mail Official Receipt in the amount of  
\$23.00 at such time as it is issued by this office.

Very truly yours,

E. S. JOHNNY WALKER  
COMMISSIONER OF PUBLIC LANDS

ESW/mmr/v

cc: Oil Conservation Commission  
Santa Fe, New Mexico

O. CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

Case  
1085

October 24, 1961

Shell Oil Company  
P. O. Box 1200  
Farmington, New Mexico

Attention: Mr. F. W. Nantker

Re: Twelfth Revision Participating  
Area, Gallup Formation,  
Application for Approval of  
Expansion - Carson Unit Area,  
San Juan County, New Mexico

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Twelfth Revision of the Participating Area, Gallup Formation and the application for expansion of the unit area for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Nine approved copies of the Revision of Participating Area and 10 approved copies of the application for expansion are handed Mr. Nantker.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/JEK/ig  
cc: Commissioner of Public Lands  
U. S. Geological Survey



## SHELL OIL COMPANY

Post Office Box 1200  
Farmington, New Mexico

October 19, 1961

Subject: Application for approval of the  
Twelfth Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.

Through

Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Twelfth Revision of the Participating Area for the Carson Unit.

The proposed Twelfth Revision adds the following acreage to the Participating Area, which lands are also included in the proposed Expansion of the Carson Unit:


Township 25 North, Range 12 West, N.M.P.M.  
Section 10: E/2, E/2 SW/4  
Section 15: NE/4, E/2 NW/4, S/2  
Section 22: NE/4 NE/4

In support of this application, applicant attaches hereto and makes a part of the following: (1) a map marked Exhibit "A" showing thereon the original Participating Area and each addition thereto including the proposed Twelfth Revision; (2) one schedule marked Exhibit "B" and one marked Exhibit "C" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. The Exhibit "C" schedule excludes the acreage in the Proposed Expanded Carson Unit and the proposed Twelfth Revision and the Exhibit "B" schedule includes the 1000-acre parcel. Applicant attaches hereto the Geologic and Engineering Report for the proposed Twelfth Revision, which supports the recommended revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Twelfth Revision concurrently with the Proposed Expansion of the Carson Unit and further approve the Expansion of the Carson Unit. Our application is attached (10 copies) together with Joinder (10 copies) by all working interest owners and approval of the Expansion (10 copies) by all royalty owners except one Dr. Daniel T. Alagna whose wife has indicated joinder by the attached letter (10 copies). His percentage interest is .00609%.

Very truly yours,

SHELL OIL COMPANY

  
F. W. Nantker  
Division Land Manager

FWN:MPD

Attachments

Approved this 24th day of  
October, 1961

New Mexico Oil Conservation Commission  
By A. L. Porter

Approved this 25 day of  
October, 1961

Commissioner of Public Lands  
By Chambers

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1961

U. S. Geological Survey

By \_\_\_\_\_

EXHIBIT "B" - PROPOSED TWELFTH REVISION

Schedule of Lands Entitled to Participate

Lease: SF-078061  
 Lessee: Shell Oil Company  
 Participating Acreage: 640.00  
 Percentage of Participation: 9.0343  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: S/2  
 Section 20: W/2

Lease: SF-078062  
 Lessee: Shell Oil Company  
 Participating Acreage: 320.00  
 Percentage of Participation: 4.5171  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: NE/4  
 Section 18: SE/4

Lease: SF-078063  
 Lessee: Shell Oil Company  
 Participating Acreage: 962.29  
 Percentage of Participation: 13.5837  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 19: All  
 Section 7: Lots 3 and 4, E/2 SW/4, S/2 SE/4  
 Section 30: Lot 1, NE/4 NW/4

Lease: SF-078064  
 Lessee: Shell Oil Company  
 Participating Acreage: 1520.00  
 Percentage of Participation: 21.4564  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 12: SW/4, S/2 SE/4  
 Section 13: All  
 Section 24: All

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 1520.00  
 Percentage of Participation: 21.4564  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 11: S/2, SW/4 NE/4, S/2 NW/4, NW/4 NW/4  
 Section 14: All  
 Section 23: NE/4, N/2 SE/4, SE/4 SE/4, N/2 NW/4,  
 SE/4 NW/4

Lease: SF-078068-A  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 2.2586  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 25: N/2 N/2

Lease:	NM-070322 *
Lessee:	Shell Oil Company
Participating Acreage:	1000.00
Percentage of Participation:	14.1160
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 10: E/2, E/2 SW/4 Section 15: NE/4, E/2 NW/4, S/2 Section 22: NE/4 NE/4
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.2586
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: NE/4
Lease:	Indian Allotted Lands 14-20-603-1284
Lessee:	Shell Oil Company
Participating Acreage:	160.77
Percentage of Participation:	2.2694
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 1 and 2, E/2 NW/4
Lease:	Indian Allotted Lands 14-20-603-1285
Lessee:	Shell Oil Company
Participating Acreage:	161.07
Percentage of Participation:	2.2737
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 3 and 4, E/2 SW/4
Lease:	Indian Allotted Lands 14-20-603-1435
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.2586
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: NW/4
Lease:	Indian Allotted Lands 14-20-603-1440
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.2586
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: NE/4
Lease:	Indian Allotted Lands 14-20-603-1441
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.2586
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: SE/4

Summary:	<u>Acres</u>	<u>Per Cent</u>
\ Total Federal Lands	6122.29 **	86.4226
Total Indian Lands	<u>961.84</u>	<u>13.5774</u>
Total Productive Acreage	7084.13	100.0000

\* These lands are included in the Proposed Expansion of the Carson Unit.

\*\* Includes 1000 acres in U. S. Lease NM-070322 included in the Proposed Expansion of the Carson Unit.

EXHIBIT "C" - PROPOSED TWELFTH REVISION

Schedule of Lands Entitled to Participate

Lease: SF-078061  
 Lessee: Shell Oil Company  
 Participating Acreage: 640.00  
 Percentage of Participation: 10.5192  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: S/2  
 Section 20: W/2

Lease: SF-078062  
 Lessee: Shell Oil Company  
 Participating Acreage: 320.00  
 Percentage of Participation: 5.2596  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: NE/4  
 Section 18: SE/4

Lease: SF-078063  
 Lessee: Shell Oil Company  
 Participating Acreage: 962.29  
 Percentage of Participation: 15.8164  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 19: All  
 Section 7: Lots 3 and 4, E/2 SW/4, S/2 SE/4  
 Section 30: Lot 1, NE/4 NW/4

Lease: SF-078064  
 Lessee: Shell Oil Company  
 Participating Acreage: 1520.00  
 Percentage of Participation: 24.9830  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 12: SW/4, S/2 SE/4  
 Section 13: All  
 Section 24: All

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 1520.00  
 Percentage of Participation: 24.9830  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 11: S/2, SW/4 NE/4, S/2 NW/4, NW/4 NW/4  
 Section 14: All  
 Section 23: NE/4, N/2 SE/4, SE/4 SE/4, N/2 NW/4,  
 SE/4 NW/4



Lease:	SF-078068-A
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.6298
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 25: N/2 N/2
Lease:	NM-070322 *
Lessee:	Shell Oil Company
Participating Acreage:	1000.00
Percentage of Participation:	00.0000
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 10: E/2, E/2 SW/4 Section 15: NE/4, E/2 NW/4, S/2 Section 22: NE/4 NE/4
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.6298
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: NE/4
Lease:	Indian Allotted Lands 14-20-603-1284
Lessee:	Shell Oil Company
Participating Acreage:	160.77
Percentage of Participation:	2.6424
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 1 and 2, E/2 NW/4
Lease:	Indian Allotted Lands 14-20-603-1285
Lessee:	Shell Oil Company
Participating Acreage:	161.07
Percentage of Participation:	2.6474
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 3 and 4, E/2 SW/4
Lease:	Indian Allotted Lands 14-20-603-1435
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.6298
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: NW/4

Lease: Indian Allotted Lands 14-20-603-1440  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 2.6298  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 20: NE/4

Lease: Indian Allotted Lands 14-20-603-1441  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 2.6298  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 20: SE/4

Summary:	<u>Acres</u>	<u>Per Cent</u>
Total Federal Lands	5122.29 **	84.1910
Total Indian Lands	<u>961.84</u>	<u>15.8090</u>
Total Productive Acreage	6084.13	100.0000

\* These lands are included in the Proposed Expansion of the Carson Unit.

\*\* Excludes 1,000 acres in U. S. Lease NM-070322 included in the Proposed Expansion of the Carson Unit.

GEOLOGIC AND ENGINEERING REPORT  
PROPOSED TWELFTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The Engineering Report and Plan of Development of the Carson Unit Pressure Maintenance Project was submitted to the United States Geological Survey on August 25, 1961 and approved September 7, 1961. This report outlined the plans for pressure maintenance by water injection into wells located on the Proposed Expanded Carson Unit which includes the existing Carson Unit and 1000 acres of the Phillips 7 Lease (see attached map). With reference to the expansion of the Unit we recommend that when the expansion is approved, the Participating Area of the Carson Unit be increased by 1000 acres. The lands in the Participating Area thus revised would be as follows:

Township 25 North, Range 11 West, N.M.P.M.

Section 7: Lots 3 and 4, E/2 SW/4, S/2 SE/4  
Section 17: All  
Section 18: All  
Section 19: All  
Section 20: All  
Section 30: Lot 1, NE/4 NW/4

Township 25 North, Range 12 West, N.M.P.M.

Section 10: E/2, E/2 SW/4  
Section 11: S/2, SW/4 NE/4, S/2 NW/4, NW/4 NW/4  
Section 12: SW/4, S/2 SE/4  
Section 13: All  
Section 14: All  
Section 15: E/2, SW/4, E/2 NW/4  
Section 22: NE/4 NE/4  
Section 23: NE/4, N/2 SE/4 SE/4 SE/4, N/2 NW/4, SW/4 NW/4  
Section 24: All  
Section 25: N/2 N/2

The reasons for recommending this expansion conform with those presented in the eleventh revision namely that all lands within the zero isopach are reasonably proved to be productive of unitized substances in paying quantities and should be included in the Participating Area.

SHELL OIL COMPANY

*W. M. Marshall*

W. M. Marshall  
Division Exploitation Engineer  
Farmington Division

**Attachment**

Isopach Net Microlog Pay  
Gallup Sandstone

C CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

September 26, 1961

Shell Oil Company  
P. O. Box 1200  
Farmington, New Mexico

Attention: Mr. F. W. Nantker

Gentlemen:

The Oil Conservation Commission finds your Application For Approval of Expansion of Carson Unit Area, as enclosed with your letter of September 22, 1961, satisfactory as to form.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/JEK/og

cc: United States Geological Survey - Roswell  
Commissioner of Public Lands - Santa Fe



## SHELL OIL COMPANY

Post Office Box 1200  
Farmington, New Mexico

September 22, 1961

Subject: Bisti Field  
Carson Unit and Unit  
Operating Agreements - No. 2576  
Proposed Expansion of Carson  
Unit - No. 14-08-001-3485

Mr. John Anderson,  
Supervisor  
United States Geological Survey  
Drawer 1857  
Roswell, New Mexico

E. S. Walker,  
Commissioner of Public Lands  
State of New Mexico  
State Land Office Building  
Santa Fe, New Mexico

Oil and Gas Conservation Commission  
State of New Mexico  
State Land Office Building  
Santa Fe, New Mexico

Gentlemen:

As you know, earlier this year we obtained preliminary concurrence of the United States Geological Survey, the Commissioner of Public Lands, and the Oil and Gas Conservation Commission toward our plan of expanding the Carson Unit Area to the west to connect with the Central Bisti Unit. Preliminary approval of this plan was granted by the three aforementioned agencies subject to our complying with the provisions of Article 2 of the Carson Unit Agreement. We are progressing well with our joinder of the royalty owners under Tract 26, having obtained somewhat better than four-fifths of the outstanding override to date.

You will also recall that on August 30, 1961, we submitted our Plan of Development before the Oil Conservation Commission of the State of New Mexico, which hearing was attended by the representatives of the Geological Survey. We plan shortly to submit the joinder of the royalty owners to the respective State and Federal agencies for final approval, and in this connection we enclose a copy of our proposed Application for Approval of Expansion of the Carson Unit Area. We would appreciate your examining this instrument and determining whether or not it will be satisfactory to you insofar as the form is concerned. We attach a map of the proposed expanded Unit Area for your assistance in this matter.

Very truly yours,

*F. W. Nantker*  
F. W. Nantker

Division Land Manager

FWN:EG

Enclosures

1                                    APPLICATION FOR APPROVAL OF  
2                                    EXPANSION OF CARSON UNIT AREA

3                    THE UNDERSIGNED, SHELL OIL COMPANY, as Unit Operator,  
4 hereby applys for expansion of the area (hereinafter referred to  
5 as "Unit Area") subject to the UNIT AGREEMENT FOR THE DEVELOPMENT  
6 AND OPERATION OF THE CARSON UNIT, COUNTY OF SAN JUAN, STATE OF  
7 NEW MEXICO, No. 14-08-001-3485 (hereinafter referred to as "Carson  
8 Unit Agreement"), and approved by the Acting Director of the United  
9 States Geological Survey November 15, 1956 and by the Acting  
10 Commissioner of Indian Affairs November 14, 1956, to include  
11 therein, effective as of the first day of the month following  
12 approval by the director, as Tract 26, the following additional  
13 lands located in San Juan County, New Mexico, to wit:

14                    Township 25 North, Range 12 West, N.M.P.M.

15                    Section 10: E-1/2, E-1/2 SW-1/4  
16                    Section 15: NE-1/4, E-1/2 NW-1/4, S-1/2  
                     Section 22: NE-1/4 NE-1/4

17 which Unit Area, as expanded to include such additional lands,  
18 will contain 16,365.78 acres, more or less.

19                    In support of this application Unit Operator states  
20 that, pursuant to section 2 of said Carson Unit Agreement, it has:

21                    (1) obtained the preliminary concurrence  
22 of the United States Geological Survey in such  
23 proposed expansion,

24                    (2) prepared and transmitted to the  
25 Supervisor, the Director of the United States  
26 Geological Survey, the Commissioner of Public Lands  
27 of the State of New Mexico, the New Mexico Oil  
28 Conservation Commission and the lessees, lessors,  
29 working interest owners and royalty interest owners  
30 within said expanded Unit Area a notice of proposed  
31 expansion in the form attached hereto. The lessees,  
32 lessors and working interest owners to whom such

1 notice was mailed constitute all parties having interests  
2 in the expanded Unit Area as described in revised Exhibit  
3 A to said Carson Unit Agreement, which parties are listed  
4 in revised Exhibit B to said Carson Unit Agreement.  
5 Evidence of the transmission of this notice to such  
6 parties is also attached hereto,

7 (3) received no protests or objections from any  
8 parties whomsoever in connection with such proposed  
9 expansion, and

10 (4) prepared revised Exhibit A and Exhibit B,  
11 based upon such expanded Unit Area, copies of each of  
12 which exhibits are attached hereto.

13 In pursuance of Section 30 of said Carson Unit Agreement  
14 there is also attached to this application joinders, with respect  
15 to said Tract 26, (a) in said Carson Unit Agreement by Shell Oil  
16 Company, the sole lessee and working interest owner, and by the  
17 royalty interest owners and (b) by Shell Oil Company in the Unit  
18 Operating Agreement for the Development and Operation of the  
19 Carson Unit Area, San Juan County, New Mexico, dated August 1,  
20 1956, as amended by Amendment bearing the same date. The consent  
21 of the other working interest owners to such joinders are also  
22 included with the application.

23 WHEREFORE, Unit Operator respectfully requests that such  
24 expansion be approved effective as of the first day of the month  
25 following approval by the Director.

26 Approved.....*Oct 25, 1961*.....

SHELL OIL COMPANY

27 *E. Smalhe*

28 COMMISSIONER OF PUBLIC LANDS

29 *W. C. Sheppard*  
30 Manager, Land Department

31 Approved.....*Oct 24, 1961*.....

32 *W. C. Sheppard*  
Secretary-Director

NEW MEXICO OIL CONSERVATION COMMISSION

NEW MEXICO

STATE OF \_\_\_\_\_ }  
COUNTY OF \_\_\_\_\_ } ss.

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_, 19\_\_\_\_ by \_\_\_\_\_  
\_\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for said  
County and State

My Commission expires \_\_\_\_\_

STATE OF \_\_\_\_\_ }  
COUNTY OF \_\_\_\_\_ } ss.

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_, 19\_\_\_\_, by \_\_\_\_\_  
(name of officer), \_\_\_\_\_ (title of officer or  
agent), of \_\_\_\_\_ (name of corpo-  
ration), a \_\_\_\_\_ (State or County of incorporation)  
corporation, on behalf of said corporation.

\_\_\_\_\_  
Notary Public in and for said  
County and State

My Commission expires \_\_\_\_\_

STATE OF CALIFORNIA }  
COUNTY OF LOS ANGELES } ss.

The foregoing instrument was acknowledged before me this 12<sup>th</sup> day of October, 1961, by M. W. SHEPPARD, JR., Manager, Land  
Department, Los Angeles Office of Shell Oil Company, a Delaware corporation, on behalf  
of said corporation.

Mildred M. Crawford  
Mildred M. Crawford Notary Public in and for said  
County and State

My Commission expires December 11, 1963



1                    CONSENT AND JOINDER IN CARSON UNIT AGREEMENT

2

3                    Shell Oil Company, a Delaware corporation, the lessee

4 under United States Oil and Gas Lease New Mexico 070322, does

5 hereby consent to and join in the Unit Agreement for the Develop-

6 ment and Operation of the Carson Unit Area, County of San Juan,

7 State of New Mexico, No. 14-08-001-3485, dated June 13, 1956,

8 amended August 1, 1956, as the working interest owner with respect

9 to Tract 26 covered thereby, and, in pursuance of Section 30 of

10 said Unit Agreement, does hereby consent to the joinder therein

11 by all parties owning any overriding royalties, oil payments or

12 any other right, title or interest in Tract 26, as described in

13 revised Exhibit B to said Unit Agreement.

14                    SHELL OIL COMPANY

15

16                    By M. W. Sheppard Jr.

17                    Manager, Land Department

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NEW MEXICO

STATE OF \_\_\_\_\_ }  
COUNTY OF \_\_\_\_\_ } ss.

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_, 19\_\_\_\_, by \_\_\_\_\_  
\_\_\_\_\_.

\_\_\_\_\_  
Notary Public in and for said County and State  
My Commission expires \_\_\_\_\_

STATE OF \_\_\_\_\_ }  
COUNTY OF \_\_\_\_\_ } ss.

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_, 19\_\_\_\_, by \_\_\_\_\_  
(name of officer), \_\_\_\_\_ (title of officer or agent), of  
\_\_\_\_\_ (name of corporation), a  
\_\_\_\_\_ (State or County of incorporation) corporation,  
on behalf of said corporation.

\_\_\_\_\_  
Notary Public in and for said County and State  
My Commission expires \_\_\_\_\_

STATE OF CALIFORNIA }  
COUNTY OF LOS ANGELES } ss.

The foregoing instrument was acknowledged before me this 12<sup>th</sup> day of October, 1961, by M. W. SHEPPARD, JR., Manager, Land Department,  
Los Angeles Office of Shell Oil Company, a Delaware corporation, on behalf of said corporation.

Mildred M. Crawford  
Mildred M. Crawford Notary Public in and for said County and State

My Commission expires December 31, 1963

Banner 1857  
Roswell, New Mexico

September 7, 1961

Shell Oil Company  
P. O. Box 1200  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Gentlemen:

Your plan of development and revised engineering report for secondary recovery operations under the Carson unit agreement, San Juan County, New Mexico, as submitted with your letter of August 23, 1961, has been approved on this date, subject to like approval by the appropriate officials of the State of New Mexico.

Very truly yours,

(Orig. Sgd.) JOHN A. ANDERSON

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Copy to: Washington (w/cy of plan)  
Farmington (w/cy of Plan)  
BHOCC (ltr only) ✓  
Comm. Pub. Lands (ltr only)



# SHELL OIL COMPANY

SHELL BUILDING  
1008 WEST SIXTH STREET  
LOS ANGELES 54, CALIFORNIA

TELEPHONE HUNTLEY 2-3131

Post Office Box 1200  
Farmington, New Mexico

AUG 18 1961

Subject: Carson Unit No. 14-08-001-3485  
San Juan County, New Mexico  
"A" Plat for the Proposed  
Expansion of the Carson Unit Area

See Attached Mailing List for Interested Parties

We refer to our letter of July 18, 1961 wherein we proposed expansion of the Carson Unit to enable us to conduct secondary recovery operations.

We enclose for your inspection and files a Revised Exhibit "B" and Exhibit "A" plat showing the Proposed Expansion of the Carson Unit Area. This plat shows the existing Carson Unit outline and the proposed expanded Carson Unit outline which encompasses the Lease NM-070322. Also shown are the outlines of the Central Bisti Unit and the Proposed East Bisti Unit. With reference to the Central Bisti Unit, these properties were unitized July 1, 1959 and are presently under flooding operations. However, the original Revised Exhibit "B" attached to our letter dated July 18, 1961 was not numbered correctly as to tracts according to the original Unit Area, and we attach corrected Exhibit "B" to cover this contingency and to conform it to the original tract numbering system.

We apologize for having to make these corrections.

Very truly yours,

F. W. Nantker  
Division Land Manager

RAD:BG

Enclosures

San Juan County, New Mexico

Tract No.	Description of Land	No. of Acres	Serial No. & Date of Lease	Basic Royalty & Percentage	Lessee of Record	O.R.R. & Percentage	Working Interest & Percentages
<b>FEDERAL LANDS</b>							
1.	T. 25 N., R. 11 W., N.M.P.M. Sec. 17: S/2 Sec. 20: W/2 Sec. 29: All	1280.00	SF-078061 Feb. 1, 1948	U.S. - 12-1/2%	Shell Oil Company	Oil Payment of \$100 per acre out of 1.5% of the production distributed as follows: Gas Producers Corp. 00.75000% Republic Nat'l. Bank of Dallas for account of Robert Mims - 00.28125% E. W. Mudge, Jr. - 00.18750% Wroe Owens - 00.01875% John A. Pace - 00.01875% Republic Nat'l. Bank of Dallas for account of Betty Jean Mudge Stahl - 00.15000% Republic Nat'l. Bank of Dallas for account of Harriet M. Buchenau - 00.09375%	Shell Oil Company 100%
<p>Overriding Royalty of 3.5% distributed as follows:</p> <p>Robert B. Aaronson - 00.04862%</p> <p>Leo A. Achtschin - 00.09727%</p>							

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

2

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
					Daniel Alagna -		
					00.00609%		
					Kathryn D. Ashby -		
					00.09727%		
					R. M. Barron &		
					Lucille C. Barron -		
					00.19442%		
					Georges Bigar -		
					00.03647%		
					Leonard Bluestone -		
					00.03038%		
					Reese Cleveland &		
					Rozelle B. Cleveland -		
					00.19442%		
					Myrtle Connor		
					00.04862%		
					Leah B. Downey -		
					00.14588%		
					William & Florence D.		
					Dubilier - 00.03647%		
					Robert D. Duden &		
					Nancy Mae Duden -		
					00.19442%		
					Robert Murray Fasken,		
					Executor & Trustee under		
					the Will of Andrew		
					Fasken, Deceased -		
					00.09720%		
					Gerald Fitz-Gerald &		
					Elizabeth Fitz-Gerald -		
					00.09727%		
					Lewis Freed - 00.01943%		
					Edward Grapel & Pearl		
					Grapel - 00.00609%		
					Thomas M. & Mina		
					Grodin - 00.00910%		

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd)

3

<u>Tract</u> <u>No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp;</u> <u>Date of Lease</u>	<u>Basic Royalty</u> <u>&amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest</u> <u>&amp; Percentages</u>
						W. Benton Harrison & Mildred P. Harrison - 00.01214%	
					Lee Etta Hedberg as Her Separate Property and Estate - 00.04862%		
					Frank Jensis & Margaret Jensis - 00.01214%		
					Wallace S. Karutz - 00.01824%		
					Charles D. & Lucy S. Karutz - 00.02429%		
					Sam Kirschenbaum & Sara Ada Kirschenbaum - 00.00609%		
					Murray Langfelder - 00.00609%		
					Lawrence L. Lavalle - 00.02429%		
					Marianne Weill Lester - 00.01214%		
					Sidney E. Licht - 00.00609%		
					William V. Licht - 00.00249%		
					Morris Levine - 00.01943%		
					William Levine - 00.01943%		
					Myron Lidell - 00.01214%		
					Myron Lidell & Nelly Lidell - 00.01214%		
					Harry Lipsky - 00.01943%		

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd)

4

<u>Tract</u> <u>No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp;</u> <u>Date of Lease</u>	<u>Basic Royalty</u> <u>&amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest</u> <u>&amp; Percentages</u>
					Alexander S. Lo Re -		
					00.01218%		
					Ralph Lowe and Erma		
					Lowe - 00.19442%		
					J. R. Martin & Lucille		
					Martin - 00.19442%		
					Mrs. Olive Miller -		
					00.00305%		
					Lewis Otersen -		
					00.01824%		
					Benjamin J. &		
					Helen G. Plenkowski -		
					00.01218%		
					J. F. Postelle &		
					Jessie Postelle -		
					00.19442%		
					Frank A. Schultz -		
					00.19442%		
					P. O. Still - 00.04862%		
					W. H. Sloan & Alberta		
					Sloan - 00.09721%		
					Ina Belle Hightower -		
					00.09721%		
					J. Ralph Stewart &		
					Viola Stewart -		
					00.19442%		
					Guy A. Weill - 00.01214%		
					Guy A. Weill,--Custodian -		
					00.02429%		
					Marie Helene Weill -		
					00.01214%		
					Sid Weiss - 00.01943%		
					Jan H. Westerman -		
					00.09723%		
					Albert Wilkes - 00.00609%		



REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd)

5

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
2.	T. 25 N., R. 11 W., N.M.P.M. Sec. 5: SW/4 Sec. 6: Lots 1 and 2, S/2 NE/4, SE/4 Sec. 8: All Sec. 17: NE/4 Sec. 18: SE/4	1440.30	SF-078062 Feb. 1, 1948	U.S.-12-1/2%	Shell Oil Company	Albert B. Wilkes & Tekla Wilkes - 00.01214% C. B. Yarbrough - 00.09727% Katherine B. Yarbrough - 00.09727% Stanley F. Zacharek - 00.00609% Stanley F. Zacharek & Ann Zacharek - 00.00609% The First Nat'l. Bank of Midland, Trustee for Trust No. 204 - 00.19442% Same as Tract No. 1	Shell Oil Company 100%
3.	T. 25 N., R. 12 W., N.M.P.M. Sec. 1: Lots 1, 2, 3, and 4 S/2 N/2, S/2 (All) Sec. 12: All Sec. 13: All Sec. 24: All	2559.60	SF-078064 Feb. 1, 1948	U.S.-12-1/2%	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

6

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
4.	T. 25 N., R. 11 W., N.M.P.M. Sec. 7: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (A11) Sec. 19: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (A11) Sec. 30: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (A11) Sec. 31: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (A11)	2563.86	SF-078063 Feb. 1, 1948	U.S.-12-1/2%	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
5.	T. 25 N., R. 12 W., N.M.P.M. Sec. 25: A11 Sec. 26: S/2 Sec. 35: A11	1600.00	SF-078068 -A Feb. 1, 1948	U.S.-12-1/2%	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
6.	T. 25 N., R. 12 W., N.M.P.M. Sec. 26: NW/4	160.00	SF-078066 Feb. 1, 1948	U.S.-12-1/2%	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
7.	T. 25 N., R. 12 W., N.M.P.M. Sec. 11: A11 Sec. 14: A11 Sec. 23: A11 Sec. 26: NE/4	2080.00	SF-078067 Feb. 1, 1948	U.S.-12-1/2%	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
<u>INDIAN ALLOTTED LANDS</u>							
8.	T. 25 N., R. 11 W., N.M.P.M. Sec. 18: NE/4	160.00	14-20-603-1283 Feb. 2, 1956	Nahti-ye-ca-wood-price-12-1/2%	Shell Oil Company	None	Shell Oil Company 100%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

7

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic, Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
9.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 18: Lots 1 and 2, E/2 NW/4	160.77	14-20-603-1284 Feb. 2, 1956	Hoska-ge-hos- wood - 12-1/2%	Shell Oil Company	None	Shell Oil Company 100%
10.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 18: Lots 3 and 4, E/2 SW/4	161.07	14-20-603-1285 Feb. 7, 1956	Uska-ye-ni-sa 12-1/2%	Shell Oil Company	None	Shell Oil Company 100%
11.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 5: Lots 1 and 2, S/2 NE/4	160.64	14-20-603-1337 March 19, 1956	Yah-nel-bah or Harriett 12-1/2%	Humble Oil Company	None	Humble Oil Company 100%
12.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 5: SE/4	160.00	14-20-603-1338 March 19, 1956	Al-so-ah or Dolly 12-1/2%	Humble Oil Company	None	Humble Oil Company 100%
13.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 6: Lots 3, 4 and 5, SE/4 NW/4	160.22	14-20-603-1339 Aug. 16, 1956	Hi-ge-di-pah- or Hattie Pierce Jacquez	Humble Oil Company	None	Humble Oil Company 100%
14.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 6: Lots 6 and 7, E/2 SW/4	159.72	14-20-603-1340 March 23, 1956	Glip-pah Price	Humble Oil Company	None	Humble Oil Company 100%
5.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 5: Lots 3 and 4, S/2 NW/4	160.48	14-20-603-1359 Aug. 15, 1956	Yiehth-pah or Farina	Monsanto Chemical Company	None	Monsanto Chemical Company 100%
16.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 17: NW/4	160.00	14-20-603-1435 March 28, 1956	Sanda Wall 12-1/2%	Shell Oil Company	None	Shell Oil Company 100%
17.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 20: NE/4	160.00	14-20-603-1440 Feb. 3, 1956	Uska-ye-ni- sa 12-1/2%	Shell Oil Company	None	Shell Oil Company
18.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 20: SE/4	160.00	14-20-603-1441 Feb. 3, 1956	Ray Canute	Shell Oil Company	None	Shell Oil Company 100%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

8

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
<u>STATE LANDS</u>							
19.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 32: <u>N/2 NE/4, N/2 SE/4, SW/4 SE/4</u>	200.00	E-3148-1 Dec. 10, 1949	State of New Mexico 12-1/2%	El Paso Natural Gas Products Company	John Burroughs - 5%	El Paso Natural Gas Products Company 100%
20.	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Sec. 2: <u>S/2 N/2</u>	160.00	E-6633 Nov. 10, 1952	State of New Mexico 12-1/2%	El Paso Natural Gas Products Company	None	El Paso Natural Gas Products Company
21.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 32: <u>N/2 NW/4</u>	80.00	E-5622-1 Oct. 1, 1951	State of New Mexico 12-1/2%	Shell Oil Company	William F. Mylander - 1.34% Walter C. Mylander, Jr. - .33% Mathilde M. Hebb - .33% Henry A. Mylander - .33% Harriet M. Maling - .33% Elmer L. Mylander - .67% A. Wilbur Mylander - .67%	Shell Oil Company 100%
22.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Sec. 32: <u>S/2 NE/4</u>	80.00	E-6223 May 16, 1952	State of New Mexico 12-1/2%	Edward C. Evensen	None	Edward C. Evensen 100%
23.	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Sec. 2: <u>Lots 1, 2, 3, and 4, S/2</u> Sec. 36: <u>S/2</u>	799.12	E-6597 Oct. 7, 1952	State of New Mexico 12-1/2%	Laurence C. Kelly, J. D. Middleton - 1/4 of 1% Trustee and El Paso Natural Gas Products Company	L. C. Kelly 5%	Laurence C. Kelly, Trustee - 50% El Paso Natural Gas Products Company - 50%
24.	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Sec. 36: <u>N/2</u>	320.00	E-6644-1 Nov. 14, 1952	State of New Mexico 12-1/2%	Laurence C. Kelly - Trustee	Laurence C. Kelly - 2%	Laurence C. Kelly 100%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd)

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
25.	<u>T. 25 N., R. 11 W., N.M., P.M.</u> Sec. 32: S/2 NW/4, SW/4, SE/4 SE/4	280.00	B-10894-6 Jan. 1, 1944	State of New Mexico 12-1/2%	Woodriver Oil and Refining Company, Inc. El Dorado Refining Company	None	Woodriver Oil and Refining Company, Inc. - 50% El Dorado Refining Company - 50%

ADDITIONAL FEDERAL LANDS

6.	<u>T. 25 N., R. 12 W., N.M., P.M.</u> Sec. 10: E/2, E/2 SW/4 Sec. 15: NE/4, E/2 NW/4, S/2 Sec. 22: NE/4 NE/4	1000.00	NW-070322	U.S.-12-1/2%	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
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The following is a recapitulation of the acreage in the Carson Unit Area:

