



ARCO Permian

600 North Marienfeld
Midland, TX 79701-4373
P.O. Box 1610
Midland, TX 79702-1610
Telephone 915-688-5570
Facsimile 915-688-5956
Email ecasbee@mail.arco.com

Elizabeth A. Casbeer
Regulatory/Compliance Analyst

DHC

7/15/99

2397

JUN 25 1999

June 22, 1999

New Mexico Oil Conservation Division
ATTN: David Catanach
2040 S. Pacheco Street
Santa Fe, NM 87505

RE: Application of ARCO Permian
for Downhole Commingling on
Washington State "33" Well No. 12
Artesia (QGSA) and Artesia (Glor-Yeso) Fields
Eddy Co., NM

Mr. Catanach:

ARCO Permian respectfully requests administrative approval for downhole commingling on the Washington State "33" Well No. 12. Attached are the supporting documents for this application.

If you have any questions, please contact me at 915/688-5570. Please send the approved permit to:

ARCO Permian
ATTN: E. A. CASBEER, Room 959-54
P. O. Box 1610
Midland, TX 79702

Yours very truly,

Elizabeth A. Casbeer
Regulatory Compliance Analyst

Attachments

xc: Larry Henson - EUN
Donald Knipe - 61323/MIO
Central Files - 041/MIO
R/C Files

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980
DISTRICT II
811 South First St., Artesia, NM 88210-2835
DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410-1693

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
2040 S. Pacheco
Santa Fe, New Mexico 87505-6429

Form C-107-A
New 3-12-96

APPROVAL PROCESS:
☐ Administrative ☐ Hearing

EXISTING WELLBORE
☐ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Operator ARCO Permian, P.O. Box 1610 Midland, TX 79702 Address
Lease Washington "33" State No.12 Well No. G-33-17S#28E Unit Ltr. - Sec - Twp - Rge Eddy County
OGRID NO. 000990 Property Code 22954 API NO. 30-015-30348 Spacing Unit Lease Types: (check 1 or more)
Federal ☐ State ☒ (and/or) Fee ☐

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zone	Lower Zone
1. Pool Name and Pool Code	Artesia (03230) (Queen, GRBG, S.A.)	80 BOPD w/20 CAT No 60R Lmif	Artesia (96830) (Glorieta, Yeso)
2. Top and Bottom of Pay Section (Perforations)	1500' - 3100'		3700' - 4100'
3. Type of production (Oil or Gas)	Oil		Oil
4. Method of Production (Flowing or Artificial Lift)	Artificial Lift		Artificial Lift
5. Bottomhole Pressure Oil Zones - Artificial Lift: Gas & Oil - Flowing: All Gas Zones: Estimated Current Measured Current Estimated Or Measured Original	a. (Current) 70 b. (Original)	a. b.	a. 75 b.
6. Oil Gravity (°API) or Gas BTU Content	40 - 42° API		42° API
7. Producing or Shut-In?	awaiting perfs		producing
Production Marginal? (yes or no)	Expected in 3 to 6 months		yes
* If Shut-In, give date and oil/gas/water rates of last production Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data	Date: Rates: N/A	Date: Rates:	Date: Rates: N/A
* If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: Rates: N/A	Date: Rates:	Date: 4/12/99 Rates: 22 BOPD 76 BOPD 41 MCFGPD
8. Fixed Percentage Allocation Formula - % for each zone	Oil: 27 % Gas: 27 %	Oil: % Gas: %	Oil: 73 % Gas: 73 %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.
10. Are all working, overriding, and royalty interests identical in all commingled zones? ☒ Yes ☐ No
If not, have all working, overriding, and royalty interests been notified by certified mail? ☐ Yes ☐ No
Have all offset operators been given written notice of the proposed downhole commingling? ☒ Yes ☐ No
11. Will cross-flow occur? ☐ Yes ☒ No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. ☐ Yes ☐ No (If No, attach explanation)
12. Are all produced fluids from all commingled zones compatible with each other? ☒ Yes ☐ No
13. Will the value of production be decreased by commingling? ☐ Yes ☒ No (If Yes, attach explanation)
14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. ☒ Yes ☐ No
15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S). _____
16. ATTACHMENTS:
* C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
* Production curve for each zone for at least one year. (If not available, attach explanation.)
* For zones with no production history, estimated production rates and supporting data.
* Data to support allocation method or formula.
* Notification list of all offset operators.
* Notification list of working, overriding, and royalty interests for uncommon interest cases.
* Any additional statements, data, or documents required to support commingling.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Elizabeth A. Casbeer TITLE Reg/Comp Analyst DATE 6-22-99

