DHC 1/3/00

devon
ENERGY CORPORATION

20 North Broadway, Suite 1500
Oklahoma City, Oklahoma 73102-8260

Telephone 405/235-3611
FAX 405/552-4550

3570

RECEIVED
DEC 13 1999
CONSERVATION DIVISION

December 10, 1999

Certified Mail No. Z 068 588 982

STATE OF NEW MEXICO
Energy, Minerals and Natural Resources Dept.
Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505-6429

RE: Downhole Commingling
Hawk 8 L Federal #5
Section L-8-18S-27E
API #30-015-29015
Red Lake (Q-GB-SA) and
Red Lake (Glorieta-Yeso) Fields
Eddy County, NM

Gentlemen:

Concerning the referenced, enclosed please find the Form C-107A Application for Downhole Commingling and attachments (and three copies).

Please direct inquiries concerning this report to Ernie Buttross at (405) 235-3611, X4509.

Yours truly,

DEVON ENERGY CORPORATION (NEVADA)

Tonja Rutelonis
Engineering Tech.

/trr
Enclosures

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
DISTRICT IV
2040 S. Pacheco, Santa Fe, NM 87505

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
Revised August 1999

APPROVAL PROCESS:
___ Administrative ___ Hearing

EXISTING WELLBORE
___ YES ___ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Devon Energy Corporation (Nevada) — Operator
20 N. Broadway, Suite 1500, Oklahoma City OK 73102-8260 — Address

Hawk 8 L Federal — Lease
5 — Well No.
L – 8-18S-27E — Unit Ltr. - Sec - Twp - Rge
Eddy — County

OGRID NO. 6137 Property Code 19138 API NO. 30-015-29015
Spacing Unit Lease Types: (check 1 or more) Federal X, 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	Red Lake (Q-GB-SA)		Red Lake (Glor-Yeso)
2. Top and Bottom of Pay Section (Perforations)	1524'-2014'		To be perforated 2850'-3150'
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: Estimated Current Gas & Oil - Flowing: Measured Current All Gas Zones: Estimated Or Measured Original	a. (Current) 50 psi producing BHP	a.	a. 100 psi producing BHP
	b. (Original)	b.	b.
6. Oil Gravity (°API) or Gas BTU Content	39.5°		38.3°
7. Producing or Shut-In?	Producing		Awaiting Perfs
Production Marginal? (yes or no)	Yes		Expected to be marginal
• 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: N/A Rates:	Date: Rates:	Date: N/A Rates:
• If Producing, give date and oil/gas/ water rates of recent test (within 60 days)	Date: 11/24/99 Rates: 3 BOPD, 2 MCFGPD, 6 BWPD	Date: Rates:	Date: N/A Rates:
8. Fixed Percentage Allocation Formula -% for each zone (total of %'s to equal 100%)	Oil: 17 % Gas: 13 %	Oil: % Gas: %	Oil: 83 % Gas: 87 %

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? X Yes ___ No
If not, have all working, overriding, and royalty interests been notified by certified mail? ___ Yes ___ No

11. Will cross-flow occur? ___ Yes X 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? X Yes ___ No

13. Will the value of production be decreased by commingling? ___ Yes X 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. X 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 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 Tonja Rutelonis TITLE Engineering Technician DATE 10/14/99

TYPE OR PRINT NAME Tonja Rutelonis TELEPHONE NO. (405) 552-4515

EXHIBIT 2

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-102
Revised February 10, 1994
Instruction on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

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	Pool Name
	51300	Red Lake (Q-GB-SA) & Red Lake; Glorieta-Yeso

Property Code	Property Name	Well Number
	~~Higgins Federal~~ Hawk "8L" Federal	~~1~~ 5

OGRID No.	Operator Name	Elevation
6137	Devon Energy Corporation (Nevada)	3388'

Surface Location

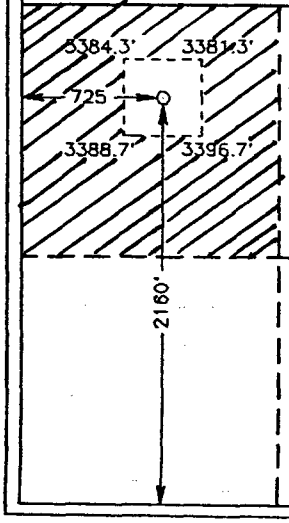
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	8	18 S	27 E		2160	South	725	West	Eddy

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	Joint or Infill	Consolidation Code	Order No.
40			

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.

E. L. Buttross, Jr.
Signature

E. L. Buttross, Jr.
Printed Name

District Engineer
Title

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 supervison, and that the same is true and correct to the best of my belief.

