



Water Analysis Report by Baker Petrolite

**COASTAL
GERONIMO
WATER PLANT
TANK**

Account Manager
WAYNE PETERSON

Summary		Analysis of Sample 106238 @ 75°F					
Sampling Date	1/6/99	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date	1/13/99	Chloride	153487	4378	Sodium	79884	3475
Analyst	ORIELA HERNANDEZ	Bicarbonate	82.8	1.88	Magnesium	8070	314
		Carbonate	0.00	0.00	Calcium	12651	631
TDS (mg/l or g/m ³)	250813	Sulfate	900	18.7	Strontium	339	7.74
Density (g/cm ³ or tonne/m ³)	1.163	Phosphate	N/A	N/A	Barium	0.30	0.00
Anion/Cation Ratio	1.00	Borate	N/A	N/A	Iron	5.50	0.20
		Silicate	N/A	N/A	Potassium	919	23.5
Carbon Dioxide	210 PPM				Aluminum	N/A	N/A
Oxygen		Hydrogen Sulfide		2 PPM	Chromium	N/A	N/A
					Copper	N/A	N/A
		pH at time of sampling		6.90	Lead	N/A	N/A
		pH at time of analysis			Manganese	N/A	N/A
		pH used in Calculations		6.90	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
80	0.	0.60	2.87	-0.05		0.00	3.20	-0.00		-0.01	0.05
100	0.	0.62	3.06	-0.13		-0.01		-0.08		-0.21	0.06
120	0.	0.63	3.49	-0.20		-0.01		-0.10		-0.39	0.08
140	0.	0.64	3.97	-0.26		0.02	19.1	-0.10		-0.54	0.11

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

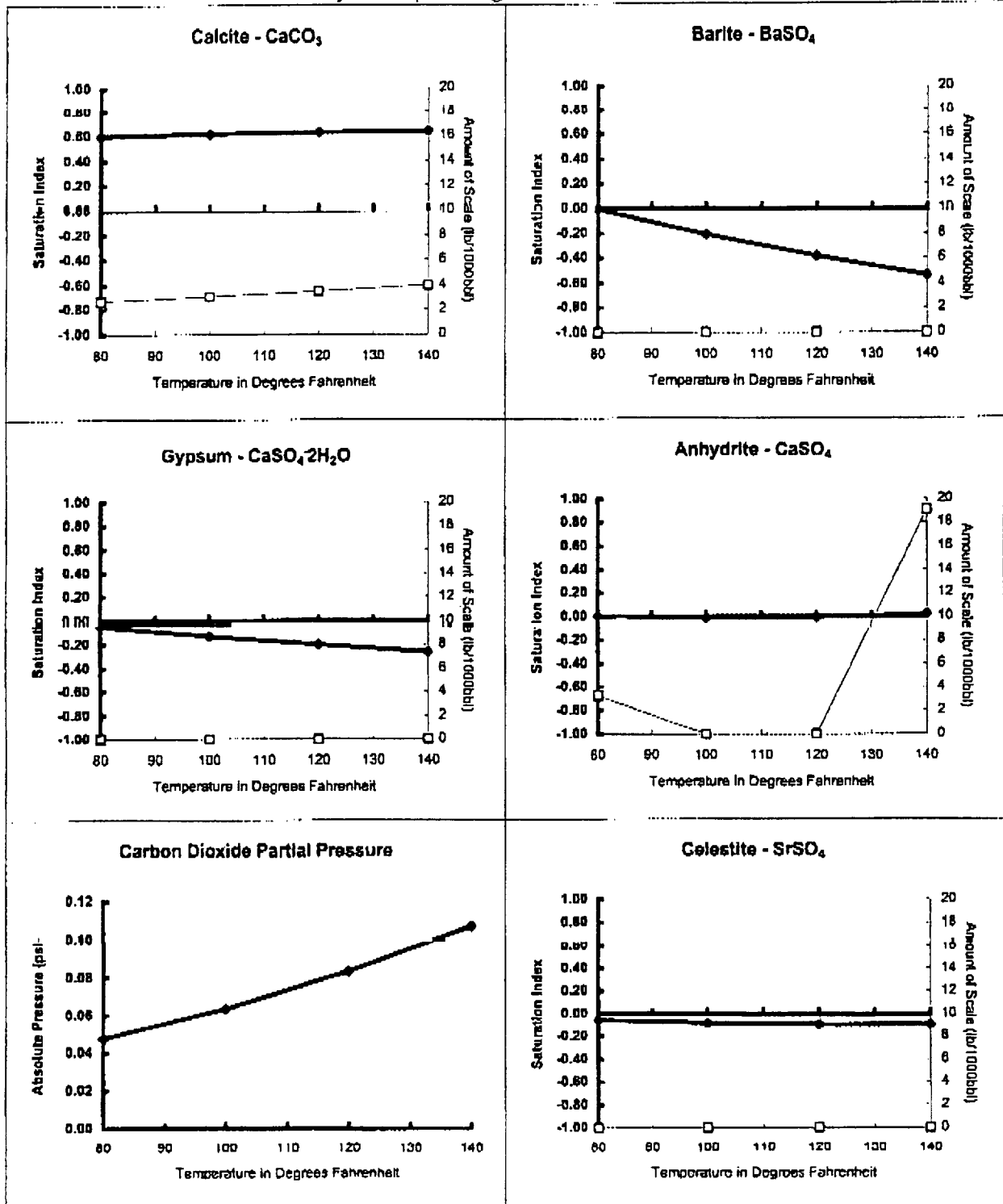
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