TYPE OR PRINT NAME Elizabeth A. Casbeer TELEPHONE NO. (915) 688-5570

WELLBORE SCHEMATIC

Washington "33" No. 12

2432' FNL & 2270' FEL (G)

Sec. 33, T-17S, R-28E,

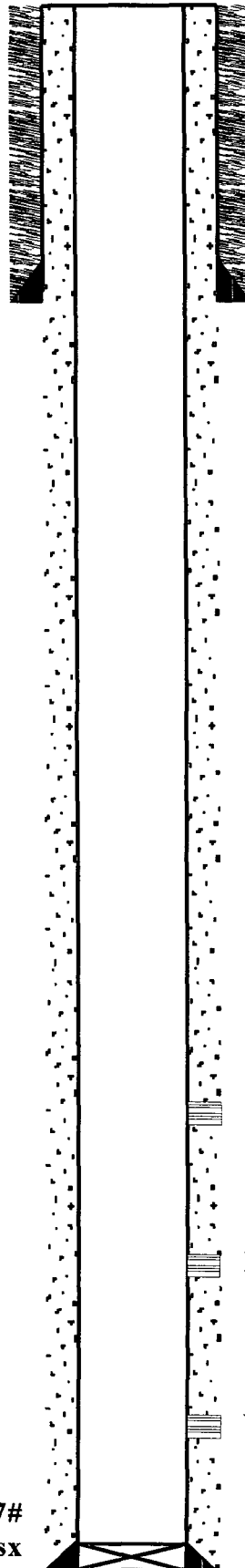
Eddy County, NM

Spudded: 10/29/98

Completed: 11/12/98

API #: 30-015-30348

Surface Casing 8 5/8" 24# @ 600'
Circ w/400sx cmt



Proposed Shallow Sand Perfs 1541'-2212'

Proposed San Andres Perfs 2468'-3032'

Yeso Perfs 3778'-4082'

Production Casing 5 1/2" 17#
Circ Cmt @ 4000' w/810 sx

TD @ 4000', PBTD 3958'

DLK 06-10-99

Submit to Appropriate
District Office
State Lease - 6 copies
Fee Lease - 5 copies

DISTRICT I

P.O. Box 1980, Hobbs, NM 88240

DISTRICT II

P.O. Drawer DD, Artesia, NM 88210

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-105
Revised 1-1-89

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

WELL API NO.

015-30348

5. Indicate Type Of Lease

STATE ☒

FEE ☐

6. State Oil & Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:

OIL WELL ☒

GAS WELL ☐

DRY ☐

OTHER ☐

b. Type of Completion:

NEW WELL ☒

WORK OVER ☐

DEEPEN ☐

PLUG BACK ☐

DIFF RESVR ☐

OTHER ☐

7. Lease Name or Unit Agreement Name

WASHINGTON "33" STATE

2. Name of Operator

ARCO Permian

8. Well No.

12

3. Address of Operator

P.O. Box 1610 Midland, TX 79702

9. Pool name or Wildcat

ARTESIA; GLORIETA-YESO

4. Well Location

Unit Letter G : 2432 Feet From The NORTH Line and 2270 Feet From The EAST Line

Section 33

Township 17S

Range 28E

NMPM

EDDY

County

10. Date Spudded

10/29/98

11. Date T.D. Reached

11/5/98

12. Date Compl(Ready to Prod.)

11/12/98

13. Elevations(DF & RKB, RT, GR, etc.)

3666'

14. Elev. Casinghead

15. Total Depth

4000

16. Plug Back T.D.

3958

17. If Multiple Compl. How Many Zones?

18. Intervals Drilled By

Rotary Tools

X

Cable Tools

19. Producing Interval(s), of this completion - Top, Bottom, Name

3652-3786

20. Was Directional Survey Made

NO

21. Type Electric and Other Logs Run

CPNL

22. Was Well Cored

NO

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8-5/8	24	540	12-1/4	CL C-325 SX	
5-1/2	17	4000	7-7/8	810 SX	

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
					2 7/8"	3690	

25. TUBING RECORD

26. Perforation record (interval, size, and number)

3652-3786 25 HOLES

27. ACID, SHOT, FRACTURE, CEMENT, SOEEZE, ETC.

DEPTH INTERVAL

3652-3786

AMOUNT AND KIND MATERIAL USED

2000 GAL 15%

8000 GAL VIK I-25

88000 #SD

28. PRODUCTION

Date First Production 11/17/98		Production Method(Flowing, gas lift, pumping - Size and type pump) PUMPING						Well Status(Prod. or Shut-in) PRODUCING	
Date of Test 11/21/98	Hours Tested 24	Choke Size	Prod'n For Test Period	Oil - Bbl. 23	Gas - MCF 69	Water - Bbl. 284	Gas - Oil Ratio 3000		
Flow Tubing Press. 60	Casing Pressure 60	Calculated 24- Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API(Corr.) 36.2			

29. Disposition of Gas(Sold, used for fuel, vented, etc.)

SOLD

Test Witnessed By

30. List Attachments

31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature

Elizabeth A. Casbeer

Printed Name

ELIZABETH A. CASBEER

Title

REG./COMP.