March 20, 1996
Date Surveyed

Signature & Seal of Professional Surveyor

W.O. No. 6093H

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

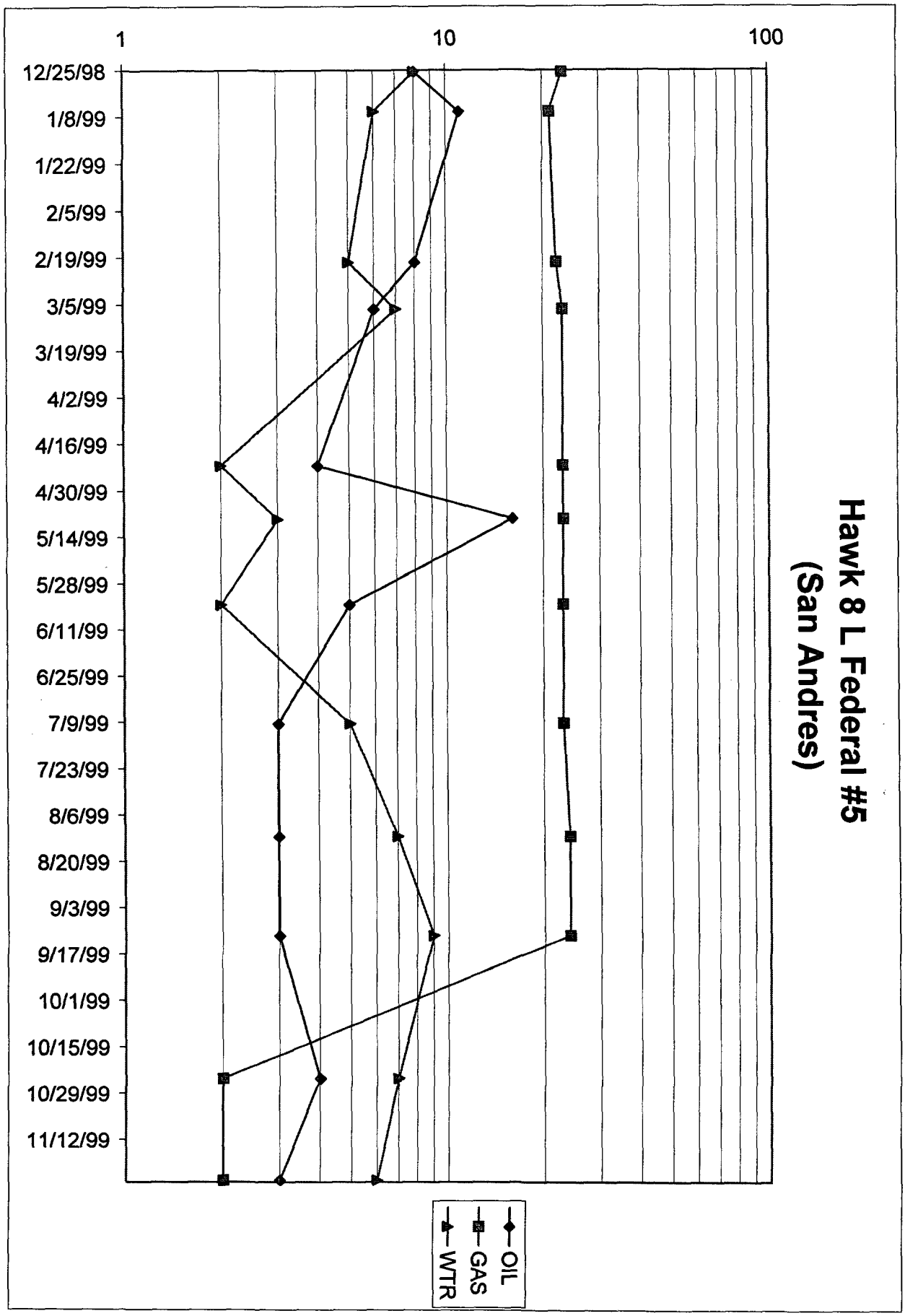
Hawk 8 L Federal #5

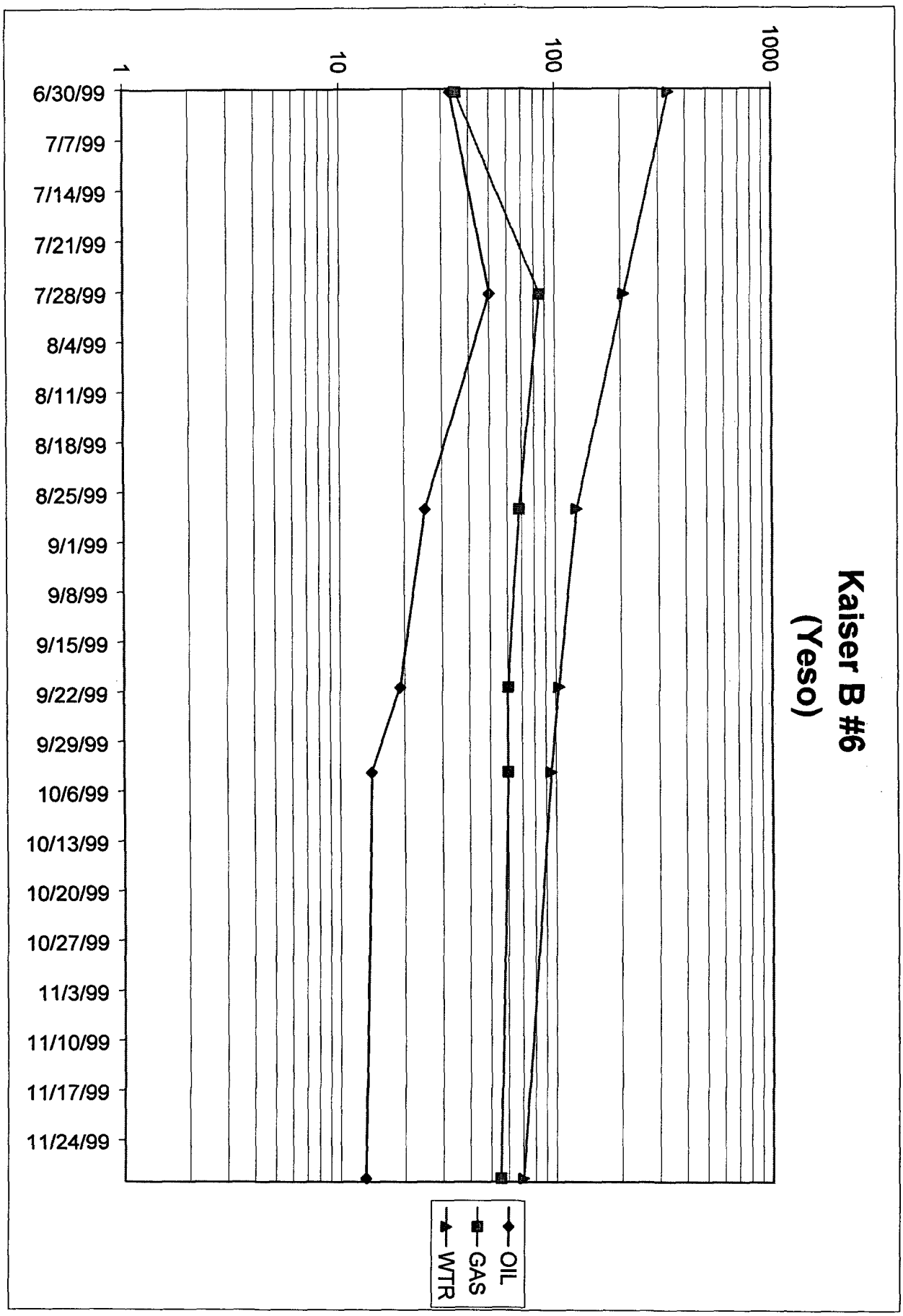
Allocation Formula

Well Name	Producing Formation	*Daily Production Test 3-month Average	% of Total
Kaiser B #6	Red Lake (Glor-Yeso)	15 BO/58 MCF/89 BW	83 %
Hawk 8 L Federal #5	Red Lake (Q-GB-SA)	3 BO/9 MCF/7 BW	17 %

* From attached production plots

The above production test represents stable production from a San Andres producer (Hawk 8 L Federal #5) and a Yeso producer (Kaiser B #6). We believe these rates of production represent an acceptable means to allocate production. **ARCO has previously received approval for downhole commingling in these fields utilizing a similar allocation method.**