<u>Type of Land</u>	<u>Acres</u>	<u>Per Cent of Unit Area</u>
Total Federal Lands	12,683.76	77.50%
Total Indian Allotted Land	1,762.90	10.77%
<u>Total State Lands</u>	<u>1,919.12</u>	<u>11.73%</u>
Total Unit Lands	16,365.78	100.00%

MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

United States Geological Survey  
Drawer 1857  
Roswell, New Mexico

State of New Mexico  
Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico  
Attention A. L. Porter, Jr.  
Secretary - Director

State of New Mexico  
Commissioner of Public Lands  
P. O. Box 791  
Santa Fe, New Mexico  
Attention E. S. Johnny Walker, Commissioner

Humble Oil and Refining Company  
P. O. Box 2180  
Houston, Texas

El Paso Natural Gas Company  
P. O. Box 1492  
El Paso, Texas

Gas Producers Corporation  
Post Office Box 176  
Dallas, Texas

The First National Bank of Midland  
Trustee for Trust No. 204  
P. O. Box 1599  
Midland, Texas

Republic National Bank of Dallas  
For Account of Harriet M. Buchenan  
Dallas, Texas

Robert B. Aaronson  
150 Broadway  
New York City, New York

Leo A. Achtschin  
505 North Ervay Street  
Dallas 1, Texas

Daniel Alagna  
67-52 179th Street  
Flushing, New York

Kathryn D. Ashby  
P. O. Box 1854  
Midland, Texas

R. M. Barron  
P. O. Box 182  
Midland, Texas

George Bigar  
551 Fifth Avenue  
New York City, New York

Leonard Bluestone  
98 Fort Greene Place  
Brooklyn, New York

Reese Cleveland  
P. O. Box 46  
Midland, Texas

Myrtle Connor  
4253 Westmont Court  
Fort Worth 9, Texas

Leah B. Downey  
606 West Storey  
Midland, Texas

William Dubilier  
72 Esplanade  
New Rochelle, New York

Robert D. Duden  
612 Livestock Exchange Station  
Stockyards Station  
Kansas City, Missouri

Robert Murray Fasken  
1201 Bedford Drive  
Midland, Texas

## MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

2

Gerald Fitz-Gerald  
P. O. Box 1885  
Midland, Texas

Lewis Freed  
6307-A Bandera  
Dallas 25, Texas

Edward Grapel  
1304 New York Avenue  
Brooklyn 3, New York

Thomas M. Grodin  
110-26 68th Road  
Forest Hills, New York

W. Benton Harrison  
Ryder System Inc.  
P. O. Box 33816  
Miami 33, Florida

Mathilde M. Hebb  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Lee Etta Hedberg  
3001 Alton Road  
Fort Worth, Texas

Ina Belle Hightower  
2000 Mercantile Bank Building  
Dallas 1, Texas

Frank Jensis  
1615 Putnam Avenue  
Brooklyn, New York

Charles D. Karutz  
1731 NE 22nd Terrace  
Fort Lauderdale, Florida

Wallace S. Karutz  
118 Pennsylvanian Avenue  
Brooklyn, New York

Sam Kirschenbaum  
101 West 31st Street  
New York City 1, New York

Murray Langfelder  
930 East 7th Street  
Brooklyn 30, New York

Lawrence L. Lavalley  
Equitable Savings & Loan Association  
Willoughby and Pearl Street  
Brooklyn 1, New York

Marianne Weill Lester  
200 5th Avenue  
New York City, New York

Sidney E. Licht  
1400 East 31st Street  
Brooklyn, New York

William V. Licht  
1402 East 31st Street  
Brooklyn, New York

Morris Levine and William Levine  
8909 Ambassador Row  
Dallas, Texas

Myron Lidell and Nelly Lidell  
11 West 42nd Street  
New York City 36, New York

Harry Lipshy  
8909 Ambassador Row  
Dallas, Texas

Alexander S. Lo Re  
2365 Dean Street  
Brooklyn, New York

Ralph Lowe and Erma Lowe  
P. O. Box 832  
Midland, Texas

Harriet M. Maling  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

J. R. Martin and Lucille Martin  
P. O. Box 1247  
Midland, Texas

MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

3

Mrs. Olive Miller  
1201 Union Street  
Brooklyn, New York

Robert Mims  
2831 Republic National Bank Building  
Dallas, Texas

E. W. Mudge, Jr.  
2831 Republic National Bank Building  
Dallas, Texas

A. Wilbur Mylander  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Elmer L. Mylander  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Henry C. Mylander  
1213 Fidelity Building  
Baltimore, Maryland

Walter C. Mylander, Jr.  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

William F. Mylander  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore, Maryland

Lewis Otersen  
77 Logan Street  
Brooklyn, New York

Wroe Owens  
Perry-Brooks Building  
Austin, Texas

John A. Pace  
1735 Republic National Bank Building  
Dallas, Texas

Benjamin J. and Helen G. Pienkowski  
121 Bently Avenue  
Jersey City, New Jersey

J. F. Postelle  
P. O. Box 2326  
Odessa, Texas

Frank A. Schultz  
2630 Fidelity Union Tower  
Dallas, Texas

P. O. Sill  
1209 Bedford Street  
Midland, Texas

W. H. Sloan  
2000 Mercantile Bank Building  
Dallas 1, Texas

Betty Jean Mudge Stahl  
1735 Republic National Bank Building  
Dallas 22, Texas

J. Ralph Stewart  
P. O. Box 1254  
San Angelo, Texas

Guy A. Weill, Individually  
Guy A. Weill, Custodian  
c/o British American House  
200 Fifth Avenue  
New York City, New York

Marie Helene Weill  
5 Paddington Road  
Scarsdale, New York

Sid Weiss  
8909 Ambassador Row  
Dallas, Texas

Jan H. Westerman  
2575 Palisades Avenue, Apt. 8F  
Riverdale, New York

Albert B. Wilkes and Tekla Wilkes  
211 Autumn Avenue  
Brooklyn, New York

C. B. Yarbrough  
617 Melrose Hotel  
Dallas, Texas

Katherine B. Yarbrough  
P. O. Box 1471  
Midland, Texas



MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

4

Stanley F. Zacharek and Ann Zacharek  
166 Jewett Avenue  
Jersey City, New Jersey

Uska-ye-ni-sa  
aka Jim Pierce, Jr.  
P. O. Box 217  
Farmington, New Mexico

Sanda Wall  
Hatch Trading Post  
Hogback, New Mexico

Ray Canute  
P. O. Box 127  
Bloomfield, New Mexico

Al-so-ah or Dolly  
P. O. Box 217  
Farmington, New Mexico

Lena Jaquez or Jin-nit-pah  
aka Lena Tsosie and Billie Tsosie  
P. O. Box 217  
Farmington, New Mexico

Pauline Jaquez or Tien-ni-pah  
P. O. Box 217  
Farmington, New Mexico

Hoska-ye-ca-wood-price, or  
Oshka-gas-wood, or Hoska-yee-coz-wood  
aka Jim Pierce, Jr.  
P. O. Box 217  
Farmington, New Mexico

Herbert Platero and Mrs. Herbert Platero  
P. O. Box 217  
Farmington, New Mexico

Mahti-ye-ca-wood-price  
aka Frankie Pierce  
P. O. Box 217  
Farmington, New Mexico

Hoska-ge-hos-wood  
aka Jim Pierce  
P. O. Box 217  
Farmington, New Mexico

Uska-ye-ni-sa  
aka Steven Canuto  
P. O. Box 127  
Bloomfield, New Mexico

Yah-nei-bah  
or Harriett Jones  
P. O. Box 217  
Farmington, New Mexico

Woody or Wilbert Jaquez, or Hoska-ge-ne-wood  
aka Calvin Jaquez & Tommy Waty Jaquez  
P. O. Box 217  
Farmington, New Mexico

Jim Pierce, aka Jim Price  
and Mrs. Jim Pierce, Sr.  
P. O. Box 217  
Farmington, New Mexico

Glin-hi-ne-bah, or Glah-ni-bah  
or Mrs. Peter Dempsey and Mr. Peter Dempsey  
P. O. Box 217  
Farmington, New Mexico

Nah-ti-ye-ca-wood-price, or  
Frankie Pierce, or Nah-ti-yee-cas-wood  
or Yee-cas-wood  
P. O. Box 217  
Farmington, New Mexico



# SHELL OIL COMPANY

Post Office Box 1200  
Farmington, New Mexico

JUL 25 1961

Subject: Carson Unit No. 14-08-001-3485  
San Juan County, New Mexico  
"A" Plat For the Proposed  
Expansion of the Carson Unit Area

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

See Attached Mailing List for Interested Parties

We refer to our letter of July 18, 1961 wherein we proposed expansion of the Carson Unit to enable us to conduct secondary recovery operations.

We enclose for your inspection and files a plat showing the Proposed Expansion of the Carson Unit Area. This plat shows the existing Carson Unit outline and the proposed expanded Carson Unit outline which encompasses the Lease NM-070322. Also shown are the outlines of the Central Bisti Unit and the Proposed East Bisti Unit. With reference to the Central Bisti Unit, these properties were unitized July 1, 1959 and are presently under flooding operations. We understand that it is the plan of the operators involved in the Proposed East Bisti Unit to flood these properties with water. As mentioned in our previous letter dated July 18, 1961, we propose to water flood the Bisti-Gallup sandstone reservoir underlying the expanded Carson Unit. As you will note from the plat, the Lease NM-070322 is located between the western boundary of the existing Carson Unit and the eastern boundary of the Central Bisti Unit. Our plan is to include this property in the Carson Unit to facilitate the secondary recovery effort and maximize recovery.

We hope this plat will aid you in your decision to join with us in this undertaking.

Very truly yours,

F. W. Nantker  
Division Land Manager

PLG:MPD

Enclosure

MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

United States Geological Survey  
Drawer 1857  
Roswell, New Mexico

Robert Mims  
2831 Republic National Bank Building  
Dallas, Texas

Wroe Owens  
Perry-Brooks Building  
Austin, Texas

Betty Jean Mudge Stahl  
1735 Republic National Bank Building  
Dallas 22, Texas

Leo A. Achtschin  
505 North Ervay Street  
Dallas 1, Texas

Kathryn D. Ashby  
P. O. Box 1854  
Midland, Texas

George Bigar  
551 Fifth Avenue  
New York City, New York

Reese Cleveland  
P. O. Box 46  
Midland, Texas

Leah B. Downey  
606 West Storey  
Midland, Texas

Robert B. Duden  
612 Livestock Exchange Station  
Stockyards Station  
Kansas City, Missouri

Gerald Fitz-Gerald  
P. O. Box 1885  
Midland, Texas

Edward Grapel  
1304 New York Avenue  
Brooklyn 3, New York

Gas Producers Corporation  
Post Office Box 176  
Dallas, Texas

E. W. Mudge, Jr.  
2831 Republic National Bank Building  
Dallas, Texas

John A. Pace  
1735 Republic National Bank Building  
Dallas, Texas

Robert B. Aaronson  
150 Broadway  
New York City, New York

Daniel Alagna  
67-52 179th Street  
Flushing, New York

R. M. Barron  
P. O. Box 182  
Midland, Texas

Leonard Bluestone  
98 Fort Greene Place  
Brooklyn, New York

Myrtle Connor  
4253 Westmont Court  
Fort Worth 9, Texas

William Dubilier  
72 Esplanade  
New Rochelle, New York

Robert Murray Fasken  
1201 Bedford Drive  
Midland, Texas

Lewis Freed  
6307-A Bandera  
Dallas 25, Texas

Thomas M. Grodin  
110-26 68th Road  
Forest Hills, New York

MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

2

W. Benton Harrison  
Ryder System Inc.  
P. O. Box 33816  
Miami 33, Florida

Lee Etta Hedberg  
3001 Alton Road  
Fort Worth, Texas

Frank Jensis  
1615 Putnam Avenue  
Brooklyn, New York

Wallace S. Karuta  
118 Pennsylvanian Avenue  
Brooklyn, New York

Charles D. Karutz  
109 Puritan Avenue  
Forest Hills Gardens 75, New York

Sam Kirschenbaum  
101 West 31st Street  
New York City 1, New York

Murray Langfelder  
930 East 7th Street  
Brooklyn 30, New York

Lawrence L. Lavalley  
Equitable Savings & Loan Association  
Willoughby and Pearl Street  
Brooklyn 1, New York

Marianne Weill Lester  
200 5th Avenue  
New York City, New York

Sidney E. Licht  
1400 East 31st Street  
Brooklyn, New York

William V. Licht  
1402 East 31st Street  
Brooklyn, New York

Morris Levine  
8909 Ambassador Row  
Dallas, Texas

William Levine  
8909 Ambassador Row  
Dallas, Texas

Myron Lidell  
11 West 42nd Street  
New York City 36, New York

Myron Lidell and Nelly Lidell  
11 West 42nd Street  
New York City 36, New York

Harry Lipshy  
8909 Ambassador Row  
Dallas, Texas

Alexander S. Lo Re  
2365 Dean Street  
Brooklyn, New York

Ralph Lowe and Erma Lowe  
P. O. Box 832  
Midland, Texas

J. R. Martin and Lucille Martin  
P. O. Box 1247  
Midland, Texas

Mrs. Olive Miller  
1201 Union Street  
Brooklyn, New York

Lewis Otersen  
77 Logan Street  
Brooklyn, New York

Benjamin J. and Helen G. Pienkowski  
121 Bently Avenue  
Jersey City, New Jersey

J. F. Postelle  
P. O. Box 2326  
Odessa, Texas

Frank A. Schultz  
2630 Fidelity Union Tower  
Dallas, Texas

## MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

3

P. O. Sill  
1209 Bedford Street  
Midland, Texas

J. Ralph Stewart  
P. O. Box 1254  
San Angelo, Texas

Guy A. Weill, Custodian  
c/o British American House  
200 Fifth Avenue  
New York City, New York

Sid Weiss  
8909 Ambassador Row  
Dallas, Texas

Albert Wilkes  
211 Autumn Avenue  
Brooklyn, New York

C. B. Yarbrough  
617 Melrose Hotel  
Dallas, Texas

Stanley F. Zacharek  
166 Jewett Avenue  
Jersey City, New Jersey

The First National Bank of Midland  
Trustee for Trust No. 204  
P. O. Box 1599  
Midland, Texas

Ina Belle Hightower  
2000 Mercantile Bank Building  
Dallas 1, Texas

Edward C. Evenson  
309 Bank of America Building  
Beverly Hills, California

Woodrider Oil and Refining Company, Inc.  
321 West Douglas  
Wichita, Kansas

Henry C. Mylander  
1213 Fidelity Building  
Baltimore, Maryland

W. H. Sloan  
2000 Mercantile Bank Building  
Dallas 1, Texas

Gay A. Weill  
c/o British American House  
200 Fifth Avenue  
New York City, New York

Marie Helene Weill  
5 Paddington Road  
Scarsdale, New York

Jan H. Westerman  
2575 Palisades Avenue, Apt. 8F  
Riverdale, New York

Albert B. Wilkes and Tekla Wilkes  
211 Autumn Avenue  
Brooklyn, New York

Katherine B. Yarbrough  
P. O. Box 1471  
Midland, Texas

Stanley F. Zacharek and Ann Zacharek  
166 Jewett Avenue  
Jersey City, New Jersey

Republic National Bank of Dallas  
For Account of Harriet M. Buchenau  
Dallas, Texas

El Paso Natural Gas Company  
P. O. Box 1492  
El Paso, Texas

Laurence C. Kelly  
739 Haight Street  
San Francisco, California

El Dorado Refining Company  
306 Koch Building  
Wichita 2, Kansas

William F. Mylander  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore, Maryland

## MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

4

Walter C. Mylander, Jr.  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Harriet M. Maling  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

A. Wilbur Mylander  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Monsanto Chemical Company  
P. O. Box 1742  
Midland, Texas

State of New Mexico ← THIS COPY FOR  
Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico  
Attention A. L. Porter, Jr.  
Secretary - Director

Uska-ye-ni-sa  
aka Jim Pierce, Jr.  
P. O. Box 217  
Farmington, New Mexico

Sanda Wall  
Hatch Trading Post  
Hogback, New Mexico

Ray Canute  
P. O. Box 127  
Bloomfield, New Mexico

Al-so-ah or Dolly  
P. O. Box 217  
Farmington, New Mexico

Lena Jaquez or Jin-nit-pah  
aka Lena Tsosie and Billie Tsosie  
P. O. Box 217  
Farmington, New Mexico

Pauline Jaquez or Tien-ni-pah  
P. O. Box 217  
Farmington, New Mexico

Mathilde M. Hebb  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Elmer L. Mylander  
c/o Henry C. Mylander, Esq.  
1213 Fidelity Building  
Baltimore 1, Maryland

Humble Oil and Refining Company  
P. O. Box 2180  
Houston, Texas

State of New Mexico  
Commissioner of Public Lands  
P. O. Box 791  
Santa Fe, New Mexico  
Attention E. S. Johnny Walker, Commissioner

Nahti-ye-ca-wood-price  
aka Frankie Pierce  
P. O. Box 217  
Farmington, New Mexico

Hoska-ge-hos-wood  
aka Jim Pierce  
P. O. Box 217  
Farmington, New Mexico

Uska-ye-ni-sa  
aka Steven Canuto  
P. O. Box 127  
Bloomfield, New Mexico

Yah-nei-bah  
or Harriett Jones  
P. O. Box 217  
Farmington, New Mexico

Woody or Wilbert Jaquez, or Hoska-ge-ne-wood  
aka Calvin Jaquez & Tommy Waty Jaquez  
P. O. Box 217  
Farmington, New Mexico

Jim Pierce, aka Jim Price  
and Mrs. Jim Pierce, Sr.  
P. O. Box 217  
Farmington, New Mexico

MAILING LIST

Overriding Royalty Interest Owners  
Carson Unit Area

5

Glin-hi-ne-bah, or Glah-ni-bah  
or Mrs. Peter Dempsey and Mr. Peter Dempsey  
P. O. Box 217  
Farmington, New Mexico

Nah-ti-ye-ca-wood-price, or  
Frankie Pierce, or Nah-ti-yee-cas-wood  
or Yee-cas-wood  
P. O. Box 217  
Farmington, New Mexico

Hoska-ye-ca-wood-price, or  
Oshka-gas-wood, or Hoska-yee-coz-wood  
aka Jim Pierce, Jr.  
P. O. Box 217  
Farmington, New Mexico

Herbert Platero and Mrs. Herbert Platero  
P. O. Box 217  
Farmington, New Mexico



## SHELL OIL COMPANY

Post Office Box 1200  
Farmington, New Mexico

July 19, 1961

Subject: Eleventh Revision of The  
Participating Area for the  
Gallup Pool  
Carson Unit, San Juan County,  
New Mexico No. 14-08-001-3488

State of New Mexico  
Oil Conservation Commission  
P. O. Box 371  
Santa Fe, New Mexico

Attention A. L. Porter, Jr.  
Secretary - Director

Gentlemen:

We refer to our letter dated May 22, 1961, in regard to our Application for Approval of the Eleventh Revision of the Participating Area of the subject Unit, and also refer to your letter dated May 24, 1961 of the same subject. In this connection, we attach for your files and information copy of letter dated July 6, 1961 signed by John Anderson, Regional Oil and Gas Supervisor of the United States Geological Survey office in Roswell, New Mexico.

Concurrently with the Application for the Approval of the Eleventh Revision of the Participating Area, we gave notice of our intention to apply for an expansion of the Carson Unit which would provide that we would add 1,000 acres in U. S. Lease NM-070322 to the existing Unit. More detailed information in this matter is being forwarded under separate cover; however, we attach copy of letter dated July 5, 1961 from the U. S. Department of the Interior, Geological Survey, in Washington, D.C. giving us preliminary approval for this proposed expansion of the Carson Unit.

We trust these letters will complete your files to date and if we can do anything to assist you further in this matter, kindly advise.

Very truly yours,

For F. W. Mantker  
Division Land Manager

RAD:BG

Enclosures



SHELL OIL COMPANY  
Post Office Box 1200  
Farmington, New Mexico

JUL 18 1961

Subject: Carson Unit No. 14-08-001-3485  
San Juan County, New Mexico  
Notice of Preliminary Approval  
For The Proposed Expansion of  
The Carson Unit Area

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

State of New Mexico  
Oil Conservation Commission  
Post Office Box 871  
Santa Fe, New Mexico

Attention A. L. Porter, Jr.

Gentlemen:

Please refer to that certain Unit Agreement covering the Carson Unit No. 14-08-001-3485, San Juan County, New Mexico, dated June 13, 1956; which Unit was approved by the Acting Director of the United States Geological Survey November 15, 1956.

The Carson Unit, along with non-unitized U. S. Lease NM-070322, is situated between two other existing Units; that is, Central Bisti Lower Gallup Sand Unit on the west and the proposed East Bisti Unit to the east. Shell Oil Company is the sole Working Interest Owner covering all productive acreage within the Carson Unit, as well as U. S. Lease NM-070322. We propose to institute a water flood operation covering all of our holdings in the Carson Unit and including non-unitized U. S. Lease NM-070322 immediately west of the existing Unit. Therefore, in accordance with Article 2 of the Unit Agreement, we propose to expand the Carson Unit to include the 1,000 productive acres in U. S. Lease NM-070322, which lease has eighteen productive Gallup formation oil wells. This expansion will close the Carson Unit Area to contact the Central Bisti Unit Area, upon which secondary recovery operations are now being conducted.

Therefore, in accordance with Article 2.(b) of the Carson Unit Agreement, you are hereby given thirty days in which to submit any objections which you may have to this proposal. This proposed expansion will increase the Carson Unit Area to 16,365.78 acres and assist us in initiating necessary secondary recovery operations within the expanded Carson Unit.

In the absence of noticeable objections to this plan of expansion we propose that this proposed plan of Unit expansion be given an effective date of August 1, 1961.

For your convenience in considering our request, we attach the following:

1. Exhibit "B", revised to show new Carson Unit lease data.
2. Notice of Proposed Expansion of the Carson Unit Area.

If you have any further questions in this regard please feel free to call upon us.

Very truly yours,



For F. W. Nantker  
Division Land Manager

RAD:BG

Attachments

cc - The Director  
United States Geological Survey

Through

Supervisor  
United States Geological Survey  
Drawer 1857  
Roswell, New Mexico

REVISED EXHIBIT "B" - CARSON UNIT AREA

San Juan County, New Mexico

Tract No.	Description of Land	No. of Acres	Serial No. & Date of Lease	Basic Royalty & Percentage	Lessee of Record	O.R.R. & Percentage	Working Interest & Percentages
FEDERAL LANDS							
1.	T. 25 N., R. 11 W., N.M.P.M. Sec. 17: S/2 Sec. 20: W/2 Sec. 29: All	1280.00	SF-078061 Feb. 1, 1948	U. S. - 12- $\frac{1}{2}$ %	Shell Oil Company		
						Oil Payment of \$100 per acre out of 1.5% of the production distributed as follows: Gas Producers Corp. 00.75000% Republic Nat'l. Bank of Dallas for account of Robert Mims - 00.28125% E.W. Mudge, Jr. - 00.18750% Wroe Owens - 00.01875% John A. Pace - 00.01875% Republic Nat'l. Bank of Dallas for account of Betty Jean Mudge Stahl - 00.15000% Republic Nat'l Bank of Dallas for account of Harriet M. Buchanan - 00.09375%	Shell Oil Company 100%
						Overriding Royalty of 3.5% distributed as follows: Robert B. Aaronson - 00.04862% Leo A. Achtschuln - 00.09727%	

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

2

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>Working Interest &amp; Percentage</u>
				<u>0.R.R. &amp; Percentage</u>		
					Daniel Alagna -	
				00.00609%		
					Kathryn D. Ashby -	
				00.09727%		
					R. M. Barron &	
					Lucille C. Barron -	
				00.19442%		
					Georges Bigar -	
				00.03647%		
					Leonard Bluestone -	
				00.03038%		
					Reese Cleveland &	
					Rozelle B. Cleveland -	
				00.19442%		
					Myrtle Connor -	
				00.04862%		
					Leah B. Downey -	
				00.14588%		
					William & Florence D.	
					Dublier - 00.03647%	
					Robert D. Duden &	
					Nancy Mae Duden -	
				00.19442%		
					Robert Murray Fasken,	
					Executor & Trustee under	
					the Will of Andrew	
					Fasken, Deceased -	
				00.09720%		
					Gerald Fitz-Gerald &	
					Elizabeth Fitz-Gerald -	
				00.09727%		
					Lewis Freed - 00.01943%	
					Edward Grepel & Pearl	
					Grapel - 00.00609%	
					Thomas W. & Rhina	
					Grodin - 00.00910%	

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

3

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
					W. Benton Harrison & Mildred P. Harrison - 00.01214%		
					Lee Etta Hedberg as Her Separate Property and Estate - 00.04862%		
					Frauk Jensis & Margaret Jensis - 00.01214%		
					Wallace S. Karutz - 00.01824%		
					Charles D. & Lucy S. Karutz - 00.02429%		
					Sam Kirschenbaum & Sarah Ada Kirschenbaum - 00.00609%		
					Murray Langfelder - 00.00609%		
					Lawrence L. Lavalie - 00.02429%		
					Marianne Weill Lester - 00.01214%		
					Sidney E. Licht - 00.00609%		
					William V. Licht - 00.04249%		
					Morris Levine - 00.01943%		
					William Levine - 00.01943%		
					Myron Liddell - 00.01214%		
					Myron Liddell & Nelly Liddell - 00.01214%		
					Harry Lipsby - 00.01943%		

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

4

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest, &amp; Percentages</u>
					Alexander S. Lo Re - 00.01218%		
					Ralph Lowe and Erma Lowe - 00.19442%		
					J. R. Martin & Lucille Martin - 00.19442%		
					Mrs. Olive Miller - 00.00305%		
					Lewis Otersen - 00.01824%		
					Benjamin J. & Helen G. Plenkowski - 00.01218%		
					J. F. Postelle & Jessie Postelle - 00.19442%		
					Frank A. Schultz - 00.19442%		
					P.O. Still - 00.04862%		
					W. H. Sloan & Alberta Sloan - 00.09721%		
					Ina Belle Hightower - 00.09721%		
					J. Ralph Stewart & Viola Stewart - 00.19442%		
					Guy A. Weill - 00.01214%		
					Guy A. Weill, Custodian - 00.02429%		
					Marie Belene Weill - 00.01214%		
					Sid Weles - 00.01943%		
					Jan H. Westerman - 00.09723%		
					Albert Wilkes - 00.00609%		

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

5

Tract No.	Description of Land	No. of Acres	Serial No. & Date of Lease	Basic Royalty & Percentage	Lessee of Record	U.R.R. & Percentage	Working Interest & Percentages
2.	T. 25 N., R. 11 W., N.M.P.M. Sec. 5: SW/4 Sec. 6: Lots 1 and 2, S/2 NE/4, SE/4 Sec. 8: All Sec. 17: NE/4 Sec. 18: SE/4	1440.30	SF-078062 Fe. 1, 1948	U. S. - 12- <del>3</del> / <del>4</del>	Shell Oil Company	Same as Tract No. 1	Shell Oil Company - 100%
3.	T. 25 N., R. 11 W., N.M.P.M. Sec. 7: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (All) Sec. 19: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (All) Sec. 30: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (All) Sec. 31: Lots 1, 2, 3 and 4 E/2 W/2, E/2 (All)	2563.86	SF-078063 Feb. 1, 1948	U. S. - 12- <del>3</del> / <del>4</del>	Shell Oil Company	Same as Tract No. 1	Shell Oil Company - 100%

Albert B. Wilkes &  
Tekla Wilkes - 00.01214%  
C. B. Yarbrough - 00.09727%  
Katherine B. Yarbrough -  
00.09727%  
Stanley F. Zacharek -  
00.00609%  
Stanley F. Zacharek &  
Ann Zacharek - 00.00609%  
The First Nat'l. Bank  
of Midland, Trustee  
for Trust No. 204 -  
00.19442%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

6

Tract No.	Description of Land	No. of Acres	Serial No. & Date of Lease	Basic Royalty & Percentage	Lessee of Record	O.R.R. & Percentage	Working Interest & Percentages
4.	T. 25 N., R. 12 W., N.M.P.M. Sec. 1: Lots 1, 2, 3 and 4 S/2 N/2, S/2 (A11) Sec. 12: A11 Sec. 13: A11 Sec. 24: A11	2559.60	SF-078064 Feb. 1, 1948	U. S. - 12- $\frac{1}{2}$ %	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
5.	T. 25 N., R. 12 W., N.M.P.M. Sec. 26: NW/4	160.00	SF-078066 Feb. 1, 1948	U. S. - 12- $\frac{1}{2}$ %	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
6.	T. 25 N., R. 12 W., N.M.P.M. Sec. 11: A11 Sec. 14: A11 Sec. 23: A11 Sec. 26: NE/4	2080.00	SF-078067 Feb. 1, 1948	U. S. - 12- $\frac{1}{2}$ %	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
7.	T. 25 N., R. 12 W., N.M.P.M. Sec. 25: A11 Sec. 26: S/2 Sec. 35: A11	1600.00	SF-078068	U. S. - 12- $\frac{1}{2}$ %	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%
8.	T. 25 N., R. 12 W., N.M.P.M. Sec. 10: E/2, E/2 SW/4 Sec. 15: NE/4, E/2 NW/4, S/2 Sec. 22: NE/4 NE/4	1000.00	NM-070322	U. S. - 12- $\frac{1}{2}$ %	Shell Oil Company	Same as Tract No. 1	Shell Oil Company 100%

Total Federal Lands - 12,683.76 acres or 77.50% of Unit Area



Tract No.	Description of Land	No. of Acres	Serial No. & Date of Lease	Basic Royalty & Percentage	Lessee of Record	O.R.R. & Percentage	Working Interest & Percentages
<b>INDIAN ALLOTTED LANDS</b>							
9.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 18: NE/4</u>	160.00	14-20-603-1283 Feb. 2, 1956	Nah-ti-ye-ca- wood-price - 12- $\frac{1}{2}$ %	Shell Oil Company	None	Shell Oil Company 100%
10.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 18: Lots 1 and 2,</u> <u>E/2 NW/4</u>	160.77	14-20-603-1284 Feb. 2, 1956	Hoska-ge-hos- wood - 12- $\frac{1}{2}$ %	Shell Oil Company	None	Shell Oil Company 100%
11.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 18: Lots 3 and 4,</u> <u>E/2 SW/4</u>	161.07	14-20-603-1285 Feb. 7, 1956	Uska-ye-ni-sa - 12- $\frac{1}{2}$ %	Shell Oil Company	None	Shell Oil Company 100%
12.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 5: Lots 1 and 2,</u> <u>S/2 NE/4</u>	160.64	14-20-603-1337 March 19, 1956	Yah-nei-bah or Harriett - 12- $\frac{1}{2}$ %	Humble Oil Company	None	Humble Oil Company 100%
13.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 5: SE/4</u>	160.00	14-20-603-1338 March 19, 1956	Al-so-ah or Dolly - 12- $\frac{1}{2}$ %	Humble Oil Company	None	Humble Oil Company 100%
14.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 6: Lots 3, 4 and 5,</u> <u>SE/4 NW/4</u>	160.22	14-20-603-1339 Aug. 16, 1956	Hi-ge-di-pah- or Hattie Pierce Jacquez	Humble Oil Company	None	Humble Oil Company 100%
15.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 6: Lots 6 and 7,</u> <u>E/2 SW/4</u>	159.72	14-20-603-1340 March 23, 1956	Glip-pah Price	Humble Oil Company	None	Humble Oil Company 100%
16.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 5: Lots 3 and 4,</u> <u>S/2 NW/4</u>	160.48	14-20-603-1359 Aug. 15, 1956	Yiehth-pah or Farina	Monsanto Chemical Company	None	Monsanto Chemical Company - 100%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

8

Tract No.	Description of Land	No. of Acres	Serial No. & Date of Lease	Basic Royalty & Percentage	Lessee of Record	O.R.R. & Percentage	Working Interest & Percentages
17.	T. 25 N., R. 11 W., N.M.P.M. Sec. 17: NW/4	160.00	14-20-603-1435 March 28, 1956	Santa Wall - 12- $\frac{3}{4}$ %	Shell Oil Company	None	Shell Oil Company 100%
18.	T. 25 N., R. 11 W., N.M.P.M. Sec. 20: NE/4	160.00	14-20-603-1440 Feb. 3, 1956	Uska-ye-ni- sa - 12- $\frac{3}{4}$ %	Shell Oil Company	None	Shell Oil Company 100%
19.	T. 25 N., R. 11 W., N.M.P.M. Sec. 20: SE/4	160.00	14-20-603-1441 Feb. 3, 1956	Ray Camute	Shell Oil Company	None	Shell Oil Company 100%

Total Indian Allotted Lands - 1,762.90 acres or 10.77% of Unit Area

STATE LANDS

20.	T. 25 N., R. 11 W., N.M.P.M. Sec. 32: S/2 NE/4, SW/4, SE/4 SE/4	280.00	B-10894-6 Jan. 1, 1944	State of New Mexico - 12- $\frac{3}{4}$ %	Woodriver Oil and Refining Company, Inc. El Dorado Refining Company	None	Woodriver Oil and Refining Company, Inc. - 50% El Dorado Refining Company - 50%
21.	T. 25 N., R. 11 W., N.M.P.M. Sec. 32: N/2 NE/4, N/2 SE/4, SW/4 SE/4	200.00	E-3148-1 Dec. 10, 1949	State of New Mexico - 12- $\frac{3}{4}$ %	El Paso Natural Gas Products Company	John Burroughs - 5%	El Paso Natural Gas Products Company - 100%
22.	T. 25 N., R. 11 W., N.M.P.M. Sec. 32: N/2 NW/4	80.00	E-5622-1 Oct. 1, 1951	State of New Mexico - 12- $\frac{3}{4}$ %	Shell Oil Company	William F. Mylander - 1.34% Walter C. Mylander, Jr. - .33% Ruthilde M. Hebb - .33% Henry A. Mylander - .33% Harriet M. Maling - .33%	Shell Oil Company - 100%

REVISED EXHIBIT "B" - CARSON UNIT AREA  
San Juan County, New Mexico (Cont'd.)