Date

12/3/98

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a sun tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STAT

Southeastern New Mexico

Northeastern New Mexico

T. Anhy	
T. Salt	
B. Salt	
T. Yates	
T. 7 Rivers	
T. Queen	12160
T. Grayburg	11695
T. San Andres	2000
T. Glorieta	3520
T. Paddock	3630
T. Blinebry	
T. Tubb	
T. Drinkard	
T. Abo	
T. Wolfcamp	
T. Penn	
T. Cisco (Bough C)	

T. Canyon
T. Strawn
T. Atoka
T. Miss
T. Devonian
T. Silurian
T. Montoya
T. Simpson
T. McKee
T. Ellenburger
T. Gr. Wash
T. Delaware Sand
T. Bone Springs
T.
T.
T.
T.

T. Ojo Alamo
T. Kirtland-Fruitland
T. Pictured Cliffs
T. Cliff House
T. Menefee
T. Point Lookout
T. Mancos
T. Gallup
Base Greenhorn
T. Dakota
T. Morrison
T. Todilto
T. Entrada
T. Wingate
T. Chinle
T. Permian
T. Penn "A"

T. Penn. "B"
T. Penn. "C"
T. Penn. "D"
T. Leadville
T. Madison
T. Elbert
T. McCracken
T. Ignacio Otzte
T. Granite
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T.

OIL OR GAS SANDS OR ZONES

No. 1, from to
No. 2, from to

No. 3, from..... to.....
No. 4, from..... to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from to feet

No. 2, from to feet

No. 3, from to feet

LITHOLOGY RECORD

(Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology

From	To	Thickness in Feet	Lithology

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102
Revised February 10, 1984
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 3230	Pool Name ARTESIA (Q-G-SA)
Property Code 22954	Property Name WASHINGTON 33 STATE	Well Number 12
OGRID No. 000990	Operator Name ARCO PERMIAN	Elevation 3666

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
	33	17 S	28 E		2432	N	2270	E	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres 40	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

				OPERATOR CERTIFICATION I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief. <i>Elizabeth A. Casbeer</i> Signature ELIZABETH A. CASBEER Printed Name REG. / COMP. ANALYST Title 8/4/98 Date
SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. MARCH 3, 1998 Date Surveyed Signature of Seal of Professional Surveyor RONALD J. EDSON NEW MEXICO 5-4-98 239 12641 12185				
Certificate No. RONALD J. EDSON 3239 GARY EDSON 12641 WATSON McDONALD 12185				

Washington State "33" No. 12

Allocation Formula

Well Name	Producing Formation	Daily Production Test (3 mo. Avg. Nov, Dec. 98', Jan. 99')	% of Total
Washington State "33" No. 24	Artesia (Glorieta, Yeso)	29 BO/61 MCF/84 BW	72.5 %
Washington State "33" No. 25	Artesia (Queen, Grayburg, SA)	11 BO/57 MCF/41 BW	27.5 %

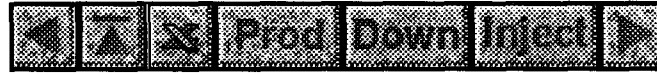
The above production test represents stable production from a San Andres producer (Washington State "33" No. 25) and a Yeso producer (Washington State "33" No. 24) . We believe these rates of production represent an acceptable means to allocate production. See attached production plots.