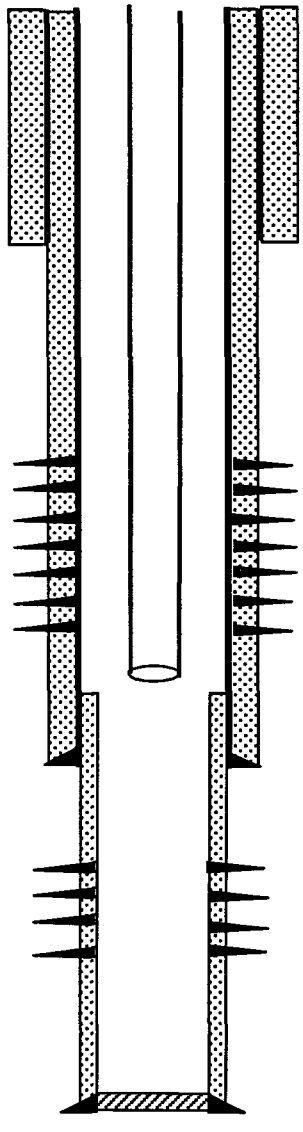

Hawk 8 L Federal #5
(San Andres)
1
10
100
12/25/98
1/8/99
1/22/99
2/5/99
2/19/99
3/5/99
3/19/99
4/2/99
4/16/99
4/30/99
5/14/99
5/28/99
6/11/99
6/25/99
7/9/99
7/23/99
8/6/99
8/20/99
9/3/99
9/17/99
10/1/99
10/15/99
10/29/99
11/12/99
OIL
GAS
WTR


Kaiser B #6
(Yeso)
1
10
100
1000
6/30/99
7/7/99
7/14/99
7/21/99
7/28/99
8/4/99
8/11/99
8/18/99
8/25/99
9/1/99
9/8/99
9/15/99
9/22/99
9/29/99
10/6/99
10/13/99
10/20/99
10/27/99
11/3/99
11/10/99
11/17/99
11/24/99
OIL
GAS
WTR

DEVON ENERGY CORPORATION - WELLBORE SCHEMATIC

WELL NAME: Hawk 8 L Federal #5		FIELD: Red Lake	
LOCATION: 2160' FSL & 725' FWL, Sec. 8-18S-27E		COUNTY: Eddy	STATE: NM
ELEVATION: GL = 3498', KB 3507'		SPUD DATE: 7/21/96	COMP DATE: 8/15/96
API#: 30-015-29015	PREPARED BY: T. Rutelonis		DATE: 9/21/99

	DEPTH	SIZE	WEIGHT	GRADE	THREAD	HOLE SIZE
CASING:	0' - 1022'	8-5/8"	24#	J-55		12-1/4"
CASING:	0' - 2199'	5 1/2"	15.5#	J-55		7-7/8"
LINER:	2100' - 4500'	4"	10.46#	J-55	FL4S	4-3/4"
TUBING:	0' - 2070'	2-7/8"				
TUBING:						



☐ CURRENT ▦ PROPOSED

OPERATOR: DEVON ENERGY CORPORATION

8-5/8" Casing, Set @ 1022' w/ 500 sxs cmt. TOC @ surface

SAN ANDRES PERFORATIONS:
1524'-2014' (25 holes, .40", ALPHA, "A", "B", "C", & "D")

2-7/8" tbg w/ SN @ 2070'

TOL @ 2100'
5 1/2" 15.5# J-55 Casing Set @ 2199' w/ 400 sxs cmt. TOC @ surf.

YESO PERFORATIONS:
±2850'- ±3150' (20 HOLES, .38")

TD @ 4500'

Form 3160-4
(October 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

OPERATOR'S COPY

RECEIVED
BUREAU OF LAND MANAGEMENT
SEP 06 1996
DIST. 2
Carlsbad, New Mexico

OMB NO. 1004-0137

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 ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF RESVR ☐ Other

2 NAME OF OPERATOR
DEVON ENERGY OPERATING CORPORATION

3. ADDRESS AND TELEPHONE NO.
20 N. BROADWAY, SUITE 1500, OKC, OK 73102-8260 (405) 552-4530

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface 2160' FSL & 725' FWL

At top prod. interval reported below (SAME)

At total depth (SAME)

5. LEASE DESIGNATION AND SERIAL NO.	6. IF INDIAN, ALLOTTEE OR TRIBE NAME	7. UNIT AGREEMENT NAME	8. FARM OR LEASE NAME, WELL NO.	9. API WELL NO.	10. FIELD AND POOL, OR WILDCAT	11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
LC-070678-A	N/A	N/A	Hawk "8L" Federal #5	30-015-29015	Red Lake (Q-GB-SA)	Sec. 8-18S-27E

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
	6/26/96	Eddy County	NM

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
7/21/96	7/25/96	8/15/96	KB 3507'; DF 3506'; GL 3498'	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
2199'	2159'		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
1524 - 2014' San Andres

25. WAS DIRECTIONAL SURVEY MADE
No

26. TYPE ELECTRIC AND OTHER LOGS RUN
CN/LD/GR; DL/MSLF/GR

27. WAS WELL CORED
No

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

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
8 5/8" J-55	24#	1022'	12 1/4"	surf/300 sx Poz-C + 200 sx Cl C	None
5 1/2" J-55	15.5#	2199'	7 7/8"	surf/150 sx Poz-C + 250 sx Cl C	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2 7/8"	2038'	OET

31. PERFORATION RECORD (*Interval, size and number*)
1524 - 2014' (25 - .40" EHD Holes)

32. ACID SHOT, FRACTURE, CEMEMNT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
1524 - 2014'	2500 gals 15% NeFe acid
1524 - 2014'	15,000 gals PrePad + 2 drum Pro-Ke+52,000 gals 30# X-link gel
	wtr+6000# 100 mesh sd + 228,000# 16/30 sd + 24,000# 12/20
	CRC sd

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTIONS METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
8/17/96	pumping (2-1/2" x 2" x 12' RWTC pump)	producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N FOR TEST PERIOD →	OIL-BBL.	GAS-MCF.	WATER-BBL.	GAS-OIL RATIO
8/23/96	24			98	336	113	3428/1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL-BBL.	GAS-MCF.	WATER-BBL.	OIL GRAVITY-API (CORR.)
N/A	N/A		98	336	113	38°

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)
sold

TEST WITNESSED BY
Danny Hokett

35. LIST OF ATTACHMENTS
logs and deviation survey report

ACCEPTED FOR RECORD
SEP 24 1996
BLM

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Candace R. Graham
CANDACE R. GRAHAM
TITLE ENGINEERING TECHNICIAN DATE September 4, 1996

*(See Instructions and Spaces for Additional Data on Reverse Side)

