

EXHIBIT "B"

Schedule of Lands Entitled to Participate

Lease:	SF-078061	
Lessee:	Shell Oil Company	
Participating Acreage:	400.00	
Percentage of Participation:	22.7002%	
Description:	T. 25 N., R. 11 W., N.M.P.M. Section 17: $W\frac{1}{2}SE\frac{1}{4}$, $SW\frac{1}{4}$ Section 20: $NW\frac{1}{4}$	
Lease:	SF-078062	
Lessee:	Shell Oil Company	
Participating Acreage:	160.00	
Percentage of Participation:	9.0801%	
Description:	T. 25 N., R. 11 W., N.M.P.M. Section 18: $SE\frac{1}{4}$	
Lease:	SF-078063	
Lessee:	Shell Oil Company	
Participating Acreage:	321.03	
Percentage of Participation:	18.2186%	
Description:	T. 25 N., R. 11 W., N.M.P.M. Section 19: Lots 1 and 2, $E\frac{1}{2}NW\frac{1}{4}$, $NE\frac{1}{4}$	
Lease:	SF-078064	
Lessee:	Shell Oil Company	
Participating Acreage:	640.00	
Percentage of Participation:	36.3203	
Description:	T. 25 N., R. 12 W., N.M.P.M. Section 13: $S\frac{1}{2}$ Section 24: $E\frac{1}{2}$	
Lease:	Indian Allotted Lands 14-20-603-1440	
Lessee:	Skelly Oil Company	
Participating Acreage:	80.00	
Percentage of Participation:	4.5400	
Description:	T. 25 N., R. 11 W., N.M.P.M. Section 20: $W\frac{1}{2}NE\frac{1}{4}$	
Lease:	Indian Allotted Lands 14-20-603-1235	
Lessee:	Phillips Petroleum Company	
Participating Acreage:	161.07	
Percentage of Participation:	9.1408	
Description:	T. 25 N., R. 11 W., N.M.P.M. Section 18: Lots 3 and 4, $E\frac{1}{2}SW\frac{1}{4}$	
Summary:		
Total Federal Lands:	Acres 1521.03	Percent 86.3192%
Total Indian Lands:	241.07	13.6808%
Total Productive Acreage:	1762.10	100.0000%

GEOLOGICAL AND ENGINEERING REPORT
PROPOSED SECOND 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 Second Revision of the Participating Area in the Carson Unit area. This second revision adds 160 acres to the Proposed First Revision of the Participating Area which was submitted for approval in April on the basis of four March completions. The total number of acres to be included in the Second Revised Participating Area is 1762.10 acres. Enclosure 1 illustrates the location of the Initial Participating Area, approved May 27, 1957, together with the Proposed First and Second Revisions to the Participating Area.

Well Data

Carson Unit 14-13 was completed naturally in the Gallup (Upper Cretaceous) Pool of the Carson Unit.

Location: 660' N and 660' E of the SW Corner, Section 13, T. 25 N.,
R. 12 W., N.M.P.M.

Total Depth: 5046'

Perforated Intervals: 4876-91, 4943-48, 4954-66, 4972-86

Feet Microlog Separation: 14'

Feet Pay Without Separation: 3'

Initial Production: Flowed 741 B/D oil with 0.2% cut, GOR 380 cu. ft/bbl.
on a 30/64" choke.

Completion Date: May 12, 1957

Current Status: Shut in

Based on the initial production rate of 741 B/D oil and on the well developed pay characteristics of this well, we expect Carson Unit 14-13 to be a paying well.

Seven wells that have been drilled on the Carson Unit have not been completed. Three of these wells were drilled prior to the submittal of the Proposed First Revision to the Participating Area, and four subsequently. The status of these wells is tabulated on the following page.