ARCO Permian

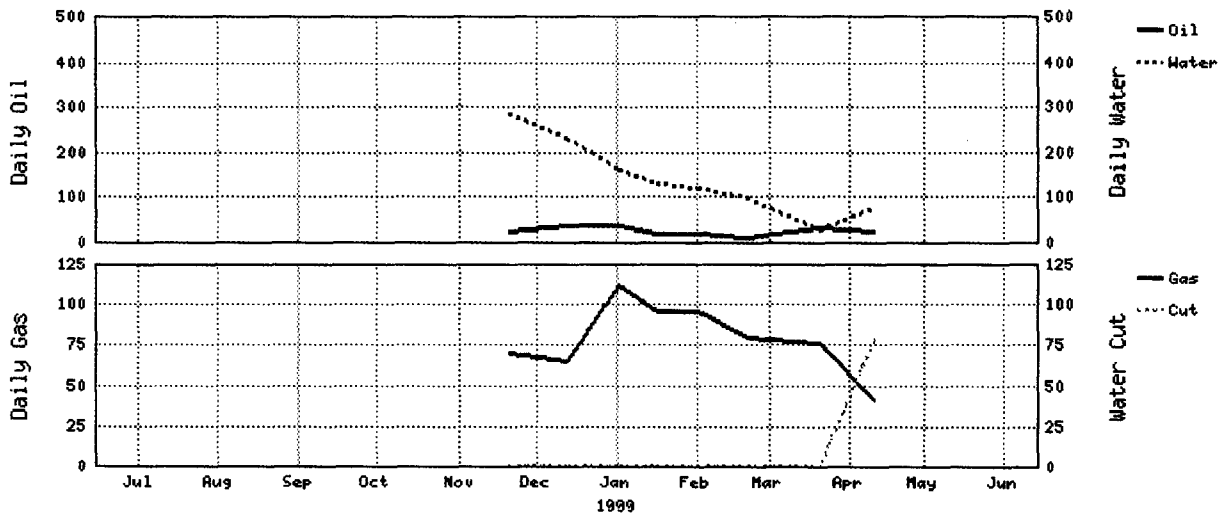
Mon Jun 14, 1999

2:31:56 PM

Well Test Data for SE NEW MEXICO: ARTESIA: YESO WASHINGTON 33 STATE 12 - 300153034800 - PO - AC



Date	Oil	Water	Gas	Cut	Fl	Pd	%CO2	GasGr	GDur
04/12/1999	22	76	41	78	0	0	0.000	0	0
03/22/1999	32	27	75	0	0	0	0.000	0	0
02/22/1999	11	96	79	0	0	0	0.000	0	0
02/03/1999	16	118	95	0	0	0	0.000	0	0
01/18/1999	16	127	95	0	0	0	0.000	0	0
01/03/1999	36	161	111	0	0	0	0.000	0	0
12/14/1998	34	230	64	0	0	0	0.000	0	0
11/21/1998	23	284	69	0	0	0	0.000	0	0
Average:	24	140	79	10	0	0	0.000	0	0



execution time = 6 seconds

For questions or comments regarding this program, contact pagemaster@permian.arco.com

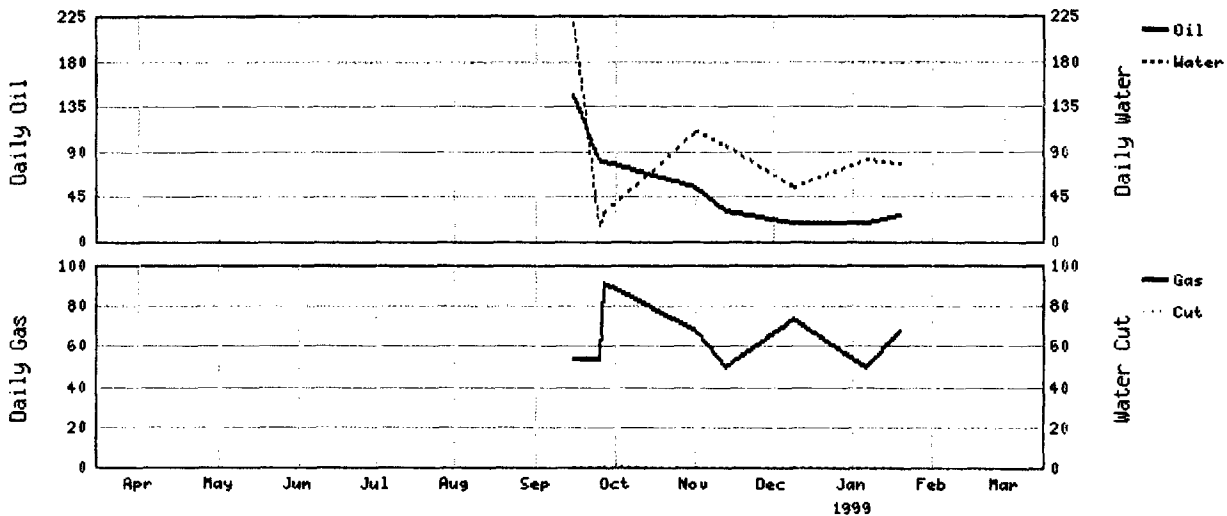


Mon Mar 15, 1999
3:08:12 PM

**Well Test Data for SE NEW MEXICO: ARTESIA: YESO
WASHINGTON 33 STATE #24 - 300153033400 - PO - AC**



Date	Oil	Water	Gas	Cut	Fl	Pd	%C02	GasGr	GDur
01/19/1999	26	78	67	0	0	0	0.000	0	0
01/06/1999	18	82	50	0	0	0	0.000	0	0
12/09/1998	18	53	73	0	0	0	0.000	0	0
11/13/1998	29	96	50	0	0	0	0.000	0	0
11/01/1998	54	109	67	0	0	0	0.000	0	0
09/26/1998	80	27	91	0	0	0	0.000	0	0
09/25/1998	80	15	53	0	0	0	0.000	0	0
09/15/1998	146	218	53	0	0	0	0.000	0	0
Average:	56	85	63	0	0	0	0.000	0	0



execution time = 2 seconds

For questions or comments regarding this program, contact pagemaster@permian.arco.com