9-30-96 DL

BAKER HUGHES
Baker Petrolite

Analysis: 24190

Water Analysis Report from Baker Petrolite

Summary of Mixing Waters		
Sample Number	133534	112098
Company	DEVON ENERGY	DEVON ENERGY
Lease	HAWK 8	HAWK "8"
Well	WELL # 3 yeso	BATTERY SAN ANDRES
Sample Location	WELLHEAD	FWKO
Anions (mg/L)		
Chloride	106,253	99,569
Bicarbonate	573	497
Carbonate	0.00	0.00
Sulfate	3,912	4,489
Phosphate	0.00	0.00
Borate	0.00	0.00
Silicate	0.00	0.00
Cations (mg/L)		
Sodium	67,918	63,725
Magnesium	369	509
Calcium	1,749	1,770
Strontium	36.0	49.0
Barium	0.06	0.10
Iron	48.0	0.40
Potassium	523	269
Aluminum	0.00	0.00
Chromium	0.00	0.00
Copper	0.00	0.00
Lead	0.00	0.00
Manganese	0.00	0.00
Nickel	0.00	0.00
Anion/Cation Ratio	***1.00***	***1.00***
TDS (mg/L)	181,381	170,877
Density (g/cm)	1.12	1.11
Sampling Date	10/26/99	7/28/99
Account Manager	CURRY PRUIT	CURRY PRUIT
Analyst	JOANNA RAGAN	JOANNA RAGAN
Analysis Date		8/4/99
pH at time of sampling	5.90	7.90
pH at time of analysis		
pH used in Calculations	**5.90**	**7.90**

BAKER HUGHES
Baker Petrolite

Analysis: 24190

Water Analysis Report from Baker Petrolite

Mixes at 80°F and 0 psi

Predictions of Carbon Dioxide Pressure, Saturation Index and Amount of Scale in lb/1000bbl											
Mix Waters		CO_2	Calcite $CaCO_3$		Gypsum $CaSO_4 \cdot 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$	
133534	112098	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
100%	0%	5.52	-0.31		-0.20		-0.18		-0.21		0.13	0.01
90%	10%	4.90	-0.27		-0.19		-0.17		-0.18		0.17	0.01
80%	20%	4.30	-0.22		-0.18		-0.16		-0.16		0.20	0.01
70%	30%	3.70	-0.17		-0.17		-0.16		-0.14		0.23	0.02
60%	40%	3.10	-0.10		-0.17		-0.15		-0.12		0.26	0.02
50%	50%	2.51	-0.01		-0.16		-0.14		-0.10		0.29	0.02
40%	60%	1.92	0.09	7.5	-0.15		-0.14		-0.08		0.32	0.02
30%	70%	1.34	0.24	16.9	-0.15		-0.13		-0.06		0.35	0.03
20%	80%	0.78	0.46	26.8	-0.14		-0.13		-0.04		0.38	0.03
10%	90%	0.27	0.89	37.5	-0.14		-0.12		-0.02		0.40	0.03
0%	100%	0.05	1.51	48.8	-0.13		-0.12		0.00	0.18	0.43	0.03

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: CO_2 Pressure is absolute pressure. Total Pressure is gauge pressure.