<u>Well</u>	<u>Location</u>	<u>T.D.</u>	<u>Status</u>
Unit 3	530' E & 1818' N of SW corner, Sec. 7, T25N, R11W	5004'	Fracture treated, awaiting pumping unit.
Unit 41-13	660' S & 660' W of NE corner, Sec. 13, T25N, R12W	5050'	Fracture treated, awaiting pumping unit.
Unit 23-20	1977' N & 1766' E of SW corner, Sec. 20, T25N, R12W	5079'	Fracture treated, awaiting pumping unit.
Unit 32-14	1980' S & 1980' W of NE corner, Sec. 14, T25N, R12W	5073'	Not perforated
Unit 41-23	660' S & 660' W of NE	5072'	Test well: Fracture treated in poor pay only. Awaiting test.
Unit 34-13	660' N & 1976' W of SE corner, Sec. 13, T25N, R12W	5104'	Test well: Fracture treated in poor pay only. Testing.
Unit 41-14	660' S & 660' W of NE corner, Sec. 14, T25N, R12W	5090'	Running logs at T.D.

Conclusion

It is recommended that the participating area of the Carson Unit be extended to include the land in the vicinity of Carson Unit 14-13. The substantial production rate obtained and the well developed pay found at this location make the land reasonably proven productive. Accordingly, we recommend that an area of 160 acres be added to the participating area outlined in the proposed First Revision to the Participating Area. The lands in the participating area, thus revised, should be described as follows:

Township 15 North, Range 11 West, N.M.P.M.

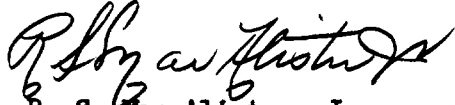
Section 17: W/2 SE/4, SW/4
Section 18: Lots 3 and 4, E/2 SW/4, SE/4
Section 19: Lots 1 and 2, E/2 NW/4, NE/4
Section 20: NW/4, W/2 NE/4

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

Section 13: S/2
Section 24: E/2

It is further recommended that the effective date of the above described second revision to the participating area be May 1, 1957, the first of the month in which Carson Unit 14-13 was completed.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.
Division Exploitation Engineer
Farmington Division

Attachments

Map: Participating Area - 2 copies
Map: Gc sand pay - 2 copies
Map: Gd sand pay - 2 copies

June 20, 1957

600

GEOLOGIC AND ENGINEERING REPORT
PROPOSED FIRST 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 First Revision of the Participating Area in the Carson Unit area. The initial participating area of 1081.60 acres was proposed on the basis of completions of Carson Unit 1 and 4. Proposed additional participating lands are located within the estimated limits of the reasonably proven commercially productive area, based on the results of wells completed in March, 1957. Enclosure 1 illustrates the location of the initial Participating Area together with revisions proposed in this memorandum.

Well Data

All of the following wells were completed in the Gallup (Upper Cretaceous) pool of the Carson Unit. Unit 23-17 was completed naturally; the other three were fracture treated.

<u>Well No.</u>	<u>Location</u>	<u>T.D.</u>	<u>Intervals Perforated</u>	<u>Initial Production</u>		<u>Cut %</u>	<u>GOR Cu.Ft. Bbl.</u>	<u>Bean Size</u>	<u>Status</u>
				<u>Date of Completion</u>	<u>B/D Oil</u>				
Unit 2	660 S & 660 E of NW Corner Sec. 25, T25N, R12W, NMPM	5000	4790-4795 4818-4822 4828-4833 4843-4852 4866-4874	3-6-57	21 (P)	1.4	--	--	Pumping
Unit 33-24	1980 N & 1980 W of SE Corner Sec. 24, T25N, R12W, NMPM	5030	4866-4874 4894-4900 4905-4910 4913-4920 4925-4936 4949-4958 4965-4973	3-9-57	470 (F)	0.1	620	48/64	Shut In
Unit 23-17	1980 N & 2085 E of SW Corner Sec. 17, T25N, R11W, NMPM	5075	4872-4876 4881-4883 4888-4896 4934-4936 4949-4955 4967-4972	3-14-57	312 (F)	0.1	380	37-48/64	Shut In
Unit 43-13	1980 N & 660 W of SE Corner Sec. 13, T25N, R12W, NMPM	5054	4889-4897 4900-4914 4922-4927 4972-4982 4990-4994	3-23-57	219 (F)	0.1	750	64/64	Shut In

Of these, we believe Carson Unit 33-24, 23-17, and 43-13 to be paying wells, based on the initial potentials and the characteristics of the reservoir discussed further in this report. We are continuing production tests on Carson Unit 2 to determine whether the well should be considered paying. The current limited market for crude oil has necessitated shutting in the three wells, Units 33-24, 23-17, and 43-13, immediately after the establishment of an initial rate; thus no decline data have been obtained. Carson Units 1 and 4 are also shut in awaiting the completion of the Four Corners Pipe Line Company's crude line to California. Present indications are that the line will be completed early in 1958; this line should provide a capacity market outlet for the oil at a favorable well head price.