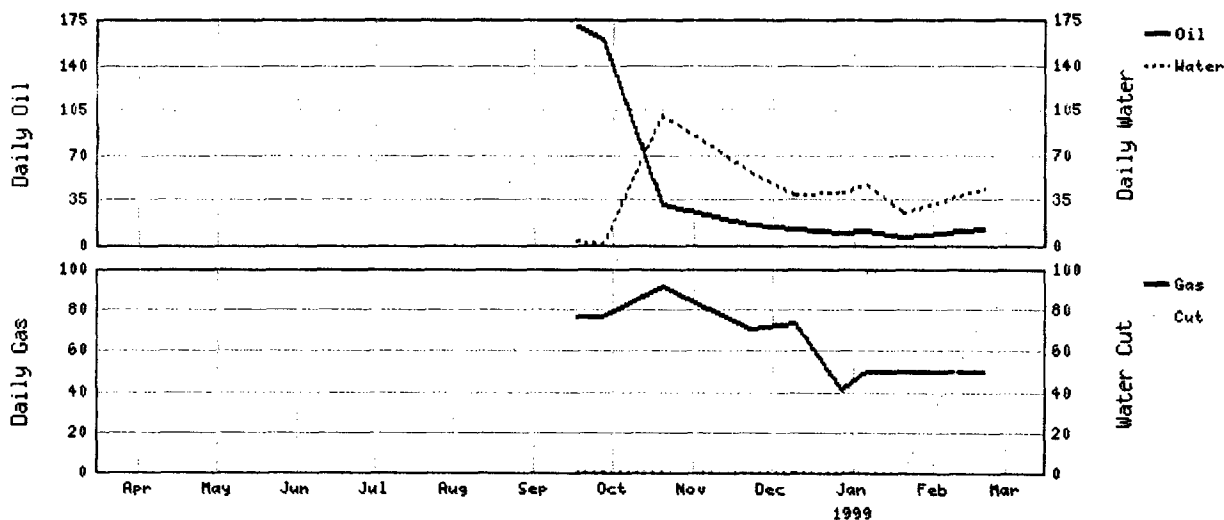


Mon Mar 15, 1999
3:06:54 PM

**Well Test Data for SE NEW MEXICO: ARTESIA: QUEEN GRAYBURG SAN
ANDRES
WASHINGTON 33 STATE #25 - 300150169000 - PO - AC**



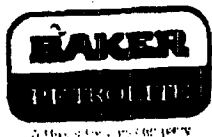
Date	Oil	Water	Gas	Cut	Fl	Pd	%C02	GasGr	GDur
02/20/1999	13	43	50	77	0	0.000	0	0	
01/20/1999	6	25	50	0	0	0.000	0	0	
01/06/1999	11	46	50	0	0	0.000	0	0	
12/28/1998	10	40	41	0	0	0.000	0	0	
12/10/1998	12	39	73	0	0	0.000	0	0	
11/23/1998	16	56	70	0	0	0.000	0	0	
10/20/1998	31	100	91	0	0	0.000	0	0	
09/27/1998	160	0	76	0	0	0.000	0	0	
09/17/1998	169	3	76	0	0	0.000	0	0	
Average:	48	39	64	9	0	0.000	0	0	



execution time = 9 seconds

For questions or comments regarding this program, contact pagemaster@permian.arco.com

Sent by: BAKER PETROLITE 10155837942



Water Analysis Report by Baker Petrolite

ARCO
WASHINGTON 33
WELL # 24
WELLHEAD

Account Manager
STEVE THOMAS

YESO

Summary		Analysis of Sample 108815 @ 75°F					
Sampling Date	2/18/99	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date	2/24/99	Chloride	121426	3425	Sodium	77942	3390
Analyst	JOANNA RAGAN	Bicarbonate	444	7.28	Magnesium	425	35.0
		Carbonate	0.00	0.00	Calcium	1698	84.7
TDS (mg/l or g/m ³)	208471	Sulfate	4174	88.9	Strontium	36.0	0.82
Density (g/cm ³ or tonne/m ³)	1.136	Phosphate	N/A	N/A	Barium	0.40	0.01
Anion/Cation Ratio	1.00	Borate	N/A	N/A	Iron	2.00	0.07
		Silicate	N/A	N/A	Potassium	324	8.25
Carbon Dioxide					Aluminum	N/A	N/A
Oxygen					Chromium	N/A	N/A
					Copper	N/A	N/A
		pH at time of sampling			Lead	N/A	N/A
		pH at time of analysis		7.33	Manganese	N/A	N/A
		pH used in Calculations		7.33	Nickel	N/A	N/A