<u>Tract No.</u>	<u>Description of Land</u>	<u>No. of Acres</u>	<u>Serial No. &amp; Date of Lease</u>	<u>Basic Royalty &amp; Percentage</u>	<u>Lessee of Record</u>	<u>O.R.R. &amp; Percentage</u>	<u>Working Interest &amp; Percentages</u>
23.	<u>T. 25 N., R. 11 W., N.M.P.M.</u> <u>Sec. 32: S/2 NE/4</u>	80.00	E-6223 May 16, 1952	State of New Mexico - 12- $\frac{1}{2}\%$	Edward C. Evensen	None	Edward C. Evensen 100%
24.	<u>T. 25 N., R. 12 W., N.M.P.M.</u> <u>Sec. 2: Lots 1, 2, 3 and 4,</u> <u>S/2</u> Sec. 36: S/2	799.12	E-6597 Oct. 7, 1952	State of New Mexico - 12- $\frac{1}{2}\%$	Laurence C. Kelly, Trustee and El Paso Natural Gas Products Company	J. D. Middleton - 1/4 of 1% L. C. Kelly - 5%	Laurence C. Kelly, Trustee - 50% El Paso Natural Gas Products Company - 50%
25.	<u>T. 25 N., R. 12 W., N.M.P.M.</u> <u>Sec. 2: S/2 N/2</u>	160.00	E-6633 Nov. 10, 1952	State of New Mexico - 12- $\frac{1}{2}\%$	El Paso Natural Gas Products Company	None	El Paso Natural Gas Products Company
26.	<u>T. 25 N., R. 12 W., N.M.P.M.</u> <u>Sec. 36: N/2</u>	320.00	E-6644-1 Nov. 14, 1952	State of New Mexico - 12- $\frac{1}{2}\%$	Laurence C. Kelly - Trustee	Laurence C. Kelly - 2%	Laurence C. Kelly - 100%

TOTAL STATE LANDS - 1,919.12 acres or 11.73% of Unit Area

**TOTAL UNIT AREA - 16,365.78 acres**

NOTICE OF PROPOSED EXPANSION OF  
CARSON UNIT AREA

TO THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY, THE STATE OF NEW MEXICO AND THE LESSEES, LESSORS, WORKING INTEREST OWNERS AND OTHER PARTIES WHO HAVE EXECUTED THE UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE CARSON UNIT AREA:

The undersigned SHELL OIL COMPANY, as UNIT OPERATOR, hereby notifies you that it proposes to expand the area (hereinafter referred to as "unit area") subject to the UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE CARSON UNIT, COUNTY OF SAN JUAN, STATE OF NEW MEXICO, No. 14-08-001-3485, and approved by the Acting Director of the United States Geological Survey November 15, 1956 and by the Acting Commissioner of Indian Affairs November 14, 1956 to include therein, effective as of the first day of the month following approval by the Director, the following described lands, located in San Juan County, New Mexico, to wit:

Township 25 North, Range 11 West, N.M.P.M.

Section 5: Lots 1, 2, 3, 4, S/2 N/2, S/2 (All)  
Section 6: Lots 1 through 7, S/2 NE/4, SE/4 NW/4, E/2 SW/4, SE/4 (All)  
Section 7: Lots 1, 2, 3, 4, E/2 W/2, E/2 (All)  
Section 8: All  
Section 17: All  
Section 18: Lots 1, 2, 3, 4, E/2 W/2, E/2 (All)  
Section 19: Lots 1, 2, 3, 4, E/2 W/2, E/2 (All)  
Section 20: All  
Section 29: All  
Section 30: Lots 1, 2, 3, 4, E/2 W/2, E/2 (All)  
Section 31: Lots 1, 2, 3, 4, E/2 W/2, E/2 (All)  
Section 32: All

Township 25 North, Range 12 West, N.M.P.M.

Section 1: Lots 1, 2, 3, 4, S/2 N/2, S/2 (All)  
Section 2: Lots 1, 2, 3, 4, S/2 N/2, S/2 (All)  
Section 10: E/2, E/2 SW/4  
Section 11: All  
Section 12: All  
Section 13: All  
Section 14: All  
Section 15: NE/4, E/2 NW/4, S/2  
Section 22: NE/4 NE/4  
Section 23: All  
Section 24: All  
Section 25: All  
Section 26: All  
Section 35: All  
Section 36: All

containing 16,365.78 acres more or less, of which 1,000.00 acres more or less, as indicated by underlining, will be additional (hereinafter sometimes called "additional lands") due to the expansion herein requested.

1 A plat outlining the present boundaries of the unit area and the  
2 lands to be added thereto as a result of such expansion is attached hereto.  
3 The undersigned has previously obtained preliminary concurrence of the United  
4 States Geological Survey to the <sup>affirmed</sup> expansion of the unit area.

5 Such expansion is necessary and advisable for the purpose of the  
6 Unit Agreement and to conserve natural resources in that maximum production  
7 may be obtained only through operations for the secondary recovery of unitized  
8 substances. Said secondary recovery operations, in order to prevent economic  
9 waste, must include said additional lands, as well as lands presently unitized  
10 under a <sup>?</sup> single unitized plan of operation.

11 In accordance with Section 2 of said Unit Agreement, if you have  
12 any objections to such expansion of the unit area, such objections must be  
13 delivered in writing to the undersigned at Post Office Box 1200, Farmington,  
14 New Mexico within thirty (30) days.

15 SHELL OIL COMPANY

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17   
18 Division Land Manager

19 Dated: JUL 18 1961, 1961.  
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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
Drawer 1857  
Roswell, New Mexico

July 6, 1961

Shell Oil Company  
P.O. Box 1200  
Farmington, New Mexico

Attention: Mr. F. W. Nantker

Gentlemen:

Your application of May 22, 1961, for the eleventh expansion of the Gallup participating area, for the Carson unit agreement, San Juan County, New Mexico, was approved June 12, 1961, by the Acting Director of the Geological Survey, effective as of May 1, 1961.

At your next opportunity please check the acreage in the participating area and make appropriate corrections consistent with our long-standing practice of including within the participating area all lands considered proved to be productive regardless of commitment. It seems that in your fourth, tenth and eleventh revisions a small tract of noncommitted land was incorrectly excluded in the acreage count, i.e., all acreage should be counted in the summaries even though the noncommitted portions are given a zero allocation in the schedule. Accordingly, it appears that the total participating acreage through the eleventh revision should be 6084.15 instead of 5924.15 you have shown. If the noncommitted land now can be committed, this confusion would be eliminated, and appropriate adjustments in the acreage count could be made upon consummation of the commitment.

Enclosed are five copies of the approved application. It is assumed that you will furnish the State of New Mexico and any other interested party with appropriate evidence of this approval.

Very truly yours,  
(Orig. Sgd.) JOHN A. ANDERSON

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Copy to: Washington (ltr. only)

Farmington (cy appln.)  
BLM, Santa Fe (w/cy appln.)  
NMOCC, Santa Fe (ltr. only)

May 24, 1961

Shell Oil Company  
P. O. Box 1240  
Farmington, New Mexico

Re: Eleventh Revision of the  
Gallup Participating Area,  
Carson Unit, San Juan County,  
New Mexico

Gentlemen:

The Commissioner of Public Lands has this date approved the Eleventh Revision of the Gallup Participating Area for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Oil Conservation Commission.

Nine approved copies of the application are handed to Mr. F. W. Nantker.

Very truly yours,

E. S. JOHNNY WALKER  
COMMISSIONER OF PUBLIC LANDS

ESW/mmcr/s

cc:

US Geological Survey  
Roswell, New Mexico

Oil Conservation Commission  
Santa Fe, New Mexico

CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

May 24, 1961

Shell Oil Company  
P. O. Box 1200  
Farmington, New Mexico

Re: Eleventh Revision of the  
Gallup Participating Area,  
Carson Unit, San Juan County,  
New Mexico

Gentlemen:

This is to advise that the New Mexico Oil  
Conservation Commission has this date approved the Eleventh  
Revision of the Gallup Participating Area for the Carson  
Unit, San Juan County, New Mexico, subject to like approval  
by the United States Geological Survey and the Commissioner  
of Public Lands of the State of New Mexico.

Eleven approved copies of the application are  
handed to Mr. F. W. Hantker.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/JEK/og

cc: Commissioner of Public Lands - Santa Fe  
U. S. Geological Survey - Roswell





# SHELL OIL COMPANY

P. O. Box 1200  
Farmington, New Mexico

May 23, 1961

Subject: Application for approval of the  
Eleventh Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Supervisor  
United States Geological Survey  
Roswell, New Mexico

Dear Sir:

We enclose nine copies of Application for Approval of the Eleventh Revision of the Participating Area for the Gallup (Upper Cretaceous) Pool - Carson Unit, San Juan County, New Mexico, No. 14-08-001-3488 for your consideration, which is in accordance with the subject unit agreement. Upon approval of the Eleventh Revision, we plan to apply to the Director to expand the unit to the west pursuant to Paragraph 2 of said unit agreement to join with the Central Bisti Unit, and upon preliminary approval of this expansion and agreement of the parties involved, we shall submit to the Director a Twelfth Revision of the participating area. Meanwhile, we intend to commit our recently acquired Sanda Wall Tract No. 16 (Northwest 1/4 of Section 17, Range 25-North, Township 11-West, N.M.P.M., San Juan County, New Mexico) under the subsequent joinder Paragraph 30 of the unit agreement.

Upon completion of the above steps, we plan to submit a Plan of Development pursuant to Paragraph 10, which will encompass our proposed water flood, copies of our plan having heretofore been furnished you. We feel the Eleventh Revision is essential to our flood plans.

Very truly yours,

SHELL OIL COMPANY

*F. W. Nantker*  
F. W. Nantker  
Division Land Manager

Attachments

*See also letter to Mr. [unclear] dated [unclear]*



# SHELL OIL COMPANY

Post Office Box 1200  
Farmington, New Mexico

May 22, 1961

Subject: Application for approval of the  
Eleventh Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capital Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Eleventh Revision of the Participating Area for the Carson Unit.

The proposed Eleventh Revision adds the following acreage to the Participating Area:

Township 25 North, Range 11 West, N.M.P.M.

Section 7: Lot 3, NE/4 SW/4  
Section 17: NE/4 NW/4, N/2 NE/4  
Section 19: SE/4, E/2 SW/4, Lot 3  
Section 20: SE/4, S/2 SW/4, SE/4 NE/4

Township 25 North, Range 12 West, N.M.P.M.

Section 11: NW/4 NW/4  
Section 12: N/2 SW/4, S/2 SE/4  
Section 23: SE/4 NW/4, N/2 SE/4, SE/4 SE/4  
Section 24: SW/4 SW/4  
Section 25: N/2 NW/4, NW/4 NE/4

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

2

New Mexico Oil Conservation

Commissioner of Public Lands

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon the original Participating Area and each addition thereto including the proposed Eleventh Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto the Geologic and Engineering Report for the proposed Eleventh Revision which supports the recommended revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Eleventh Revision to be effective May 1, 1961.

Very truly yours,

SHELL OIL COMPANY



F. W. Nantker  
Division Land Manager

Attachments

Approved this 24th day of  
May, 1961

New Mexico Oil Conservation Commission

By 

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1961

Commissioner of Public Lands

By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1961

U. S. Geological Survey

By \_\_\_\_\_

EXHIBIT "B" - PROPOSED ELEVENTH REVISION

Schedule of Lands Entitled to Participate

Lease:	SF-078061
Lessee:	Shell Oil Company
Participating Acreage:	640.00
Percentage of Participation:	10.8033
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: S/2 Section 20: W/2
Lease:	SF-078062
Lessee:	Shell Oil Company
Participating Acreage:	320.00
Percentage of Participation:	5.4016
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: NE/4 Section 18: SE/4
Lease:	SF-078063
Lessee:	Shell Oil Company
Participating Acreage:	962.29
Percentage of Participation:	16.2436
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 19: All Section 7: Lots 3 and 4, E/2 SW/4, S/2 SE/4 Section 30: Lot 1, NE/4 NW/4
Lease:	SF-078064
Lessee:	Shell Oil Company
Participating Acreage:	1520.00
Percentage of Participation:	25.6578
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 12: SW/4, S/2 SE/4 Section 13: All Section 24: All
Lease:	SF-078067
Lessee:	Shell Oil Company
Participating Acreage:	1520.00
Percentage of Participation:	25.6578
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 11: S/2, SW/4 NE/4, S/2 NW/4, NW/4 NW/4 Section 14: All Section 23: NE/4, N/2 SE/4, SE/4 SE/4, N/2 NW/4, SE/4 NW/4
Lease:	SF-078068--A
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	2.7008
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 25: N/2 N/2

Lease: Indian Allotted Lands 14-20-603-1283  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 2.7008  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: NE/4

Lease: Indian Allotted Lands 14-20-603-1284  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.77  
 Percentage of Participation: 2.7138  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 1 and 2, E/2 NW/4

Lease: Indian Allotted Lands 14-20-603-1285  
 Lessee: Shell Oil Company  
 Participating Acreage: 161.07  
 Percentage of Participation: 2.7189  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 3 and 4, E/2 SW/4

Lease: Indian Allotted Lands 14-20-603-1435  
 Lessee: Shell Oil Company \*\*  
 Participating Acreage: 160.00  
 Percentage of Participation: 0.0000 (Not committed to Unit)  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: NW/4

Lease: Indian Allotted Lands 14-20-603-1440  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 2.7008  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 20: NE/4

Lease: Indian Allotted Lands 14-20-603-1441  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 2.7008  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 20: SE/4

Summary:	<u>Acres</u>	<u>Per Cent</u>
Total Federal Lands	5122.29	86.4649
Total Indian Lands	801.84 *	13.5351
Total Productive Acreage	5924.13	100.0000

\* Excludes 160 acres, Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.

\*\* Effective February 1, 1961 the Mobil Oil Company's (formerly Magnolia Petroleum Company) interest in this lease was transferred to the Shell Oil Company, the present lessee of record.

GEOLOGIC AND ENGINEERING REPORT  
PROPOSED ELEVENTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

A thorough review of all the available geological and engineering data was conducted after the primary development of the Carson Unit was completed in 1960. This study included the re-evaluation of Net Microlog Pay assigned to each well and the construction of a new Isopach Map (see attached map).

As a result of this review the conclusion was reached that all lands within the zero isopach are reasonably proved to be productive of unitized substances in paying quantities and should be included in the Participating Area. This conclusion conforms essentially with the suggestion outlined in the letter to Shell Oil Company from the Acting Oil and Gas Supervisor, United States Geological Survey, Roswell, New Mexico, dated April 2, 1959.

We, therefore, recommend increasing the Participating Area of the Carson Unit by 1280.48 acres. The lands in the Participating Area thus revised are as follows:

Township 25 North, Range 11 West, N.M.P.M.  
Section 7: Lots 3 and 4, E/2 SW/4, S/2 SE/4  
Section 17: All  
Section 18: All  
Section 19: All  
Section 20: All  
Section 30: Lot 1, NE/4 NW/4

Township 25 North, Range 12 West, N.M.P.M.  
Section 11: S/2, SW/4 NE/4, S/2 NW/4, NW/4 NW/4  
Section 12: SW/4, S/2 SE/4  
Section 13: All  
Section 14: All  
Section 23: NE/4, N/2 SE/4, SE/4 SE/4, N/2 NW/4,  
SE/4 NW/4  
Section 24: All  
Section 25: N/2 N/2

It is further recommended that the effective date of the Eleventh Revision of the Participating Area be May 1, 1961, the first of the month during which the above-mentioned acreage was determined to be productive in paying quantities.

SHELL OIL COMPANY

*W. M. Marshall*

W. M. Marshall  
Division Exploitation Engineer  
Farmington Division

Attachment - Isopach Net Microlog Pay  
Gallup Sandstone



# SHELL OIL COMPANY

*Case 1085*

Post Office Box 158  
Farmington, New Mexico

February 19, 1960

Subject: Bisti Field  
Carson Unit Agreement No. 2576

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:



Enclosed herewith for your files please find a copy of a letter dated February 16, 1960, from the United States Geological Survey advising of their approval of the Tenth Revision of the Carson Unit.

Very truly yours,

*F. W. Nantker*

For F. W. Nantker  
Division Land Manager

## Enclosure

- cc - New Mexico Oil Conservation Commission  THIS COPY FOR   
Santa Fe, New Mexico
- Commissioner of Public Lands  
Santa Fe, New Mexico
  - Humble Oil and Refining Company  
Houston, Texas



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

P. O. Box 6721  
Roswell, New Mexico

**IN REPLY REFER TO:**

February 16, 1960

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Gentlemen:

Your application of December 14, 1959, for approval of the tenth revision (290.53 acres) of the Gallup Sandstone participating area (new total - 4,802.65 acres), under the Carson unit agreement, New Mexico, No. 14-03-091-3435, was approved by the Acting Director, U. S. Geological Survey, on February 8, 1960.

Three copies of the approved application are enclosed. Please furnish all other interested parties with appropriate evidence of this approval.

Very truly yours,

ANDERSON  
Regional Oil and Gas Supervisor

ILLEGIBLE

## FARMINGTON LAND

FEB 19 1960



NEW MEXICO OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

12/30/59

December 30, 1959

C  
Shell Oil Company  
P. O. Box 158  
Farmington, New Mexico

O  
ATTENTION: MR. F. W. NANTKER

RE: Tenth Revision Gallup  
Participating Area  
Carson Unit, San Juan  
County, New Mexico.

P  
Gentlemen:

Y  
This is to advise that the New Mexico Oil Conservation  
Commission has this date approved the Tenth Revision of the Gallup  
Participating Area for the Carson Unit, San Juan County, New Mexico,  
subject to like approval by the United States Geological Survey  
and the Commissioner of Public Lands of the State of New Mexico.

Eight approved copies of the application were forwarded  
to the Commissioner of Public Lands.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/JEK:ig

cc: US Geological Survey - Roswell  
Commissioner of Public Lands - Santa Fe



# SHELL OIL COMPANY

Post Office Box 158  
Farmington, New Mexico

DEC 15 1959

Subject: Bisti Field - Carson Unit  
Proposed Tenth Revision  
of the Participating Area

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Attention D. S. Nutter

Gentlemen:

We enclose for your consideration and approval nine copies of our proposed Tenth Revision of the Participating Area for the Carson Unit. Attached to each copy of our application for approval please find the following:

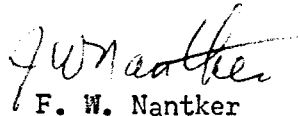
1. Land Map Marked Exhibit "A"
2. Schedule of Lands Entitled to Participate
3. Geological and Engineering Report
4. Isopach of Net Microlog Pay

The proposed Tenth Revision of the Participating Area of the Carson Unit was first submitted on March 4, 1959. This revision was approved by the New Mexico Oil Conservation Commission and the State Land Office. The United States Geological Survey returned this proposed Tenth Revision with a request that we include a total of 1040 additional acres located on the fringes of the present field development. This request was evaluated and reservoir engineering data was furnished to the United States Geological Survey. Out of 1040 acres proposed by the United States Geological Survey to be added to the Tenth Revision of the Participating Area, it was felt that 200 acres are reasonably proven productive of hydrocarbons in commercial quantities. We have included this additional 200 acres in our revised Tenth Revision of the Participating Area.



We request that you approve this revision and also obtain the approval of the Commissioner of Public Lands. We would then appreciate your forwarding seven copies to the United States Geological Survey in Roswell, New Mexico, retaining one copy for your files and one copy for the Commissioner of Public Lands.

Very truly yours,



F. W. Nantker  
Division Land Manager

Enclosures

- cc - Commissioner of Public Lands
- U. S. Geological Survey  
Roswell, New Mexico
- U. S. Geological Survey  
Farmington, New Mexico

GEOLOGIC AND ENGINEERING REPORT  
PROPOSED TENTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Tenth Revision of Participating Area in the Carson Unit. This revision adds 280.53 acres to the Participating Area for a total of 4803.65 acres. Forty acres of the addition are held by Mobil Oil Company (formerly Magnolia Petroleum Company) who have not joined the Carson Unit; this addition gives Mobil a total of 120 acres in the Participating Area which are not committed to the unit.

WELL DATA

Carson Unit 24-7

Location: 660' N and 1971' E of SW Corner, Section 7, T25N, R11W, NMPM

Total Depth: 5040'

Perforated Intervals: 4910-4932, 4956-4966, 4972-4986, 4992-5002

Microlog Pay: 11'

Pay Without Separation: 3'

Initial Production: Pumped 270 B/D gross, 0.4% cut, with a GOR of 480 cu. ft./bbl. after recovering load and fracture oil.

Completed: November 12, 1958

Carson Unit 13-12

Location: 1980' N and 660' E of SW Corner, Section 12, T25N, R12 W, NMPM

Total Depth: 5055'

Perforated Intervals: 4914-4941, 4973-4987, 4991-5007

Microlog Pay: 0'

Pay Without Separation: 0'

Initial Production: Pumped 25 B/D gross, 0.2% cut, with a GOR of 640 cu. ft./bbl. after recovering load and fracture oil.

Completed: October 5, 1958

Carson Unit 3

Location: 530' E and 1818' N of SW Corner, Section 7, T25N, R11W, NMPM

Total Depth: 5048'

Perforated Intervals: 4882-4900, 4939-67

Microlog Pay: 5'

Pay Without Separation: 0'

Initial Production: Pumped 59 B/D gross, 0.1% cut with a GOR of 660 cu. ft./bbl. after recovering load and fracture oil.

Completed: October 12, 1957

Carson Unit 31-17

Location: 658' S and 1975' W of NE Corner, Section 17, T25N, R11W, NMPM  
Total Depth: 5040'  
Perforated Intervals: 4910-4930, 4938-4954  
Microlog Pay: 0'  
Pay Without Separation: 0'  
Initial Production: Pumped 9 B/D gross, 0.1% cut, with a GOR of 500  
cu. ft./bbl. after recovery of load and fracture oil.  
Completed: December 28, 1958.

Carson Unit 32-20

Location: 2100' S and 1880' W of NE Corner, Section 20, T25N, R11W, NMPM  
Total Depth: 5020'  
Perforated Intervals: 4852-70, 4882-90, 4925-30, 4937-47, 4957-66  
Microlog Pay: 15'  
Pay Without Separation: 0'  
Initial Production: 1250 MCF/D gas  
Completed: September 3, 1957

Carson Unit 23-19

Location: 1980' N and 1980' E of SW Corner, Section 19, T25N, R11W, NMPM  
Total Depth: 4975'  
Perforated Intervals: 4842-4863, 4908-4920, 4926-4940, 4944-4955  
Microlog Pay: 0'  
Pay Without Separation: 0'  
Initial Production: Pumped 17 B/D gross, 0.3% cut, with a GOR of 470 cu.  
ft./bbl. after recovery of load and fracture oil.  
Completed: February 5, 1959

Carson Unit 34-19

Location: 660' N and 1980' W of SE Corner, Section 19, T25N, R11W, NMPM  
Total Depth: 5000'  
Perforated Intervals: 4846-54, 4885-89, 4903-13, 4927-37, 4944-53  
Microlog Pay: 5'  
Pay Without Separation: 0'  
Initial Production: Pumped 30 B/D gross, 0.1% cut, with a GOR of 450 cu.  
ft./bbl. after recovery of load and fracture oil.  
Completed: December 12, 1957

Carson Unit 43-23

Location: 3300' S and 660' W of NE Corner, Section 23, T25N, R12W, NMPM  
Total Depth: 4945'  
Perforated Intervals: 4792-4826, 4846-4880, 4886-4898, 4904-4918  
Microlog Pay: 6'

Pay Without Separation: 0'

Initial Production: Pumped 161 B/D gross, 0.2% cut, with a GOR of 540 cu. ft./bbl. after recovering load and fracture oil.

Completed: September 27, 1958

Carson Unit 24-7 is a commercial well based on a cumulative oil production of 37,000 bbls. as of November 1, 1959. Using ultimate production analysis (see enclosed hyperbolic decline curves) we believe that Carson Unit 13-12, 31-17, 23-19, 34-19, 43-23, and 3, six edge wells, are uneconomical.

These wells, Carson Unit 13-12, 31-17, 23-19, 34-19, 43-23, and 3, have an estimated ultimate recovery of 9,000, 1,400, 3,100, 8,500, 11,000, and 21,000 barrels respectively. Considering these six wells as a group, they are expected to recover 54,000 barrels of oil worth \$108,000 as against a net cost of \$300,000 to drill and complete; the result is an expected \$192,000 net loss on the group. The best well in the group, Carson Unit 3, has an estimated ultimate recovery of 21,000 barrels of oil, and will not pay out its \$50,000 drilling and completion cost.

Three of the wells analyzed have zero feet of microlog pay, two have five feet of microlog pay and one has six feet of microlog pay. As a result of this study we believe that the five foot isopach line and not the zero isopach should be used to exclude fringe area acreage from the participating unit.

From the analysis of the above mentioned six edge wells, we conclude that other wells drilled in this fringe area would behave in a similar manner and would be losing ventures. Therefore, we believe that these six wells and adjacent acreage and other fringe area acreage next to the participating area are not productive of unitized substances in commercial quantities and, therefore, should not be included in the participating area.

Carson Unit 32-20, a gas well, and the immediately adjacent 120 acres in Section 20, outside the Participating Area, lie in a gas cap. On the basis of a reserve analysis we believe that a well drilled on this adjacent acreage would be unprofitable. We estimate that underlying this 120 acre tract there are 1200 acre feet of gas sand. Our calculations show that there are 350 MCF per acre foot or 420,000 MCF of potentially recoverable gas from the tract. Due to the poor interconnection of the sand lenses, we would expect a well drilled on this acreage to recover at a maximum 80% of the gas in place or 340,000 MCF. The economics of such a well would be \$45,000 to drill and complete, and a \$34,000 income, which results in a net loss of \$11,000 on the venture. We, therefore, believe that this 120 acre tract is not productive of hydrocarbons in paying quantities and should not be included in the participating area.

#### GEOLOGY AND RESERVOIR

A revised isopach map of the net microlog pay for the Gallup sandstone is attached. Several changes in this map have been made since the Ninth Revision was submitted. Carson Unit 22-30 was drilled to test the extension of the south flank G<sub>d</sub> sand buildup seen in Carson Unit 11-30. Carson Unit 22-30 encountered zero feet

of microlog pay and the contours in this area have been adjusted to reflect the termination of pay development. Carson Unit 42-24, 24-14, and Government 42-15, a well adjacent to the unit, penetrated zero, three, and one feet of Gallup microlog pay respectively. These wells are located in a trend of low pay development and their lack of pay required some minor adjustments in the isopachs.

Carson Unit 32-23, a southern edge well, encountered five feet of microlog pay or five feet less than expected. This poorer pay development shows that the southern flank in this area drops off more steeply than anticipated.

It is notable that the performance of wells located on the fringes of the development that have as much as five feet of microlog pay is little better than the performance of wells with zero microlog pay. This supports our geologic conclusion that the quality of the sand as well as the thickness deteriorates toward the edges of the sand bars and is the reason why paying wells cannot be obtained outside the five foot isopach.

### CONCLUSION

We recommend increasing the Participating Area of the Carson Unit by 280.53 acres to include the land in the vicinity of Carson Unit 24-7 and five 40-acre fringe area tracts to make the boundary conform approximately to the five foot pay isopach. The land surrounding Carson Unit 24-7 has been proven productive, and the 40-acre tracts are largely inside the five foot isopach and adjacent to wells which are known to be profitable. It should be noted that a 40-acre tract held by Mobil Oil Company, formerly Magnolia Petroleum Company, qualifies for admission to the Participating Unit although they are not members of the Carson Unit and thus are not counted when calculating participation percentages. The lands in the Participating Area thus revised are as follows:

#### Township 26 North, Range 11 West, N.M.P.M.

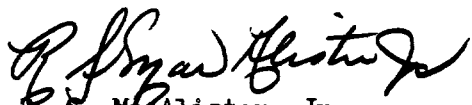
Section 7: S/2 S/2  
Section 17: NW/4 NW/4, S/2 NW/4, S/2 NE/4, S/2  
Section 18: All  
Section 19: N/2, SW/4 SW/4  
Section 20: NW/4, N/2 SW/4, N/2 NE/4, SW/4 NE/4  
Section 30: N/2 NW/4

#### Township 25 North, Range 12 West, N.M.P.M.

Section 11: S/2, S/2 NW/4, SW/4 NE/4  
Section 12: S/2 SW/4  
Section 13: All  
Section 14: All  
Section 23: NE/4, N/2 NW/4  
Section 24: E/2, NW/4, N/2 SW/4, SE/4 SW/4  
Section 25: NE/4 NE/4

It is further recommended that the effective date of the Tenth Revision of the Participating Area be November 1, 1958, the first of the month in which Carson Unit 24-7 was completed.

SHELL OIL COMPANY



R. S. MacAlister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment





## SHELL OIL COMPANY

Post Office Box 158  
Farmington, New Mexico

December 14, 1959

*Case #1085*  
*Case #1085*

Subject: Application for approval of the  
Tenth Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Tenth Revision of the Participating Area for the Carson Unit.

The proposed Tenth Revision adds the following acreage to the Participating Area:



Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey  
  
New Mexico Oil Conservation  
  
Commissioner of Public Lands

2

Township 25 North, Range 11 West, N.M.P.M.

Section 7: Lot 4, SE/4 SW/4

Section 17: NW/4 NW/4 (This acreage is a portion of  
Magnolia Petroleum Indian Allotted Lease  
No. 14-20-603-1435, not committed to the  
Carson Unit.)

Section 19: Lot 4

Township 25 North, Range 12 West, N.M.P.M.

Section 11: SW/4 NE/4

Section 24: SE/4 SW/4

Section 25: NE/4 NE/4

The proposed Tenth Revision of the Participating Area of the Carson Unit was first submitted on March 4, 1959. This revision was approved by the New Mexico Oil Conservation Commission and the State Land Office. The United States Geological Survey returned this proposed Tenth Revision with a request that we make a revision totaling 1200 acres, all located on the fringes of the field development. These 1200 acres included 80 acres proposed by Shell and 80 acres of Mobil Oil Company (formerly Magnolia) land which had been included in the Fourth Revision of the Participating Area. The remaining 1040 acres suggested by the United States Geological Survey were evaluated and reservoir engineering data were furnished to the United States Geological Survey supporting the conclusion that a total of 280 acres (including the 80 acres originally proposed for the Tenth Revision) are reasonably proven productive of hydrocarbons in paying quantities. These 280 acres constitutes the revised Tenth Revision of the Participating Area and we have included the supporting data previously supplied to the United States Geological Survey.

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the proposed Tenth Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for the proposed Tenth Revision. We believe this Geological and Engineering Report, with attachments, supports the suggested revision of the Participating Area.

Director  
 United States Geological Survey  
 Through  
 Supervisor  
 United States Geological

New Mexico Oil Conservation Commission

Commissioner of Public Lands

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Tenth Revision to be effective November 1, 1958.