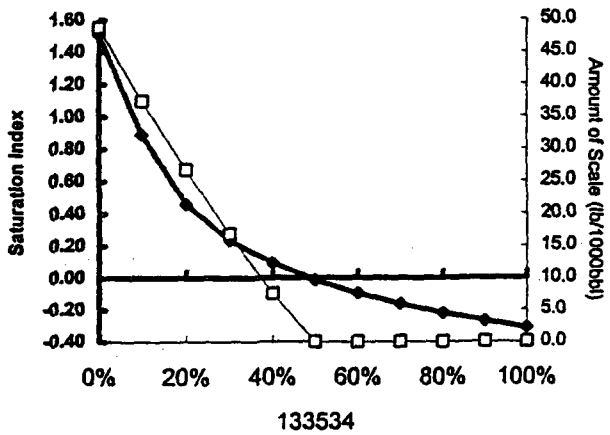
BAKER HUGHES
Baker Petrolite

Mixture Predictions from Baker-Petrolite

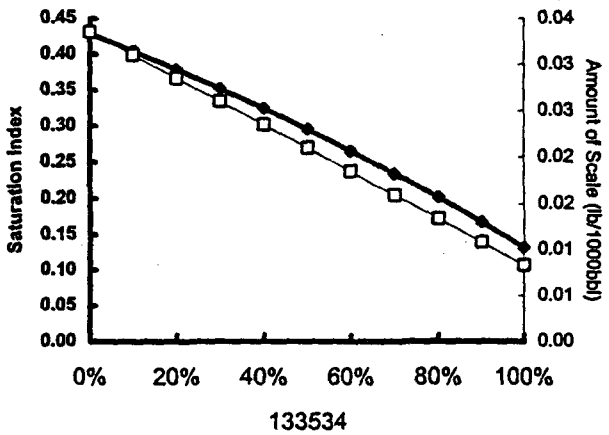
133534 with 112098 at 80°F and 0 psi

Analysis: 24190

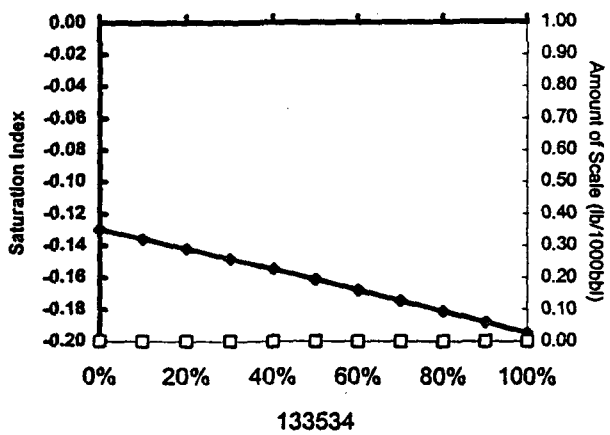
Calcite - $CaCO_3$



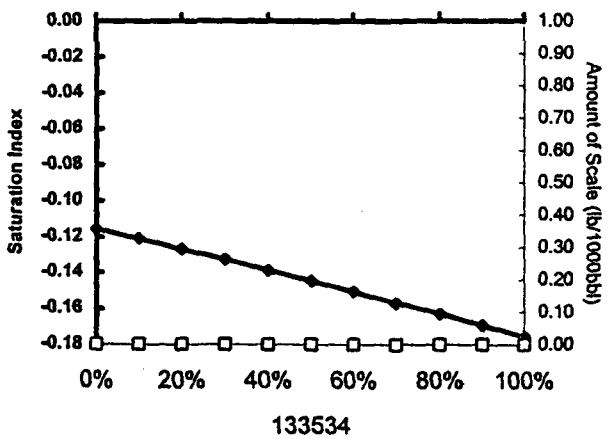
Barite - $BaSO_4$



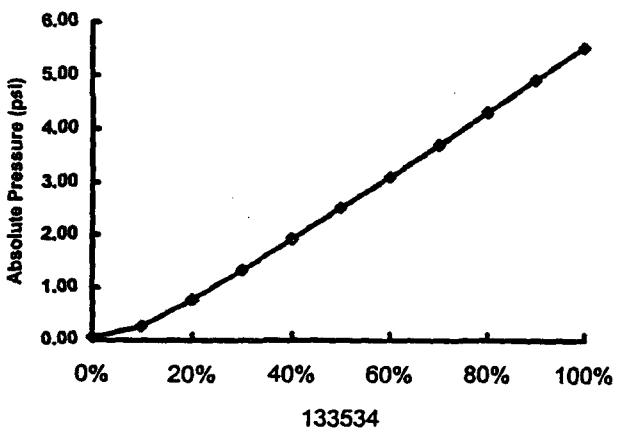
Gypsum - $CaSO_4 \cdot 2H_2O$



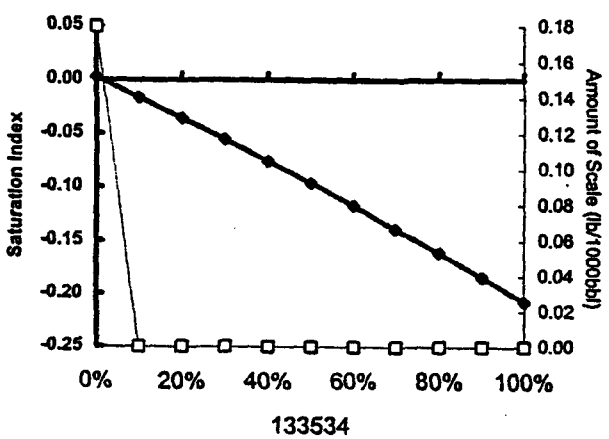
Anhydrite - $CaSO_4$



Carbon Dioxide Partial Pressure



Celestite - $SrSO_4$



BAKER HUGHES
Baker Petrolite

Analysis: 24190

Water Analysis Report from Baker Petrolite

Mixes at 100°F and 0 psi

Predictions of Carbon Dioxide Pressure, Saturation Index and Amount of Scale in lb/1000bbl											
Mix Waters		CO_2	Calcite $CaCO_3$		Gypsum $CaSO_4 \cdot 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$	
133534	112098	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
100%	0%	6.73	-0.22		-0.27		-0.19		-0.24		-0.08	
90%	10%	5.99	-0.18		-0.27		-0.18		-0.22		-0.04	
80%	20%	5.25	-0.13		-0.26		-0.18		-0.19		-0.01	
70%	30%	4.52	-0.07		-0.25		-0.17		-0.17		0.03	0.00
60%	40%	3.80	-0.00		-0.25		-0.16		-0.15		0.06	0.01
50%	50%	3.08	0.08	7.2	-0.24		-0.16		-0.13		0.09	0.01
40%	60%	2.37	0.18	15.2	-0.23		-0.15		-0.11		0.12	0.01
30%	70%	1.67	0.32	23.8	-0.22		-0.14		-0.09		0.15	0.01
20%	80%	0.99	0.53	32.8	-0.22		-0.14		-0.07		0.17	0.02
10%	90%	0.40	0.89	42.5	-0.21		-0.13		-0.05		0.20	0.02
0%	100%	0.11	1.37	53.0	-0.20		-0.12		-0.03		0.22	0.02

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: CO_2 Pressure is absolute pressure. Total Pressure is gauge pressure.

