



ARCO Permian

600 North Mariefeld
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

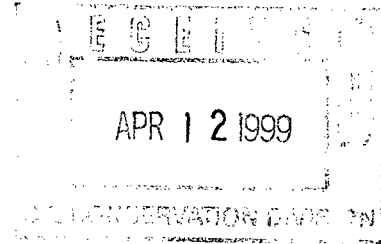
Elizabeth A. Casbeer
Regulatory/Compliance Analyst

DHC 5/3/99

2387

April 9, 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 Nos. 27 & 28
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 Nos. 27 and 28. 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

STATE OF TEXAS

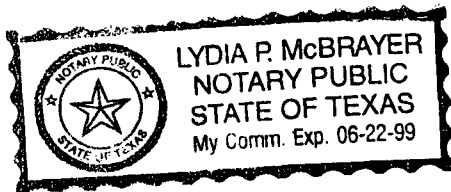
COUNTY OF MIDLAND

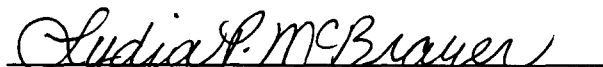
BEFORE ME, the undersigned authority on this day personally appeared Elizabeth A. Casbeer, an Regulatory Compliance Analyst with **ARCO Permian**, who being by me duly sworn, deposes and states that the persons listed on the foregoing attached list have been sent a copy on April 9, 1999, of the New Mexico Oil Conservation Division Form C-107 entitled, "Application For Downhole Commingling" for the Washington State "33" Well Nos. 27 and 28, located in Section 33, T17S, R28E, Eddy County New Mexico.

ARCO Permian


Elizabeth A. Casbeer

SUBSCRIBED AND SWORN TO before me on April 9, 1999, to certify which witness my hand and seal of office.




NOTARY PUBLIC, STATE OF TEXAS

ARCO Permian
Downhole Commingling
Washington State "33" Lease
Section 33, T-17S, R-28E
Eddy County, New Mexico

Well No. 27
API: 30-015-22605
815' FSL & 2525' FWL (O)

Well No. 28
API: 30-015-22124
313' FSL & 2490' FWL (O)

Surface Owners for Unit O:

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

Offset Operators:

Altura Energy, Ltd.
Attn: Mr. Jerry D. West
P.O. Box 4294
Houston, TX 77210-4294

Bulldog Energy Corp.
P. O. Box 668
Artesia, NM 88210

Mack Chase, Trustee
P. O. Box 1767
Artesia, NM 88211-1767

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 87505-6429Form C-107-A
New 3-12-96

APPROVAL PROCESS:

☒ Administrative ☐ Hearing

EXISTING WELLBORE

☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

ARCO Permian P.O. Box 1610 Midland, TX 79702

Operator

Address

Washington "33" State No. 28 0-33-T17s-R28E

Eddy

Lease Well No. Unit Ltr. - Sec - Twp - Rge County

Spacing Unit Lease Types: (check 1 or more)

OGRID NO. 000990 Property Code 22954 API NO. 30-015-22124 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 (Queen, Grbg, S.A.)		Artesia (Glorieta, Yeso)
2. Top and Bottom of Pay Section (Perforations)			
3. Type of production (Oil or Gas)	Oil		Oil
4. Method of Production (Flowing or Artificial Lift)	Art. Lift		Art. Lift
5. Bottomhole Pressure Oil Zones - Artificial Lift: Estimated Current Gas & Oil - Flowing: Measured Current All Gas Zones: Estimated Or Measured Original	a. (Current) 70 b. (Original)	a. b.	a. 75 b.
6. Oil Gravity ($^{\circ}$ API) or Gas BTU Content	40-42 $^{\circ}$ API		42 $^{\circ}$ API
7. Producing or Shut-In?	Producing		Awaiting Perfs
Production Marginal? (yes or no)	yes		Expected in 3 to 6 months
* 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: 2/23/99 Rates: 12 BOPD 73 BOPD 50 MCFPD	Date: Rates:	Date: Rates: N/A
8. Fixed Percentage Allocation Formula - % for each zone	Oil: 28 % Gas: 28 %	Oil: % Gas: %	Oil: 72 % Gas: 72 %