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000bbl										
Temp.	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ · 2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press.
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0.	1.01	30.7	-0.18		-0.15		-0.22		0.94	0.19	0.17
100	0.	0.95	34.2	-0.27		-0.17		-0.26		0.73	0.17	0.27
120	0.	0.91	37.8	-0.34		-0.17		-0.28		0.54	0.15	0.42
140	0.	0.87	41.8	-0.41		-0.14		-0.29		0.38	0.12	0.60

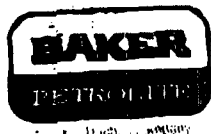
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

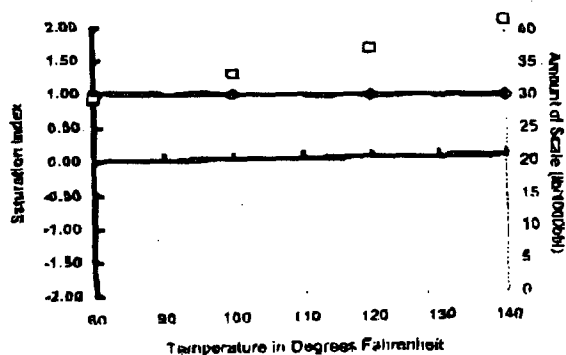
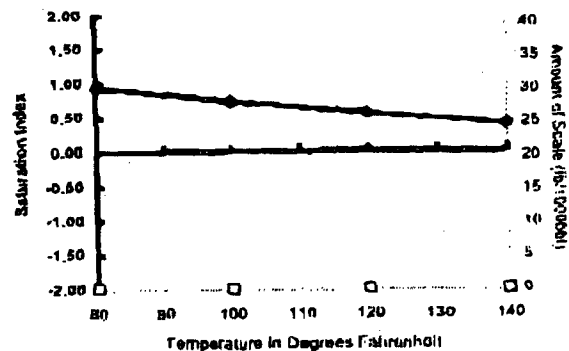
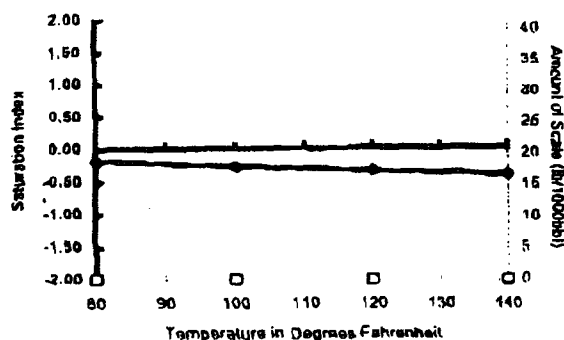
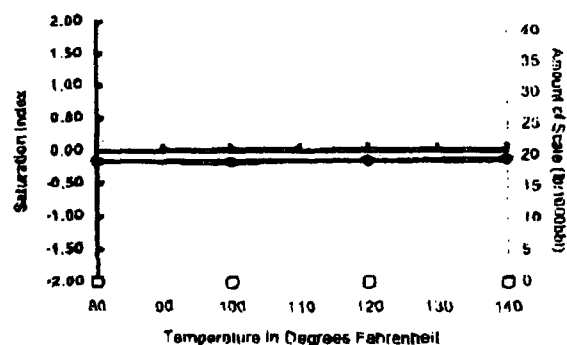
PRODUCT WARRANTY, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND ON THE BACK OF THIS SHEET