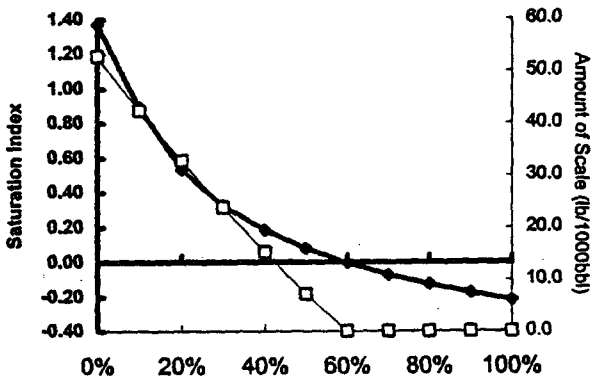
BAKER HUGHES
Baker Petrolite

Mixture Predictions from Baker-Petrolite

133534 with 112098 at 100°F and 0 psi

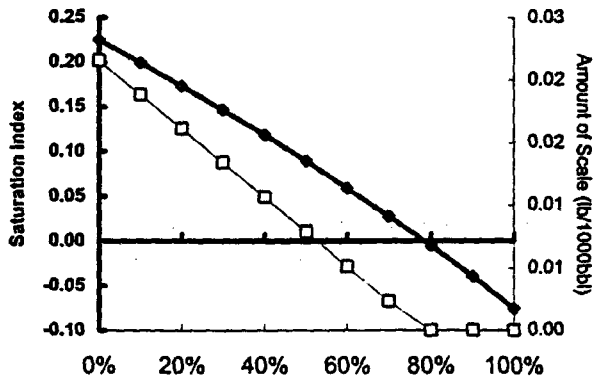
Analysis: 24190

Calcite - $CaCO_3$



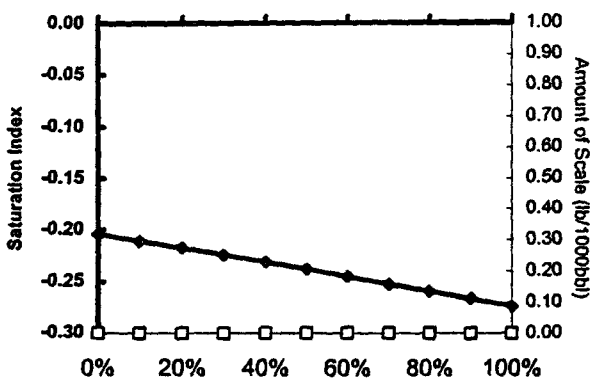
133534

Barite - $BaSO_4$



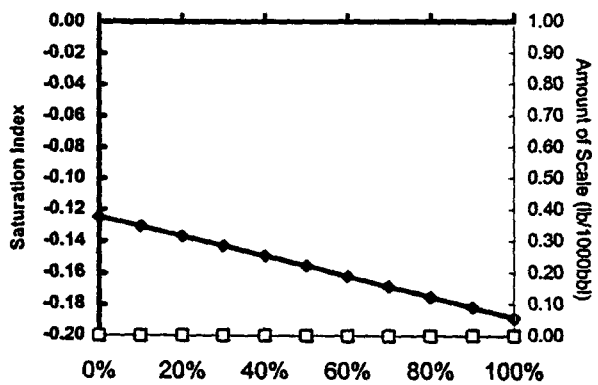
133534

Gypsum - $CaSO_4 \cdot 2H_2O$



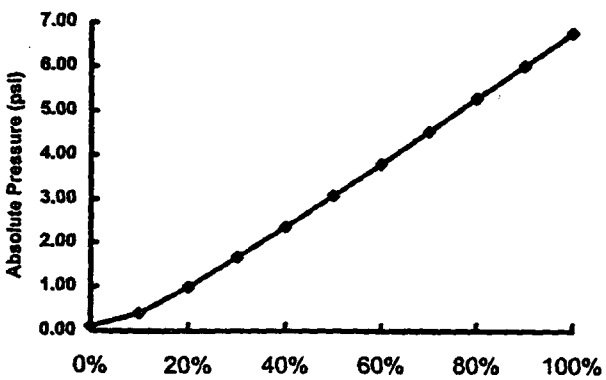
133534

Anhydrite - $CaSO_4$



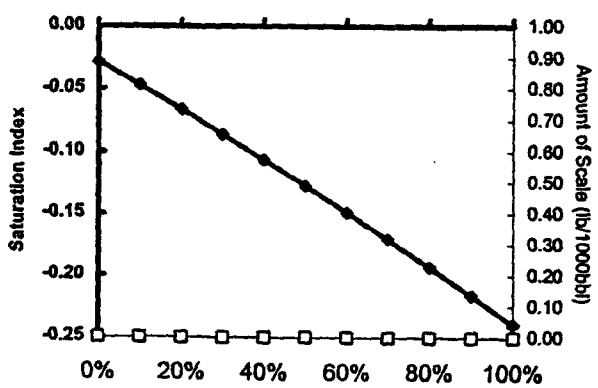
133534

Carbon Dioxide Partial Pressure



133534

Celestite - $SrSO_4$



133534

BAKER HUGHES
Baker Petrolite

Analysis: 24190

Water Analysis Report from Baker Petrolite

Mixes at 120°F and 0 psi

Predictions of Carbon Dioxide Pressure, Saturation Index and Amount of Scale in lb/1000bbl

Mix Waters		CO_2	Calcite $CaCO_3$		Gypsum $CaSO_4 \cdot 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$	
133534	112098	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
100%	0%	7.93	-0.12		-0.34		-0.18		-0.26		-0.26	
90%	10%	7.06	-0.08		-0.33		-0.17		-0.24		-0.22	
80%	20%	6.20	-0.03		-0.33		-0.16		-0.21		-0.19	
70%	30%	5.34	0.02	2.7	-0.32		-0.16		-0.19		-0.15	
60%	40%	4.49	0.09	9.2	-0.31		-0.15		-0.17		-0.12	
50%	50%	3.65	0.17	16.1	-0.30		-0.14		-0.15		-0.09	
40%	60%	2.83	0.27	23.3	-0.30		-0.13		-0.13		-0.06	
30%	70%	2.01	0.41	31.0	-0.29		-0.13		-0.11		-0.03	
20%	80%	1.24	0.60	39.2	-0.28		-0.12		-0.09		-0.01	
10%	90%	0.58	0.90	47.9	-0.27		-0.11		-0.07		0.02	0.00
0%	100%	0.20	1.26	57.4	-0.27		-0.11		-0.05		0.04	0.01

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: CO_2 Pressure is absolute pressure. Total Pressure is gauge pressure.