Three other wells, Carson Unit 3, 41-13, and 23-20, have been drilled on the Carson Unit for Gallup production, but have not yet been completed for initial rates. The wells have been sand-oil fracture treated but the load and fracture oil has not been recovered.

Geology

Carson Unit production is obtained from the Gallup sandstone pool of the Bisti field. The latter is situated on a gently northerly sloping homocline (enclosure 1) where structure plays but a minor part in controlling the accumulation. On the Carson Unit, as in the remainder of the field, oil is trapped chiefly by rapidly changing stratigraphic conditions. Because these sedimentary changes are of principal importance in developing the economic reserves of the Unit, we have devoted the discussion below entirely to the description of the stratigraphic geology of the Unit.

The upper Cretaceous Gallup formation is made up of a series of thin, well indurated sandstones separated by dense, dark grey siltstones. On the Carson Unit two of these sandstones, lying stratigraphically midway in the formation, possess permeabilities ranging from 0.1 millidarcy up to several hundred millidarcys and account for nearly all the oil and gas production from the unitized lands. Generally, these productive sands are well sorted, fine grained to silty, contain appreciable quantities of clay, and exhibit extensive reworking by marine organisms during deposition and the initial stages of compaction. Permeability, which has been impaired and in some cases destroyed by the activities of these marine animals, is found in the interconnected voids not filled by clay, calcite cement, and secondary growth of quartz. The highest porosities, observed in petrographic examinations of cored material, occur where secondary quartz is most common and finely divided clay is absent. Environmentally, the Gallup sandstones are believed to have been deposited in quite shallow water as a series of off-shore sand bars. Such an environment would readily explain the long axis of uniform deposition and the transverse axis of variable sedimentation noted in the Gallup sandstones.

The upper and main productive sand has been arbitrarily designated by Shell as the "GC" sand and is rather uniformly distributed from northwest to southeast throughout the Bisti field. Enclosure 2 shows the areal extent of GC sand net pay on the Carson Unit as indicated by present control and provides a guide for future development of the reserves. Net pay has been determined from study of electric and micro-logs of the wells already drilled, and attains a maximum development on the Carson Unit of 16 feet in Unit 4.

The lower sand productive on the Unit is known as the "GD" member. Actually, this sand consists of two laterally separated, stratigraphically equivalent units of different character. These characteristics of the GD member are illustrated on enclosure 3, an isopach map of net pay thickness, and on enclosures 4 and 5, large scale cross-sections across the main productive area of the Unit. As can be seen from the cross-sections, the southerly unit of the GD member is comprised of several intercalated thin sands and shales in contrast to the northerly unit, which is made up of one well developed sand. The best development of the latter sand is observed on the log of Unit 23-17. In this well 8 feet of pay produce oil at an initial, natural flowing rate of 312 B/D. This rate is substantially higher than would be expected from 8 feet of average Gallup pay and is believed to reflect unusually favorable petrophysical properties (notably larger grain size) of this particular sand in comparison with other Gallup sands. Surprisingly good initial rates from moderate amounts of pay seem to be the rule from this unit of the GD member for several wells to the east have demonstrated good potentials in this sand.

Reservoir

As no decline data are available, all reservoir estimates are based on volumetric analysis of our Bisti field wells and are tentative. An average Bisti well has approximately 25' of net sandstone interval which is composed of 10' of permeable sandstone (that with microlog separation) with an average porosity of 15% and water saturation of 25%, and 15' of poorer quality sandstone with an average porosity of 12% and water saturation of 50%. The shrinkage factor of the Bisti crude is about 0.78. We believe that a well draining 40 to 80 acres can be expected reasonably to have 20% recovery efficiency for the permeable sandstone and 10% recovery for the less permeable sandstone, and on this basis the ultimate production of 75,000 barrels per average well is anticipated. Based on these data we have concluded that wells with 10 net feet of microlog pay in the Gallup should yield a satisfactory profit margin and that development of areas of less than 10 feet of pay should be postponed until a more firmly supported profitability can be calculated. The four newly completed Carson Unit wells have sandstone development as follows:

<u>Well No.</u>	<u>Feet Microlog Separation</u>	<u>Feet Pay Without Separation</u>
Carson Unit 2	0	10
Carson Unit 33-24	10	15
Carson Unit 23-17	8	7
Carson Unit 43-13	7	8

Although two of these wells proposed for inclusion in the participating area have less than the prescribed 10 net feet minimum microlog separation, they are proposed for inclusion because they are expected to be commercial, although the profit realized from them could be substandard.

To assure reasonable profits based on the above preliminary estimates, our current plan of exploitation is to develop on 80-acre spacing those areas with from 10' to 15' net microlog pay and on 40 acre spacing the central, prolific trend where more than 15' net microlog pay should be encountered. This plan is described in detail in a separate report which is currently being considered by the other participants in the unit and when agreed upon it will be forwarded to the U.S.G.S.

Until data from sustained production are available, we do not believe there can be any reliable basis for revising this development plan to include more area. Such information will not be available until after the Four Corners Pipeline provides a volume outlet about a year from now. Consequently, for the next few months, we envision that the limits of the participating area transverse to the productive trend will extend outward from the 10' microlog pay isopach no more than 1100 feet (approximate radius of an 80 acre drainage area). We wish to stress, however, that this is not intended to be the final prescription for the participating area. The known variation in sand character suggests that drainage will be better in some areas than in others and that ultimately a less rigid plan will be supportable. Moreover, as indicated above, production performance data are necessary to substantiate any arguments regarding drainage limits and when such data are available a review of our position will be made.

Conclusion:

In view of the production obtained at Carson Unit 33-24, 23-17, and 43-13, we believe that it is reasonable to extend the participating area to include the land in the vicinity of these three wells; moreover, because of the continuity of sands and pay development in the northwest - southeast direction, the lands between 43-13 and 23-17 should be considered reasonable proven productive.

Accordingly, we recommend that an area of 520.50 acres be added to the initial participating area, making a total of 1602.10 acres in the revised participating area. The lands in the revised participating area should be described as follows:

Township 25 North, Range 11 West, NMPM

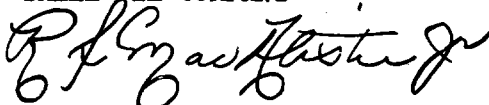
Section 17: W/2 SE/4, SW/4
Section 18: Lots 3 and 4, E/2 SW/4, SE/4
Section 19: Lots 1 and 2, E/2 NW/4, NE/4
Section 20: NW/4, W/2 NE/4

Township 25 North, Range 12 West, NMPM

Section 13: SE/4
Section 24: NE/4, SE/4

It is further recommended that the effective date of the above described first revision to the participating area be March 1, 1957, the first of the month in which Carson Unit 2, 33-24, 23-17, and 43-13 were completed.

SHELL OIL COMPANY



R. S. Mac Alister, Jr.
Division Exploitation Engineer
Farmington Division

RDA:AOS:MCP

Attachments

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

June 20, 1957

C
O
P
Y

Shell Oil Company
1901 Main Avenue
Durango, Colorado

Attention: Mr. F. W. Nantker

Re: Carson Unit Area
San Juan County, New Mexico
First Revision, Gallup
Participating Area

Gentlemen:

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

Very truly yours,

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

ALP:DSN:1r



SHELL OIL COMPANY

1901 Main Avenue
Durango, Colorado

June 18, 1957

file

Carson Area
Subject: Carson Unit Agreement
Mims Lease - SF-078067
Mudge No. 1 Lease - SF-078061
Mudge No. 2 Lease - SF-078062
Mudge No. 3 Lease - SF-078064
Mudge No. 4 Lease - SF-078065
Phillips No. 1 Lease - SF-078063
Phillips No. 2 Lease - SF-078066
Phillips No. 3 Lease - SF-078068

Mr. Murray Morgan
Commissioner of Public Lands
P. O. Box 791
Santa Fe, New Mexico