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 ☐ No11. 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 ☐ No13. 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:

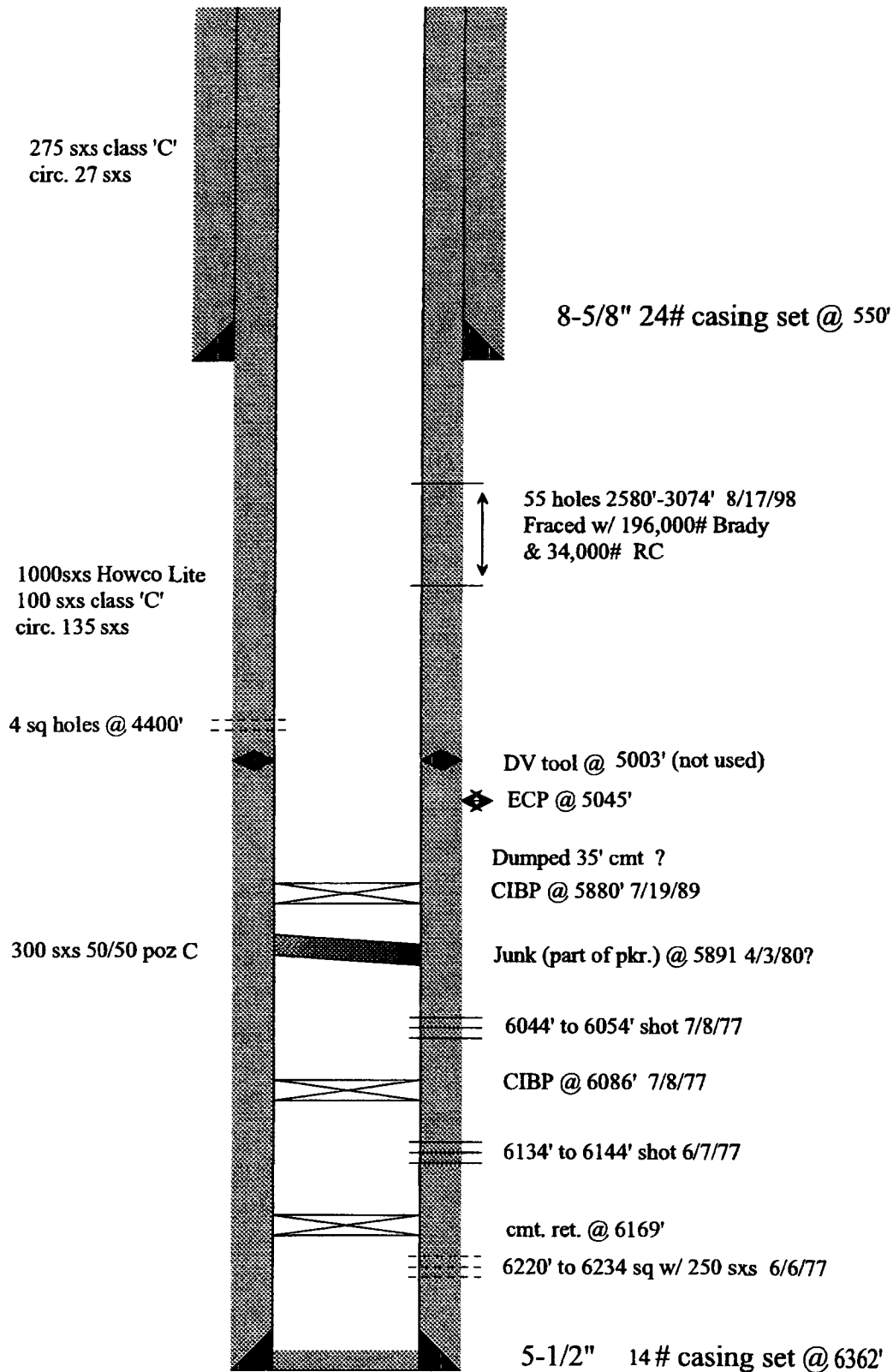
- * C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- * Production curve for each zone for at least one year. (If not available, attach explanation.)
- * For zones with no production history, estimated production rates and supporting data.
- * Data to support allocation 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 4-9-99