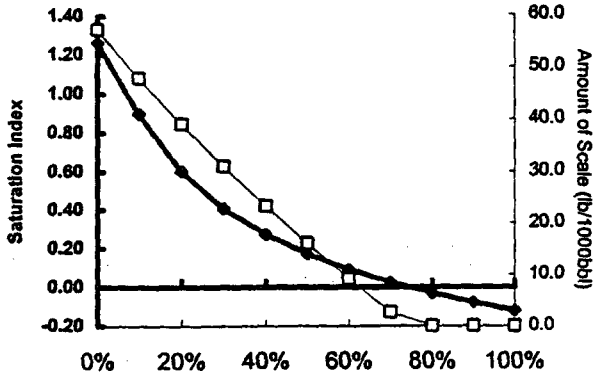
BAKER HUGHES
Baker Petrolite

Mixture Predictions from Baker-Petrolite

133534 with 112098 at 120°F and 0 psi

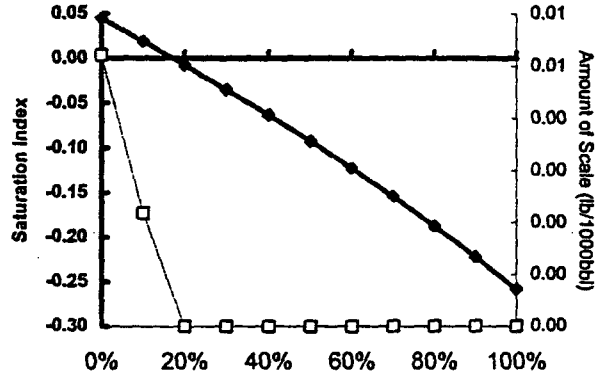
Analysis: 24190

Calcite - $CaCO_3$



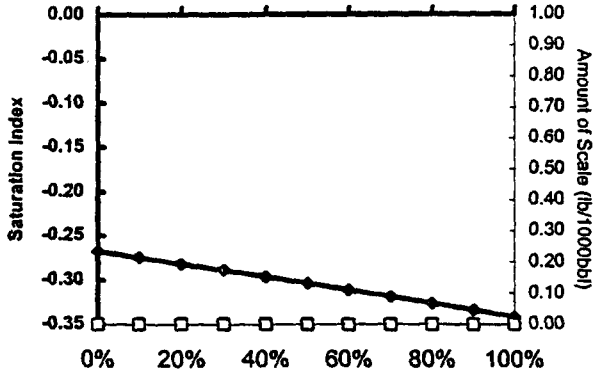
133534

Barite - $BaSO_4$



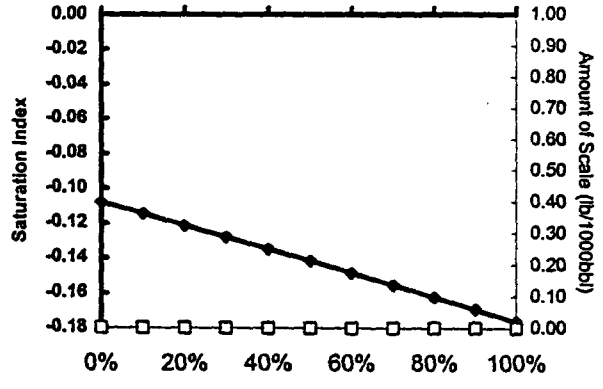
133534

Gypsum - $CaSO_4 \cdot 2H_2O$



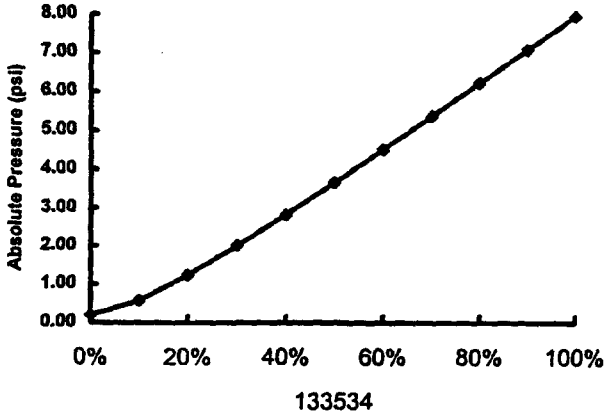
133534

Anhydrite - $CaSO_4$



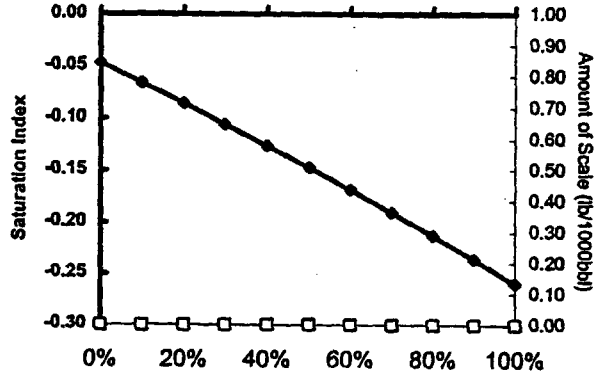
133534

Carbon Dioxide Partial Pressure



133534

Celestite - $SrSO_4$



133534

BAKER HUGHES
Baker Petrolite

Analysis: 24190

Water Analysis Report from Baker Petrolite

Mixes at 140°F and 0 psi

Predictions of Carbon Dioxide Pressure, Saturation Index and Amount of Scale in lb/1000bbl												
Mix Waters		CO_2	Calcite $CaCO_3$		Gypsum $CaSO_4 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$	
133534	112098	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
100%	0%	9.05	-0.02		-0.40		-0.14		-0.27		-0.42	
90%	10%	8.07	0.02	2.7	-0.39		-0.13		-0.25		-0.38	
80%	20%	7.09	0.07	8.0	-0.38		-0.13		-0.22		-0.35	
70%	30%	6.13	0.13	13.5	-0.38		-0.12		-0.20		-0.31	
60%	40%	5.17	0.19	19.3	-0.37		-0.11		-0.18		-0.28	
50%	50%	4.22	0.27	25.4	-0.36		-0.11		-0.16		-0.25	
40%	60%	3.29	0.37	31.9	-0.35		-0.10		-0.14		-0.22	
30%	70%	2.38	0.49	38.7	-0.34		-0.09		-0.12		-0.19	
20%	80%	1.53	0.66	46.0	-0.34		-0.08		-0.10		-0.17	
10%	90%	0.80	0.90	53.8	-0.33		-0.08		-0.08		-0.14	
0%	100%	0.34	1.18	62.3	-0.32		-0.07		-0.06		-0.11	

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: CO_2 Pressure is absolute pressure. Total Pressure is gauge pressure.