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



Scale Predictions from Baker Petrolite

Analysis of Sample 106238 @ 75°F for COASTAL, Jan/13/99





Water Analysis Report by Baker Petrolite

MARATHON
TORANO
WATER PLANT
TANK

Account Manager
WAYNE PETERSON

<i>Summary</i>		<i>Analysis of Sample 106237 @ 75°F</i>					
Sampling Date	1/6/99	Anions	<i>mg/l</i>	<i>meq/l</i>	Cations	<i>mg/l</i>	<i>meq/l</i>
Analysis Date	1/13/99	Chloride	89691	2530	Sodium	51718	2250
Analyst	SHEILA HERNANDEZ	Bicarbonate	187	3.06	Magnesium	1340	110
		Carbonate	0.00	0.00	Calcium	4385	219
TDS (mg/l or g/m ³)	150848	Sulfate	2929	61.0	Strontium	122	2.78
Density (g/cm ³ or tonne/m ³)	1.096	Phosphate	N/A	N/A	Barium	0.10	0.00
Anion/Cation Ratio	1.00	Borate	N/A	N/A	Iron	4.50	0.16
		Silicate	N/A	N/A	Potassium	462	11.8
Carbon Dioxide	135 PPM				Aluminum	N/A	N/A
Oxygen		Hydrogen Sulfide		9 PPM	Chromium	N/A	N/A
					Copper	N/A	N/A
		pH at time of sampling		7.10	Lead	N/A	N/A
		pH at time of analysis			Manganese	N/A	N/A
		pH used in Calculations		7.10	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.	0.70	11.1	0.07	216	0.08	177	0.24	33.5	0.26	0.02	0.11
100	0.	0.73	13.0	0.01	27.4	0.08	181	0.21	30.9	0.06	0.01	0.16
120	0.	0.76	15.0	-0.04		0.10	240	0.20	29.5	-0.11		0.21
140	0.	0.79	17.2	-0.09		0.15	338	0.20	29.2	-0.25		0.29