Very truly yours,

SHELL OIL COMPANY

*F. W. Nantker*

F. W. Nantker  
 Division Land Manager

Attachments

Approved this 30 day of  
December, 1959

New Mexico Oil Conservation Commission  
 By *[Signature]*

Approved this \_\_\_\_\_ day of  
 \_\_\_\_\_, 1959

Commissioner of Public Lands  
 By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
 \_\_\_\_\_, 1959

U. S. Geological Survey  
 By \_\_\_\_\_

# EXHIBIT "B" - PROPOSED TENTH REVISION

## Schedule of Lands Entitled to Participate

Lease: SF-078061  
 Lessee: Shell Oil Company  
 Participating Acreage: 560.00  
 Percentage of Participation: 11.9565  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: S/2  
 Section 20: NW/4, N/2 SW/4

Lease: SF-078062  
 Lessee: Shell Oil Company  
 Participating Acreage: 240.00  
 Percentage of Participation: 5.1242  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: S/2 NE/4  
 Section 18: SE/4

Lease: SF-078063  
 Lessee: Shell Oil Company  
 Participating Acreage: 601.81  
 Percentage of Participation: 12.8492  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 19: Lots 1 and 2, E/2 NW/4, NE/4,  
 Lot 4  
 Section 7: S/2 SE/4, Lot 4, SE/4 SW/4  
 Section 30: Lot 1, NE/4 NW/4

Lease: SF-078064  
 Lessee: Shell Oil Company  
 Participating Acreage: 1320.00  
 Percentage of Participation: 28.1831  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 12: S/2 SW/4  
 Section 13: All  
 Section 24: E/2, NW/4, N/2 SW/4, SE/4 SW/4

Lease: Indian Allotted Lands 14-20-603-1440  
 Lessee: Skelly Oil Company  
 Participating Acreage: 120.00  
 Percentage of Participation: 2.5621  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 20: N/2 NE/4, SW/4 NE/4

Lease: Indian Allotted Lands 14-20-603-1283  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 3.4161  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: NE/4

Lease:	Indian Allotted Lands 14-20-603-1284	
** Lessee:	Shell Oil Company	
Participating Acreage:	160.77	
Percentage of Participation:	3.4326	
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 1 and 2, E/2 NW/4	
Lease:	Indian Allotted Lands 14-20-603-1285	
** Lessee:	Shell Oil Company	
Participating Acreage:	161.07	
Percentage of Participation:	3.4391	
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 3 and 4, E/2 SW/4	
Lease:	SF-078067	
Lessee:	Shell Oil Company	
Participating Acreage:	1320.00	
Percentage of Participation:	28.1831	
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 11: S/2, S/2 NW/4, SW/4 NE/4 Section 14: All Section 23: N/2 NW/4, NE/4	
Lease:	SF-078068-A	
Lessee:	Shell Oil Company	
Participating Acreage:	40.00	
Percentage of Participation:	.8540	
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 25: NE/4 NE/4	
Summary:	<u>Acres</u>	<u>Percent</u>
Total Federal Lands:	4081.81	87.1502
Total Indian Lands:	<u>601.84*</u>	<u>12.8498</u>
Total Productive Acreage:	4683.65	100.0000

\* Excludes 120 acres (S/2 NW/4, NW/4 NW/4) Section 17, Township 25 North, Range 11 West, N. M. P. M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.

\*\* The Lessee under leases, Indian Allotted Lands 14-20-603-1283, 14-20-603-1284 and 14-20-603-1285 was as of November 11, 1958 and up to May 1, 1959, the Phillips Petroleum Company. Effective May 1, 1959 the Phillips Petroleum Company's interest in these leases was transferred to the Shell Oil Company the present lessee of record.



MAIN OFFICE OCC  
SHELL OIL COMPANY

1959 AUG 12 PM 1:23  
Post Office Box 158  
Farmington, New Mexico

August 13, 1959

File

1085

Subject: Bisti Field  
Carson Unit Agreement  
Eighth and Ninth  
Supplemental Plans of  
Development

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:

Enclosed herewith for your files please find the following:

1. Photocopy of letter from the United States Geological Survey dated August 7, 1959 evidencing their approval of the Eighth and Ninth Supplemental Plans of Development for the Carson Unit.
2. Photocopy of letter from the New Mexico State Land Office dated August 7, 1959 evidencing their approval of the Eighth and Ninth Supplemental Plans of Development for the Carson Unit.
3. Photocopy of letter from the New Mexico Oil Conservation Commission dated August 3, 1959 evidencing their approval of the Eighth Supplemental Plan of Development for the Carson Unit.

El Paso Natural Gas Products Company  
Humble Oil and Refining Company  
Skelly Oil Company

2



4. Photocopy of letter from the New Mexico Oil Conservation Commission dated August 3, 1959 evidencing their approval of the Ninth Supplemental Plan of Development for the Carson Unit.

Very truly yours,



For F. W. Nantker  
Division Land Manager

Enclosures

cc - New Mexico Oil Conservation Commission (w/one enclosure)  THIS COPY FOR   
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands (w/one enclosure)  
Post Office Box 791  
Santa Fe, New Mexico

Humble Oil and Refining Company (w/four enclosures)  
Post Office Box 2180  
Houston 1, Texas



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

P. O. Box 6721  
Roswell, New Mexico

IN REPLY REFER TO:

August 7, 1959

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Gentlemen:

The eighth and ninth supplemental plan of development for the Carson unit area, San Juan County, New Mexico (No. 14-08-001-3485) have been approved on this date subject to like approval by the appropriate officials of the State of New Mexico. The eighth supplemental plan proposes the drilling of 34 Gallup sandstone wells within the present participating area of the Carson unit and one Gallup sandstone well at a step-out location. The ninth supplemental plan of development provides for the completion of unit well 113-17 in the Gallup sandstone.

Six approved copies of each plan of development are enclosed.

Very truly yours,

AUG 10 1959

JOHN A. ANDERSON

Regional Oil and Gas Supervisor

Enclosure: 12

1	Mr. Anderson	mm
2	Mr. Robison	mm
3	Mr. [unclear]	mm
4	Mr. [unclear]	mm
5	Mr. [unclear]	mm
6	Mr. [unclear]	mm
7	Mr. [unclear]	mm
8	Mr. [unclear]	mm
9	Mr. [unclear]	mm
10	Mr. [unclear]	mm
11	Mr. [unclear]	mm
12	Mr. [unclear]	mm



*File*  
*N 401*  
P. O. Box 6721  
Roswell, New Mexico

August 7, 1959  
*1085*

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Gentlemen:

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Six approved copies of each plan of development are enclosed.

Very truly yours,

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Enclosure: 12

Copy to: Wash. (w/cy of plan)  
Farmington (w/cy of plan)  
NMOCC, Santa Fe (letter only)  
Com. Pub. Lands "



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

P. O. Box 6721  
Roswell, New Mexico

IN REPLY REFER TO:

August 7, 1959

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Gentlemen:

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Very truly yours,

AUG 10 1959

JOHN A. ANDERSON

Regional Oil and Gas Supervisor

Enclosure: 12

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4 McGarry

5 Ash Deer

*File  
N Action*

P. O. Box 6721  
Roswell, New Mexico

August 7, 1959

*10/85*

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. E. Robison

Gentlemen:

The eighth and ninth supplemental plan of development for the Carson unit area, San Juan County, New Mexico (No. 14-08-001-3485) have been approved on this date subject to like approval by the appropriate officials of the State of New Mexico. The eighth supplemental plan proposes the drilling of 34 Gallup sandstone wells within the present participating area of the Carson unit and one Gallup sandstone well at a step-out location. The ninth supplemental plan of development provides for the completion of unit well 113-17 in the Gallup sandstone.

Six approved copies of each plan of development are enclosed.

Very truly yours,

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Enclosure: 12

Copy to: Wash. (w/cy of plan)  
Farmington (w/cy of plan)  
NMOCC, Santa Fe (letter only)  
Com. Pub. Lands "

RECEIVED  
AUG 10 AM 8:35

In reply refer to:  
Unit Division

August 7, 1959

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nanter

Re: Carson Unit Agreement  
San Juan County, New Mexico

Gentlemen:

We are enclosing two copies each of your Eighth and Ninth Supplemental Plans of Development for the Carson Unit Area, which were approved by the Commissioner of Public Lands August 6, 1959.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MMR/m

cc:

OCC- Santa Fe  
USGS- Roswell

C  
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Y

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

File  
1645

August 3, 1959

C  
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Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. R. E. Robison

Re: Ninth Supplemental Plan of  
Development, Carson Unit,  
San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Ninth Supplemental Plan of Development for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

One approved copy of the application is returned herewith.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/pj

cc: United States Geological Survey - Roswell, New Mexico  
State Land Office - Santa Fe, New Mexico

OIL CONSERVATION COMMISSION

P. O. BOX 871  
SANTA FE, NEW MEXICO

August 3, 1959

File  
1685

C  
O  
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Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. R. E. Robison

Re: Eighth Supplemental Plan of  
Development, Carson Unit,  
San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Eighth Supplemental Plan of Development for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

One approved copy of the application is returned herewith.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/pj

cc: United States Geological Survey - Roswell, New Mexico  
State Land Office - Santa Fe, New Mexico



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

JUL 30 1959

Re: Carson Unit Agreement  
14-08-001-3485  
Ninth Supplemental  
Plan of Development

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Roswell, New Mexico

Dear Mr. Anderson:

We submit for your consideration this Ninth Supplemental Plan of Development for the completion of one Gallup (Upper Cretaceous) well in the Carson Unit at an infilling 40-acre location. This well, Carson Unit 113-17 (Location: NW/4, SW/4, Section 17, Township 25N, Range 11W) was drilled to a depth of 11,430 feet in order to evaluate formations underlying the Gallup sandstone (approved by U.S.G.S. October 27, 1958). The well encountered non-productive measures below the Gallup and was subsequently plugged back to the base of the Gallup, 5100 feet.

This plan, providing for the completion of Carson Unit 113-17 in the Gallup sandstone reservoir at a regular 40-acre location is designed to improve the drainage efficiency of the reservoir.

Your approval of this plan is respectfully requested.

Very truly yours,

R. R. Robison  
Division Production Manager

## Attachments

cc - New Mexico Oil Conservation Commission THIS COPY FOR   
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico



Mr. John A. Anderson, Supervisor (9)

cc - Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

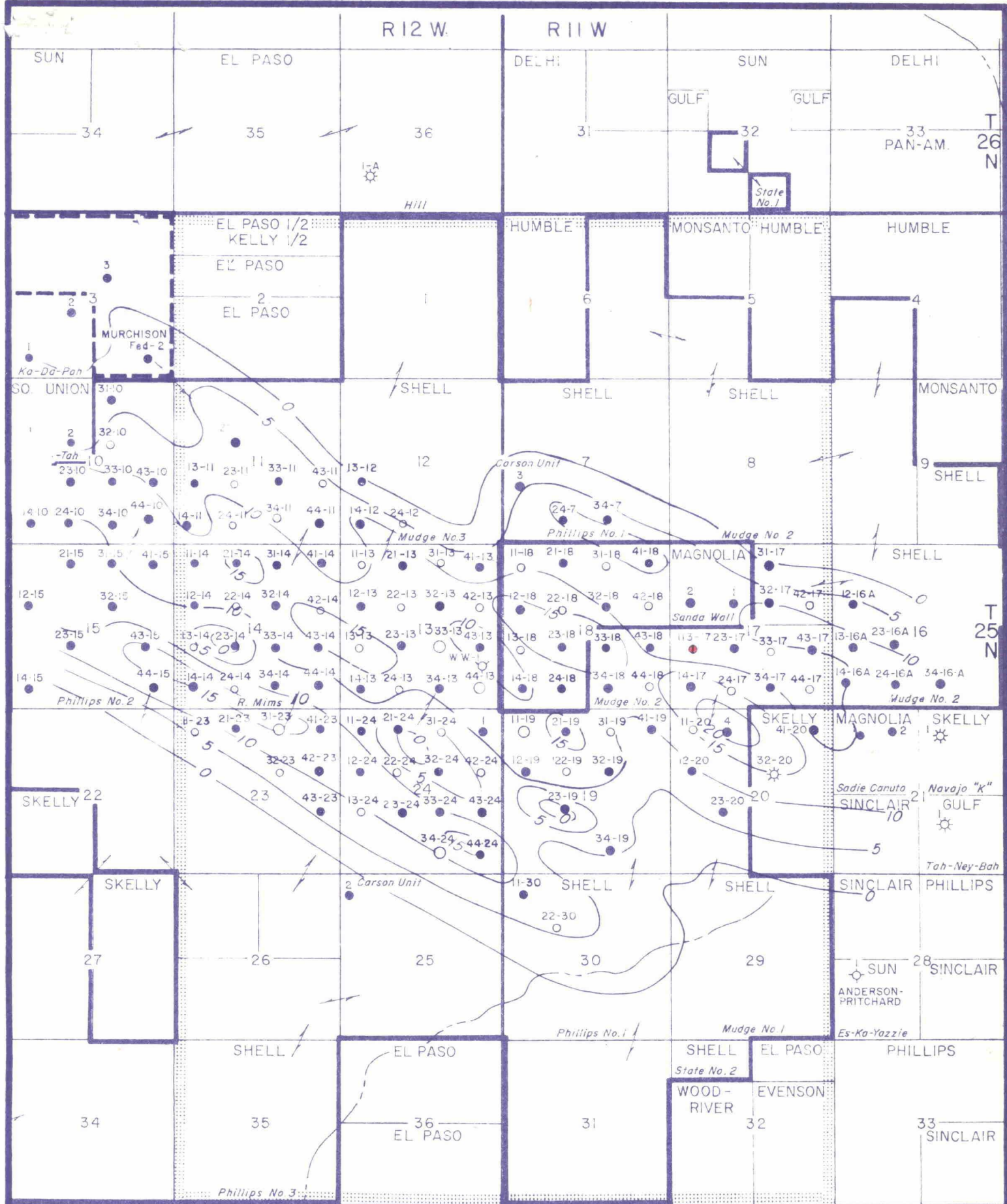
Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Humble Oil and Refining Company  
Post Office Box 2180  
Houston 1, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Approved *by* ..... 1917..  
*A. F. Carter*  
Secretary  
CONSERVATION COMMISSION





— LEGEND —

○ Proposed Location

● Oil Well

★ Gas Well

● Well Discussed in Text

○ Location

⊕ Drilling Well

⊕ Abandoned Well

▨ Carson Unit

CARSON UNIT  
ISOPACH NET MICROLOG PAY  
GALLUP SANDSTONE  
San Juan Co., New Mexico

Scale: 1"=4000' Z20-903



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

JUL 30 1959

Re: Carson Unit Agreement  
14-08-001-3485  
Eighth Supplemental  
Plan of Development

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Post Office Box 6721  
Roswell, New Mexico

Dear Mr. Anderson:

We submit for your consideration this Eighth Supplemental Plan of Development for drilling 34 Gallup (Upper Cretaceous) wells in the Carson Unit at infilling 40-acre locations and one well at an outstep location. This plan is designed to improve the drainage efficiency within the Unit.

The wells to be drilled are by designation and location (refer to attached map):

<u>Well No.</u>	<u>Location</u>
Carson Unit 13-14	NW/4 SW/4 Section 14, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 11-23	NW/4 NW/4 Section 23, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 23-11	NE/4 SW/4 Section 11, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 24-11	SE/4 SW/4 Section 11, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 22-14	SE/4 NW/4 Section 14, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 24-14	SE/4 SW/4 Section 14, Township 25 North, Range 12 West, N. M. P. M.

Carson Unit 34-11	SW/4 SE/4 Section 11, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 32-23	SW/4 NE/4 Section 23, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 43-11	NE/4 SE/4 Section 11, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 42-14	SE/4 NE/4 Section 14, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 11-13	NW/4 NW/4 Section 13, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 13-13	NW/4 SW/4 Section 13, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 13-24	NW/4 SW/4 Section 24, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 24-12	SE/4 SW/4 Section 12, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 22-13	SE/4 NW/4 Section 13, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 24-13	SE/4 SW/4 Section 13, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 22-24	SE/4 NW/4 Section 24, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 31-13	NW/4 NE/4 Section 13, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 31-24	NW/4 NE/4 Section 24, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 42-13	SE/4 NE/4 Section 13, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 42-24	SE/4 NE/4 Section 24, Township 25 North, Range 12 West, N. M. P. M.
Carson Unit 11-18	NW/4 NW/4 Section 18, Township 25 North, Range 11 West, N. M. P. M.

Carson Unit 13-18	NW/4 SW/4 Section 18, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 22-18	SE/4 NW/4 Section 18, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 22-19	SE/4 NW/4 Section 19, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 22-30	SE/4 NW/4 Section 30, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 31-18	NW/4 NE/4 Section 18, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 31-19	NW/4 NE/4 Section 19, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 42-18	SE/4 NE/4 Section 18, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 44-18	SE/4 SE/4 Section 18, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 11-20	NW/4 NW/4 Section 20, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 24-17	SE/4 SW/4 Section 17, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 33-17	NW/4 SE/4 Section 17, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 42-17	SE/4 NE/4 Section 17, Township 25 North, Range 11 West, N. M. P. M.
Carson Unit 44-17	SE/4 SE/4 Section 17, Township 25 North, Range 11 West, N. M. P. M.

Of the other participating operators, Phillips has conveyed their interest in the Carson Unit to Shell as the result of a property trade with Shell and, therefore, they have no interest in this drilling program. We have arranged a satisfactory agreement with Skelly so they will not object to the proposed program, although we do not wish to convey that this means a change of policy by Skelly on the overall spacing question at Bisti.

Mr. John A. Anderson, Supervisor (9)

4



Inasmuch as 34 of the 35 proposed wells are at proven locations, we plan a continuous drilling program soon after all necessary approvals are obtained. Your approval of this plan is respectfully requested.

Very truly yours,



R. R. Robison  
Division Production Manager

Attachment

cc - New Mexico Oil Conservation Commission  THIS COPY FOR   
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

Approved  19   
  
Secretary-Director

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention P. T. McGrath

NEW MEXICO OIL CONSERVATION COMMISSION

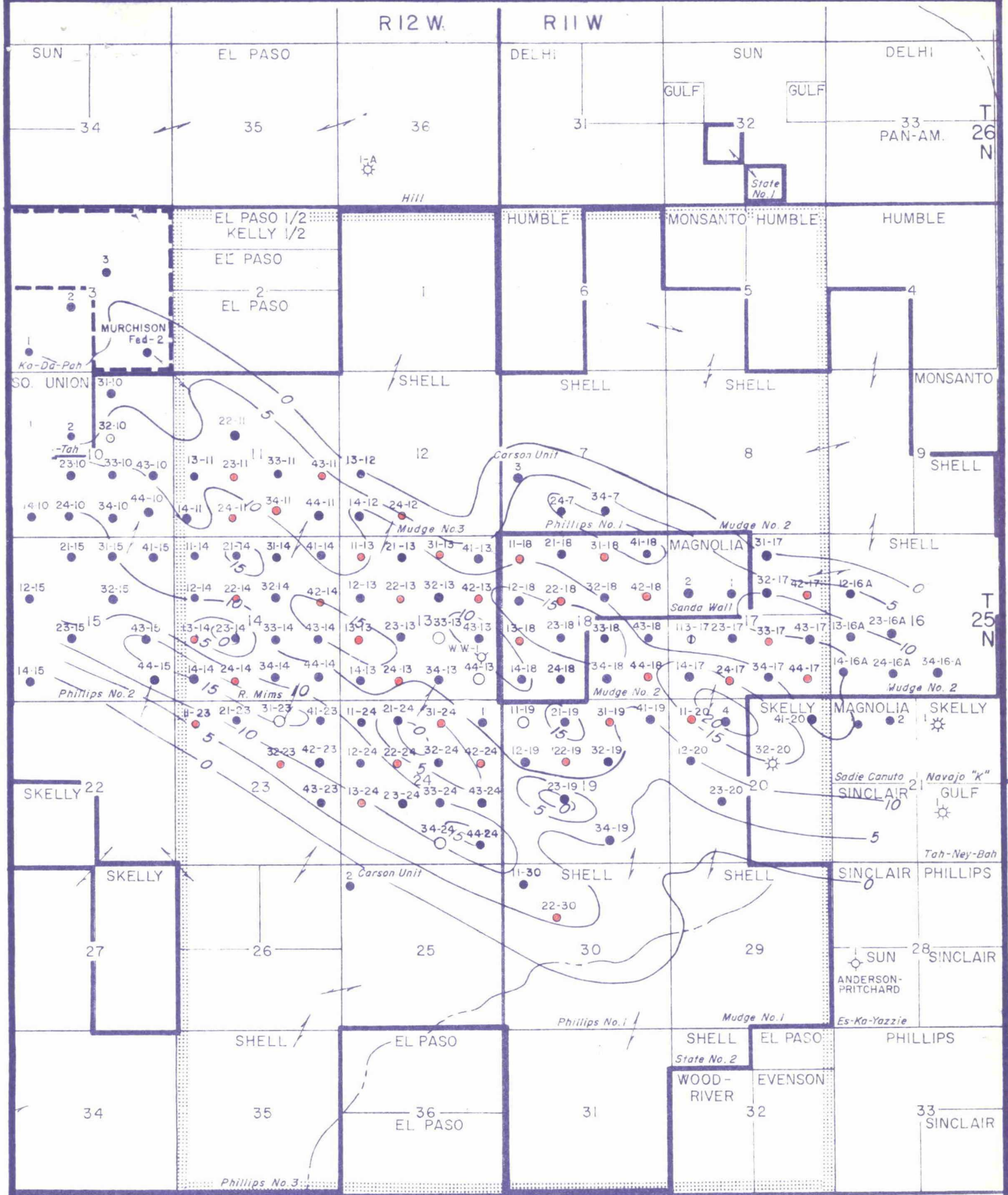
El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Humble Oil and Refining Company  
Post Office Box 2180  
Houston 1, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma





— LEGEND —

- Proposed Location
- Oil Well
- ☼ Gas Well
- Well Discussed in Text
- Location
- ⊙ Drilling Well
- ⊕ Abandoned Well
- ▨ Carson Unit

CARSON UNIT,  
ISOPACH NET MICROCLOG PAY  
GALLUP SANDSTONE  
San Juan Co., New Mexico  
Scale: 1"=4000' Z20-903



## SHELL OIL COMPANY

705 West Municipal Drive  
1358 San Juan, New Mexico

June 10, 1959

Subject: Bisti Field  
Carson Unit Agreement  
No. 2576

*File*  
*1085*

New Mexico Oil Conservation Commission  
Post Office Box 871  
Santa Fe, New Mexico

Gentlemen:

Reference is made to your approval of our Sixth and Seventh Supplemental Plans of Development for the Carson Unit Area, San Juan County, New Mexico, Unit No. 14-08-001-3485.

Enclosed herewith for your files is a copy of a letter dated June 1, 1959 from the United States Geological Survey approving our Sixth and Seventh Supplemental Plans of Development.

Very truly yours,

*F. W. Nantker*  
For F. W. Nantker  
Division Land Manager

Enclosure

10034  
JUN 11 1959  
JUN 22 1959  
In reply refer to:  
Unit Division

June 3, 1959

Shell Oil Company  
105 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Seventh Supplemental  
Plan of Development,  
Carson Unit, San Juan  
County, New Mexico

Gentlemen:

The Commissioner of Public Lands has of this date approved the Seventh Supplemental Plan of Development for the Carson Unit Area, dated May 28, 1959, subject to like approval by the United States Geological Survey and the Oil Conservation Commission.

We are returning one approved copy of this application.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MMR/m  
cc:

USGS-Roswell  
OCC-Santa Fe





IN REPLY REFER TO:

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

P. O. Box 6721  
Roswell, New Mexico

June 1, 1959

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico


Attention: Mr. R. R. Robison

Gentlemen:

The sixth and seventh supplemental plans of development for the Carson unit area, San Juan County, New Mexico, No. 14-08-001-3485, have been approved on this date, subject to like approval by appropriate officials of the State of New Mexico.

Six approved copies of each plan of development are enclosed.

Very truly yours,

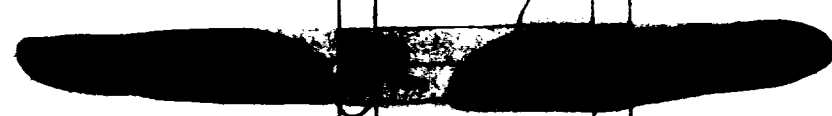
  
JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

FARMINGTON PRODUCTION  
DIVISION

JUN 5 1959

Enclosures: 12

①	Manager	
②	Engineering	<i>Went</i>
	Mechanical	
	Paradox Dist.	
	San Juan Dist.	
	Wildcat Drig.	
	Treasury	
③	Land	<i>Full</i>
	Survey & Draft.	
	Purch. & Stores	
	Automotive	
	P. & I. E.	
	<i>McGarry</i>	



OIL CONSERVATION COMMISSION

P. O. BOX 871  
SANTA FE, NEW MEXICO

June 1, 1959

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Seventh Supplemental Plan  
of Development, Carson  
Unit, San Juan County,  
New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Seventh Supplemental Plan of Development for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

One approved copy of the application is returned herewith.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/pj

Encl.

cc: State Land Office - Santa Fe, New Mexico  
United States Geological Survey - Roswell, New Mexico



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

May 28, 1959

Subject: Bisti Field  
Carson Unit Agreement  
No. 2576

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Attention D. S. Nutter

Gentlemen:

Enclosed herewith for your approval please find two (2) copies of our proposed Seventh Supplemental Plan of Development for the Carson Unit Area.

This plan has been discussed with the other working interest owners in the Participating Area for the Carson Unit and they are in agreement with our proposed plan.

Concurrently, herewith, we are forwarding copies of this Plan to the United States Geological Survey and the New Mexico Commissioner of Public Lands for approval.

Very truly yours,

*F. W. Nantker*  
For F. W. Nantker  
Division Land Manager

Enclosures



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

May 28, 1959

Re: Carson Unit Agreement  
14-08-001-3485  
Seventh Supplemental  
Plan of Development

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Post Office Box 6721  
Roswell, New Mexico

Dear Mr. Anderson:

We submit for your consideration this Seventh Supplemental Plan of Development for drilling five Gallup (Upper Cretaceous) wells in the Carson Unit at infilling 40-acre locations. This Plan is designed to improve the drainage efficiency within the Unit.

The wells to be drilled are by designation and location (refer to attached map):

<u>Well No.</u>	<u>Location</u>
Carson Unit 33-13	NW/4 SE/4 Section 13, Township 25 North, Range 12 West, N.M.P.M.
Carson Unit 44-13	SE/4 SE/4 Section 13, Township 25 North, Range 12 West, N.M.P.M.
Carson Unit 11-19	NW/4 NW/4 Section 19, Township 25 North, Range 11 West, N.M.P.M.
Carson Unit 34-24	SW/4 SE/4 Section 24, Township 25 North, Range 12 West, N.M.P.M.
Carson Unit 31-23	NW/4 NE/4 Section 23, Township 25 North, Range 12 West, N.M.P.M.

The other participating operators are agreeable to this plan, but we do not wish to convey that their approval necessarily means a change of position regarding the overall 40-acre spacing question at Bisti. All of

these wells are at proven locations and they will be drilled as a group soon after all necessary approvals are obtained.

Your approval of this plan is respectfully requested.

Very truly yours,

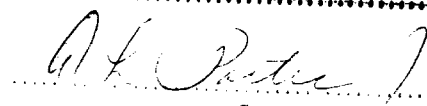


R. R. Robison  
Division Production Manager

Attachments

cc - New Mexico Oil Conservation Commission ← THIS COPY FOR  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

- Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

Approved.....6-1.....19.05  
  
Secretary-Director

- United States Geological Survey NEW MEXICO OIL CONSERVATION COMMISSION  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

- El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

- Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma  
Attention Mr. L. E. Fitzjarrald

- Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

- Phillips Petroleum Company  
Post Office Box 548  
Cortez, Colorado

- Humble Oil & Refining Company  
Post Office Box 1600  
Midland, Texas

- Humble Oil & Refining Company  
Post Office Box 2180  
Houston 1, Texas

- Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma





# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

April 14, 1959

Subject: Bisti Field  
Carson Unit Agreement No. 2576

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:

Enclosed herewith for your files please find a copy of a letter dated April 8, 1959 from the United States Geological Survey advising of their approval of the Ninth Revision of the Carson Unit.

Very truly yours,

*F. W. Nantker*  
For F. W. Nantker  
Division Land Manager

Enclosures

cc - New Mexico Oil Conservation Commission ← THIS COPY FOR  
Santa Fe, New Mexico Phillips Petroleum Company  
Cortez, Colorado

Commissioner of Public Lands  
Santa Fe, New Mexico Phillips Petroleum Company  
Durango, Colorado

Humble Oil and Refining Company  
Houston, Texas





UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

APR 8 1958

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Gentlemen:

Your application of December 18, 1958, for the ninth revision, (400.25 acres), of the Gallup sandstone participating area, (new total 4,523.12 acres), under the Carson unit agreement, New Mexico, No. 14-08-001-3485, was approved April 7, 1959, by Arthur A. Baker, Acting Director of the Geological Survey, effective as of October 1, 1958.

Enclosed are three copies of the approved application for your records. It is requested that you furnish the State of New Mexico or any other interested principal with whatever evidence of this approval is deemed appropriate.

Very truly yours,

27/12/2000

For the Director

Enclosures 3

## FARMYOTES LAND

1950

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[illegible]



Please disregard our letter dated April 7, 1959  
on the Carson Unit Plan of Development. Our  
letter stated it was approved by the Commissioner  
April 6, 1959 and it was actually approved  
April 7, 1959.

Thanks  
ms

*F. L.*  
*1085*

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In reply refer to:  
Unit Division

April 8, 1959

C  
O  
P  
Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Sixth Supplemental Plan of  
Development-Carson Unit  
San Juan County, New Mexico

Gentlemen:

We are enclosing one copy of your proposed sixth Supplemental Plan of Development for the Carson Unit Area, which was approved by the Commissioner of Public Lands April 7, 1959. Our approval is subject to like approval by the United States Geological Survey and the Oil Conservation Commission.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MMR/m

cc:

OCC- Santa Fe  
USGS- Roswell

In reply refer to:  
Unit Division

April 7, 1959

C  
O  
P  
Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Sixth Supplemental Plan of  
Development- Carson Unit  
San Juan County, New Mexico

Gentlemen:

We are enclosing one copy of your proposed sixth Supplemental Plan of Development for the Carson Unit Area, which was approved by the Commissioner of Public Lands April 6, 1959. Our approval is subject to like approval by the United States Geological Survey and the Oil Conservation Commission.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MMR/m

cc: OCC- Santa Fe  
USGS- Roswell

*File*

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

*Case 1085*

April 6, 1959

C  
O  
P  
Y

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Re: Sixth Supplemental Plan of  
Development - Carson Unit  
San Juan County, New Mexico

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Sixth Supplemental Plan of Development for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

One approved copy of the application is returned herewith.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

RLS/ir

cc: U. S. Geological Survey - Roswell, New Mexico  
Commissioner of Public Lands - Santa Fe, New Mexico



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

April 2, 1959

Re: Carson Unit Agreement  
14-08-001-3485  
Sixth Supplemental  
Plan of Development

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Roswell, New Mexico

Dear Mr. Anderson:

We submit for your consideration this Sixth Supplemental Plan of Development for drilling five Gallup (Upper Cretaceous) wells in the Carson Unit at infilling 40-acre locations. This Plan is designed to improve the drainage efficiency within the Unit in areas where existing wells are poorer than average producers because of inferior sand development at the existing well locations and/or because of subnormal completions.

The wells to be drilled are by designation and location (refer to location map attached):

<u>Well No.</u>	<u>Location</u>
Carson Unit 31-14	NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 14, Township 25 North, Range 12 West, N.M.P.M.
Carson Unit 11-24	NW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 24, Township 25 North, Range 12 West, N.M.P.M.
Carson Unit 44-24	SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 24, Township 25 North, Range 12 West, N.M.P.M.
Carson Unit 24-18	SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 18, Township 25 North, Range 11 West, N.M.P.M.
Carson Unit 33-18	NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 18, Township 25 North, Range 11 West, N.M.P.M.

Since all of these wells are at proven locations, they will be drilled as a group soon after all necessary approvals are obtained.

Your approval of this Plan is respectfully requested.

Very truly yours,



R. R. Robison  
Division Production Manager

Attachments

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Humble Oil and Refining Company  
Post Office Box 2180  
Houston 1, Texas

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

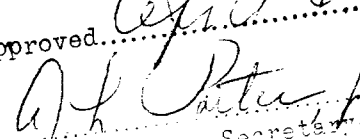
El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma  
Attention Mr. L. E. Fitzjarrald

Phillips Petroleum Company  
Post Office Box 548  
Cortez, Colorado

Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Approved.....April 6.....1959  
  
.....  
Secretary-Director  
NEW MEXICO OIL CONSERVATION COMMISSION





## SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

March 13, 1959

Subject: Bisti Field  
Carson Unit Agreement No. 2576

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Humble Oil and Refining  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:

Enclosed herewith for your files please find a copy of a letter dated March 9, 1959 from the New Mexico Oil Conservation Commission and a copy of a letter dated March 12, 1959 from the State Land Office advising of their approvals of our Tenth Revision of the Carson Unit.

Very truly yours,

For F. W. Nantker  
Division Land Manager

Enclosures

cc - New Mexico Oil Conservation Commission  
Santa Fe, New Mexico

Commissioner of Public Lands  
Santa Fe, New Mexico

Phillips Petroleum Company  
Durango, Colorado

Phillips Petroleum Company  
Cortez, Colorado

Humble Oil and Refining Company  
Houston, Texas



OCC- Santa Fe  
USGS- Roswell

GOVERNOR  
JOHN S. WATKINS  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**

LAND COMMISSIONER  
MURRAY E. MORGAN  
MEMBER



P. O. BOX 871  
SANTA FE  
March 9, 1959

MANAGEMENT	
DIVISION	
MAR 10 1959	
Manager	
Perm. Dist.	
Dev. Dist.	
STATE GEOLOGIST	
A. L. PORTER, JR.	
SECRETARY-DIRECTOR	
File	

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

RE: Tenth Revised Gallup  
Participating Area  
Carson Unit San Juan  
County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Tenth Revised Gallup Participating Area for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Eight approved copies of the application were forwarded to the Commissioner of Public Lands.