Dear Mr. Morgan:

We refer to the telephone conversation between your Mrs. Marian Rhea and our Mr. Mantker regarding our plans for operating our Bisti field wells, both within and without the Carson Unit Area. Our maps showing the approximate trend of the Bisti "pay" were furnished you in our letter of February 20, 1957 submitting our Preliminary Plan of Development for 1957, our letter of February 14, 1957 submitting our Proposed Initial Participating Area for 1957, our Supplemental Plan of Development dated March 29, 1957, and our revised Participating Area for the Carson Unit Area dated June 12, 1957, all of which letters contained enclosures showing the Shell acreage in Township 25 North, Ranges 11 and 12 West, and the general trend of the Bisti field through the Shell acreage. You have approved all but the last referred to letter.

We respectfully request permission to shut in production from the wells which have been completed, including the leases lying outside the Carson Unit, as well as to other wells which may be hereafter drilled, pending completion of the pipeline from the Four Corners Area to the Los Angeles, California area, which Shell and a number of other oil companies are now in the process of constructing. Such approval has previously been given us as to the Unit wells.

Although we have been unable to run production tests for the wells thus far completed, we would estimate that the initial production potential ranges from 50 barrels per day to 600 barrels per day flowing. Under the most favorable circumstances, at the present time, transportation costs are estimated to be approximately \$1.00 per barrel more than the estimated pipeline costs and upon completion of the pipeline, we think that our oil will bring approximately \$3.18 per barrel at the wellhead. We feel that it would be economically justified from the standpoint of all interested parties to suspend production from all wells on these leases (aside from testing) until the time such pipeline facilities are available.

We will, of course, take periodic bottomhole pressure build-up tests and otherwise undertake to ascertain the extent to which competitors' wells on adjoining lands are being produced, so that we will be fully apprised of any potential drainage of the leased land and in a position to place on production our offsetting wells to remedy that situation whenever it arises.

Very truly yours,

SHELL OIL COMPANY

Original Signed by

R. L. Freeman *R. L. Freeman*

For: F. W. Nantker

District Land Agent

FWN:MLH

cc - New Mexico Oil Conservation Commission ✓

June 18, 1957

In reply refer to:
Unit Division

File

Shell Oil Co.
1901 Main Avenue
Durango, Colorado

Re: Carson Unit Agreement -
First Revision of the
Participating Area

Attention: Mr. F. W. Nantker
District Land Agent

Gentlemen:

We have carefully reviewed your information submitted and herewith approve your First Revision of the Participating Area for the Carson Unit Agreement, my approval being 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

MEM:MMR/m
cc: USGS-Roswell
OCC-Santa Fe

ILLEGIBLE



SHELL OIL COMPANY

1901 Main Avenue
Durango, Colorado

June 14, 1957

Subject: Carson Area
Carson Unit
First 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 a carbon copy of a letter to the U. S. Geological Survey in Roswell, New Mexico whereby we requested their approval of our First Revision of the Participating Area to our Carson Unit. We also enclose a copy of our engineering report for your use. We respectfully request that you favorably consider our application and so advise Mr. Anderson of the U. S. Geological Survey, and us of your approval.

If you have any questions regarding these papers, do not hesitate to call the undersigned in Durango, collect, 1313, and we will be pleased to discuss this matter with you either by telephone or in person.

Very truly yours,

F. W. Nantker
District Land Agent

Enclosure



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SHELL OIL COMPANY

V 0:25

108 North Behrend Avenue
Farmington, New Mexico

June 14, 1957

Re: Carson Unit Area
San Juan County, New Mexico
Second Supplemental Plan of
Development for 1957

United States Geological Survey
Post Office Box 6721
Roswell, New Mexico

Attention Mr. John A. Anderson

Gentlemen:

Please refer to our Supplemental Plan of Development for the Carson Unit dated March 29, 1957, in which we stated that we were in the process of preparing a comprehensive plan of development to provide for drilling on the Unit for a one-year period. We have not yet reached agreement with all other working interest owners on the details of this comprehensive plan. Thus, in order to maintain continuous operations, we should like to submit a second supplemental plan of development to include the drilling of eight Gallup sandstone wells, five located on land held by Shell, and three located on a Skelly lease as suggested by Skelly, to cover the interim period between the completion of the present drilling program and the commencement of the comprehensive plan.