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

WASHINGTON 33 STATE # 28
(Empire Abo Unit # H-311)



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 30-015-22124	Pool Code	Pool Name ARTESIA (Q-CB-SA)
Property Code 22954	Property Name WASHINGTON 33 STATE	Well Number 28
OGRID No. 000990	Operator Name ARCO PERMIAN	Elevation 3661'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	33	17 S	28 E		313	SOUTH	2490	EAST	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

05 03 01				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 6/3/98 Date	
06 04 02				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 <i>Ronald E. Eidson</i> Professional Surveyor 3239 88-11-0378 5-4-98 Certificate No. RONALD E. EIDSON 3239 GARY EIDSON 12641 PROFESSIONAL SURVEYOR-MCDONALD 12185	
07 09 013					
08 10 12 14					
021 019					
022 031 17 18 16					
023 25 27					
024 26 28					

Washington State "33" No. 28

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.



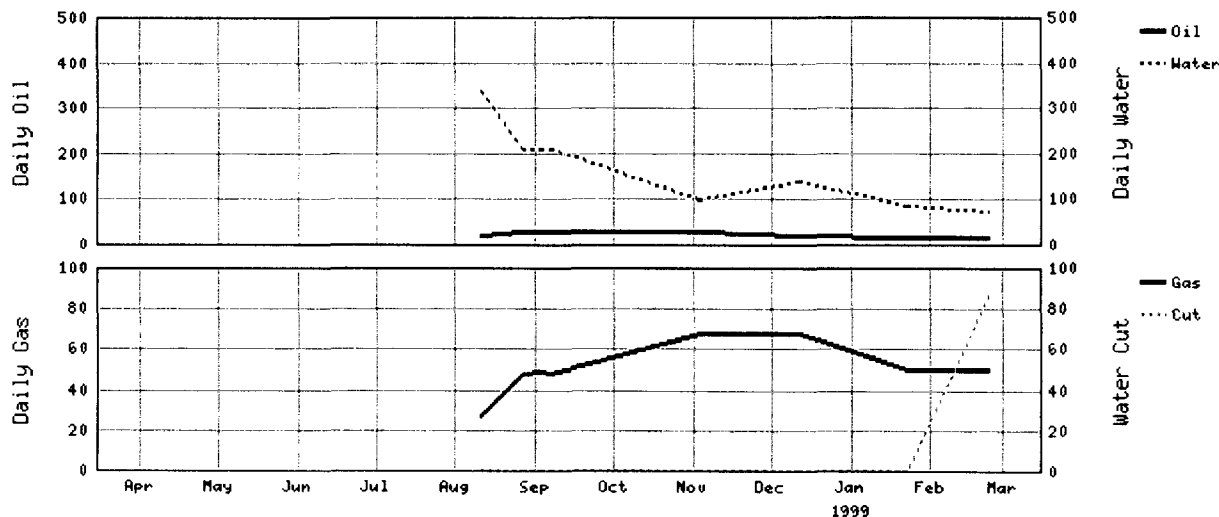
Mon Mar 15, 1999
3:10:03 PM

Well Test Data for SE NEW MEXICO: ARTESIA: QUEEN GRAYBURG SAN ANDRES

WASHINGTON 33 STATE #28 - 300152212400 - PO - AC



Date	Oil	Water	Gas	Cut	Fl	Pd	%C02	GasGr	GDur
02/23/1999	12	73	50	86	0	0.000	0	0	0
01/23/1999	13	83	50	0	0	0.000	0	0	0
12/12/1998	18	139	67	0	0	0.000	0	0	0
11/03/1998	28	98	67	0	0	0.000	0	0	0
09/07/1998	25	208	48	0	0	0.000	0	0	0
09/03/1998	25	208	49	0	0	0.000	0	0	0
08/27/1998	25	208	48	0	0	0.000	0	0	0
08/11/1998	16	335	27	0	0	0.000	0	0	0
Average:	20	169	51	11	0	0.000	0	0	0