Very truly yours,

*A. L. Porter, Jr.*  
A. L. PORTER, Jr.,  
Secretary-Director

RIS/ALP/ig

cc: State Land Office - Santa Fe  
U. S. Geological Survey - Roswell



## SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

March 4, 1959

Subject: Bisti Field - Carson Unit  
Proposed Tenth Revision  
of the Participating Area

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Attention D. S. Nutter

Gentlemen:

We enclose for your consideration and approval nine copies of our proposed Tenth Revision of the Participating Area for the Carson Unit. Attached to each copy of our application for approval please find the following:

1. Land Map Marked Exhibit "A"
2. Schedule of Lands Entitled to Participate
3. Geological and Engineering Report
4. Isopach of Net Microlog Pay

We request that you approve this revision and also obtain the approval of the Commissioner of Public Lands. We would then appreciate your forwarding seven copies to the United States Geological Survey in Roswell, New Mexico, retaining one copy for your files and one copy for the Commissioner of Public Lands.

Very truly yours,

F. W. Nantker  
Division Land Manager

### Enclosures

- cc - Commissioner of Public Lands  
- U. S. Geological Survey  
Roswell, New Mexico  
- U. S. Geological Survey  
Farmington, New Mexico



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

March 4, 1959

Subject: Application for approval of the  
Tenth Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Tenth Revision of the Participating Area for the Carson Unit.

The proposed Tenth Revision adds the following acreage to the Participating Area:

Township 25 North, Range 11 West, N.M.P.M.  
Section 7: Lot 4, SE $\frac{1}{4}$  SW $\frac{1}{4}$

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

2

New Mexico Oil Conservation Commission

Commissioner of Public Lands

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the proposed Tenth Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for the proposed Tenth Revision. We believe this Geological and Engineering Report, with attachments, supports the suggested revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Tenth Revision to be effective November 1, 1958.

Very truly yours,

SHELL OIL COMPANY



F. W. Nantker  
Division Land Manager

Attachments

Approved this 9th day of  
March, 1959

New Mexico Oil Conservation Commission  
By W. H. Fisher

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1959

Commissioner of Public Lands  
By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1959

U. S. Geological Survey  
By \_\_\_\_\_

GEOLOGICAL AND ENGINEERING REPORT  
PROPOSED TENTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Tenth Revision of Participating Area in the Carson Unit. This Revision adds 80.25 acres to the Ninth Revision for a total of 4523.37 acres of participation.

WELL DATA

Carson Unit 24-7

Location: 660'N and 1971'E of SW Corner, Section 7, T25N, R11W, NMPM  
Total Depth: 5040'  
Perforated Intervals: 4910-4932, 4956-4966, 4972-4986, 4992-5002  
Microlog Pay: 11'  
Pay Without Separation: 3'  
Initial Production: Pumped 270 B/D gross with 0.4% cut, GOR 480 CF/B  
after recovering load and fracture oil.  
Completion Date: November 12, 1958

Carson Unit 23-19

Location: 1980'N and 1980'E of SW Corner, Section 19, T25N, R11W, NMPM  
Total Depth: 4975'  
Perforated Intervals: 4842-4863, 4908-4920, 4926-4940, 4944-4955  
Microlog Pay: 0'  
Pay Without Separation: 0'  
Initial Production: Pumped 17 B/D gross with 0.3% cut, GOR 470 CF/B  
after recovering load and fracture oil.

We believe Carson Unit 24-7 to be a commercial well, based on the amount of pay penetrated and the substantial initial rate. Present indications are that Carson Unit 23-19 will not be a profitable well.

One well has been drilled on the Unit that has not yet been completed. The status of this well is as follows:

<u>WELL</u>	<u>LOCATION</u>	<u>TOTAL DEPTH</u>	<u>STATUS</u>
Unit 113-17	1980'N and 660'E of SW Corner Section 17, T25N, R11W, NMPM	11,430'	Plugged back to 5100' - awaiting completion

GEOLOGY AND RESERVOIR

A revised isopach map of the net pay for the Gallup sandstone is attached. Several changes in this map were made since the submission of the proposed Ninth Revision. Carson Unit 23-19 encountered zero feet of net microlog pay requiring a revision of the contours in this locale and Carson Unit 113-17 encountered seven feet of net microlog pay or three feet less than predicted thereby requiring a slight modification in this area.

CONCLUSION

We recommend increasing the Participating Area of the Carson Unit by 80.25 acres to include the land in the vicinity of Carson Unit 24-7, this land having been proven productive of oil in paying quantities. The lands in the Participating Area, thus revised are as follows:

Township 25 North, Range 11 West, N.M.P.M.

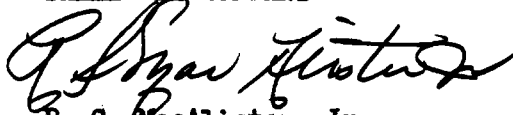
Section 7: S/2 S/2  
Section 17: S/2 NE/4, S/2  
Section 18: All  
Section 19: N/2  
Section 20: NW/4, N/2 SW/4, N/2 NE/4, SW/4 NE/4  
Section 30: N/2 NW/4

Township 25 North, Range 12 West, N.M.P.M.

Section 11: S/2, S/2 NW/4  
Section 12: S/2 SW/4  
Section 13: All  
Section 14: All  
Section 23: NE/4, N/2 NW/4  
Section 24: E/2, NW/4, N/2 SW/4

It is further recommended that the effective date of the Tenth Revision of the Participating Area be November 1, 1958, the first of the month in which Carson Unit 24-7 was completed.

SHELL OIL COMPANY



R. S. MacAlister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment - Isopach Net Microlog  
Pay Gallup Sandstone

# EXHIBIT "B" - PROPOSED TENTH REVISION

## Schedule of Lands Entitled to Participate

Lease:	SF-078061
Lessee:	Shell Oil Company
Participating Acreage:	560.00
Percentage of Participation:	12.3801
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2}$ Section 20: $NW\frac{1}{4}$ , $N\frac{1}{2} SW\frac{1}{4}$
Lease:	SF-078062
Lessee:	Shell Oil Company
Participating Acreage:	240.00
Percentage of Participation:	5.3058
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2} NE\frac{1}{4}$ Section 18: $SE\frac{1}{4}$
Lease:	SF-078063
Lessee:	Shell Oil Company
Participating Acreage:	561.53
Percentage of Participation:	12.4140
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 19: Lots 1 and 2, $E\frac{1}{2} NW\frac{1}{4}$ , $NE\frac{1}{4}$ Section 7: $S\frac{1}{2} SE\frac{1}{4}$ , Lot 4, $SE\frac{1}{4} SW\frac{1}{4}$ Section 30: Lot 1, $NE\frac{1}{4} NW\frac{1}{4}$
Lease:	SF-078064
Lessee:	Shell Oil Company
Participating Acreage:	1280.00
Percentage of Participation:	28.2975
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 12: $S\frac{1}{2} SW\frac{1}{4}$ Section 13: All Section 24: $E\frac{1}{2}$ , $NW\frac{1}{4}$ , $N\frac{1}{2} SW\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1440
Lessee:	Skelly Oil Company
Participating Acreage:	120.00
Percentage of Participation:	2.6529
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: $N\frac{1}{2} NE\frac{1}{4}$ , $SW\frac{1}{4} NE\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Phillips Petroleum Company
Participating Acreage:	160.00
Percentage of Participation:	3.5372
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: $NE\frac{1}{4}$



Lease:	Indian Allotted Lands 14-20-603-1284	
Lessee:	Phillips Petroleum Company	
Participating Acreage:	160.77	
Percentage of Participation:	3.5542	
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 1 and 2, E $\frac{1}{2}$ NW $\frac{1}{4}$	
Lease:	Indian Allotted Lands 14-20-603-1285	
Lessee:	Phillips Petroleum Company	
Participating Acreage:	161.07	
Percentage of Participation:	3.5608	
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: Lots 3 and 4, E $\frac{1}{2}$ SW $\frac{1}{4}$	
Lease:	SF-078067	
Lessee:	Shell Oil Company	
Participating Acreage:	1280.00	
Percentage of Participation:	28.2975	
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 11: S $\frac{1}{2}$ , S $\frac{1}{2}$ NW $\frac{1}{4}$ Section 14: All Section 23: N $\frac{1}{2}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$	
Summary:	<u>Acres</u>	<u>Percent</u>
Total Federal Lands:	3921.53	86.6949
Total Indian Lands:	<u>601.84*</u>	<u>13.3051</u>
Total Productive Acreage:	4523.37	100.0000

\* Excludes 80 acres (S $\frac{1}{2}$  NW $\frac{1}{4}$ ) Section 17, Township 25 North, Range 11 West, N. M. P. M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.



## SHELL OIL COMPANY

703 West Municipal Drive  
Farmington, New Mexico

February 16, 1959

Re: Bisti Field  
Carson Unit Agreement No. 2576

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:

Enclosed herewith for your files please find a copy of a letter dated February 6, 1959 from the United States Geological Survey advising of their approval of our Eighth Revision of the Carson Unit.

Very truly yours,

*F. W. Nantker*  
For F. W. Nantker  
Division Land Manager

Enclosures

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

← THIS COPY FOR 

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Phillips Petroleum Company  
Durango, Colorado

Phillips Petroleum Company  
Cortez, Colorado

Humble Oil and Refining Company  
Houston, Texas

*File  
1085*



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

FEB 6 1959

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Gentlemen:

Your application of November 13, 1958, for the eighth revision, (160.35 acres), of the Gallup sandstone participating area (new total 4,122.87 acres), under the Carson unit agreement, New Mexico, No. 14-08-001-3485, was approved February 2, 1959, by Arthur A. Baker, Acting Director of the Geological Survey, effective as of September 1, 1958.

Enclosed are three copies of the approved application for your records. It is requested that you furnish the State of New Mexico or any other interested principal with whatever evidence of this approval is deemed appropriate.

Very truly yours,

*A. A. Baker*  
For the Director

FARMINGTON PRODUCTION

ENCLOSURE

FEB 11 1959

Enclosures 3

1	Enclosure
2	Enclosure
3	Enclosure
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99	Enclosure
100	Enclosure

In reply refer to:  
Unit Division

January 4, 1939

Shell Oil Company  
P. O. Box 158  
Farmington, New Mexico

Re: Tenth Revision of the  
Participating Area for the  
Gallup Pool, Carson Unit,  
San Juan County, New Mexico

ATTENTION: Mr. F. W. Nantker

Gentlemen:

The Commissioner of Public Lands has of this date approved the Tenth Revision of the Gallup Participating Area for the Carson Unit Agreement, dated December 14, 1939.

We are forwarding seven approved copies to the United States Geological Survey, Roswell, New Mexico.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/PMR/m  
cc:

USGS- Roswell  
OCC:- Santa Fe ✓

File  
1085

In reply refer to:  
Unit Division

December 29, 1958

1958 DEC 30 AM 8:02

MAIN OFFICE OCC

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Re: Withdrawal of approval  
Ninth Expanded Participating  
Area, Carson Unit, dated  
November 28, 1958, San Juan  
County, New Mexico

Gentlemen:

We wish to advise you that this office has withdrawn its approval of the proposed Ninth Expanded Participating Area dated November 28, 1958 for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the New Mexico Oil Conservation Commission.

Very truly yours,

MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/HR/m

ec:

OCC- Santa Fe  
USGS- Roswell

C  
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MAIN OFFICE OCC

RECEIVED 20 AM 8:02

In reply refer to:  
Unit Division

December 29, 1958

C  
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Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Ninth Expanded Participating  
Area Gallup Formation Carson  
Unit San Juan County, New Mexico.

Gentlemen:

This is to advise that the Commissioner of Public Lands has this date approved the Ninth Expanded Participating Area Gallup Formation for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Oil Conservation Commission of the State of New Mexico.

Seven approved copies of the application were forwarded to the United States Geological Survey.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MER/m  
cc:

U. S. GEOLOGICAL SURVEY Roswell  
OIL CONSERVATION COMMISSION-Santa Fe

OIL CONSERVATION COMMISSION  
P. O. BOX 871  
SANTA FE, NEW MEXICO

File  
12-25

December 24, 1958

C  
O  
P  
Y  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Withdrawal of approval  
Ninth Expanded Participating  
Area Dated November 28, 1958,  
San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date withdrawn its approval of the proposed Ninth Expanded Participating Area dated November 28, 1958 for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/19

cc: U. S. Geological Survey - Roswell  
State Land Office - Santa Fe

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

1085

December 24, 1958

C  
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Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. F. W. Nantker

Re: Ninth Expanded Participating  
Area Gallup Formation Carson  
Unit San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Ninth Expanded Participating Area Gallup Formation for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Eight approved copies of the application were forwarded to the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/ig

cc: U. S. Geological Survey - Roswell  
Land Office - Santa Fe





## SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

December 18, 1958

Subject: Application for approval of the  
Ninth Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Ninth Revision of the Participating Area for the Carson Unit.

The proposed Ninth Revision adds the following acreage to the Participating Area:

Township 25 North, Range 11 West, N.M.P.M.  
Section 18:  $N\frac{1}{2}NE\frac{1}{4}$   
Section 7:  $S\frac{1}{2}SE\frac{1}{4}$   
Section 30:  $N\frac{1}{2}NW\frac{1}{4}$

Township 25 North, Range 12 West, N.M.P.M.  
Section 11:  $N\frac{1}{2}SE\frac{1}{4}, S\frac{1}{2}NW\frac{1}{4}$

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey  
  
New Mexico Oil Conservation Commission  
  
Commissioner of Public Lands

2

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the proposed Ninth Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for the proposed Ninth Revision. We believe this Geological and Engineering Report, with attachments, supports the suggested revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Ninth Revision to be effective October 1, 1958.

Very truly yours,

SHELL OIL COMPANY



F. W. Nantker  
Division Land Manager

Attachments

Approved this 24 day of  
December, 1958

New Mexico Oil Conservation Commission  
By W. L. Carter

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

Commissioner of Public Lands  
By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

U. S. Geological Survey  
By \_\_\_\_\_

GEOLOGICAL AND ENGINEERING REPORT  
PROPOSED NINTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Ninth Revision of Participating Area in the Carson Unit. This Revision adds 400.25 acres to the Eighth Revision for a total of 4443.12 acres of participation.

WELL DATA

Carson Unit 22-11

Location: 1980' S and 1980' E of NW Corner, Section 11, T25N, R12W, NMPM.

Total Depth: 5060'.

Perforated Intervals: 4918-4950, 4984-4998, 5002-5012.

Microlog Pay: 6'.

Pay Without Separation: 0

Initial Production: Pumped 211 B/D gross with 0.2% cut, GOR 480 CF/B  
after recovering load and fracture oil.

Completion Date: October 31, 1958.

Carson Unit 13-12

Location: 1980' N and 660' E of SW Corner, Section 12, T25N, R12W, NMPM.

Total Depth: 5055'.

Perforated Intervals: 4914-4947', 4973-4987', and 4991-5007'.

Microlog Pay: 0'.

Pay Without Separation: 0'.

Initial Production: Pumped 25 B/D gross with 0.2% cut, GOR 640 CF/B,  
after recovering its load and fracture oil.

Completion Date: October 5, 1958.

Carson Unit 41-18

Location: 660' S and 660' W of NE Corner, Section 18, T25N, R11W, NMPM.

Total Depth: 5070'.

Perforated Intervals: 4916-4966', 4982-4992', 5000-5012', and 5018-5026'.

Microlog Pay: 11'.

Pay Without Separation: 5'.

Initial Production: Pumped 339 B/D gross, 0.2% cut, GOR 380 CF/B after recovering its load and fracture oil.

Completion Date: October 6, 1958.

Carson Unit 33-11

Location: 1980' N and 1980' W of SE Corner, Section 11, T25N, R12W, NMPM.

Total Depth: 5045'.

Perforated Interval: 4888-4926', 4956-4976', 4980-4996'.

Microlog Pay: 8'.

Pay Without Separation: 6'.

Initial Production: Pumped 303 B/D gross, 0.2% cut, GOR 400, after recovering its load and fracture oil.

Completion Date: October 8, 1958.

Carson Unit 11-30

Location: 660' S and 660' E of NW Corner, Section 30, T25N, R11W, NMPM.

Total Depth: 4960'.

Perforated Intervals: 4834-4849', 4861-4870', 4873-4877', 4879-4889',  
4893-4906', 4916-4928', and 4933-4947'.

Microlog Pay: 8'.

Pay Without Separation: 6'.

Initial Production: Pumped 280 B/D gross, cut 0.1%, GOR 290, after recovering its load and fracture oil.

Completion Date: October 19, 1958.

Carson Unit 34-7

Location: 660' N and 1980' W of SE Corner, Section 7, T25N, R11W, NMPM.

Total Depth: 5080'.

Perforated Intervals: 4943-4962', 4981-4993', 5002-5014', and 5020-5030'.

Microlog Pay: 7'.

Pay Without Separation: 6'.

Initial Production: Pumped 180 B/D gross, cut 0.2%, GOR 500, after recovering its load and fracture oil.

Completion Date: October 28, 1958.

We believe Carson Units 22-11, 41-18, 33-11, 11-30, and 34-7 to be commercial wells, based on the amounts of pay penetrated and the substantial initial rates.

One well has been drilled on the Unit that has not yet been completed. The status of this well is as follows:

WELL	LOCATION	TOTAL DEPTH	STATUS
Unit 24-7	660' N and 1971' E of SW Corner, Sec. 7, T25N, R11W, NMPM.	5040'	Producing Frac Oil.

#### GEOLOGY AND RESERVOIR

A revised isopach map of the net pay for the Gallup sandstone is attached. Several changes in this map were made during the last month. Carson Unit 11-30 encountered an extension of G<sub>d</sub> sand build-up along the south flank of the field, while Unit 34-7 was found to be situated on the north flank of a typical northeast-southwest G<sub>d</sub> sand build-up encountered also by Units 41-18 and 24-7. In addition, a G<sub>d</sub> sand build-up was located by Units 33-11 and 22-11 along the north flank of the field.

#### CONCLUSION

We recommend increasing the Participating Area of the Carson Unit by 400.25 acres to include the lands in the vicinity of Carson Units 22-11, 41-18, 33-11, 11-30, and 34-7, these lands having been proven productive of oil in paying quantities. The lands in the Participating Area, thus revised, should be described as follows:

##### Township 25 North, Range 11 West, N.M.P.M.

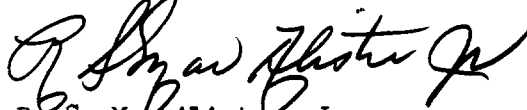
Section 7: S/2 SE/4  
Section 17: S/2 NE/4, S/2  
Section 18: All  
Section 19: N/2  
Section 20: NW/4, N/2 SW/4, N/2 NE/4, SW/4 NE/4  
Section 30: N/2 NW/4

##### Township 25 North, Range 12 West, N.M.P.M.

Section 11: S/2, S/2 NW/4  
Section 12: S/2 SW/4  
Section 13: All  
Section 14: All  
Section 23: NE/4, N/2 NW/4  
Section 24: E/2, NW/4, N/2 SW/4

It is further recommended that the effective date of the Ninth Revision of Participating Area be October 1, 1958, the first of the month in which Units 22-11, 41-18, 33-11, 11-30, and 34-7 were completed.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment - Isopach Net, Microlog  
Pay Gallup Sandstone

EXHIBIT "B" - PROPOSED NINTH REVISION

Schedule of Lands Entitled to Participate

Lease:	SF-078061
Lessee:	Shell Oil Company
Participating Acreage:	560.00
Percentage of Participation:	12.6038
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2}$ Section 20: $NW\frac{1}{4}$ , $N\frac{1}{2}$ $SW\frac{1}{4}$
Lease:	SF-078062
Lessee:	Shell Oil Company
Participating Acreage:	240.00
Percentage of Participation:	5.4016
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2}$ $NE\frac{1}{4}$ Section 18: $SE\frac{1}{4}$
Lease:	SF-078063
Lessee:	Shell Oil Company
Participating Acreage:	481.28
Percentage of Participation:	10.8320
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 19: Lots 1 and 2, $E\frac{1}{2}$ $NW\frac{1}{4}$ , $NE\frac{1}{4}$ Section 7: $S\frac{1}{2}$ $SE\frac{1}{4}$ Section 30: Lot 1, $NE\frac{1}{4}$ $NW\frac{1}{4}$
Lease:	SF-078064
Lessee:	Shell Oil Company
Participating Acreage:	1280.00
Percentage of Participation:	28.8086
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 12: $S\frac{1}{2}$ $SW\frac{1}{4}$ Section 13: All Section 24: $E\frac{1}{2}$ , $NW\frac{1}{4}$ , $N\frac{1}{2}$ $SW\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1440
Lessee:	Skelly Oil Company
Participating Acreage:	120.00
Percentage of Participation:	2.7008
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: $N\frac{1}{2}$ $NE\frac{1}{4}$ , $SW\frac{1}{4}$ $NE\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Phillips Petroleum Company
Participating Acreage:	160.00
Percentage of Participation:	3.6010
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: $NE\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1284  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 160.77  
 Percentage of Participation: 3.6184  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 1 and 2, E $\frac{1}{2}$  NW $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1285  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 161.07  
 Percentage of Participation: 3.6252  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 3 and 4, E $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 1280.00  
 Percentage of Participation: 28.8086  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 11: S $\frac{1}{2}$ , S $\frac{1}{2}$  NW $\frac{1}{4}$   
 Section 14: All  
 Section 23: N $\frac{1}{2}$  NW $\frac{1}{4}$ , NE $\frac{1}{4}$

Summary:	<u>Acres</u>	<u>Percent</u>
Total Federal Lands:	3841.28	86.4546
Total Indian Lands:	<u>601.84 *</u>	<u>13.5454</u>
Total Productive Acreage:	4443.12	100.0000

\* Excludes 80 acres (S $\frac{1}{2}$  NW $\frac{1}{4}$ ) Section 17, Township 25 North, Range 11 West, N.M.P.M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.





## SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

December 10, 1958

Re: Bisti Field  
Carson Unit Agreement No. 2576

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:

Enclosed herewith for your files please find a copy of a letter dated December 3, 1958 from the United States Geological Survey advising of their approval of our Proposed Seventh Revision of the Carson Unit.

Very truly yours,

*F. W. Nantker*

For F. W. Nantker  
Division Land Manager

Enclosures

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Phillips Petroleum Company  
Durango, Colorado

Phillips Petroleum Company  
Cortez, Colorado

Humble Oil and Refining Company  
Houston, Texas

*File*  
*1085*

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

P. O. Box 871  
Santa Fe, New Mexico  
December 3, 1956

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention: Mr. F. W. Nantker

*approval  
Withdrawn*

Re: Ninth Expanded Gallup  
participating Area  
Carson Unit San Juan  
County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Ninth Expanded Participating Area, Gallup Formation for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Eight approved copies of the application were forwarded to the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/19

cc: State Land Office - Santa Fe  
US Geological Survey - Roswell

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Y



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

IN REPLY REFER TO:

DEC 3 1958

Shell Oil Company  
1901 Main Avenue  
Durango, Colorado

Gentlemen:

Your application of June 18, 1958, for the seventh revision, (400 acres), of the Gallup sandstone participating area (new total 3962.52 acres), under the Carson unit agreement, New Mexico, No. 14-08-001-3485, was approved November 28, 1958, by Arthur A. Baker, Acting Director of the Geological Survey, effective May 1, 1958.

Enclosed are three copies of the approved application for your records. It is requested that you furnish the State of New Mexico and any other interested principal with whatever evidence of this approval is deemed appropriate.

Very truly yours,

For the Director

Enclosures 3

LAND DEPT.  
TO *H. G. DATE* 12/5/69  
FROM *T. Freeman* DATE 12/5/69  
TO DATE



RETURN TO SENDER  
F. 117  
MAIN OFFICE  
**SHELL OIL COMPANY**

705 West Municipal Drive  
Farmington, New Mexico 87401

November 28, 1958

Subject: Bisti Field - Carson Unit  
Proposed Ninth Revision  
of the Participating Area

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Attention Mr. D. S. Nutter

Gentlemen:

We enclose for your consideration and approval nine each, copies of our proposed Ninth Revision of the Participating Area for the Carson Unit. Attached to each copy of our application for approval please find the following:

1. Land Map Marked Exhibit "A"
2. Schedule of Lands Entitled to Participate
3. Geological and Engineering Report
4. Isopach of Net Microlog Pay

We request that you approve this revision and also obtain the approval of the Commissioner of Public Lands. We would then appreciate your forwarding seven copies to the United States Geological Survey in Roswell, New Mexico, retaining one copy for your files and one copy for the Commissioner of Public Lands.

Very truly yours,

*F. W. Nantker*  
For F. W. Nantker  
Division Land Manager

Enclosures

- cc - Commissioner of Public Lands  
- U. S. Geological Survey  
Roswell, New Mexico  
- U. S. Geological Survey  
Farmington, New Mexico



## SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

December 18, 1958

Subject: Bisti Field - Carson Unit  
Proposed Ninth Revision  
of the Participating Area

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Attention Mr. D. S. Nutter

Gentlemen:

Reference is made to our proposed Ninth Revision of the Participating Area for the Gallup (Upper Cretaceous) Pool - Carson Unit dated November 28, 1958 which we forwarded to you. We found that we had failed to include one well completed in October of 1958 in the Ninth Revision. The matter was discussed with the United States Geological Survey and they preferred to return the proposed Ninth Revision to us for correction and re-submission rather than have a separate amended revision submitted.

Therefore, we request that you destroy the proposed Ninth Revision dated November 28, 1958 and substitute in lieu thereof the new proposed Ninth Revision which we are filing with the United States Geological Survey. Attached to each copy of our application for approval please find the following:

1. Land Map Marked Exhibit "A"
2. Schedule of Lands Entitled to Participate
3. Geological and Engineering Report
4. Isopach of Net Microlog Pay

We request that you approve this revision and also obtain the approval of the Commissioner of Public Lands. We would then appreciate your forwarding seven copies to the United States Geological Survey in Roswell, New Mexico, retaining one copy for your files and one copy for the Commissioner of Public Lands.

Very truly yours,

F. W. Nantker  
Division Land Manager

Enclosures

- cc - Commissioner of Public Lands
- U. S. Geological Survey  
Roswell, New Mexico
- U. S. Geological Survey  
Farmington, New Mexico



MAIN OFFICE 600  
**SHELL OIL COMPANY**  
705 West Municipal Drive  
Farmington, New Mexico

November 28, 1958

Subject: Application for approval of the  
Ninth Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Ninth Revision of the Participating Area for the Carson Unit.

The proposed Ninth Revision adds the following acreage to the Participating Area:

Township 25 North, Range 11 West, N.M.P.M.  
Section 18:  $N\frac{1}{2}$   $NE\frac{1}{4}$   
Section 7:  $S\frac{1}{2}$   $SE\frac{1}{4}$   
Section 30:  $N\frac{1}{2}$   $NW\frac{1}{4}$

Township 25 North, Range 12 West, N.M.P.M.  
Section 11:  $N\frac{1}{2}$   $SE\frac{1}{4}$

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

2

New Mexico Oil Conservation Commission

Commissioner of Public Lands

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the proposed Ninth Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for the proposed Ninth Revision. We believe this Geological and Engineering Report, with attachments, supports the suggested revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Ninth Revision to be effective October 1, 1958.

Very truly yours,

SHELL OIL COMPANY

*F. W. Nantker*

For F. W. Nantker  
Division Land Manager

Attachments

Approved this 3rd day of  
Dec, 1958

New Mexico Oil Conservation Commission

By *L. P. Carter*

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

Commissioner of Public Lands

By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

U. S. Geological Survey

By \_\_\_\_\_

GEOLOGICAL AND ENGINEERING REPORT  
PROPOSED NINTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Ninth Revision of Participating Area in the Carson Unit. This Revision adds 320.25 acres to the Eighth Revision for a total of 4363.12 acres of participation.

WELL DATA

Carson Unit 13-12

Location: 1980°N and 660°E of SW Corner, Section 12, T25N, R12W, NMPM.

Total Depth: 5055'

Perforated Intervals: 4914-4947', 4973-4987', and 4991-5007'.

Microlog Pay: 0'.

Pay Without Separation: 0'.

Initial Production: Pumped 25 B/D gross with 0.2% cut, GOR 640 CF/B, after recovering its load and fracture oil.

Completion Date: October 5, 1958.

Carson Unit 41-18

Location: 660°S and 660°W of NE Corner, Section 18, T25N, R11W, NMPM.

Total Depth: 5070'.

Perforated Intervals: 4916-4966', 4982-4992', 5000-5012', and 5018-5026'.

Microlog Pay: 11'.

Pay Without Separation: 5'.

Initial Production: Pumped 339 B/D gross, 0.2% cut, GOR 380 CF/B after recovering its load and fracture oil.

Completion Date: October 6, 1958

Carson Unit 33-11

Location: 1980°N and 1980°W of SE Corner, Section 11, T25N, R12W, NMPM.



Total Depth: 5045'

Perforated Intervals: 4888-4926', 4956-4976', 4980-4996'.

Microlog Pay: 8'.

Pay Without Separation: 6'.

Initial Production: Pumped 303 B/D gross, 0.2% cut, GOR 400, after recovering its load and fracture oil.

Completion Date: October 8, 1958.

Carson Unit 11-30

Location: 660'S and 660'E of NW Corner, Section 30, T25N, R11W, NMPM.

Total Depth: 4960'.

Perforated Intervals: 4834-4849', 4861-4870', 4873-4877', 4879-4889', 4893-4906', 4916-4928', and 4933-4947'.

Microlog Pay: 8'.

Pay Without Separation: 6'.

Initial Production: Pumped 280 B/D gross, cut 0.1%, GOR 290, after recovering its load and fracture oil.

Completion Date: October 19, 1958.

Carson Unit 34-7

Location: 660'N and 1980'W of SE Corner, Section 7, T25N, R11W, NMPM.

Total Depth: 5080'.

Perforated Intervals: 4943-4962', 4981-4993', 5002-5014', and 5020-5030'.

Microlog Pay: 7'.

Pay Without Separation: 6'.

Initial Production: Pumped 180 B/D gross, cut 0.2%, GOR 500, after recovering its load and fracture oil.

Completion Date: October 28, 1958.

We believe Carson Units 41-18, 33-11, 11-30, and 34-7 to be commercial wells, based on the amounts of pay penetrated and the substantial initial rates.

Several wells have been drilled on the Unit that have not yet been completed. The status of these wells is as follows:

WELL	LOCATION	TOTAL DEPTH	STATUS
Unit 22-11	1980'S & 1980'E of NW Corner, Sec. 11, T25N, R12W, NMPM.	5060'	Producing Frac Oil.
Unit 24-7	660'N & 1971'E of SW Corner, Sec. 7, T25N, R11W, NMPM.	5040'	Producing Frac Oil.

#### GEOLOGY AND RESERVOIR

A revised isopach map of the net pay for the Gallup sandstone is attached. Several changes in this map were made during the last month. Carson Unit 11-30 encountered an extension of G<sub>d</sub> sand build-up along the south flank of the field, while Unit 34-7 was found to be situated on the north flank of a typical northeast-southwest G<sub>d</sub> sand build-up encountered also by Units 41-18 and 24-7. In addition, a G<sub>d</sub> sand build-up was located by Units 33-11 and 22-11 along the north flank of the field.