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

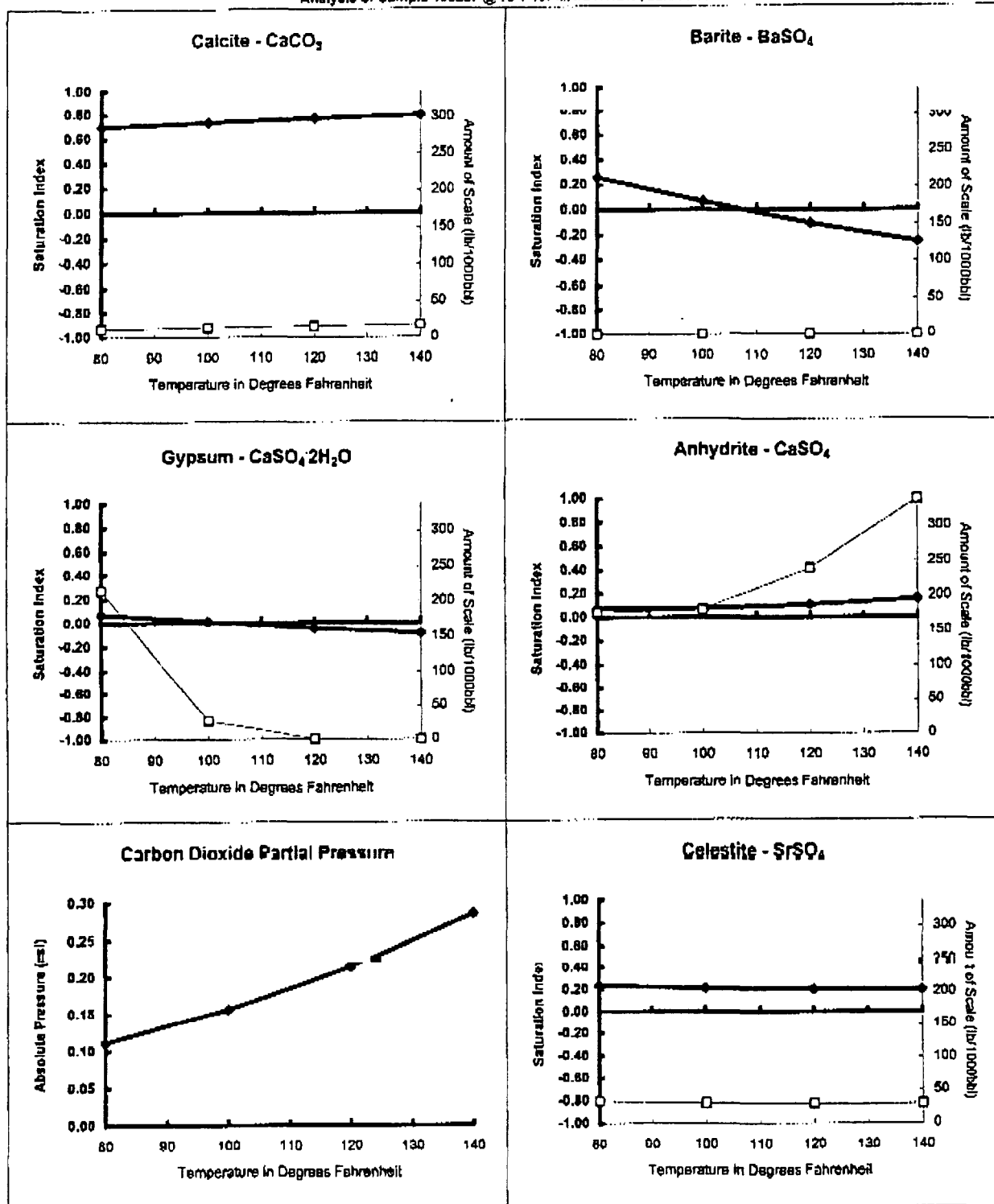
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

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



Scale Predictions from Baker Petrolite

Analysis of Sample 106237 @ 75°F for MARATHON, Jan/13/98





Analysis: 22546

Water Analysis Report from Baker Petrolite

Summary of Mixing Waters			
Sample Number	106238	106237	106840
Company	COASTAL	MARATHON	HEYCO
Lease	GERONIMO	TORANO	YOUNG DEEP
Well	WATER PLANT	WATER PLANT	
Sample Location	TANK	TANK	I.P.D.
Anions (mg/L)			
Chloride	153,482	89,691	106,932
Bicarbonate	62.0	187	354
Carbonate	0.00	0.00	0.00
Sulfate	900	2,929	1,416
Phosphate	0.00	0.00	0.00
Borate	0.00	0.00	0.00
Silicate	0.00	0.00	0.00
Cations (mg/L)			
Sodium	79,884	51,718	54,936
Magnesium	2,570	1,340	1,975
Calcium	12,651	4,395	8,961
Strontium	339	122	188
Barium	0.30	0.10	0.20
Iron	5.50	4.50	4.00
Potassium	919	462	1,869
Aluminum	0.00	0.00	0.00
Chromium	0.00	0.00	0.00
Copper	0.00	0.00	0.00
Lead	0.00	0.00	0.00
Manganese	0.00	0.00	0.00
Nickel	0.00	0.00	0.00
Anion/Cation Ratio	1.00	1.00	1.00
TDS (mg/L)	250,813	150,848	176,635
Density (g/cm)	1.16	1.10	1.12
Sampling Date	1/6/99	1/6/99	8/3/98
Account Manager	WAYNE PETERSON	WAYNE PETERSON	FRANK WONER
Analyst	SHEILA HERNANDEZ	SHEILA HERNANDEZ	SHEILA DEARMAN
Analysis Date	1/13/99	1/13/99	8/6/98
pH at time of sampling	6.90	7.10	6.45
pH at time of analysis	6.90	7.10	6.45
pH used in Calculations	6.90	7.10	6.45



Analysis: 22546

Water Analysis Report from Baker Petrolite

Mixes at 80°F and 0 psi with 106237

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 ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106238	106640	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
20%	40%	0.39	0.57	15.4	0.10	200	0.11	182	0.16	36.9	0.24	0.04

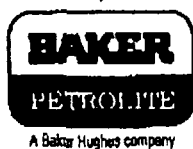
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

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: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.