execution time = 3 seconds

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

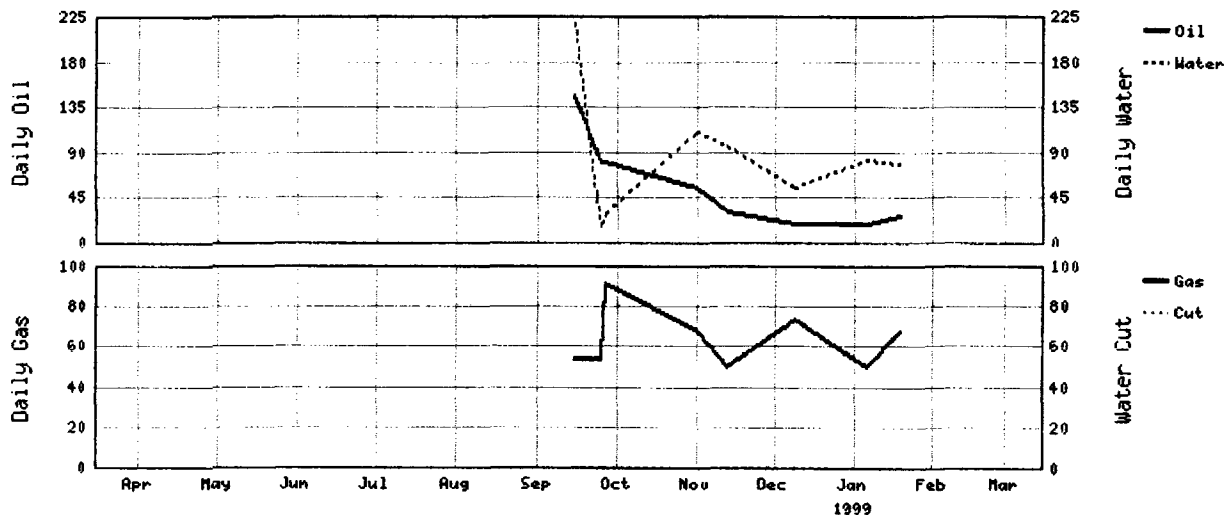


Mon Mar 15, 1999
3:08:12 PM

**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

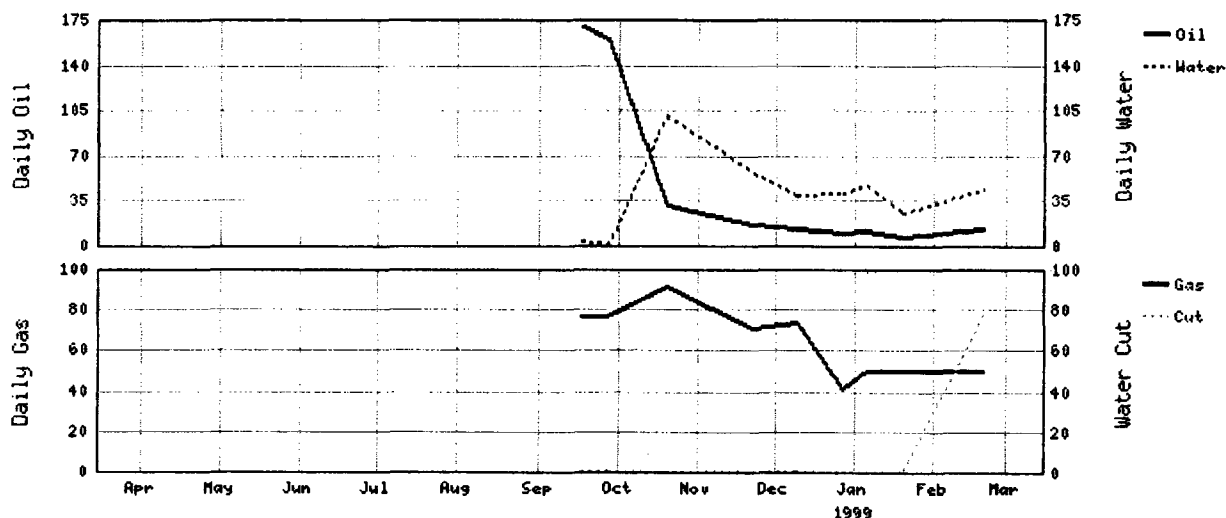


Mon Mar 15, 1999
3:06:54 PM

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



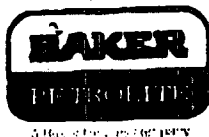
Date	Oil	Water	Gas	Cut	Fl	Pd	%CO2	GasGr	GDur
02/20/1999	13	43	50	77	0	0	0.000	0	0
01/20/1999	6	25	50	0	0	0	0.000	0	0
01/06/1999	11	46	50	0	0	0	0.000	0	0
12/28/1998	10	40	41	0	0	0	0.000	0	0
12/10/1998	12	39	73	0	0	0	0.000	0	0
11/23/1998	16	56	70	0	0	0	0.000	0	0
10/20/1998	31	100	91	0	0	0	0.000	0	0
09/27/1998	160	0	76	0	0	0	0.000	0	0