#### CONCLUSION

We recommend increasing the Participating Area of the Carson Unit by 320.25 acres to include the lands in the vicinity of Carson Units 41-18, 33-11, 11-30, and 34-7, these lands having been proven productive of oil in paying quantities. The lands in the Participating Area, thus revised, should be described as follows:

##### Township 25 North, Range 11 West, N.M.P.M.

Section 7: S/2 SE/4  
 Section 17: S/2 NE/4, S/2  
 Section 18: All  
 Section 19: N/2  
 Section 20: NW/4, N/2 SW/4, N/2 NE/4, SW/4 NE/4  
 Section 30: N/2 NW/4

##### Township 25 North, Range 12 West, N.M.P.M.

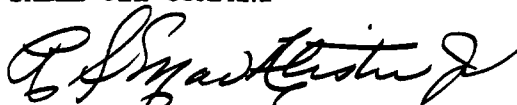
Section 11: S/2  
 Section 12: S/2 SW/4  
 Section 13: All  
 Section 14: All  
 Section 23: NE/4, N/2 NW/4  
 Section 24: E/2, NW/4, N/2 SW/4

GEOLOGICAL AND ENGINEERING REPORT

4

It is further recommended that the effective date of the Ninth Revision of Participating Area be October 1, 1958, the first of the month in which Units 41-18, 33-11, 11-30, and 34-7 were completed.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment - Isopach Net Microlog  
Pay Gallup Sandstone

EXHIBIT "B" - PROPOSED NINTH REVISION

Schedule of Lands Entitled to Participate

Lease: SF-078061  
 Lessee: Shell Oil Company  
 Participating Acreage: 560.00  
 Percentage of Participation: 12.8349  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: S $\frac{1}{2}$   
 Section 20: NW $\frac{1}{4}$ , N $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: SF-078062  
 Lessee: Shell Oil Company  
 Participating Acreage: 240.00  
 Percentage of Participation: 5.5007  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 17: S $\frac{1}{2}$  NE $\frac{1}{4}$   
 Section 18: SE $\frac{1}{4}$

Lease: SF-078063  
 Lessee: Shell Oil Company  
 Participating Acreage: 481.28  
 Percentage of Participation: 11.0306  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 19: Lots 1 and 2, E $\frac{1}{2}$  NW $\frac{1}{4}$ , NE $\frac{1}{4}$   
 Section 7: S $\frac{1}{2}$  SE $\frac{1}{4}$   
 Section 30: Lot 1, NE $\frac{1}{4}$  NW $\frac{1}{4}$

Lease: SF-078064  
 Lessee: Shell Oil Company  
 Participating Acreage: 1280.00  
 Percentage of Participation: 29.3368  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 12: S $\frac{1}{2}$  SW $\frac{1}{4}$   
 Section 13: All  
 Section 24: E $\frac{1}{2}$ , NW $\frac{1}{4}$ , N $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1440  
 Lessee: Skelly Oil Company  
 Participating Acreage: 120.00  
 Percentage of Participation: 2.7503  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 20: N $\frac{1}{2}$  NE $\frac{1}{4}$ , SW $\frac{1}{4}$  NE $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1283  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 3.6671  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: NE $\frac{1}{4}$

ILLEGIBLE

Lease: Indian Allotted Lands 14-20-603-1284  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 160.77  
 Percentage of Participation: 3.6847  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 1 and 2, E $\frac{1}{2}$  NW $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1285  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 161.07  
 Percentage of Participation: 3.6916  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 3 and 4, E $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 1200.00  
 Percentage of Participation: 27.5033  
 Description: T. 25 N., R. 12 W., N.M.P.M.  
 Section 11: S $\frac{1}{2}$   
 Section 14: All  
 Section 23: N $\frac{1}{2}$  NW $\frac{1}{4}$ , NE $\frac{1}{4}$

Summary:	Acreage	Percent
Total Federal Lands:	3761.28	86.2062
Total Indian Lands:	<u>601.94*</u>	<u>13.7938</u>
Total Productive Acreage:	4363.12*	100.0000

\* Excludes 80 acres (S $\frac{1}{2}$  NW $\frac{1}{4}$ ) Section 17, Township 25 North, Range 11 West, N.M.P.M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.

ILLEGIBLE

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

November 17, 1958

C  
O  
P  
Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention: Mr. F. W. Nantker

Re: Eighth Expanded Participating  
Area - Gallup Formation  
Carson Unit - San Juan County,  
New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Eighth Expanded Participating Area for the Carson Unit, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Eight approved copies of the application were forwarded to the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/RLS/ir

cc: Commissioner of Public Lands - Santa Fe, New Mexico  
U. S. Geological Survey - Roswell, New Mexico



## SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

November 13, 1958

Subject: Bisti Field - Carson Unit  
Proposed Eighth Revision  
of the Participating Area

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Attention Mr. D. S. Nutter

Gentlemen:

We enclose for your consideration and approval nine each, copies of our proposed Eighth Revision of the Participating Area for the Carson Unit. Attached to each copy of our application for approval please find the following:

1. Land Map Marked Exhibit "A"
2. Schedule of Lands Entitled to Participate
3. Geological and Engineering Report
4. Isopach of Net Microlog Pay

We request that you approve this revision and also obtain the approval of the Commissioner of Public Lands. We would then appreciate your forwarding seven copies to the United States Geological Survey in Roswell, New Mexico, retaining one copy for your files and one copy for the Commissioner of Public Lands.

Very truly yours,

*F. W. Nantker*  
For: F. W. Nantker  
Division Land Manager

cc - Commissioner of Public Lands  
- U. S. Geological Survey  
Roswell, New Mexico  
- U. S. Geological Survey  
Farmington, New Mexico



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

November 13, 1958

Subject: Application for approval of the  
Eighth Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Eighth Revision of the Participating Area for the Carson Unit.

The proposed Eighth Revision adds the following acreage to the Participating Area:

Township 25 North, Range 11 West, N.M.P.M.  
Section 18: Lot 1, NE $\frac{1}{4}$  NW $\frac{1}{4}$

Township 25 North, Range 12 West, N.M.P.M.  
Section 11: N $\frac{1}{2}$  SW $\frac{1}{4}$



Director  
 United States Geological Survey  
 Through  
 Supervisor  
 United States Geological Survey

New Mexico Oil Conservation Commission

Commissioner of Public Lands

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the proposed Eighth Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for the proposed Eighth Revision. We believe this Geological and Engineering Report, with attachments, supports the suggested revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Eighth Revision to be effective September 1, 1958.

Very truly yours,

SHELL OIL COMPANY

*F. W. Nantker*

For F. W. Nantker  
 Division Land Manager

Attachments

Approved this 17 day of  
Nov, 1958

New Mexico Oil Conservation Commission  
 By *W. G. Porter*

Approved this \_\_\_\_\_ day of  
 \_\_\_\_\_, 1958

Commissioner of Public Lands  
 By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
 \_\_\_\_\_, 1958

U. S. Geological Survey  
 By \_\_\_\_\_

GEOLOGICAL AND ENGINEERING REPORT  
PROPOSED EIGHTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Eighth Revision of Participating Area in the Carson Unit area. This revision adds 160.35 acres to the Seventh Revision for a total of 4042.87 acres of participation.

WELL DATA

Carson Unit 21-18

Location: 660'S and 1973'E of NE Corner, Section 18, T25N, R11W, NMFM.

Total Depth: 5024'

Perforated Intervals: 4883-4912, 4936-4942, 4950-4965, 4968-4980.

Microlog Pay: 6'

Pay without Separation: 4'

Initial Production: Pumped 384 B/D gross with 0.3% cut, GOR 450 CF/B, after recovering its load and fracture oil.

Completion Date: September 14, 1958.

Carson Unit 13-11

Location: 1910'N and 590'E of SW Corner, Section 11, T25N, R12W, NMFM.

Total Depth: 4920'

Perforated Intervals: 4776-4810, 4814-4829, 4856-4869, 4873-4890.

Microlog Pay: 8'

Pay without Separation: 7'

Initial Production: Pumped 170 B/D gross with 0.3% cut, GOR 490 CF/B after recovering its load and fracture oil.

Completion Date: September 22, 1958.

Carson Unit 43-23

Location: 3300'S and 660'W of NE Corner, Section 23, T25N, R12W, NMFM.

Total Depth: 4945'

Perforated Intervals: 4792-4826, 4846-4880, 4886-4898, 4904-4918.

Microlog Pay: 6'

Pay without Separation: 2'

Initial Production: Pumped 161 B/D Gross with 0.2% cut, GOR 540  
CF/B after recovering its load and fracture oil.

Completion Date: September 27, 1958

We believe Carson Units 21-18 and 13-11 to be paying wells, based on the amounts of pay penetrated and the substantial initial rates. Mechanical difficulty was experienced with Unit 43-23 after obtaining the initial potential and lack of reliable data prevents us from submitting it to be included in the Participating Area at this time.

Several wells have been drilled on the Unit that have not yet been completed. The status of these wells is as follows:

<u>WELL</u>	<u>LOCATION</u>	<u>TOTAL DEPTH</u>	<u>STATUS</u>
Unit 13-12	1980'N & 660'E of SW Corner, Sec. 12, T25N, R12W	5055'	Producing Frac Oil
41-18	660'S & 660'W of NE Corner, Sec. 18, T25N, R11W	5070'	Producing Frac Oil
33-11	1980'N & 1980'W of SE Corner, Sec. 11, T25N, R12W	5045'	Fracture treated, installing artificial lift equipment.

#### GEOLOGY AND RESERVOIR

A revised isopach map of the net microlog pay for the Gallup sandstone is attached. Past development in the Carson Unit has shown that trends of favorable sand development exhibit a pronounced northwest-southeast orientation. Carson Unit wells 13-11 and 21-18 encountered northwesterly extensions of sand build-ups on the north flank of the field while Carson Unit 43-23 is situated on the southwest edge of a similar trend on the south flank.

#### CONCLUSION

We recommend increasing the Participating Area of the Carson Unit by 160.35 acres to include the lands in the vicinity of Carson Units 21-18 and 13-11, these lands having been proven productive of oil in paying quantities. The lands in the Participating Area, thus revised, should be described as follows:

Township 25 North, Range 11 West, N.M.P.M.  
Section 17: S/2 NE/4, S/2  
Section 18: NW/4, S/2, S/2 NE/4  
Section 19: N/2  
Section 20: NW/4, N/2 SW/4, N/2 NE/4, SW/4 NE/4

Township 25 North, Range 12 West, N.M.P.M.

Section 11: SW/4, S/2 SE/4

Section 12: S/2 SW/4

Section 13: ALL

Section 14: ALL

Section 23: NE/4, N/2 NW/4

Section 24: E/2, NW/4, N/2 SW/4

It is further recommended that the effective date of the Eighth Revision of Participating Area be September 1, 1958, the first of the month in which units 21-18 and 13-11 were completed.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment - Isopach Net Microlog  
Pay Gallup Sandstone



IN REPLY REFER TO:

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

P. O. Box 6721  
Roswell, New Mexico

November 7, 1958

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico

Gentlemen:

Your third amendment, dated November 3, 1958, to the fifth supplemental plan of development for the Carson Unit Area, New Mexico, No. 14-08-001-3485, has been approved on this date subject to like approval by the appropriate State of New Mexico officials.

Six approved copies of the plan are enclosed.

Very truly yours,

CARL C. TRAYWICK

CARL C. TRAYWICK  
Acting Oil and Gas Supervisor

Enclosures 6

Copy to: Washington (w/cy of plan)  
Farmington (w/cy of plan)  
Comm. of Public Lands, Santa Fe (ltr only)  
Oil Cons. Comm., Santa Fe (ltr only)

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

November 5, 1958

C  
O  
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Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. R. R. Robinson

Re: Third Amendment to the  
Fifth Supplemental Plan  
of Development Carson Unit  
San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Third Amendment to the Fifth Supplemental Plan of Development calling for the drilling of four additional wells for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/ig

cc: Land Office, Santa Fe  
U.S. Geological Survey, Roswell



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

November 3, 1958

Re: Carson Unit Agreement  
14-08-001-3485  
Fifth Supplemental  
Plan of Development  
Third Amendment

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Roswell, New Mexico

Dear Mr. Anderson:

We submit herewith the Third Amendment to the Fifth Supplemental Plan of Development for drilling three Gallup (Upper Cretaceous) wells in the Carson Unit.

The wells to be drilled are by designation and location (refer to location map attached):

<u>Well No.</u>	<u>Location</u>
Carson Unit No. 14-8	SW $\frac{1}{4}$ SW $\frac{1}{4}$ Section 8, T. 25 N., R. 11 W., N.M.P.M.
Carson Unit No. 31-17	NW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 17, T. 25 N., R. 11 W., N.M.P.M.
Carson Unit No. 23-19	NE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 19, T. 25 N., R. 11 W., N.M.P.M.
Carson Unit No. 22-23	SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 23, T. 25 N., R. 12 W., N.M.P.M.

These wells are designed to further delineate the economic boundaries of the pool in areas which appear to have additional profitable locations based upon the success of the wells previously drilled under the Fifth Supplemental Plan of Development.

Your early approval of the amendment is respectfully requested.

Very truly yours,



R. R. Robison  
Division Production Manager

Enclosure

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Phillips Petroleum Company  
Post Office Box 548  
Cortez, Colorado

Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

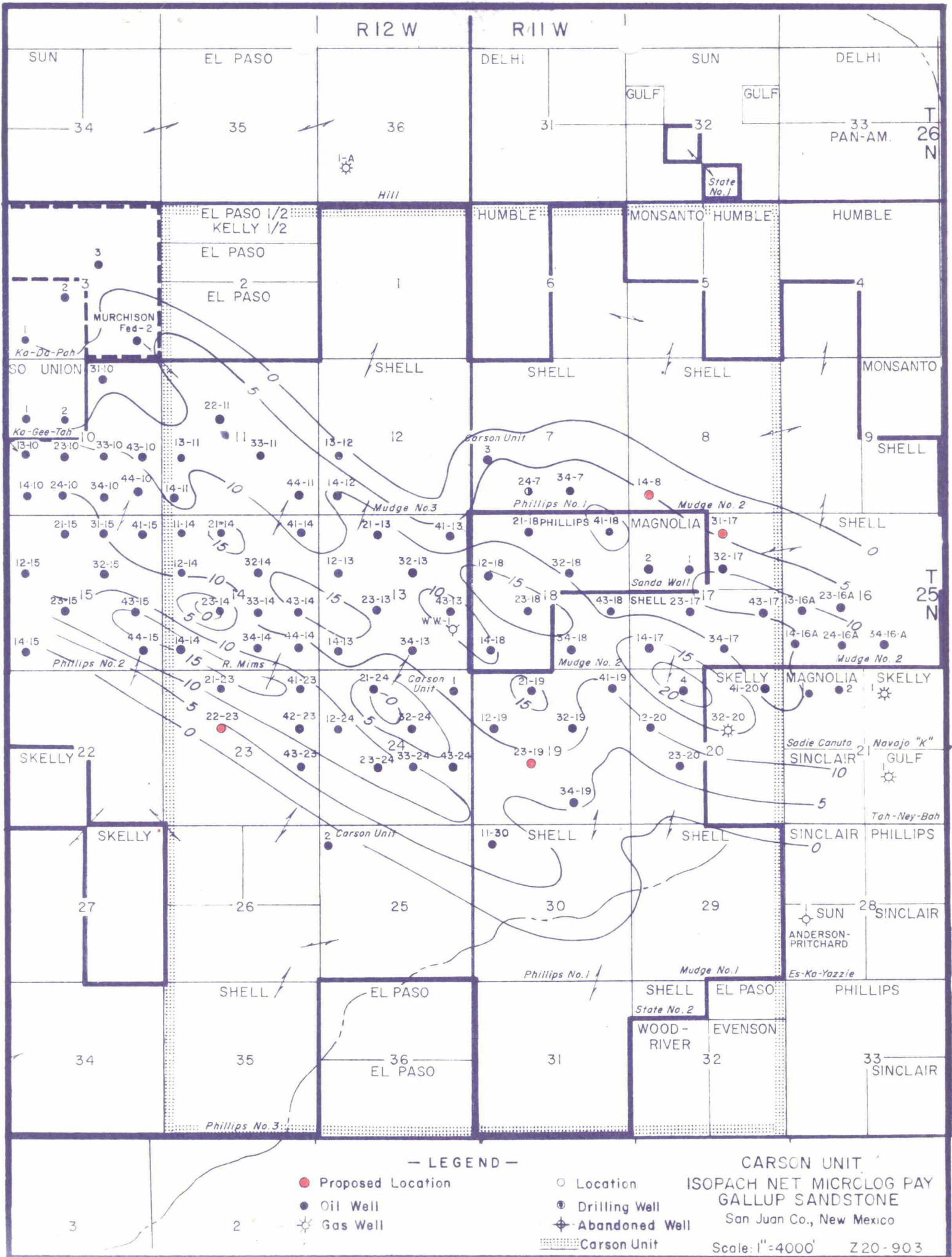
Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Humble Oil and Refining Company  
Post Office Box 2180  
Houston 1, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Approved *[Signature]* 1942  
Secretary-Director  
NEW MEXICO OIL CONSERVATION COMMISSION





File  
1085

MAIN OFFICE OCC  
1958 OCT 30 AM 8:08

In reply refer to:  
Unit Division

October 29, 1958

C  
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Y

Shell Oil Company  
705 W Municipal Drive  
Farmington, New Mexico

Re: Second Amendment to the  
Fifth Supplemental Plan of  
Development-Carson Unit  
Agreement

ATTENTION: Mr. R. R. Robinson

Gentlemen:

Please disregard our letter approving the Second Amendment to the Fifth Supplemental Plan of Development, Carson Unit Agreement, which was dated October 23, 1956.

We are approving the Second Amendment to the Fifth Supplemental Plan of Development, Carson Unit Agreement, as of October 23, 1958.

We trust this has caused you no inconvenience.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MM/MMR/m

cc: OCC-Santa Fe  
USGS-Roswell

**PHILLIPS PETROLEUM COMPANY**

BARTLESVILLE, OKLAHOMA

October 28, 1958

In re: Carson Unit - Conservation Practices - Pressure Maintenance

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention of Mr. R. R. Robison

Dear Sir:

In a recent visit with members of your staff at Farmington it was learned that you have no present plans for pressure maintenance on the Carson Unit. The reasons given were that Shell was not "an early water flood" and that the present well density was insufficient to permit effective pressure maintenance or secondary recovery. The term "early water flood" in the context of the conversation was taken to include all forms of secondary recovery operations.

Phillips and a majority of the other operators in the field do not share your views in this matter; however, the basic technical issues involved have been argued at length without resolution of the differences of opinion which exist. It is certain that you would agree that the early application of secondary recovery or pressure maintenance techniques under suitable conditions would result in greater ultimate recovery than would the same techniques applied to a depleted reservoir. In the case of the miscible slug gas injection process early application is mandatory. There can also be no doubt that it would be more economical to develop the unit area on 80-acre spacing for both primary and secondary recovery rather than 40-acre spacing if the recovery efficiency was the same for both densities. Inasmuch as the degree to which these premises are applicable to the Carson Unit cannot be ascertained by further debate, it would appear prudent to test them while it is still possible to do so by conducting a pilot pressure maintenance program on the unit under the present 80-acre well density.

From the pressure data you have recently furnished this office it is apparent that the miscible slug-gas injection process would still be applicable. The results of the LPG-gas injection pilot now in operation elsewhere in the Bisti Field indicates an ultimate recovery far in excess of that

Shell Oil Company  
In re: Carson Unit  
October 28, 1958  
Page No. 2

which would be expected from any of the conventional pressure maintenance methods. Phillips Petroleum Company believes that increased recovery in the order of 200 per cent of primary attributable to the LPG gas injection pilot program justifies a full-scale pressure maintenance program using this method, however, this office would compromise its opinion to the extent of agreeing to a pilot test rather than a unit-wide application. We believe that the necessity for development of an effective conservation method through pressure maintenance exceeds in importance the preservation of the concept that any operator has of the relative merits of early versus late secondary recovery or wide versus close spacing.

You are aware of the efforts of the operators west of the Carson Unit to form a unit for the purpose of conducting pressure maintenance operations. The opinions expressed by a majority of these operators at a recent meeting indicate that one or more units will be formed and that some type of pressure maintenance will be commenced at a relatively early date. Under these circumstances it becomes more urgent that a pressure maintenance program be developed for the Carson Unit to forestall restrictive action by the New Mexico Oil Conservation Commission to protect the pressure maintenance area from drainage to the primary depletion area.

This office would be pleased to assist in the development of a unit-wide or pilot LPG-gas injection program or consider any program which you may wish to submit.

Yours very truly,

L. E. Fitzjarrald

LEF:EFL:dr  
cc: Skelly Oil Company  
Skelly Building  
Tulsa 2, Oklahoma  
Attn: Mr. George Salinger

U.S.G.S.  
P. O. Box 6721  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
Box 671  
Santa Fe, New Mexico  
Attn: Mr. A. L. Porter, Jr.



MAIN OFFICE 000

# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

October 13, 1958

Re: Bisti Field  
Carson Unit Agreement No. 2576

*F. L.  
10/15*

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Bartlesville, Oklahoma

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Gentlemen:

Reference is made to the First and Second Amendments to the Fifth Supplemental Plan of Development for the Carson Unit Area.

Enclosed herewith for your files is a copy of a letter dated October 6, 1958 from the United States Geological Survey advising the First and Second Amendments were approved October 6, 1958.

Very truly yours,

*F. W. Nantker*

For F. W. Nantker  
Division Land Manager

Enclosure

cc - Phillips Petroleum Company  
Post Office Box 548  
Cortez, Colorado

Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

Humble Oil and Refining Company  
Post Office Box 2180  
Houston, Texas

New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

File  
1035

October 7, 1958

C  
O  
P  
Y  
  
Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

ATTENTION: Mr. R. R. Robison

Re: Fifth Supplemental Plan  
of Development Second  
Amendment Carson Unit  
San Juan County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Second Amendment to the Fifth Supplemental Plan of Development calling for the drilling of one additional well for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ig/

cc: Land Office, Santa Fe  
US Geological Survey, Roswell



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
MAIN OFFICE  
GEOLOGICAL SURVEY

1958 OCT 8 AM 8:13  
P. O. Box 6721  
Roswell, New Mexico

October 6, 1958

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Gentlemen:

The first and second amendments to the fifth supplemental plan of development for the Carson unit area, San Juan County, New Mexico, No. 14-08-001-3485, have been approved on this date, subject to like approval by appropriate officials of the State of New Mexico.

Six approved copies of each amended plan of development are enclosed.

Very truly yours,

(Orig. Sgd.) JOHN A. ANDERSON

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Enclosures 12

Copy to: Wash. (w/cy of each plan)  
Farmington (w/cy of each plan)  
Oil Cons. Comm. ✓  
Comm. of Public Lands



# SHELL OIL COMPANY

705 West Municipal Drive  
Farmington, New Mexico

October 2, 1958

Re: Carson Unit Agreement  
14-08-001-3485  
Fifth Supplemental  
Plan of Development  
Second Amendment

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Roswell, New Mexico

Dear Mr. Anderson:

We submit herewith the Second Amendment to the Fifth Supplemental Plan of Development for drilling a Gallup (Upper Cretaceous) well in the Carson Unit and such additional wells as the Supervisor may verbally approve as was discussed by your Mr. Knauff and our Mr. Nantker on October 1, 1958. This amendment should not be construed as changing any of the wells proposed in our Fifth Supplemental Plan of Development contained in our letter of August 15, 1958 or in the First Amendment thereto contained in our letter of September 22, 1958, but provides for the drilling of additional wells only.

The well to be drilled is by designation and location (refer to location map attached):

<u>Well No.</u>	<u>Location</u>
Carson Unit 22-11	SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 11, Township 25 North, Range 12 West, N.M.P.M.

The microlog pay thicknesses found in Carson Units 13-11 and 33-11 indicate a northerly extension of favorable sand development. Carson Unit 22-11 is designed to test the possible northerly extension.

Approved: 10-7 1958  
  
Secretary-Director

NEW MEXICO OIL CONSERVATION COMMISSION



We have a contract drilling rig which has almost completed drilling Carson Unit 11-30 and will then move to Carson Unit 34-7. Immediately upon completion of Carson Unit 34-7 we plan to move onto Carson Unit 22-11.

Your early approval of this amendment is respectfully requested.

Very truly yours,



R. R. Robison  
Division Production Manager

Enclosure

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Humble Oil and Refining Co.  
Post Office Box 2180  
Houston 1, Texas

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

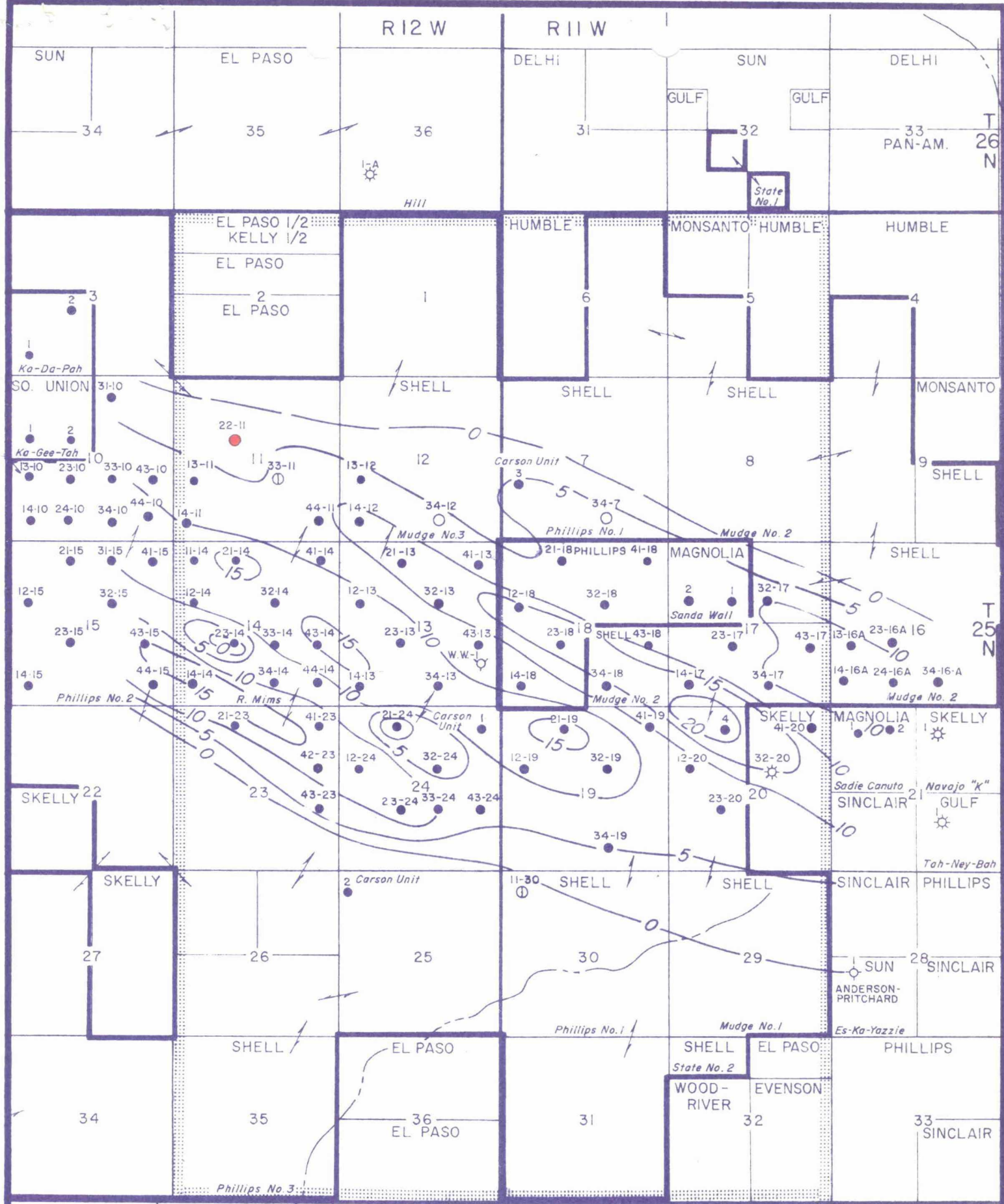
El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma

Phillips Petroleum Company  
Post Office Box 548  
Cortez, Colorado

Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas



— LEGEND —

- Proposed Location
- Oil Well
- ☼ Gas Well

- Location
- Drilling Well
- ✦ Abandoned Well

CARSON UNIT  
ISOPACH NET MICROLOG PAY  
GALLUP SANDSTONE  
San Juan Co., New Mexico

Carson Unit

Scale: 1"=4000' Z 20-903

PHILLIPS PETROLEUM COMPANY

BARTLESVILLE OKLAHOMA

September 12, 1936

In re: Carson Unit - Fifth Supplemental Plan of Development

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention Mr. R. R. Robison

Dear Sir:

Reference is made to your letter dated August 15, 1936 to the U.S.G.S. submitting the subject Supplemental Plan of Development. Phillips Petroleum Company has no objection to the Plan as proposed, however, it would be appreciated if, in the future, you would submit your proposed Plans for approval as provided in Section 4.8 of the Amendatory Agreement dated August 1, 1936.

Yours very truly,



L. E. Fitzjarrald

LEF:NFL:mll

cc: El Paso Natural Gas Products Co.  
P. O. Box 1161  
El Paso, Texas

Humble Oil and Refining Co.  
P. O. Box 2100  
Houston 1, Texas

Shelly Oil Company  
P. O. Box 1690  
Tulsa 2, Oklahoma

Mr. John A. Anderson, Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Comm.  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Mr. Murray Morgan  
Commissioner of Public Lands  
P. O. Box 792  
Santa Fe, New Mexico

In reply refer to:  
Unit Division

August 22, 1958

1958 AUG 22 PM 8:48

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Re: ~~CARSON UNIT AGREEMENT~~  
Fifth Supplemental Plan  
of Development  
San Juan County, New Mexico

Attention: Mr. F. W. Nantker

Gentlemen:

We are forwarding one copy of the above designated  
Plan of Development to the United States Geological Survey,  
Roswell, New Mexico.

This was approved by the Commissioner of Public Lands  
August 21, 1958.

Very truly yours,  
MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MMR/m  
cc:

OCC- Santa Fe  
USGS- Roswell



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
MAIN OFFICE **OCC**  
GEOLOGICAL SURVEY

1958 AUG 25 AM 8:46 O. Box 6721  
Roswell, New Mexico

August 21, 1958

Shell Oil Company  
705 W. Municipal Drive  
Farmington, New Mexico

Attention: Mr. F. W. Mantker

Gentlemen:

Your letters of July 15 and July 23, 1958, regarding the Third Supplemental Plan of Development for the Carson unit area, San Juan County, New Mexico, advise that you have drilled 24 of the wells covered by the plan and will drill one more; that you have drilled three wells not covered by the plan; that you wish to drop two proposed wells as being unprofitable, if drilled; and that you have not drilled the remaining 24 40-acre infill wells because of Order No. E-1069-B of the Oil Conservation Commission. You request our approval of your drilling the three wells not covered by the plan and the dropping of the two locations, and extension of the Plan of Development to June 30, 1959, within which to drill the remaining wells.

Wells Nos. 14-12, 42-23, and 44-11, which were not included in any plans of development, are considered as having been drilled pursuant to the terms of the unit agreement in lieu of wells Nos. 14-19 and 23-19 which you believe would be unprofitable, if drilled. No objection is offered to your dropping the apparently unprofitable locations from the plan.

As stated in your letter of July 15, shortly after the issuance of Order No. 1069-B we told you in several conversations regarding development in the Carson unit area that we would not require you to drill the infill 40-acre locations proposed in your Third Supplemental Plan of Development. Your Fourth and Fifth Supplemental Plans of Development have been submitted and approved.

The Third Supplemental Plan (as well as the other plans) covers no specified period of time. In the circumstances, no extension of the plan appears necessary and your letter of July 15 is

MAIN OFFICE OCC

1938 AUG 25 AM 8:42  
accepted as notice that you are deferring the drilling of the 40-acre  
infill wells as long as Order No. 4269-B is in effect.

Three copies of your letter of July 15 have been retained  
for Survey records and the other eight are returned herewith.

Very truly yours,

(Orig. Sec.) JOHN A. ANDERSON

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Enclosures 8

Copy to: Cons. Div., Wash. (w/cy July 25 ltr)  
Farmington (w/cy July 25 ltr)  
O.C.C., Santa Fe ✓  
Comm. Public Lands, Santa Fe



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

MAIN OFFICE OCC

P. O. Box 6721

1958 AUG 22 AM 8:24  
Bartwell, New Mexico

August 20, 1958

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Attention: Mr. R. R. Robison

Gentlemen:

The fifth supplemental plan of development for the Carson unit area, San Juan County, New Mexico, No. 14-08-001-3485, has been approved on this date, subject to like approval by the appropriate officials of the State of New Mexico.

Six approved copies of the plan of development are enclosed.

Very truly yours,

(Orig. Sgd.) JOHN A. ANDERSON

JOHN A. ANDERSON  
Regional Oil and Gas Supervisor

Enclosures 6

Copy to: Washington (w/cy of plan)  
Farmington (w/cy of plan)  
Oil Cons. Comm. (ltr only)  
Comm. of Public Lands, Santa Fe (ltr only)

OIL CONSERVATION COMMISSION  
P. O. BOX 871  
SANTA FE, NEW MEXICO

August 19, 1958

*File  
Carson Unit*

Shell Oil Company  
705 West Municipal Drive  
Farmington, New Mexico

Re: Fifth Supplemental  
Plan of Development  
Carson Unit San Juan  
County, New Mexico.

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Fifth Supplemental Plan of Development for the Carson Unit San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

One approved copy of the plan is returned herewith, and one approved copy of the plan has been forwarded to the United States Geological Survey in Roswell, New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ig

cc: U.S.G.S., Roswell, New Mexico  
Land Office, Santa Fe, New Mexico

ILLEGIBLE





MAIN OFFICE OCC  
**SHELL OIL COMPANY**  
1958 AUG 13 AM 8  
705 West Municipal Drive  
Farmington, New Mexico

August 15, 1958

Re: Bisti Field  
Carson Unit Agreement 14-08-001-3485  
San Juan County, New Mexico  
Fifth Supplemental Plan of Development

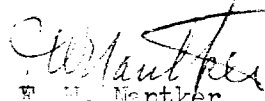
New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Attention Mr. D. S. Nutter

Gentlemen:

We enclose herewith three copies of the Fifth Supplemental Plan of Development for the Carson Unit, dated August 15, 1958. If this Plan of Development meets with your approval please forward one approved copy to the United States Geological Survey, Post Office Box 6721, Roswell, New Mexico.