sent by: BAKER PETROLITE 19155637942

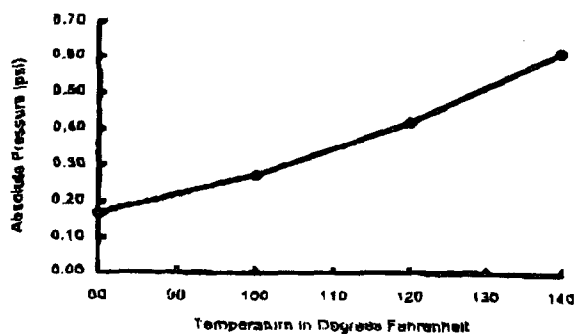
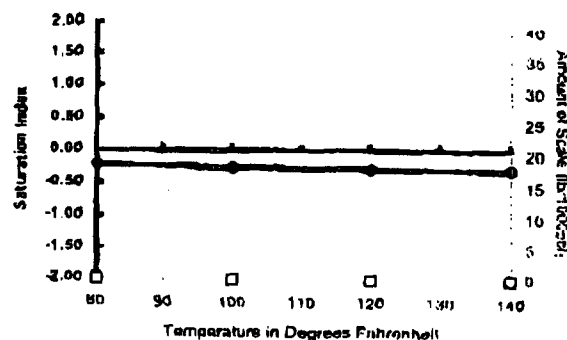


Scale Predictions from Baker Petrolite

Analysis of Sample 108815 @ 75°F for ARCO, Feb/24/99

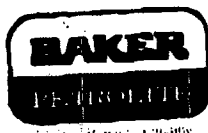
Calcite - CaCO_3 Barite - BaSO_4 Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ Anhydrite - CaSO_4 

Carbon Dioxide Partial Pressure

Celestite - SrSO_4 

PRODUCT WARRANTIES, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND ON THE BACK OF THIS SHEET

Sent by: BAKER PETROLITE 19155637942



Water Analysis Report by Baker Petrolite

ARCO
WASHINGTON 33
WELL # 26
WELLHEAD

Account Manager
STEVE THOMAS

SAN ANDRES

Summary			Analysis of Sample 108814 @ 75°F					
Sampling Date	2/18/99		Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date	2/24/99		Chloride	106506	3004	Sodium	67398	2932
Analyst	JOANNA RAGAN		Bicarbonate	714	11.7	Magnesium	563	46.1
			Carbonate	0.00	0.00	Calcium	2187	109
TDS (mg/l or g/m ³)	181974		Sulfate	4076	84.8	Strontium	45.0	1.03
Density (g/cm ³ or tonne/m ³)	1.120		Phosphate	N/A	N/A	Barium	0.10	0.00
Anion/Cation Ratio	1.00		Borate	N/A	N/A	Iron	8.00	0.29
			Silicate	N/A	N/A	Potassium	475	12.1
Carbon Dioxide						Aluminum	N/A	N/A
Oxygen						Chromium	N/A	N/A
						Copper	N/A	N/A
						Lead	N/A	N/A
			pH at time of sampling			Manganese	N/A	N/A
			pH at time of analysis		7.02	Nickel	N/A	N/A
			pH used in Calculations		7.02			

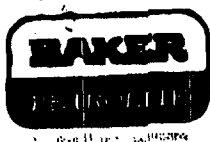
Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000bbl										
Temp.	Gauge Press.	Calcite CaCO ₃		Gypsum CaSO ₄ · 2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		CO ₂ Press.
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0.	0.98	63.6	-0.09		-0.07		-0.10		0.36	0.03	0.50
100	0.	1.01	70.8	-0.16		-0.08		-0.13		0.16	0.02	0.70
120	0.	1.03	78.3	-0.23		-0.07		-0.15		-0.02		0.90
140	0.	1.05	86.2	-0.29		-0.03		-0.16		-0.18		1.30

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

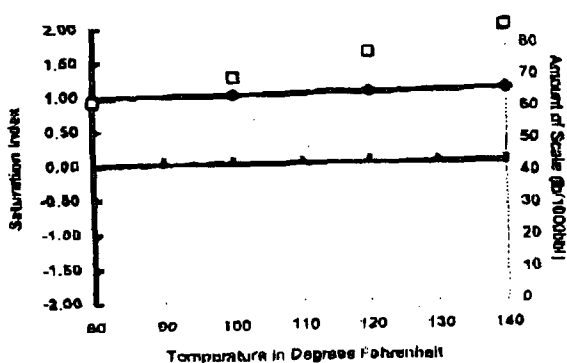
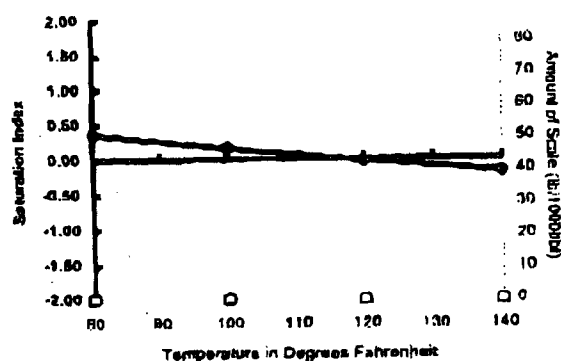
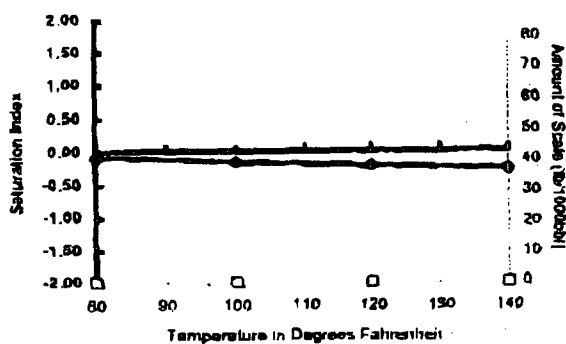
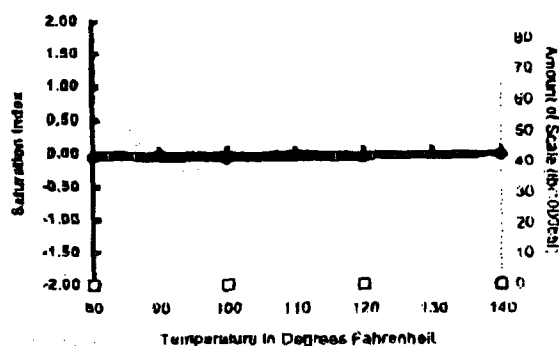
Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