09/17/1998	169	3	76	0	0	0	0.000	0	0
Average:	48	39	64	9	0	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 19155637942



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)	206471		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	0.23
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.

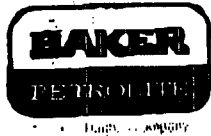
PROBERT WARRANTY, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND ON THE BACK OF THIS SHEET

RECEIVED TIME MAR. 1. 4:12PM

PRINT TIME MAR. 1. 4:15PM

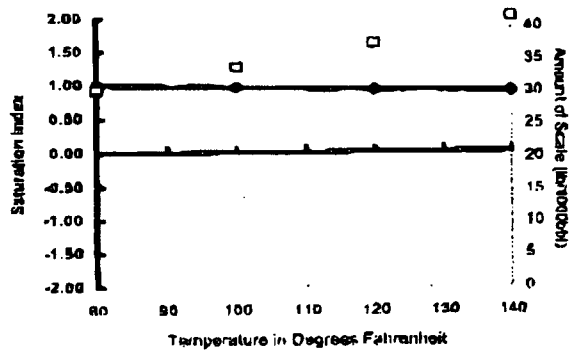
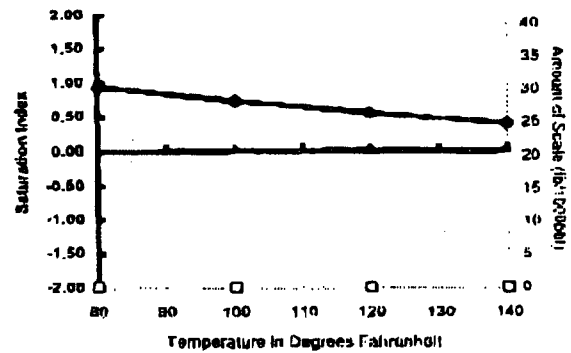
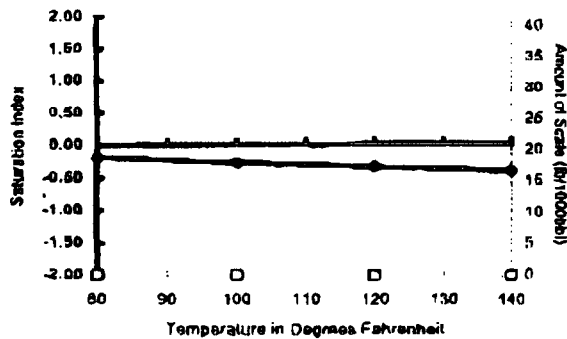
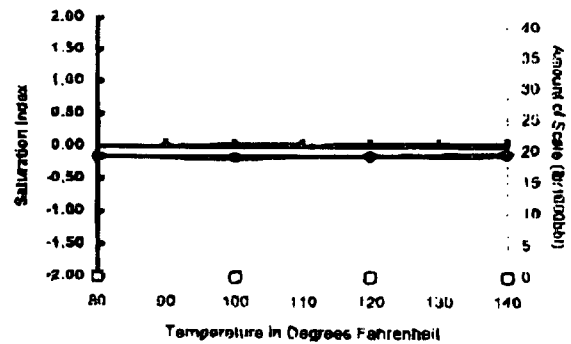
sent by: BAKER PETROLITE 19155637942