Very truly yours,

  
F. W. Mantker  
Division Land Manager

Enclosures



MAIN OFFICE OCC  
SHELL OIL COMPANY

705 West Municipal Drive AUG 13 AM 8:58  
Farmington, New Mexico

August 15, 1958

Re: Carson Unit Agreement  
14-08-001-3485  
Fifth Supplemental  
Plan of Development

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Roswell, New Mexico

Dear Mr. Anderson:

We submit for your consideration this Fifth Supplemental Plan of Development for drilling seven Gallup (Upper Cretaceous) wells in the Carson Unit. This plan should not be construed as changing our views on the need for extending the Third Supplemental Plan of Development as discussed in our letter of July 15, 1958. The Fifth Plan is designed to further delineate the economic boundaries of the pool in areas where recent studies indicate there may be additional profitable locations.

The wells to be drilled are by designation and location (refer to location map attached):

<u>Well No.</u>	<u>Location</u>
Carson Unit 34-7	SW/4 SE/4 Section 7, T25N, R11W, NMPM
Carson Unit 13-11	NW/4 SW/4 Section 11, T25N, R12W, NMPM
Carson Unit 33-11	NW/4 SE/4 Section 11, T25N, R12W, NMPM
Carson Unit 13-12	NW/4 SW/4 Section 12, T25N, R12W, NMPM
Carson Unit 34-12	SW/4 SE/4 Section 12, T25N, R12W, NMPM
Carson Unit 41-18	NE/4 NE/4 Section 18, T25N, R11W, NMPM
Carson Unit 43-23	NE/4 SE/4 Section 23, T25N, R12W, NMPM

The wells are expected to develop commercial production, although they will penetrate less than the average pay thickness for the Carson Unit.

We have a contract drilling rig working for us in the Bisti Field and we plan to move onto the 13-11 location immediately, as discussed by our Mr. Nantker verbally with you.

The remaining wells will be drilled with the same rig and the entire project should be completed in eight weeks should all of the wells be drilled. Some locations are contingent on the results of others due to the fact that they are fringe wells; hence all may not be drilled.

We request your early approval of this plan so that we may continue operations without interruption, thus obtaining maximum savings attendant with multiple well contracts.

Very truly yours,

*R. R. Robison*  
for R. R. Robison  
Division Production Manager

Attachment

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Humble Oil and Refining Co.  
Post Office Box 2180  
Houston 1, Texas

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Approved.....8/21.....1958

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

*A. L. Porter Jr.*  
Secretary-Director

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

NEW MEXICO OIL CONSERVATION COMMISSION

THIS APPROVAL GRANTED SUBJECT TO LIKE APPROVAL  
BEING GRANTED BY THE UNITED STATES GEOLOGICAL  
SURVEY AND BY THE COMMISSIONER OF PUBLIC LANDS  
OF THE STATE OF NEW MEXICO.

Phillips Petroleum Company  
Production Department  
Bartlesville, Oklahoma  
Attention Mr. L. E. Fitzjarrald

Phillips Petroleum Company  
Wilson Building  
Cortez, Colorado

Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

*Da. 5.8811*



OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

*File  
Carson Unit  
1085*

July 31, 1958

C  
O  
P  
Y  
  
Shell Oil Company  
101 South Behrend Avenue  
Farmington, New Mexico

Re: Carson Unit  
Third Plan of Development

Gentlemen:

Reference is made to your letter of July 15, 1958, wherein you request an extension of the Third Plan of Development for the Carson Unit in San Juan County, New Mexico.

It is noted from your letter that 29 of the wells projected under the Third Plan of Development have not been drilled. You state that 26 of these wells were not drilled because you feel that the drilling of same "is not justified at present principally because of the temporary proration order." The stated reason for not drilling the three remaining wells is that you "now feel they would be unprofitable because of a low order of pay development."

We assume that you would not be willing to drill the three last mentioned wells even if the Third Plan of Development were extended for another year. With regard to the other 26 wells you imply in your letter that it is not justifiable to drill these wells on 40-acre tracts under the terms of Order R-1069-B but that it would be justifiable to do so if the order were revoked. It is difficult for the Commission to understand this position inasmuch as the allowable assigned to the wells would be the same in either case.

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

Shell Oil Company

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Order R-1069-B expressly authorized the drilling of wells on 40-acre tracts if the operator desires to do so; however, you have clearly indicated that you do not consider such development to be justifiable under the terms of that order. In view of your position in this matter, it seems to the Commission that any consideration of an extension of the Third Plan of Development is premature so long as Order R-1069-B remains in effect. Deferred action on this matter seems particularly appropriate since you have been released from any obligation to drill these wells.

Accordingly your request for an extension of the Third Plan of Development for the Carson Unit is hereby denied.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/WJC/ir

cc: Mr. Murray Morgan  
Commissioner of Public Lands  
P. C. Box 791  
Santa Fe, New Mexico

United States Geological Survey  
P. O. Box 965  
Farmington, New Mexico  
attention: Mr. P. T. McGrath

El Paso Natural Gas Products Co.  
P. O. Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Bartlesville, Oklahoma

Phillips Petroleum Company  
Cortez, Colorado

Phillips Petroleum Co.  
1211 Main Avenue  
Durango, Colorado

Humble Oil & Refining Co.  
P. O. Box 1600  
Midland, Texas

Humble Oil & Refining Co.  
P. O. Box 2180  
Houston 1, Texas

Skelly Oil Company  
P. O. Box 1650  
Tulsa 2, Oklahoma

Gilbert, White & Gilbert  
P. C. Box 787  
Santa Fe, New Mexico



## SHELL OIL COMPANY

1901 Main Avenue  
Durango, Colorado

July 30, 1958

Subject: Bisti Field  
Carson Unit Agreement #2576

*File*  
*Carson Unit*

New Mexico State Land Office  
Capitol Building  
Santa Fe, New Mexico  
Attention: Unit Division

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Gentlemen:

We refer to the Fourth, Fifth, and Sixth Revisions of the Carson Unit Participating Area which were previously approved by your office.

Enclosed herewith for your files is a copy of a letter dated July 25, 1958, from the U. S. G. S. evidencing their approval on the Revisions on July 21, 1958.

Very truly yours,

Original Signed By  
H. V. COMBIE

For F. W. Nantker  
Division Land Manager

Enclosure

In reply refer to:  
Unit Division

July 30, 1958

Shell Oil Company  
1901 Main Ave.  
Durango, Colorado

Re: Seventh Revision of the  
Participating Area for the  
Gallup Pool, Carson Unit,  
San Juan County, New Mexico

Attention: Mr. F. J. Hantker

Gentlemen:

This is to advise you that the Commissioner of Public Lands,  
has approved the above designated Participating Area for the Carson  
Unit Area as of July 22, 1958.

Seven approved copies are being transmitted, under copy of this  
letter, to the United States Geological Survey, Roswell, New Mexico.

Very truly yours,

MURRAY E. MORGAN  
Commissioner of Public Lands

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM/MSR/s

cc: USGS - Roswell  
OCC - Santa Fe /

C  
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P  
Y





UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
WASHINGTON 25, D. C.

IN REPLY REFER TO:

LAND	JUL 29 1958	DEPT.
TO	DATE	7-27
TO	DATE	
TO	DATE	

JUL 29 1958

Shell Oil Company  
1901 Main Avenue  
Durango, Colorado

Gentlemen:

Your application of June 11, 1958, for the fourth (720.42 acres), fifth (240 acres), and sixth (640 acres) revisions of the Gallup sandstone participating area (new total 3,562.52 acres) under the Carson unit agreement, San Juan County, New Mexico, No. 14-08-001-3485, was approved July 21, 1958, by the Acting Director of the Geological Survey, Arthur A. Baker, effective as of August 1, 1957, September 1, 1957, and October 1, 1957, respectively.

Enclosed are three copies of the approved application for your records. It is assumed that you will furnish the State of New Mexico or any other interested principal with whatever evidence of this approval is deemed appropriate.

Very truly yours,

For the Director

Enclosures 3



MAIN OFFICE OCC  
**SHELL OIL COMPANY**  
101 South Behrend Avenue  
Farmington, New Mexico

1958 JUL 24 PM 1:43

JUL 23 1958

Mr. John A. Anderson, Supervisor  
United States Geological Survey  
Post Office Box 6721  
Roswell, New Mexico

Dear Mr. Anderson:

We refer to our letter of July 15, 1958, wherein we request an extension of the portion of the Plan of Development which is as yet not drilled. We mentioned that there were three locations proposed in the Third Supplemental Plan of Development which would not be drilled because we did not think them attractive. One of those locations, Carson Unit 21-18, lies on the Phillips Petroleum Company's acreage within the unit. Subsequent to our letter and in accordance with the Unit agreement, Phillips requested us to drill 21-18. We therefore ask that if you approve our request for the extension of the Plan of Development that you exclude Carson Unit 21-18 from the extension. As operator of the unit, we will drill this well for Phillips.

Very truly yours,

*R. R. Robison*

R. R. Robison  
Division Production Manager

cc - New Mexico Oil Conservation Commission, Phillips Petroleum Company  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico  
Cortez, Colorado

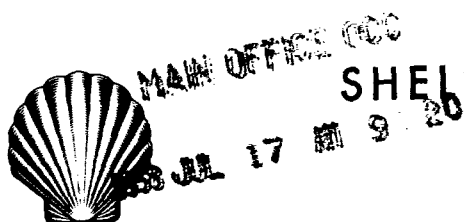
Mr. Murray Morgan,  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico  
Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath  
Humble Oil & Refining Co.  
Post Office Box 1600  
Midland, Texas

El Paso Natural Gas Products Co.  
Post Office Box 1161  
El Paso, Texas  
Humble Oil & Refining Co.  
Post Office Box 2180  
Houston 1, Texas

Phillips Petroleum Company  
Bartlesville, Oklahoma  
Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

ILLEGIBLE



## SHELL OIL COMPANY

1901 Main Avenue  
Durango, Colorado

JUL 15 1958

Re: Bisti Field  
Carson Unit Agreement 14-08-001-3485  
San Juan County, New Mexico  
Extension of Plan of Development

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Attention Mr. D. S. Nutter

Gentlemen:

We enclose herewith three copies of Request for Extension of Plan of Development for the Carson Unit, dated July 15, 1958. If this Request for Extension meets with your approval please forward one approved copy to the United States Geological Survey, Post Office Box 6721, Roswell, New Mexico.

Very truly yours,

  
F. W. Nantker  
Division Land Manager

**PHILLIPS PETROLEUM COMPANY**

MAIN OFFICE

BARTLESVILLE, OKLAHOMA

1958 JUL 23 PM 1:28

July 22, 1958

File  
1085

Re: Carson Unit 14-08-001-3485  
San Juan County, New Mexico  
Plan of Development

Shell Oil Company  
1901 Main Avenue  
Durango, Colorado

Attention: Mr. F. W. Nantker

Gentlemen:

We have reference to your letter of July 15, 1958, requesting approval of a plan of development requiring no further drilling until June 30, 1959.

We have today requested our Production Department to contact you for the drilling of Carson Unit Well No. 21-18, to be located in the approximate center of the NE/4 NW/4 Section 18-25N-11W, San Juan County, New Mexico, which shall be drilled to a depth to test the regular field pay, realizing that the risk and expense is entirely Phillips' should this result in a non-commercial oil and gas well. Obviously, we think this location will produce in paying quantities.

In addition, if this well results in a producer of unitized substances in paying quantities, we will request our Production Department to ask you to move to Unit Well No. 41-18 in the approximate center of the NE/4 NE/4 Section 18-25N-11W for a second well.

Yours very truly,

R. F. Hood, Manager  
Northwest Region  
Land and Geological Department

ORIGINAL SIGNED BY

R. O. DUNBAR

By

R. O. Dunbar  
Assistant Regional Manager

RFR:lh

cc - Mr. John A. Anderson, Supervisor  
United States Geological Survey  
Post Office Box 6721  
Roswell, New Mexico

New Mexico Oil Conservation Commission COPY FOR  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention: Mr. P. T. McGrath

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Humble Oil and Refining Company  
Post Office Box 2180  
Houston 1, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Mr. L. E. Fitzjarrald (2)  
Mr. C. W. Corbett  
Durango Office

MAIN OFFICE OCC  
1958 JUL 30 AM 8:14  
MAIN OFFICE OCC  
1958 JUL 30 AM 8:14

July 17, 1958

In reply refer to:  
Unit Division

C  
O  
P  
Y

Shell Oil Company  
1901 Main Avenue  
Durango, Colorado

Re: Extension of Plan of  
Development, Carson  
Unit Area, San Juan  
County, New Mexico

Attention: Mr. F. W. Mantker

Gentlemen:

We are mailing, under copy of this letter, two  
copies of your Request for an Extension to June 30, 1959,  
for the Third Supplemental Plan of Development, on the  
Carson Unit Area.

The Commissioner of Public Lands approved this ex-  
tension July 17, 1958, subject to like approval by the  
United States Geological Survey.

May we please have a fully executed copy at such time  
as you receive final approval. If approval is not granted  
by the United States Geological Survey please notify us in  
order that we may post our records accordingly.

Very truly yours,

MURRAY E. MORGAN  
Commissioner of Public Lands  
B

BY:  
Ted Bilberry, Supervisor  
Oil and Gas Division

MEM:MGR:m

cc: OCC-Santa Fe, N. M.



# SHELL OIL COMPANY

1958 JUL 17 AM 9:20  
1901 Main Avenue  
Durango, Colorado

July 15, 1958

Subject: Bisti Field  
Carson Unit Agreement 14-08-001-3485  
San Juan County, New Mexico  
Extension of Plan of Development

Mr. John A. Anderson, Supervisor (9)  
United States Geological Survey  
Post Office Box 6721  
Roswell, New Mexico

Dear Mr. Anderson:

As operator of the Carson Unit, Bisti field, we hereby request extension of the Third Supplemental Plan of Development, dated July 8, 1957, for one year from June 30, 1958. Although this Plan covers twenty-nine wells not yet drilled, the drilling of these wells is not justified at present, principally because of the temporary 80-acre proration order of the New Mexico Conservation Commission (Order R-1069-B). The requested extension would simplify the paperwork pending final settlement of the spacing controversy and would allow us to continue present studies designed to determine whether there are other drillable locations not included in the Third Plan. As of the present time, we are no longer drilling because we do not recognize any profitable undrilled 80-acre locations.

To review briefly the history of development plans for the Carson Unit, our First Supplemental Plan of Development for the Carson Unit dated March 29, 1957, was approved by you early in 1957, the Second Supplemental Plan of Development was dated June 14, 1957 and was approved by you on July 27, 1957. The wells called for by these two Plans of Development have been drilled. On July 8, 1957, we submitted a Third Supplemental Plan of Development for your approval, providing for the drilling of fifty-three wells to be drilled on forty-acre spacing as outlined in said Plan. Because of the controversy over spacing in the Bisti field, scheduled at about that time to be heard before the New Mexico Oil Conservation Commission, you held this Plan of Development in abeyance. In the interim period, by letter dated August 19, 1957, approved by you on August 23, 1957, you gave us

permission to drill certain wells included in the fifty-three well Plan of Development. However, by Order No. R-1069, the New Mexico Oil Conservation Commission determined that the lower Gallup Bisti Field should be developed on 40-acre spacing and, accordingly, you approved our Third Supplemental Plan of Development (i.e., the fifty-three well plan) on October 15, 1957. In all cases we had approval of the appropriate New Mexico State agencies. Later the New Mexico Oil Conservation Commission reversed its decision in Order R-1069-B and in several conversations held between you and your staff and members of our Production and Land Departments, it was understood that we would not be required to drill the infill 40's because of the Commission's latest Order. On March 17, 1958 we submitted our Fourth Supplemental Plan of Development which was approved by you on April 2, 1958 and was also approved by the appropriate State agencies. The wells called for in the Fourth Supplemental Plan of Development have been drilled.

You will recall that at the meeting held April 22, 1958 we discussed with you, Mr. Duncan, members of the New Mexico Oil Conservation Commission and other interested parties, the fifty-three well plan as affected by the latest Commission Order (R-1069-B). Included in the fifty-three well plan were some twenty-six wells listed below which we have not drilled because of the Commission proration order but which were included in the Third Supplemental Plan of Development.

Carson Unit wells, 24-11, 13-13, 24-13, 44-13,  
22-14, 24-14, 31-14, 42-14, 13-17, 24-17, 22-18,  
24-18, 33-18, 44-18, 11-19, 13-19, 31-19, 11-20,  
22-20, 31-20, 42-20, 31-23, 11-24, 22-24, 31-24,  
42-24.

In addition there were three wells proposed in the Third Supplemental Plan of Development, namely 14-19, 23-19 and 21-18, which we have not drilled because we now feel they would be unprofitable because of a low order of pay development. However, in lieu of these wells, we drilled 14-12, 42-23 and 44-11, in addition to the Plan of Development wells and for our records we would appreciate your specific approval of the drilling of these wells as was previously discussed verbally with you.

Inasmuch as it is not economically attractive to drill any of the remaining wells in the Third Supplemental Plan of Development while Order R-1069-B is in effect, but in view of the possibility that this order



may be revoked by early 1959, we believe that extension of the Third Plan for one year (to June 30, 1959) is desirable. Your approval of this extension is respectfully requested.

Very truly yours,

  
F. W. Nantker  
Division Land Manager

cc - New Mexico Oil Conservation Commission  
125 Mabry Hall, Capitol Building  
Santa Fe, New Mexico

Mr. Murray Morgan  
Commissioner of Public Lands  
Post Office Box 791  
Santa Fe, New Mexico

United States Geological Survey  
Post Office Box 965  
Farmington, New Mexico  
Attention Mr. P. T. McGrath

El Paso Natural Gas Products Company  
Post Office Box 1161  
El Paso, Texas

Phillips Petroleum Company  
Bartlesville, Oklahoma

Phillips Petroleum Company  
1200 Denver Club Building  
Denver 2, Colorado

Phillips Petroleum Company  
1211 Main Avenue  
Durango, Colorado

Humble Oil and Refining Company  
Post Office Box 1600  
Midland, Texas

Humble Oil and Refining Company  
Post Office Box 2180  
Houston 1, Texas

Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

*F. L.  
Owen  
1085*

June 21, 1958

Shell Oil Company  
1901 Main Avenue  
Durango, Colorado

Attention: Mr. F. W. Nantker

Re: Fourth, Fifth, and Sixth  
Revisions of the Participating  
Area - Carson Unit Area, San  
Juan County, New Mexico

Gentlemen:

This is to advise that the New Mexico Oil Conservation Commission has this date approved the Fourth, Fifth, and Sixth Revisions of the Participating Area for the Carson Unit Area, San Juan County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico.

Eight approved copies of the subject Participating Areas are being forwarded to the Commissioner of Public Lands of the State of New Mexico.

Very truly yours,

A. L. PORTER, Jr.,  
Secretary-Director

ALP/DSN/ir

cc: Commissioner of Public Lands - Santa Fe

U. S. Geological Survey, Roswell, N.M.

C  
O  
P  
Y



# SHELL OIL COMPANY

1901 Main Avenue  
Durango, Colorado

June 18, 1958

*File  
1085*

Subject: Application for approval of the  
Seventh Revision of the Participating Area for the Gallup  
(Upper Cretaceous) Pool - Carson  
Unit, San Juan County, New Mexico,  
No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the proposed Seventh Revision of the Participating Area for the Carson Unit.

The proposed Seventh Revision adds the following acreage to the Participating Area:

Township 25 North, Range 11 West  
Section 17:  $S\frac{1}{2}$  NE $\frac{1}{4}$

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

2

New Mexico Oil Conservation Commission

Commissioner of Public Lands

Township 25 North, Range 12 West

Section 11: S $\frac{1}{2}$  SE $\frac{1}{4}$   
Section 12: S $\frac{1}{2}$  SW $\frac{1}{4}$   
Section 23: S $\frac{1}{2}$  NE $\frac{1}{4}$   
Section 24: N $\frac{1}{2}$  SW $\frac{1}{4}$

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the proposed Seventh Revision, 2) Schedule marked Exhibit "B" showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for the proposed Seventh Revision. We believe this Geological and Engineering Report, with attachments, supports the suggested revision of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Seventh Revision to be effective May 1, 1958.

Very truly yours,

SHELL OIL COMPANY



F. W. Nantker  
Division Land Manager

Attachments

Approved this July 21 day of  
July, 1958

New Mexico Oil Conservation Commission  
By A. H. Carter

Approved this 22 day of  
July, 1958

Commissioner of Public Lands  
By W. M. Morgan

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

U. S. Geological Survey  
Bv

## GEOLOGICAL AND ENGINEERING REPORT

### PROPOSED SEVENTH REVISION OF PARTICIPATING AREA

#### GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Seventh Revision of Participating Area for the Carson Unit. This revision adds 400 acres to the Proposed Sixth Revision for a total of 3962.52 acres.

#### WELL DATA

##### Carson Unit 23-24

Location: 1980' N and 1980' E of SW Corner, Section 24, T25N, R12W, N.M.P.M.

Total Depth: 4990'

Perforated Intervals: 4854-68', 4882-96', 4899-4910', 4914-26', 4936-47', 4952-68'.

Microlog Pay: 11'

Pay Without Separation: 13'

Initial Production: Flowed 532 B/D gross with 0.1% cut, GOR 814 cu. ft/bbl. on a 64/64" bean. TP 170 psi, after recovering frac oil.

Completion Date: May 21, 1958

In addition, there are three wells of importance which have been drilled but not yet completed. Carson Unit 32-17, located in the SW/4 NE/4, Section 17, T25N, R11W, encountered 9' of microlog pay and offsets previous production to the east and west. Carson Unit 14-12, located in the SW/4 SW/4, Section 12, T25N, R12W, penetrated 13' of microlog pay and offsets production to the southeast and southwest. In Carson Unit 42-23, located in the SE/4 NE/4, Section 23, T25N, R12W, 11' of microlog pay were found. This well offsets production to the north and to the east.

A number of wells have been drilled and completed since proposing the Sixth Revision of Participating Area. Since these wells are within currently proposed or approved participating areas and have little bearing on the Seventh Proposed Revision, we merely tabulate them with their initial production figures.

#### Well

#### Initial Production

Carson Unit 14-11	672 B/D (F)
Carson Unit 12-13	240 B/D (F)
Carson Unit 21-13	870 B/D (F)
Carson Unit 23-13	495 B/D (F)
Carson Unit 32-13	576 B/D (F)
Carson Unit 34-13	1010 B/D (F)
Carson Unit 11-14	810 B/D (F)
Carson Unit 14-14	814 B/D (F)
Carson Unit 21-14	790 B/D (F)
Carson Unit 23-14	240 B/D (F)
Carson Unit 33-14	853 B/D (F)
Carson Unit 34-14	240 B/D (F)
Carson Unit 43-14	120 B/D (F)
Carson Unit 44-14	372 B/D (F)

# SEVENTH REVISION

Carson Unit 14-17	758 B/D (F)
Carson Unit 43-17	1000 B/D (F)
Carson Unit 12-18	270 B/D (F)
Carson Unit 14-18	291 B/D (F)
Carson Unit 23-18	148 B/D (F)
Carson Unit 32-18	304 B/D (F)
Carson Unit 34-18	600 B/D (F)
Carson Unit 43-18	96 B/D (F)
Carson Unit 12-19	408 B/D (F)
Carson Unit 21-19	542 B/D (F)
Carson Unit 32-19	84 B/D (P)
Carson Unit 41-19	636 B/D (F)
Carson Unit 12-20	57 B/D (P)
Carson Unit 41-20	750 B/D (F)
Carson Unit 12-24	781 B/D (F)
Carson Unit 32-24	124 B/D (P)
Carson Unit 43-24	112 B/D (P)

Carson Unit 23-24, 32-17, 14-12, and 42-23 should prove profitable and the land in the vicinity of the wells should be considered proven paying productive. One additional well, Carson Unit 34-19 has been drilled and completed outside of any proposed participating area. The well penetrated 5' of microlog pay and 8' of pay without microlog separation. After fracture treatment, artificial lift was installed and the well was completed for 30 B/D, 0.1% cut, GOR: 450 cu. ft./bbl. Due to the small amount of pay penetrated and the rather low initial rate, payout on this well is considered questionable and the well should therefore not be considered for participation.

The status of wells drilled on the unit but not yet completed follows:

<u>Well</u>	<u>Location</u>	<u>TD</u>	<u>Status</u>
Carson Unit 14-12	SW/4 SW/4, 12-25N-12W	5030'	Fracture treated, flowing back frac oil.
Carson Unit 32-17	SW/4 NE/4, 17-25N-11W	5030'	Fracture treated, flowing back frac oil.
Carson Unit 21-24	NE/4 NW/4, 24-25N-12W	5012'	Fracture treated, artificial lift installed, testing
Carson Unit 42-23	SE/4 NE/4, 23-25N-12W	4945'	Running casing

## GEOLOGY AND RESERVOIR

In previous Geological and Engineering Reports for proposed revisions to participating area, it was pointed out that the individual sand trends have general predictability in the NW-SE direction along trend for short distances, and poor predictability transverse to the trend. The additional drilling development cited has borne out the complexity of the various sand members (see attached map). We have drilled wells encountering 0' of microlog pay which were surrounded by wells having substantial amounts of microlog pay and substantial initial production rates.

## SEVENTH REVISION

### CONCLUSIONS

We recommend increasing the participating area of the Carson Unit to include those lands indicated proven paying productive by the drilling and/or completion of the four Carson Unit wells: 23-24, 32-17, 14-12 and 42-23. Further, the land lying between Carson Unit 14-12 and 14-11, since this follows the sand trend, should also be paying productive. Accordingly, 400 acres should be added and the lands within the participating area thus revised should be described as follows:

Township 25 North, Range 11 West, N.M.P.M.

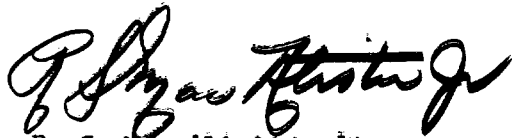
Section 17: S/2, S/2 NW/4, S/2 NE/4.  
Section 18: Lots 2, 3 and 4, SE/4 NW/4, E/2 SW/4,  
SE/4, S/2 NE/4.  
Section 19: Lots 1 and 2, E/2 NW/4, NE/4.  
Section 20: NW/4, N/2 NE/4, SW/4 NE/4, N/2 SW/4.

Township 25 North, Range 12 West, N.M.P.M.

Section 11: S/2 SW/4, S/2 SE/4.  
Section 12: S/2 SW/4.  
Section 13: All.  
Section 14: All.  
Section 23: N/2 NW/4, NE/4.  
Section 24: N/2, N/2 SW/4, SE/4.

It is further recommended that the effective date of the Seventh Revision of Participating Area be May 1, 1958, the first of the month in which the information cited above was obtained.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment - Isopach Map - Net Microlog Pay - Gallup Sandstone

EXHIBIT "B" (PROPOSED SEVENTH REVISION  
Schedule of Lands Entitled to Participate

Lease:	SF-078061
Lessee:	Shell Oil Company
Participating Acreage:	560.00
Percentage of Participation:	14.4236
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2}$ Section 20: $NW\frac{1}{4}$ , $N\frac{1}{2}$ $SW\frac{1}{4}$
Lease:	SF-078062
Lessee:	Shell Oil Company
Participating Acreage:	240.00
Percentage of Participation:	6.1816
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2}$ $NE\frac{1}{4}$ Section 18: $SE\frac{1}{4}$
Lease:	SF-078063
Lessee:	Shell Oil Company
Participating Acreage:	321.03
Percentage of Participation:	8.2686
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 19: Lots 1 and 2, $E\frac{1}{2}$ $NW\frac{1}{4}$ , $NE\frac{1}{4}$
Lease:	SF-078064
Lessee:	Shell Oil Company
Participating Acreage:	1280.00
Percentage of Participation:	32.9682
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 12: $S\frac{1}{2}$ $SW\frac{1}{4}$ Section 13: All Section 24: $E\frac{1}{2}$ , $NW\frac{1}{4}$ , $N\frac{1}{2}$ $SW\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1440
Lessee:	Skelly Oil Company
Participating Acreage:	120.00
Percentage of Participation:	3.0908
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: $N\frac{1}{2}$ $NE\frac{1}{4}$ , $SW\frac{1}{4}$ $NE\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Phillips Petroleum Company
Participating Acreage:	80.00
Percentage of Participation:	2.0605
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: $S\frac{1}{2}$ $NE\frac{1}{4}$



Lease: Indian Allotted Lands 14-20-603-1284  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 80.42  
 Percentage of Participation: 2.0713  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lot 2, SE $\frac{1}{4}$  NW $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1285  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 161.07  
 Percentage of Participation: 4.1486  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 3 and 4, E $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 1040.00  
 Percentage of Participation: 26.7868  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 11: S $\frac{1}{2}$  SW $\frac{1}{4}$ , S $\frac{1}{2}$  SE $\frac{1}{4}$   
 Section 14: All  
 Section 23: N $\frac{1}{2}$  NW $\frac{1}{4}$ , NE $\frac{1}{4}$

Summary:	<u>Acres</u>	<u>Percent</u>
Total Federal Lands:	3441.03	88.6288
Total Indian Lands:	<u>441.49*</u>	<u>11.3712</u>
Total Productive Acreage	3882.52*	100.0000%

\* Excludes 80 acres (S $\frac{1}{2}$  NW $\frac{1}{4}$ ) Section 17, Township 25 North, Range 11 West, N.M.P.M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.



# SHELL OIL COMPANY

1901 Main Avenue  
Durango, Colorado

JUN 11 1958

Subject: Bisti Field - Carson Unit  
Proposed Fourth, Fifth and  
Sixth Revisions of the  
Participating Area

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Attention Mr. D. S. Nutter

Gentlemen:

We enclose for your consideration and approval nine each, copies of our proposed Fourth, Fifth and Sixth Revisions of the Participating Area in our Carson Unit. Each application for approval is accompanied by the following:

1. Land Map Marked Exhibit "A".
2. Schedule of Lands Entitled to Participate.
3. Geological and Engineering Report.
4. Isopach of Net Microlog Pay.

We request that you approve each of these revisions and also obtain the approval of the Commissioner of Public Lands. We would then appreciate your forwarding seven copies to the United States Geological Survey in Roswell, New Mexico, retaining one copy for your files and one copy for the Commissioner of Public Lands.

Very truly yours,

F. W. Nantker  
Division Land Manager

Enclosures

cc - Commissioner of Public Lands  
- U. S. Geological Survey  
Roswell, New Mexico  
- U. S. Geological Survey  
Farmington, New Mexico



100-100000-000  
**SHELL OIL COMPANY**

1901 Main Avenue  
Durango, Colorado

June 11, 1958

Subject: Application for approval of the Fourth, Fifth and Sixth Revisions of the Participating Area for the Gallup (Upper Cretaceous) Pool - Carson Unit, San Juan County, New Mexico, No. 14-08-001-3488

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the following Fourth, Fifth and Sixth Revisions of the Participating Area for the Carson Unit.

You will recall that at the request of the New Mexico Oil Conservation Commission, a meeting was held in Santa Fe, April 22, 1958, to discuss how certain revisions of the Participating Area could be accomplished to the mutual satisfaction of all interested parties. This meeting was attended by the following individuals:

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

2

New Mexico Oil Conservation Commission

Commissioner of Public Lands

United States Geological Survey  
Harold Duncan  
John A. Anderson  
Jim Knauf  
Carl Traywick

New Mexico Oil Conservation Commission  
D. S. Nutter  
Dick Stamets

Land Commissioner, represented by  
Malcolm Long

Phillips Petroleum Company  
R. A. Wolgast  
R. L. Bales

Shell Oil Company  
R. R. Robison  
R. S. Mac Alister  
R. D. Allen  
F. W. Nantker

Skelly Oil Company was invited to send a representative but was unable to do so.