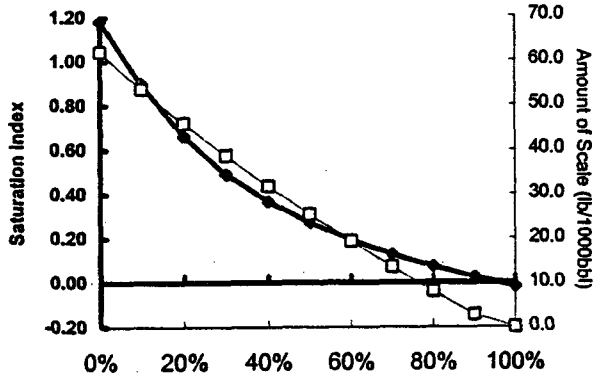
BAKER HUGHES
Baker Petrolite

Mixture Predictions from Baker-Petrolite

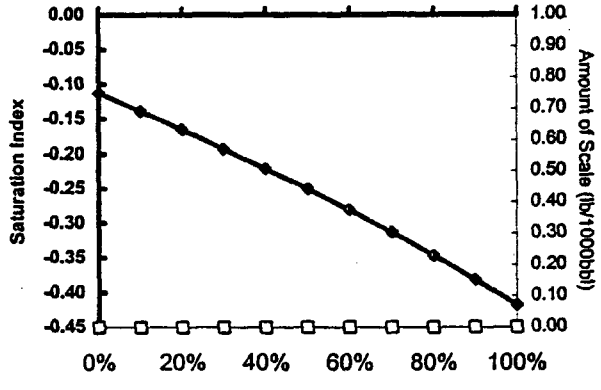
133534 with 112098 at 140°F and 0 psi

Analysis: 24190

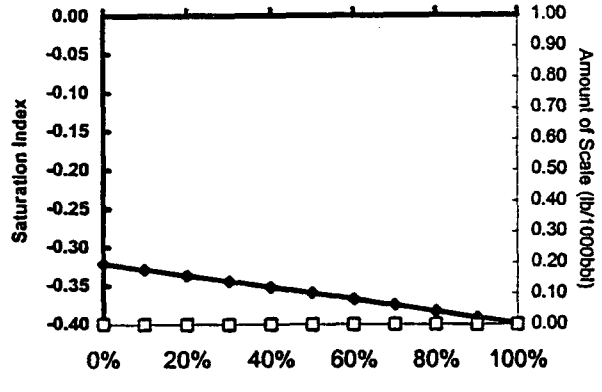
Calcite - $CaCO_3$



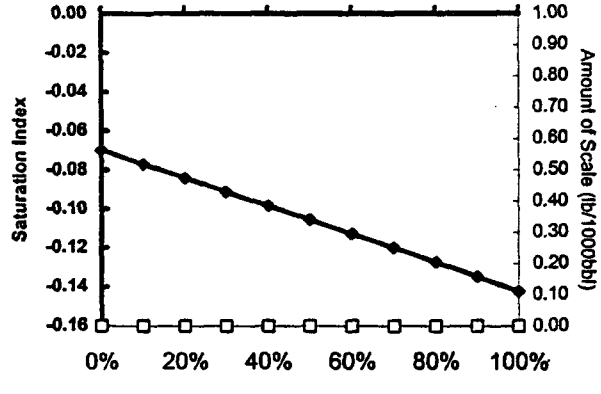
Barite - $BaSO_4$



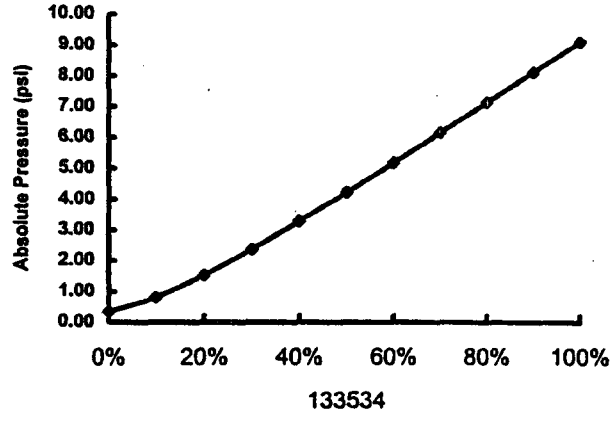
Gypsum - $CaSO_4 \cdot 2H_2O$



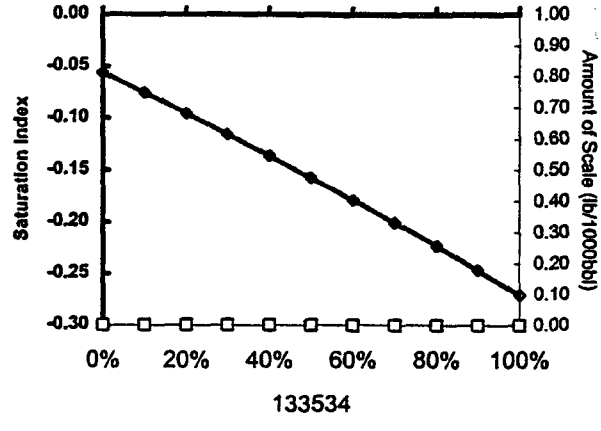
Anhydrite - $CaSO_4$



Carbon Dioxide Partial Pressure



Celestite - $SrSO_4$



Mobile Analytical Laboratories
LABORATORIES IN ODESSA, GIDDINGS & STACY DAM
WEST UNIVERSITY AND WESTOVER STREET
P.O. BOX 69210
ODESSA, TEXAS 79769-0210
PHONE 337-4744
FAX 337-8781

SEPTEMBER 16, 1996

MR. ROLLAND W. PERRY
LABORATORY SERVICES
1331 TASKER DR.
HOBBS, NEW MEXICO 88240

DEAR MR. PERRY:

THE FOLLOWING ARE THE RESULTS OF THE SEVEN OIL SAMPLES FOR SULFUR CONTENT AND GRAVITY, SAMPLED 09/14/96, RECEIVED 09/15/96, LAB NOS. 1483-1489:

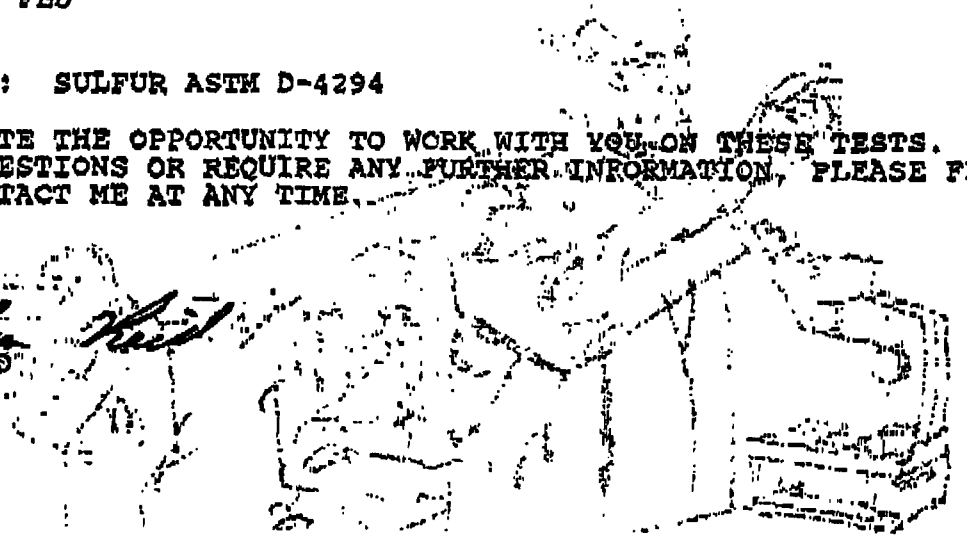
	SULFUR	API GRAVITY @ 60 °F	SPECIFIC GRAVITY @ 60 °F
LAB NO. 1483: DEVON HAWK #8-1	1.347 %wt	31.3	0.8691
LAB NO. 1484: DEVON HAWK #8-3	0.684 %wt	41.3	0.8188
LAB NO. 1485: DEVON HAWK #8-11	0.700 %wt	35.1	0.8492
LAB NO. 1486: DEVON HAWK #8-4	0.643 %wt	37.4	0.8380
SAN ANDRES LAB NO. 1487: DEVON HAWK #8-5	0.609 %wt	39.5	0.8275
LAB NO. 1488: DEVON WEST RED LAKE	0.690 %wt	39.0	0.8299
LAB NO. 1489: DEVON HONDO FED	0.522 %wt	38.2	0.8338

TEST METHOD: SULFUR ASTM D-4294

WE APPRECIATE THE OPPORTUNITY TO WORK WITH YOU ON THESE TESTS. IF YOU HAVE ANY QUESTIONS OR REQUIRE ANY FURTHER INFORMATION, PLEASE FEEL FREE TO CONTACT ME AT ANY TIME.

SINCERELY,

STEPHEN REID
SR/dt



Laboratory Services, Inc.
4016 Fiesta Drive
Hobbs, New Mexico 88240
Telephone: (505) 397-3713

SULFUR IN CRUDE OIL

Devon Energy
P. O. Box 250
Artesia, New Mexico 88211-0250

Dec 1, 1999

	Total Sulfur	API Gravity @ 60° F	Specific Gravity @ 60° F
Kaiser #1 Well (yeso)	0.4040 wt. %	38.3	0.8333
~~Kaiser Main Header~~	~~0.4066 wt. %~~	~~40.6~~	~~0.8241~~

Thank You,
Rolland Perry