02/24/99 5:34PM Job 573

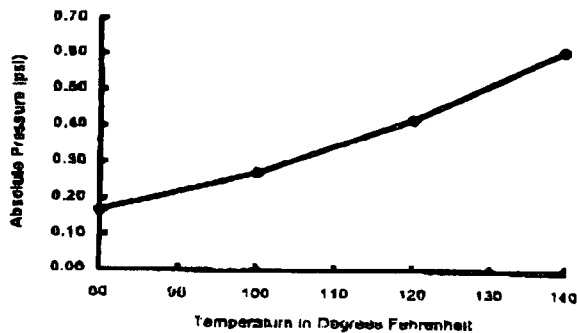
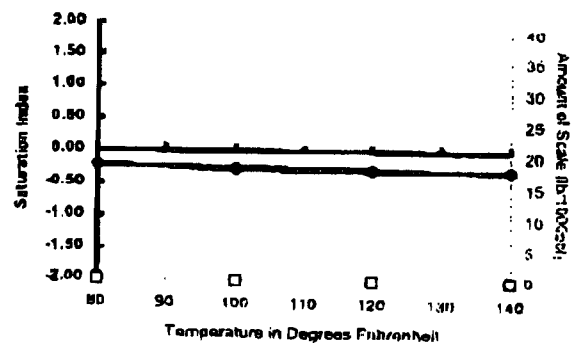


Scale Predictions from Baker Petrolite

Analysis of Sample 100815 @ 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

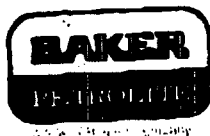
Celestite - SrSO_4 

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

RECEIVED TIME MAR. 1. 4:12PM

PRINT TIME MAR. 1. 4:15PM

Sent by: BAKER PETROLITE 19155637942



Water Analysis Report by Baker Petrolite

ARCO
WASHINGTON 33
WELL # 25
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	565	46.5	
		Carbonate	0.00	0.00	Calcium	2187	105	
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	0.25	
		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	Index Amount	ps	
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		0.98	
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.