After considerable discussion at the meeting it was decided that the Participating Area should expand as rapidly as additional lands were reasonably proved productive, whether by wells drilled by the Unit Operator, by wells drilled outside the Unit or within the Unit by non-working interest owners, or by geological inference. Accordingly, our Geological and Engineering Report for the Fourth, Fifth and Sixth Revisions indicate the land included in each Participating Area. For your information we are listing the increase in land by each revision:

Fourth Revision

Township 25 North, Range 11 West

Section 17:  $3\frac{1}{2}$  NW $\frac{1}{4}$ , E $\frac{1}{2}$  SE $\frac{1}{4}$   
Section 18: Lot 2, SE $\frac{1}{4}$  NW $\frac{1}{4}$ , S $\frac{1}{2}$  NE $\frac{1}{4}$   
Section 20: NE $\frac{1}{4}$  NE $\frac{1}{4}$ , N $\frac{1}{2}$  SW $\frac{1}{4}$

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

3

New Mexico Oil Conservation Commission

Commissioner of Public Lands

Township 25 North, Range 12 West  
Section 13: NE $\frac{1}{4}$ , N $\frac{1}{2}$  NW $\frac{1}{4}$ , SE $\frac{1}{4}$  NW $\frac{1}{4}$

Fifth Revision

Township 25 North, Range 12 West  
Section 11: S $\frac{1}{2}$  SW $\frac{1}{4}$   
Section 14: NW $\frac{1}{4}$

Sixth Revision

Township 25 North, Range 12 West  
Section 14: S $\frac{1}{2}$   
Section 23: N $\frac{1}{2}$  NW $\frac{1}{4}$ , N $\frac{1}{2}$  NE $\frac{1}{4}$   
Section 24: NW $\frac{1}{4}$

Since the above revisions were determined as a result of the meeting of April 22, 1958, you will observe that many of the inferences were strengthened by data not available on the effective date of each revision. In a sense we had the advantage of looking retrospectively in determining these revisions. At the specific insistence of the New Mexico Oil Conservation Commission, we as Unit Operator, endeavored to enlarge the participating area by increments of 80 acres or multiples thereof so that the boundaries of the participating area would conform to the well dedication pattern as established by the New Mexico Oil Conservation Commission, Order No. R 1069B, i.e. 80 acre proration units. This is despite the fact that the effective date of this order is after the effective date of any of the revisions herewith submitted. Shell does not wish this to be construed as our having abandoned the position that the most effective drainage of the reservoir would be accomplished by 40 acre development.

You will note that in the Geological and Engineering Report for the Fifth Revision, considerable doubt was expressed as to whether Carson Unit 32-20, (included in the initial participating area) located in the SW $\frac{1}{4}$  NE $\frac{1}{4}$ , Section 20, Township 25 North, Range 11 West, was in fact capable of paying production. We have deferred the possibility of excluding this well from the Participating Area pending further study and development of the gas proration and marketing situation in the Bisti Field.

Director  
United States Geological Survey  
Through  
Supervisor  
United States Geological Survey

4

New Mexico Oil Conservation Commission

Commissioner of Public Lands

In support of this application, applicant attaches hereto and makes a part of the following: 1) A map marked Exhibit "A" showing thereon in distinctive colors, the original Participating Area and each addition thereto including the Fourth, Fifth and Sixth Proposed Revisions, 2) Three schedules marked Exhibit "B", "C" and "D" showing the various lands entitled to participate under Revision Four, Five and Six, respectively, in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage participation of each lease or tract indicated thereon. Applicant attaches hereto, the Geological and Engineering Report for each Proposed Revision. We believe these Geological and Engineering Reports, with attachments, support the several suggested revisions of the Participating Area.

Therefore, applicant respectfully requests that the Director approve the selection of lands to be added to the Participating Area constituting the Fourth, Fifth and Sixth Revisions to be effective August 1, 1957, September 1, 1957 and October 1, 1957, respectively.

Very truly yours,

SHELL OIL COMPANY

*F. W. Nantker*  
F. W. Nantker  
Division Land Manager

Attachments

Approved this 21 day of  
June, 1958

New Mexico Oil Conservation Commission

By *A. H. Carter*

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

Commissioner of Public Lands

By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

U. S. Geological Survey

By \_\_\_\_\_

EXHIBIT "B" (PROPOSED FOURTH REVISION)

Schedule of Lands Entitled to Participate

Lease:	SF-078061
Lessee:	Shell Oil Company
Participating Acreage:	560.00
Percentage of Participation:	21.5176
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: $S\frac{1}{2}$ Section 20: $NW\frac{1}{4}$ , $N\frac{1}{2}$ $SW\frac{1}{4}$
Lease:	SF-078062
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	6.1479
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: $SE\frac{1}{4}$
Lease:	SF-078063
Lessee:	Shell Oil Company
Participating Acreage:	321.03
Percentage of Participation:	12.3354
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 19: Lots 1 and 2, $E\frac{1}{2}$ $NW\frac{1}{4}$ , $NE\frac{1}{4}$
Lease:	SF-078064
Lessee:	Shell Oil Company
Participating Acreage:	960.00
Percentage of Participation:	36.8873
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 13: All Section 24: $E\frac{1}{2}$
Lease:	Indian Allotted Lands 14-20-603-1440
Lessee:	Skelly Oil Company
Participating Acreage:	120.00
Percentage of Participation:	4.6109
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: $N\frac{1}{2}$ $NE\frac{1}{4}$ , $SW\frac{1}{4}$ $NE\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Phillips Petroleum Company
Participating Acreage:	80.00
Percentage of Participation:	3.0739
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: $S\frac{1}{2}$ $NE\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1284  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 80.42  
 Percentage of Participation: 3.0901  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lot 2, SE $\frac{1}{4}$  NW $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1285  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 161.07  
 Percentage of Participation: 6.1890  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 3 and 4, E $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 160.00  
 Percentage of Participation: 6.1479  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 14: NE $\frac{1}{4}$

Summary:	<u>Acres</u>	<u>Percent</u>
Total Federal Lands:	2161.03	83.04
Total Indian Lands:	<u>441.49*</u>	<u>16.96</u>
Total Productive Acreage:	2602.52*	100.0000%

\* Excludes 80 acres (S $\frac{1}{2}$  NW $\frac{1}{4}$ ) Section 17, Township 25 North, Range 11 West, N.M.P.M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.



## GEOLOGICAL AND ENGINEERING REPORT

### PROPOSED FOURTH REVISION OF PARTICIPATING AREA

#### GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT SAN JUAN COUNTY, NEW MEXICO

We submit the following data in support of the application for approval of the Fourth Revision of the Participating Area of the Carson Unit. The revision adds 720.42 acres to the participating area proposed in the Third Revision for a total of 2682.52 acres. Eighty acres of the addition are held by Magnolia Petroleum who have not elected to join the Carson Unit.

#### WELL DATA

##### Carson Unit 23-20

Location: 1977' N and 1766' E of the SW Corner, Section 20,  
T25N, R11W, N.M.P.M.  
Total Depth: 5075'  
Perforated Intervals: 4870-90', 4902-09', 4940-47', 4955-69',  
4974-84'.  
Microlog Pay: 7'  
Pay Without Separation: 8'  
Initial Production: Pumped 51 B/D of 39° API oil, 0.3% cut,  
GOR 3000 cu. ft./bbl., after recovering  
load and frac oil.  
Completion Date: August 7, 1957

##### Carson Unit 41-13

Location: 660' S and 660' W of the NE Corner, Section 13,  
T25N, R12W, N.M.P.M.  
Total Depth: 5050'  
Perforated Intervals: 4906-19', 4923-27', 4931-36', 4965-68',  
4979-84', 4997-5002'.  
Microlog Pay: 6'  
Pay Without Separation: 3'  
Initial Production: Pumped 77 B/D of 39° API oil, 0.3% cut,  
after recovering frac and load oil.  
Completion Date: August 14, 1957

In addition, several wells were drilled and have been completed on properties offsetting the Carson Unit. Magnolia Sadie Canuto #1, located in the NW/4 NW/4, Section 21, T25N, R11W was drilled to 5225' and encountered 11' of microlog separation. The well was completed naturally for 133 B/D on a 12/64" choke, GOR 400; the completion date was August 27, 1957. Shell Oil Company Gov't. 14-16A was drilled to total depth of 5085' and penetrated 10' of microlog pay. The well has not yet been completed. The well is located in the SW/4 SW/4, Section 16, T25N, R11W. Two other wells of interest were drilled on Magnolia's non-participating quarter section within the Unit boundary. They are Sanda Wall 1 and 2. Sanda Wall 1 is located in the SE/4 NW/4, Section 17, T25N, R11W and found 9' of microlog pay, and after fracture treatment flowed 490 B/D. Sanda Wall 2, located in the SW/4 NW/4 of Section 17, penetrated 8' microlog pay and was completed naturally for 194 B/D.

All of the above mentioned wells are expected to pay out and earn a reasonable profit. Although the initial rates on Carson Unit 41-13 and 23-20 are not high, the amounts of pay penetrated and the probability of being allowed to produce at capacity throughout their life makes payout within two years' time appear reasonable.

Twelve wells have been drilled on the Unit but have not yet been completed. The status of these wells at the end of August is as follows:

<u>Well</u>	<u>Location</u>	<u>TD</u>	<u>Status</u>
Unit 3	530' E and 1818' N of SW Cor. Section 7, T25N, R11W.	5004'	Awaiting test facilities.
Unit 32-14	1980' S and 1980' W of NE Cor. Section 14, T25N, R12W.	5073'	Installing pumping unit.
Unit 41-23	660' S and 660' W of NE Cor. Section 23, T25N, R12W.	5072'	Awaiting test facilities.
Unit 34-13	660' N and 1976' W of SE Cor. Section 13, T25N, R12W.	5104'	Awaiting production test.
Unit 34-17	660' N and 1942' W of SE Cor. Section 17, T25N, R11W.	5032'	Perforating
Unit 43-17	1880' N and 660' W of SE Cor. Section 17, T25N, R11W.	5100'	Perforating
Unit 12-20	1980' S and 660' E of SE Cor. Section 20, T25N, R11W.	5065'	Perforating
Unit 21-19	660' S and 1980' E of NW Cor. Section 19, T25N, R11W.	5026'	Perforating
Unit 34-19	660' N and 1980' W of SE Cor. Section 19, T25N, R11W.	5000'	Awaiting pumping unit.
Unit 14-17	660' N and 660' E of SW Cor. Section 17, T25N, R11W.	5050'	Perforating
Unit 32-20	2100' S and 1880' W of NE Cor. Section 20, T25N, R11W.	5020'	Production testing.
Unit 34-18	660' N and 1976' W of SE Cor. Section 18, T25N, R11W.	5014'	Perforating

#### GEOLOGY AND RESERVOIR

As pointed out in earlier revisions of participating area the Gallup Sand trend is generally NW-SE with fair predictability over short distances along that trend and poor predictability transverse to the trend. The isopach of net microlog pay for the Gallup Sandstone is included in this report and illustrates the trend.

CONCLUSIONS

It is recommended that the participating area of the Carson Unit be extended to include the land near Carson Unit 23-20 and 41-13 as these lands are proven productive. In addition, in view of the completions east of the Carson Unit, it is reasonable to extend the participating area to the eastern Unit boundary. Additionally, in view of the sand trend noted above, it is expected that those lands along trend between 41-13 and previously drilled wells such as 41-14 and Magnolia Sanda Wall 1 and 2 are also reasonably proven productive. It should be noted that Magnolia also qualifies for admission to the Participating Area although they are not members of the Unit and do not share in cost or production. Accordingly an area of 720.42 acres should be added to the proposed Third Revision and the lands in the participating area thus revised should be described as follows:

Township 25 North, Range 11 West, N.M.P.M.

Section 17: S/2, S/2 NW/4.  
Section 18: Lots 2, 3, and 4, SE/4 NW/4, S/2 NE/4,  
E/2 SW/4, SE/4.  
Section 19: Lots 1 and 2, E/2 NW/4, NE/4.  
Section 20: NW/4, N/2 SW/4, N/2 NE/4, SW/4 NE/4.

Township 25 North, Range 12 West, N.M.P.M.

Section 13: All.  
Section 14: NE/4.  
Section 24: E/2.

It is further recommended that the effective date of the above described Fourth Revision to the Participating Area be August 1, 1957, the first of the month in which the wells were completed.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.  
Division Exploitation Engineer  
Farmington Division

Attachment: Isopach Map - Net Microlog - Gallup Sandstone

EXHIBIT "C" (PROPOSED FIFTH REVISION)

Schedule of Lands Entitled to Participate

Lease:	SF-078061
Lessee:	Shell Oil Company
Participating Acreage:	560.00
Percentage of Participation:	19.7008
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 17: S $\frac{1}{2}$ Section 20: NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$
Lease:	SF-078062
Lessee:	Shell Oil Company
Participating Acreage:	160.00
Percentage of Participation:	5.6288
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: SE $\frac{1}{4}$
Lease:	SF-078063
Lessee:	Shell Oil Company
Participating Acreage:	321.03
Percentage of Participation:	11.2939
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 19: Lots 1 and 2, E $\frac{1}{2}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$
Lease:	SF-078064
Lessee:	Shell Oil Company
Participating Acreage:	960.00
Percentage of Participation:	33.7729
Description:	<u>T. 25 N., R. 12 W., N.M.P.M.</u> Section 13: All Section 24: E $\frac{1}{2}$
Lease:	Indian Allotted Lands 14-20-603-1440
Lessee:	Skelly Oil Company
Participating Acreage:	120.00
Percentage of Participation:	4.2216
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 20: N $\frac{1}{2}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$
Lease:	Indian Allotted Lands 14-20-603-1283
Lessee:	Phillips Petroleum Company
Participating Acreage:	80.00
Percentage of Participation:	2.8144
Description:	<u>T. 25 N., R. 11 W., N.M.P.M.</u> Section 18: S $\frac{1}{2}$ NE $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1284  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 80.42  
 Percentage of Participation: 2.8292  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lot 2, SE $\frac{1}{4}$  NW $\frac{1}{4}$

Lease: Indian Allotted Lands 14-20-603-1285  
 Lessee: Phillips Petroleum Company  
 Participating Acreage: 161.07  
 Percentage of Participation: 5.6664  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 18: Lots 3 and 4, E $\frac{1}{2}$  SW $\frac{1}{4}$

Lease: SF-078067  
 Lessee: Shell Oil Company  
 Participating Acreage: 400.00  
 Percentage of Participation: 14.0720  
 Description: T. 25 N., R. 11 W., N.M.P.M.  
 Section 14: NE $\frac{1}{4}$ , NW $\frac{1}{4}$   
 Section 11: S $\frac{1}{2}$  SW $\frac{1}{4}$

Summary:	<u>Acres</u>	<u>Percent</u>
Total Federal Lands:	2401.03	84.4684
Total Indian Lands:	<u>441.49*</u>	<u>15.5316</u>
Total Productive Acreage:	2842.52*	100.0000%

\* Excludes 80 acres (S $\frac{1}{2}$  NW $\frac{1}{4}$ ) Section 17, Township 25 North, Range 11 West, N.M.P.M. This acreage is a portion of Magnolia Petroleum Company Indian Allotted Lease No. 14-20-603-1435, not committed to the Carson Unit.

GEOLOGICAL AND ENGINEERING REPORT

PROPOSED FIFTH REVISION OF PARTICIPATING AREA

GALLUP (UPPER CRETACEOUS) POOL - CARSON UNIT SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Fifth Revision of the Participating Area for the Carson Unit. The revision adds 240 acres to the proposed Fourth Revision for a total of 2922.52 acres.

WELL DATA

Carson Unit 12-14

Location: 1960' S and 613' E of the NW Corner, Section 14,  
T25N, R12W, N.M.P.M.  
Total Depth: 4864'  
Perforated Intervals: 4723-37', 4786-93', 4800-10', 4816-26'  
Microlog Pay: 11'  
Pay Without Separation: 2'  
Initial Production: Flowed naturally 608 B/D of 39° API oil,  
with 0.1% cut, GOR 550 cu.ft./bbl. on a  
1" choke.  
Completion Date: September 29, 1957

Carson Unit 32-14

Location: 1980' S and 1980' W of the NE Corner, Section 14,  
T25N, R12W, N.M.P.M.  
Total Depth: 5073'  
Perforated Intervals: 4880-4902', 4911-17', 4856-68', 4972-86'  
Microlog Pay: 13'  
Pay Without Separation: 2'  
Initial Production: Flowed 437 B/D of 39° API oil, with 0.3%  
cut, GOR 438 cu. ft./bbl. on a 1" choke,  
after recovering load and frac oil.  
Completion Date: September 24, 1957

Carson Unit 32-20

Location: 2100' S and 1880' W of the NE Corner, Section 20,  
T25N, R11W, N.M.P.M.  
Total Depth: 5020'  
Perforated Intervals: 4852-70', 4882-90', 4925-30', 4937-47'  
4957-66'  
Microlog Pay: 15'  
Pay Without Separation: 0'  
Initial Production: 1250 MCF/D Gas, on a 1" choke  
Completion Date: September 3, 1957

In addition, wells drilled west of the Carson Unit on Shell acreage encountered substantial amounts of microlog pay. Shell Gov't. 41-15 was drilled to 4905' and penetrated 14' of microlog pay. The well flowed naturally 212 B/D on a 1" bean. The well is located in the NE/4 NE/4 Section 15, T25N, R12W. Shell Gov't. 43-10, located in the NE/4 SE/4 Section 10, was drilled to 4895' and found 9' of microlog pay. After fracture treatment, it flowed 288 B/D on a 1" choke. Shell

Gov't. 44-10 was drilled to 4890' and penetrated 14' of microlog pay, the well has not yet been completed. Further, Carson Unit 14-11 has been drilled but not yet completed in the SW/4 SW/4, Section 11, T25N, R12W. The well penetrated 9' of microlog pay. Based on the amounts of pay and the initial production rates established, we believe that the above mentioned wells will all be paying producers with the exception of Carson Unit 32-20, which we feel must be further evaluated before stating whether the well is commercial.

Several wells that have been drilled are in various stages of completion. Their status at the end of September follows:

<u>Well</u>	<u>Location</u>	<u>TD</u>	<u>Status</u>
Unit 3	1818' N and 530' E of SW Cor. Section 7, T25N, R11W.	5004'	Artificial lift installed. Production testing.
Unit 41-23	660' S and 660' W of NE Cor. Section 23, T25N, R12W.	5072'	Requires fracture treatment.
Unit 34-13	660' N and 1976' W of SE Cor. Section 13, T25N, R12W.	5104'	Requires fracture treatment.
Unit 34-17	660' N and 1942' W of SE Cor. Section 17, T25N, R11W.	5032'	Requires fracture treatment
Unit 43-17	1880' N and 660' W of SE Cor. Section 17, T25N, R11W.	5100'	Awaiting test facilities.
Unit 12-20	1980' S and 660' E of NW Cor. Section 20, T25N, R11W.	5065'	Awaiting artificial lift equipment.
Unit 21-19	660' S and 1980' E of NW Cor. Section 19, T25N, R11W.	5026'	Awaiting test facilities.
Unit 34-19	660' N and 1980' W of SE Cor. Section 19, T25N, R11W.	5000'	Artificial lift equipment installed, testing.
Unit 13-17	660' N and 660' E of SW Cor. Section 17, T25N, R11W.	5050'	Testing.
Unit 34-18	660' N and 1976' W of SE Cor. Section 18, T25N, R11W.	5014'	Awaiting test facilities.
Unit 12-19	1977' S and 660' E of NW Cor. Section 19, T25N, R11W.	5030'	To be perforated.
Unit 41-20	660' S and 661' W of NE Cor. Section 20, T25N, R11W.	5040'	To be perforated.
Unit 14-11	530' N and 460' E of SW Cor. Section 11, T25N, R12W.	4870'	To be perforated.

GEOLOGY AND RESERVOIR

The only unusual facet of the reservoir study is the occurrence of gas production at Carson Unit 32-20. This is considered unusual in that several oil wells have been drilled upstructure from 32-20. The structure is a north-dipping homocline with E-W strike. The gas anomaly is currently being investigated and will be discussed when the study is complete.

CONCLUSION

It is recommended that the participating area of the Carson Unit be enlarged to encompass the land immediately surrounding Unit 12-14, and in addition, that land along the sand pay trend and offset by the recently completed wells west of the Carson Unit. We further recommend that the effective date of this the proposed Fifth Revision of Participating Area be September 1, 1957, the first of the month which the wells were completed. The lands within the participating area including the 240 acres to be added should be described as follows:

Township 25 North, Range 11 West, N.M.P.M.

Section 17: S/2, S/2 NW/4.

Section 18: Lots 2, 3 and 4, E/2 SW/4, Se/4 NW/4, S/2 NE/4, SE/4.

Section 19: Lots 1 and 2, E/2 NW/4, NE/4.

Section 20: NW/4, N/2 NE/4, SW/4 NE/4, N/2 SW/4.

Township 25 North, Range 12 West, N.M.P.M.

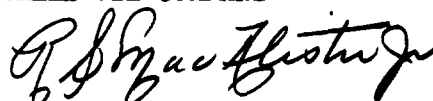
Section 11: S/2 SW/4.

Section 13: All.

Section 14: N/2.

Section 24: E/2.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.  
Division Exploitation Engineer  
Farmington, New Mexico

Attachment: Isopach - Net Microlog Pay - Gallup Sandstone





# SHELL OIL COMPANY

1901 Main Avenue  
Durango, Colorado

April 21, 1958

*file 1085*

Subject: Application for Approval of  
the Eighth Revision of the  
Participating Area for the  
Gallup - ~~Upper Cretaceous~~  
Pool - Carson Unit  
San Juan County, New Mexico  
No. 14-08-001-1485

Director  
United States Geological Survey  
Washington, D. C.  
Through  
Supervisor  
United States Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Commissioner of Public Lands  
125 Mabry Hall  
Capitol Building  
Santa Fe, New Mexico

Gentlemen:

Shell Oil Company, as Unit Operator under that certain Unit Agreement for the Carson Unit Area, approved by the Acting Commissioner of Indian Affairs and by the Acting Director of the United States Geological Survey, effective November 15, 1956, pursuant to the provision of Section 11 thereof requiring the revision of a participating area to include additional land when the same shall have been reasonably proved to be productive of unitized substances in paying quantities, respectfully submits for the approval of said Director, the selection of the following described lands to be added to the participating area to constitute the eighth revision of the participating area for the Gallup (Upper Cretaceous) Pool in the Carson Unit Area, to wit:

Township 25 North, Range 12 West, N. M. P. M.

Section 11:  $S\frac{1}{2}$  SW $\frac{1}{4}$

Section 14:  $N\frac{1}{2}$  NW $\frac{1}{4}$ ,  $N\frac{1}{2}$  SW $\frac{1}{4}$ , SE $\frac{1}{4}$

containing 400.00 acres, more or less

*For reference only  
4th, 5th, 6th,  
7th & 8th  
revisions will  
be re submitted  
as per mtg w/  
Shell, PPCo  
USGS, Land  
Comm, &  
OCC  
of  
4/22*

Director, U. S. Geological Survey  
Washington, D. C.

2

Through  
Supervisor, U. S. Geological Survey  
Roswell, New Mexico

New Mexico Oil Conservation Commission

Commissioner of Public Lands

In support of this application, applicant attaches hereto, and makes a part of, the following:

1. A map, marked Exhibit "A", showing thereon the boundary of the present participating area and the proposed revision thereof.
2. A schedule, marked Exhibit "B", showing the various lands entitled to participate in the unitized substances produced from the Gallup (Upper Cretaceous) formation, with the percentage of participation of each lease or tract indicated thereon.

Applicant has submitted separately, in triplicate, its Geologic and Engineering report, with enclosures, supporting its suggested selection of the proposed participating area.

This proposed revision of the participating area is predicated upon the knowledge and information first obtained upon the completion of Unit Wells No. 14-11 and No. 23-14. Carson Unit No. 14-11 is located in the southwest quarter of the southwest quarter (SW $\frac{1}{4}$  SW $\frac{1}{4}$ ) of Section 11, Township 25 North, Range 12 West, N. M. P. M., and was completed January 29, 1958 in the Gallup (Upper Cretaceous) intervals 4746-71 feet, 4777-87 feet, 4822-33 feet and 4838-47 feet with an initial production rate of 672 B/D oil. Carson Unit No. 23-14 is located in the northeast quarter of the southwest quarter (NE $\frac{1}{4}$  SW $\frac{1}{4}$ ) of Section 14, Township 25 North, Range 12 West, N. M. P. M., and was completed January 28, 1958 in the Gallup (Upper Cretaceous) intervals 4807-32 feet, 4843-54 feet, 4872-81 feet, 4888-99 feet and 4904-21 feet with an initial production rate of 240 B/D oil. We consider Carson Unit 14-11 and 23-14 as paying wells under the Unit Agreement. In addition to the lands adjacent to the above named wells, this revision includes additional lands surrounded by paying production. (See Geological and Engineering Report, page 3 for justification).

Therefore, applicant respectfully requests that the said Director approve the hereinabove selection of said lands to be added to the participating

Director, U. S. Geological Survey  
Washington, D. C.  
Through  
Supervisor, U. S. Geological Survey  
Roswell, New Mexico

3

New Mexico Oil Conservation Commission

Commissioner of Public Lands

area to constitute the eighth revision of the participating area to be  
effective January 1, 1958.

Very truly yours,

SHELL OIL COMPANY

  
F. W. Nantker  
Division Land Manager

Attachments

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

New Mexico Oil Conservation Commission

By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

Commissioner of Public Lands

By \_\_\_\_\_

Approved this \_\_\_\_\_ day of  
\_\_\_\_\_, 1958

U. S. Geological Survey

By \_\_\_\_\_

GEOLOGICAL AND ENGINEERING REPORT  
PROPOSED EIGHTH REVISION OF PARTICIPATING AREA  
GALLUP (UPPER CRETACEOUS) POOL-CARSON UNIT  
SAN JUAN COUNTY, NEW MEXICO

The following data are submitted in support of the application for approval of the Eighth Revision of Participating Area in the Carson Unit area. This revision adds 400 acres to the proposed Seventh Revision for a total of 2962.10 acres of participation.

Well Data

Carson Unit 34-19

Location: 660' N and 1980' W of SE Corner, Section 19, T. 25 N.,  
R. 11 W., N.M.P.M.

Total Depth: 5000'

Perforated Intervals: 4846-54', 4885-89', 4903-13', 4927-37',  
4944-53'

Microlog Pay: 5'

Pay Without Separation: 8'

Initial Production: Pumped 30 B/D gross with 0.1% cut, GOR 450  
cu. ft./bbl. after recovering fracture oil.

Completion Date: December 21, 1957

Carson Unit 12-19

Location: 1977' S and 660' E of NW Corner, Section 19, T. 25 N.,  
R. 11 W., N.M.P.M.

Total Depth: 5030'

Perforated Intervals: 4866-81', 4897-4903', 4932-39', 4947-59',  
4965-74'.

Microlog Pay: 12'

Pay Without Separation: 0'

Initial Production: Flowed 408 B/D gross with 0.1% cut, GOR 760 cu. ft./  
bbl. on a 32/64" bean, after recovering the frac-  
ture oil.

Completion Date: December 30, 1957

Carson Unit 21-19

Location: 660' S and 1980' E of NW Corner, Section 19, T. 25 N., R. 11 W.,  
N.M.P.M.

Total Depth: 5026'

Carson Unit 21-19 (Cont'd.)

Perforated Intervals: 4866-92', 4900-08', 4939-44', 4951-62',  
4969-78'

Microlog Pay: 16'

Pay Without Separation: 8'

Initial Production: Flowed 542 B/D gross with 0.1% cut, GOR 1150 cu.  
ft./bbl. on a 64/64" bean, after recovering the  
fracture oil.

Completion Date: December 30, 1957

Carson Unit 23-14

Location: 1865.2' N and 2072.9' E of SW Corner, Section 14, T. 25 N.,  
R. 12 W., N.M.P.M.

Total Depth: 5020'

Perforated Intervals: 4807-32', 4843-54', 4872-81', 4888-99',  
4904-21'

Microlog Pay: 0'

Pay Without Separation: 21'

Initial Production: Flowed 240 B/D gross with 0.3% cut, GOR 1220 cu.  
ft./bbl. on a 64/64" bean, after recovering the  
fracture oil.

Completion Date: January 28, 1958

Carson Unit 14-11

Location: 530' N and 460' E of SW Corner, Section 11, T. 25 N.,  
R. 12 W., N.M.P.M.

Total Depth: 4870'

Perforated Intervals: 4746-71, 4777-87', 4822-33', 4838-47'

Microlog Pay: 9'

Pay Without Separation: 10'

Initial Production: Flowed 672 B/D gross with 0.3% cut, GOR 395 cu. ft/  
bbl. on a 64/64" bean, after recovering the frac-  
ture oil.

Completion Date: January 29, 1958

Carson Unit 34-18

Location: 660' N and 1976' W of SE Corner, Section 18, T. 25 N.,  
R. 11 W., N.M.P.M.

Total Depth: 5014'

Perforated Intervals: 4869-86', 4900-08', 4952-58', 4971-78'.

Microlog Pay: 13'

Pay Without Separation: 4'

Initial Production: Flowed 600 B/D gross with 0.1% cut, GOR 2110 cu.  
ft./bbl. on a 64/64" bean, after recovering the  
fracture oil.

Completion Date: January 31, 1958

Of the wells completed in December 1957 and January 1958, only Carson Unit 34-19, 23-14 and 14-11 were not already included in a proposed Participating Area. Considering the amounts of pay and the substantial initial rates, we expect Carson Units 12-19, 21-19, 14-11 and 34-18 to be paying wells. Carson Unit 23-14, although no microlog pay was penetrated, is also believed to be a paying well. The well penetrated 21 feet of pay without separation which should be sufficient to pay out the well cost and make a profit. After fracture treating, the well produced formation oil at 240 B/D. Carson Unit 34-19 has questionable profitability and should not be included in participation at this time. The land in the north half of the NW Corner of Section 14, T. 25 N., R. 12 W., contains two wells which have penetrated substantial amounts of pay and is offset by paying production at Units 14-11, 12-14 and 32-14 and also by Shell Government 41-15, a non-Unit well. This land should be considered proven productive of oil in paying quantities. Further, the SE quarter of the same section has four wells with substantial amounts of pay and is offset by paying production at Units 23-14, 32-14, 14-13, and 41-23 and consequently should be considered paying productive.

The status of wells drilled on the Unit but not yet completed is as follows:

<u>Well</u>	<u>Location</u>	<u>Total Depth</u>	<u>Status</u>
Unit 12-13	1980' S & 660' E of NW Corner, Sec. 13, T25N, R12W	5015'	Preparing to frac
34-13	660' N & 1976' W of SE Corner, Sec. 13, T25N, R12W	5104'	Flowing frac oil
11-14	660' S & 530' E of NW Corner, Sec. 14, T25N, R12W	4903'	Fracture treated
21-14	698.5' S & 2011' E of NW Corner, Section 14, T25N, R12W	4915'	Flowing frac oil

<u>Well</u>	<u>Location</u>	<u>Total Depth</u>	<u>Status</u>
Unit 33-14	1980' N & 1980' W of SE Corner, Section 14, T25N, R12W	5015'	Flowing frac oil
34-14	660' N & 1980' W of SE Corner, Section 14, T25N, R12W	5005'	Flowing frac oil
43-14	1980' N & 660' W of SE Corner, Section 14, T25N, R12W	5025'	Flowing frac oil
44-14	660' N & 660' W of SE Corner, Section 14, T25N, R12W	5001'	Flowing frac oil
43-17	1880' N & 660' W of SE Corner, Section 17, T25N, R11W	5100'	Flowing frac oil
14-18	660' N & 660.8' E of SW Corner, Section 18, T25N, R11W	5025'	Preparing to frac
32-18	1980' S and 1980' W of NE Corner, Section 18, T25N, R11W	5030'	Flowing frac oil
12-20	1980' S & 660' E of NW Corner, Section 20, T25N, R11W	5065'	Pumping frac oil
41-20	660' S & 661' W of NE Corner, Section 20, T25N, R11W	5040'	Completion delayed
43-24	1980' N and 660' W of SE Corner, Section 24, T25N, R12W	4998'	Preparing to frac

Geology and Reservoir

Revised isopach maps of microlog pay in the Gallup sandstone are included. It is interesting to note the rapid variations of pay thickness and apparent discontinuous nature of the reservoir over short distances. In particular, Unit 23-14 encountered zero feet of microlog pay but wells immediately adjacent penetrated eleven, twelve, eight and fifteen feet of pay.

Conclusion

In view of the substantial amounts of pay penetrated and the initial production obtained, we recommend increasing the Participating Area of the Carson Unit by 400 acres to include the lands adjacent to Units 14-11 and 23-14 and also those lands which are surrounded by paying production. The lands in the Participating Area, thus revised, should be described as follows:

Township 25 North, Range 11 West, N.M.P.M.

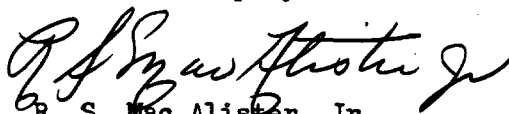
Section 17: W/2 SE/4, SW/4  
Section 18: Lots 3 & 4, E/2 SW/4, SE/4  
Section 19: Lots 1 & 2, E/2 NW/4, NE/4  
Section 20: NW/4, W/2 NE/4, NE/4 SW/4

Township 25 North, Range 12 West, N.M.P.M.

Section 11: S/2 SW/4  
Section 13: SW/4 NE4, E2 NE4, S/2  
Section 14: All  
Section 23: N/2 NW/4, N/2 NE/4  
Section 24: SE/4, N/2

It is further recommended that the effective date of the Eighth Revision of Participating Area be January 1, 1958, the first of the month in which Units 14-11 and 23-14 were completed.

Shell Oil Company

  
R. S. Mac Alister, Jr.  
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Farmington Division

Attachments - Isopach G<sub>c</sub> pay  
Isopach G<sub>d</sub> pay  
Isopach net microlog pay Gallup Sandstone