Sent by: BAKER PETROLITE 19155637942

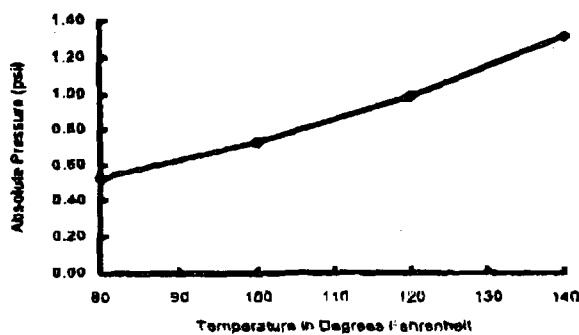
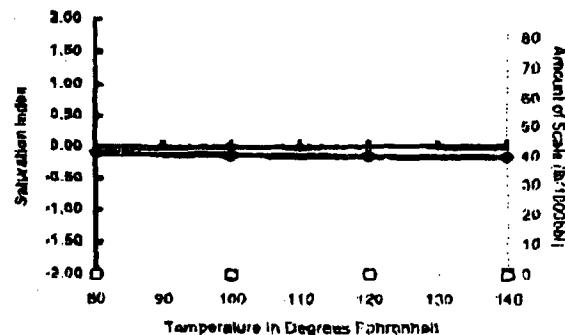


Scale Predictions from Baker Petrolite

Analysis of Sample 108814 @ 75°F for ARCO, Feb/24/99

Calcite - CaCO_3 Barite - BaSO_4 Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ Anhydrite - CaSO_4 

Carbon Dioxide Partial Pressure

Celestite - SrSO_4 

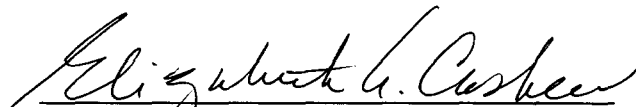
PRODUCT WARRANTY, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND ON THE BACK OF THIS SHEET

STATE OF TEXAS

COUNTY OF MIDLAND

BEFORE ME, the undersigned authority on this day personally appeared Elizabeth A. Casbeer, an Regulatory Compliance Analyst with **ARCO Permian**, who being by me duly sworn, deposes and states that the persons listed on the foregoing attached list have been sent a copy on June 22, 1999, of the New Mexico Oil Conservation Division Form C-107 entitled, "Application For Downhole Commingling" for the Washington State "33" Well No. 12, located in Section 33, T17S, R28E, Eddy County New Mexico.

ARCO Permian


Elizabeth A. Casbeer

SUBSCRIBED AND SWORN TO before me on June 22, 1999, to certify which witness my hand and seal of office.


NOTARY PUBLIC, STATE OF TEXAS



LEIGH ANN LANE

Notary Public, State of Texas

My Commission Expires: 12-12-2000

ARCO Permian
Downhole Commingling
Washington State "33" Well Mo. 12
API: 30-015-30348
2432' FNL & 2270' FEL (G)
Section 33, T-17S, R-28E
Eddy County, New Mexico

Surface Owners:

Bogle, Ltd.
P. O. Box 460
Dexter, New Mexico 88230-0460

Offset Operators:

Marbob Energy Corporation
P. O. Box 227
Artesia, New Mexico 88211-0227

Lauretta Phillipa
715 N. Maple Drive
Beverly Hills, California 90210