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

Sent by: BAKER PETROLITE 19155637942

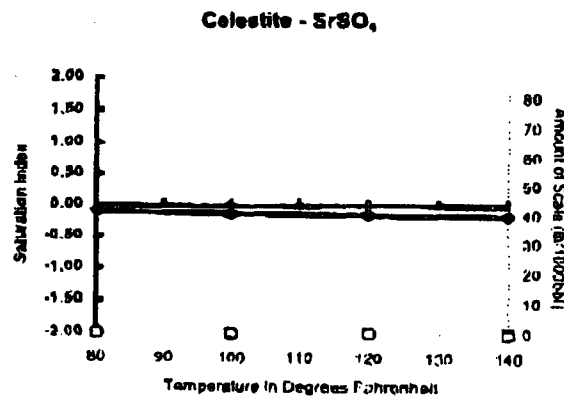
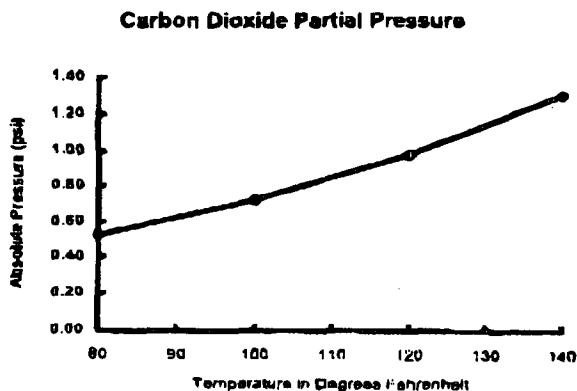
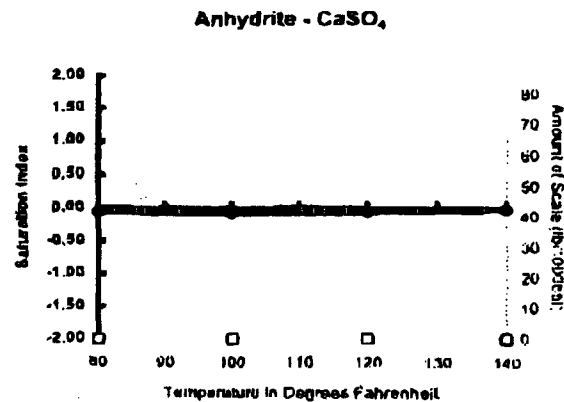
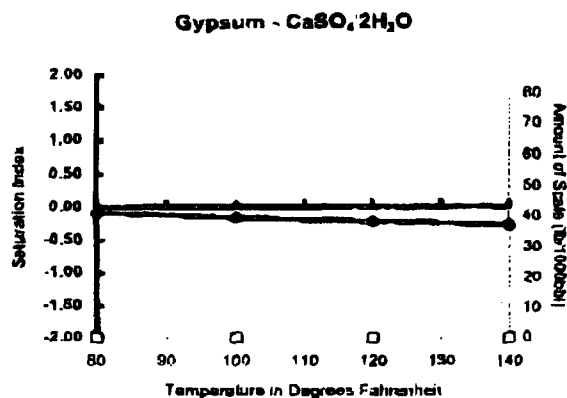
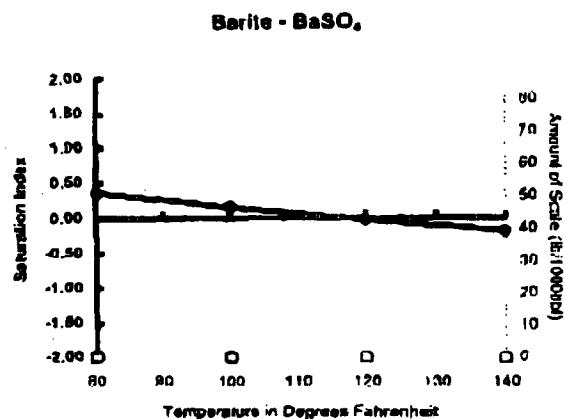
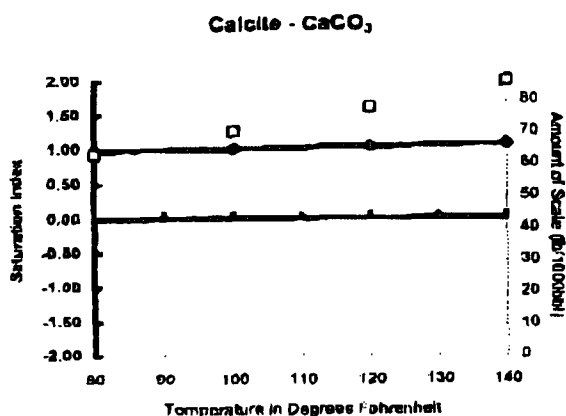
02/24/99 5:33PM Job 573

Page 2/4



Scale Predictions from Baker Petrolite

Analysis of Sample 106814 @ 75°F for ARCO, Feb/24/99



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

RECEIVED TIME MAR. 1. 4:12PM

PRINT TIME MAR. 1. 4:15PM