

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : MARBOB ENERGY
 Date : 08-17-1993
 Location: KEELY A #8 (on 8-16-1993)

Sample 1

Specific Gravity: 1.064
 Total Dissolved Solids: 89143
 pH: 6.70
 IONIC STRENGTH: 1.675

=====

CATIONS:		me/liter	mg/liter
Calcium	(Ca+2)	144	2880
Magnesium	(Mg+2)	68.0	826
Sodium	(Na+1)	1310	30000
Dissolved Iron	(Fe+2)	0.007	0.200

ANIONS:			
Bicarbonate	(HCO3-1)	13.8	842
Carbonate	(CO3-2)	0	0
Hydroxide	(OH-1)	0	0
Sulfate	(SO4-2)	94.7	4550
Chloride	(Cl-1)	1410	50000

=====

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86[F	30[C	0.37	15
110[F	43[C	1.1	15
130[F	54[C	1.4	15
140[F	60[C	1.6	15
160[F	71[C	2.0	20

Comments:

cc: Bill Polk

Joe Hay

Analysis performed by Bob Wallace - Hobbs Laboratory

I

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company :
Date : 08-17-1993
Location: KELLY A - WELL #30 (on 8-4-1993)

Sample 1

Specific Gravity:	1.155
Total Dissolved Solids:	216848
pH:	6.50
IONIC STRENGTH:	3.890

[illegible]

CATIONS:		me/liter	mg/liter
Calcium	(Ca+2)	244	4880
Magnesium	(Mg+2)	36.0	437
Sodium	(Na+1)	3430	78900

ANIONS:			
Bicarbonate	(HCO3-1)	9.60	586
Carbonate	(CO3-2)	0	0
Hydroxide	(OH-1)	0	0
Sulfate	(SO4-2)	63.5	3050
Chloride	(Cl-1)	3640	129000

[illegible]

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86[F	30[C	0.99	13
110[F	43[C	1.7	13
130[F	54[C	2.1	13
140[F	60[C	2.3	13
160[F	71[C	2.7	12

Comments:

cc: Bill Polk

Joe Hay

Analysis performed by Bob Wallace - Hobbs Laboratory

I

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : MARBOB ENERGY

Date : 08-17-1993

Location: COMPATABILITY - (on 8-17-1993)

Sample 1

Specific Gravity:

1.109

Total Dissolved Solids:

152995

pH:

6.60

IONIC STRENGTH:

2.783

[illegible]

CATIONS:

Calcium	(Ca+2)	194	3880
Magnesium	(Mg+2)	52.0	632
Sodium	(Na+1)	2370	54500
Dissolved Iron	(Fe+2)	0.004	0.100

ANIONS:

Bicarbonate	(HCO3-1)	11.7	714
Carbonate	(CO3-2)	0	0
Hydroxide	(OH-1)	0	0
Sulfate	(SO4-2)	79.1	3800
Chloride	(Cl-1)	2520	89500

DISSOLVED GASES

Carbon Dioxide (CO2)	0
Hydrogen Sulfide (H2S)	0
Oxygen (O2)	0

[illegible]

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate
86[F	30[C	0.62	12
110[F	43[C	1.3	13
130[F	54[C	1.7	13
140[F	60[C	1.9	13
160[F	71[C	2.3	12

Comments:

cc: Bill Polk

Joe Hay

Ratio: Keely A #30 = 50% and Keely A #8 = 50%

I

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : MARBOB ENERGY
 Date : 08-17-1993
 Sample 1: COMPATABILITY (on 8-17-1993)
 Sample 2: (on 8-4-1993)

	Sample 1	Sample 2
Specific Gravity:	1.118	1.100
Total Dissolved Solids:	165766	140225
pH:	6.58	6.62
IONIC STRENGTH:	3.004	2.561

=====

CATIONS:		me/liter	mg/liter	me/liter	mg/liter
Calcium	(Ca+2)	204	4080	184	3680
Magnesium	(Mg+2)	48.8	593	55.2	671
Sodium	(Na+1)	2580	59400	2160	49600
Dissolved Iron	(Fe+2)	0.003	0.080	0.004	0.120

ANIONS:		me/liter	mg/liter	me/liter	mg/liter
Bicarbonate	(HCO3-1)	11.3	688	12.1	739
Carbonate	(CO3-2)	0	0	0	0
Hydroxide	(OH-1)	0	0	0	0
Sulfate	(SO4-2)	76.0	3650	82.2	3950
Chloride	(Cl-1)	2750	97400	2300	81600

DISSOLVED GASES			
Carbon Dioxide	(CO2)	0	0
Hydrogen Sulfide	(H2S)	0	0
Oxygen	(O2)	0	0

=====

SCALING INDEX (positive value indicates scale)

Temperature		Calcium Carbonate	Calcium Sulfate	Calcium Carbonate	Calcium Sulfate
86[F	30[C	0.69	12	0.55	14
110[F	43[C	1.4	13	1.3	13
130[F	54[C	1.8	13	1.6	13
140[F	60[C	2.0	13	1.8	13
160[F	71[C	2.4	12	2.2	11

Comments:

cc: Bill Polk Ratio: Keely A #30 = 60% and Keely A #8 = 40%
 Joe Hay Keely A #30 = 40% and Keely A #8 = 60%
 Analysis performed by Bob Wallace - Hobbs Laboratory

**BEFORE THE
OIL CONSERVATION DIVISION**
Santa Fe, New Mexico

Case Nos. 10903 and 10904 Exhibit No. 18
Consolidated

Submitted by: Marbob Energy Corporation

Hearing Date: February 3, 1994