To date we have drilled a total of 15 wells on the Unit, all producible from the Gallup sandstone, with results tabulated below:

<u>Well</u>	<u>Total Depth</u>	<u>Date Completed</u>	<u>Initial Production</u>	<u>Status</u>
Carson Unit 1	5983	9-27-56	Flowed 806 B/D	Shut-in
Carson Unit 2	5000	3-6-57	Pumped 21 B/D	Pumping
Carson Unit 3	5004		Awaiting Pumping Unit	
Carson Unit 4	5043	11-15-56	Flowed 657 B/D	Shut-in
Carson Unit 33-24	5030	3-9-57	Flowed 470 B/D	Shut-in
Carson Unit 43-13	5054	2-23-57	Flowed 219 B/D	Shut-in
Carson Unit 41-13	5050		Awaiting Pumping Unit	
Carson Unit 23-17	5075	3-14-57	Flowed 312 B/D	Shut-in
Carson Unit 23-20	5075		Awaiting Pumping Unit	
Carson Unit 34-13	5100		Awaiting Completion	
Carson Unit 14-13	5040	5-12-57		Shut-in
Carson Unit 32-14	5073		Awaiting Completion	
Carson Unit 41-23	5072		Awaiting Completion	
Carson Unit 41-14	5090		Awaiting Completion	
Carson Unit 34-17	5032		Awaiting Completion	

Two wells remain to be drilled under the Supplemental Plan of Development dated March 29, 1957, namely, Carson Unit 12-20 and 21-19. Upon completion of drilling these two wells we should like to continue our drilling program but it appears that our comprehensive plan will not have all of the necessary approvals by that time. Inasmuch as the Bisti field outside the Carson Unit is more advanced in its development and a pipeline outlet is expected early in 1958, we believe that continued development is necessary to protect the interests within the unit.

Thus, we now propose, as a Second Supplemental Plan of Development, to drill eight Gallup sandstone wells on the Carson Unit, using one drilling string, and commencing about July 1, 1957. The approximate location and the planned order of drilling of the eight wells are as follows:

<u>Well Number</u>	<u>Approximate Location</u>
Carson Unit 34-19	C SW/4 SE/4 Sec. 19, T 25 N, R 11 W
Carson Unit 43-17	C NE/4 SE/4 Sec. 17, T 25 N, R 11 W
Carson Unit 41-20	C NE/4 NE/4 Sec. 20, T 25 N, R 11 W
Carson Unit 43-20	C NE/4 SE/4 Sec. 20, T 25 N, R 11 W
Carson Unit 32-20	C SW/4 NE/4 Sec. 20, T 25 N, R 11 W
Carson Unit 14-17	C SW/4 SW/4 Sec. 17, T 25 N, R 11 W
Carson Unit 34-18	C SW/4 SE/4 Sec. 18, T 25 N, R 11 W
Carson Unit 12-19	C SW/4 NW/4 Sec. 19, T 25 N, R 11 W

Four of the proposed wells, Carson Unit 34-19, 43-17, 41-20 and 43-20, are at locations outside of the Initial Participating Area and also outside of the Proposed First Revision of the Participating Area. The other four proposed wells, Carson Unit 14-17, 34-18, 12-19, and 32-20 are at locations within the Initial Participating Area.

In general, these proposed wells are at infilling development locations. However, Carson Unit 34-19 is an outpost well designed to test the prospects of commercial GD sand pay development east of Unit 33-24 and should be of considerable help in defining the southerly limits of profitable production on the Carson Unit. Carson Unit 43-17 is planned to further evaluate the GD sand which was found well developed in Carson Unit 23-17.

Your approval of this Second Supplemental Plan of Development, to cover the drilling of eight Gallup sandstone wells on the Carson Unit, is respectfully requested.

Approved.....**MAY 23 1957**.....19.....

Very truly yours,

A. L. Porter, Jr.
Secretary-Director

R. R. Robison
R. R. Robison
Division Production Manager

NEW MEXICO OIL CONSERVATION COMMISSION

Daniel S. Nutter
Attachment
DANIEL S. NUTTER
Petroleum Engineer

1901 Main Avenue
Durango, Colorado

June 14, 1957

Subject: Carson Area
Carson Unit
First Revision of the
Participating Area for the
Gallup (Upper Cretaceous) Pool

U. S. Geological Survey
P. O. Box 6721
Roswell, New Mexico

Attention Mr. John A. Anderson
Supervisor

Gentlemen:

Enclosed for your approval find First Revision of the Initial Participating Area for the Carson Unit Agreement in seven copies together with a Geologic and Engineering Report in three copies. By carbon copy of this letter, we are submitting one copy of the supplemental plan and engineering report to the New Mexico Oil Conservation Commission and one copy to the Commissioner of Public Lands of the State of New Mexico for their approval.

If you have any questions regarding these papers, do not hesitate to call the undersigned in Durango collect, 1313, and we will be pleased to discuss this matter with you either by telephone or in person.

Very truly yours,

Original Signed by
F. W. Nantker *F. W. Nantker*
F. W. Nantker
District Land Agent

FWN:MLM
Enclosures

- cc - U. S. Geological Survey (without enclosure)
Farmington, New Mexico
- New Mexico Oil Conservation Commission (with enclosure)
- Mr. Murray Morgan (with enclosure)
Commissioner of Public Lands

SHELL OIL COMPANY

June 12, 1957

Subject: Application for Approval of the
First Revision of the Participating
Area for the Gallup (Upper Cre-
taceous) Pool - Carson Unit, San
Juan County, New Mexico
No. 14-08-001-3485

Director,
United States Geological Survey (7)
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

Dear Sir:

Shell Oil Company, as unit operator under that certain unit agree-
ment 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 provisions 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 initial participating area to constitute the first revision of the
participating area for the Gallup (Upper Cretaceous) Pool in the Carson Unit
Area, to wit:

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

Section 17: NW $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$

Section 18: Lot 3, NE $\frac{1}{4}$ SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$

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

Section 13: N $\frac{1}{2}$ SE $\frac{1}{4}$

Section 24: SE $\frac{1}{4}$

containing 520.50 acres, more or less

Director,
United States Geological Survey (7)
Washington, D. C.

2

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

In support of this application, applicant attaches hereto and hereby makes a part hereof 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 geological 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 Nos. 2, 33-24, 23-17, and 43-13. Carson Unit 2 is located in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 25, T. 25 N., R. 12 W., N.M.P.M., and was completed on March 6, 1957 in the Gallup (Upper Cretaceous) intervals 4790-4795', 4818-4822', 4828-4833', 4843-4852' and 4866-4874' with an initial production rate of 21 B/D oil. Carson Unit 33-24 is located in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 24, T. 25 N., R. 12 W., N.M.P.M., and was completed on March 9, 1957 in the Gallup (Upper Cretaceous) intervals 4866-4874', 4894-4900', 4905-4910', 4913-4920', 4925-4936', 4949-4958' and 4965-4973' with an initial production rate of 470 B/D oil. Carson Unit 23-17 is located in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 17, T. 25 N., R. 11 W., N.M.P.M., and was completed on March 14, 1957 in the Gallup (Upper Cretaceous) intervals 4872-4876', 4881-4883, 4888-4896', 4934-4936', 4949-4955' and 4967-4972' with an initial production rate of 312 B/D oil. Carson Unit 43-13 is located in the NE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 13, T. 25 N., R. 12 W., N.M.P.M., and was completed on March 23, 1957 in the Gallup (Upper Cretaceous) intervals

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3

through

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4889-4897', 4900-4914', 4922-4927', 4972-4982' and 4990-4994' with an initial production rate of 219 B/D oil.

Of the above listed four wells, we consider the last three as paying wells under the Unit Agreement. We are continuing production tests on Carson Unit 2 to determine whether the well should be considered paying.

Wherefore, applicant respectfully requests that the said Director approve the hereinabove selection of lands to be added to the initial participating area to constitute the first revision of the participating area to be effective March 1, 1957.

Very truly yours,

Jack D. Jones
For J. E. Mohr
Division Land Manager

Approved *June 20 1957*
A. H. Porter
Secretary-Director

NEW MEXICO OIL CONSERVATION COMMISSION