Compositions of the Mixed Waters used for the Calculations

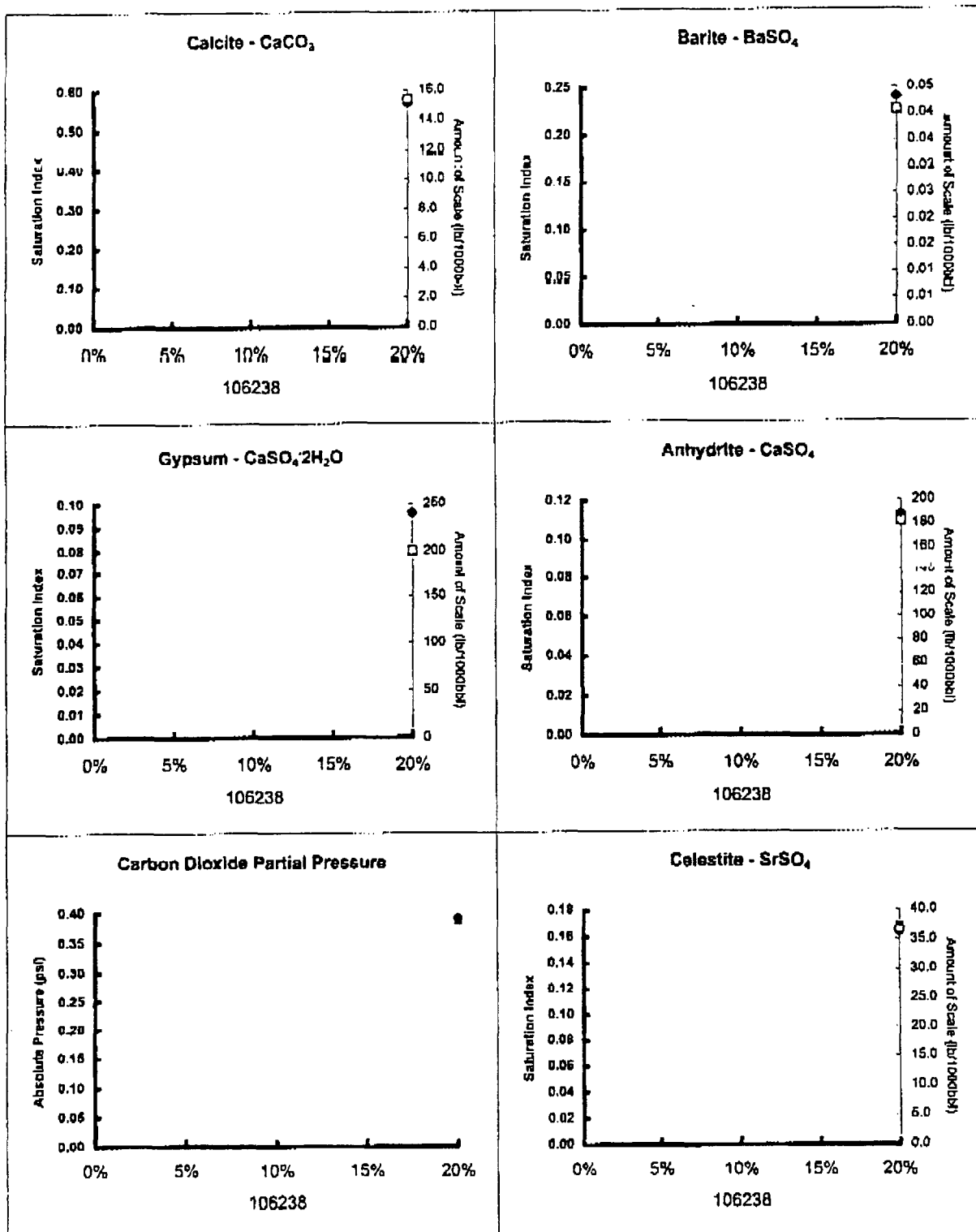
106238	106237	106640
20.0%	40.0%	40.0%



Analysis: 22546

Mixture Predictions from Baker-Petrolite

106238 with 106237 and with 106640 at 80°F and 0 psi





Analysis: 22546

Water Analysis Report from Baker Petrolite

Mixes at 100°F and 0 psi with 106237

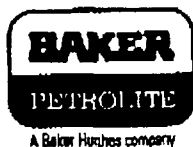
<i>Predictions of Carbon Dioxide Pressure, Saturation Index and Amount of Scale in lb/1000bbl</i>												
Mix Waters		CO ₂	Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106238	106640	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
20%	40%	0.49	0.64	17.9	0.03	61.4	0.11	178	0.14	32.3	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.

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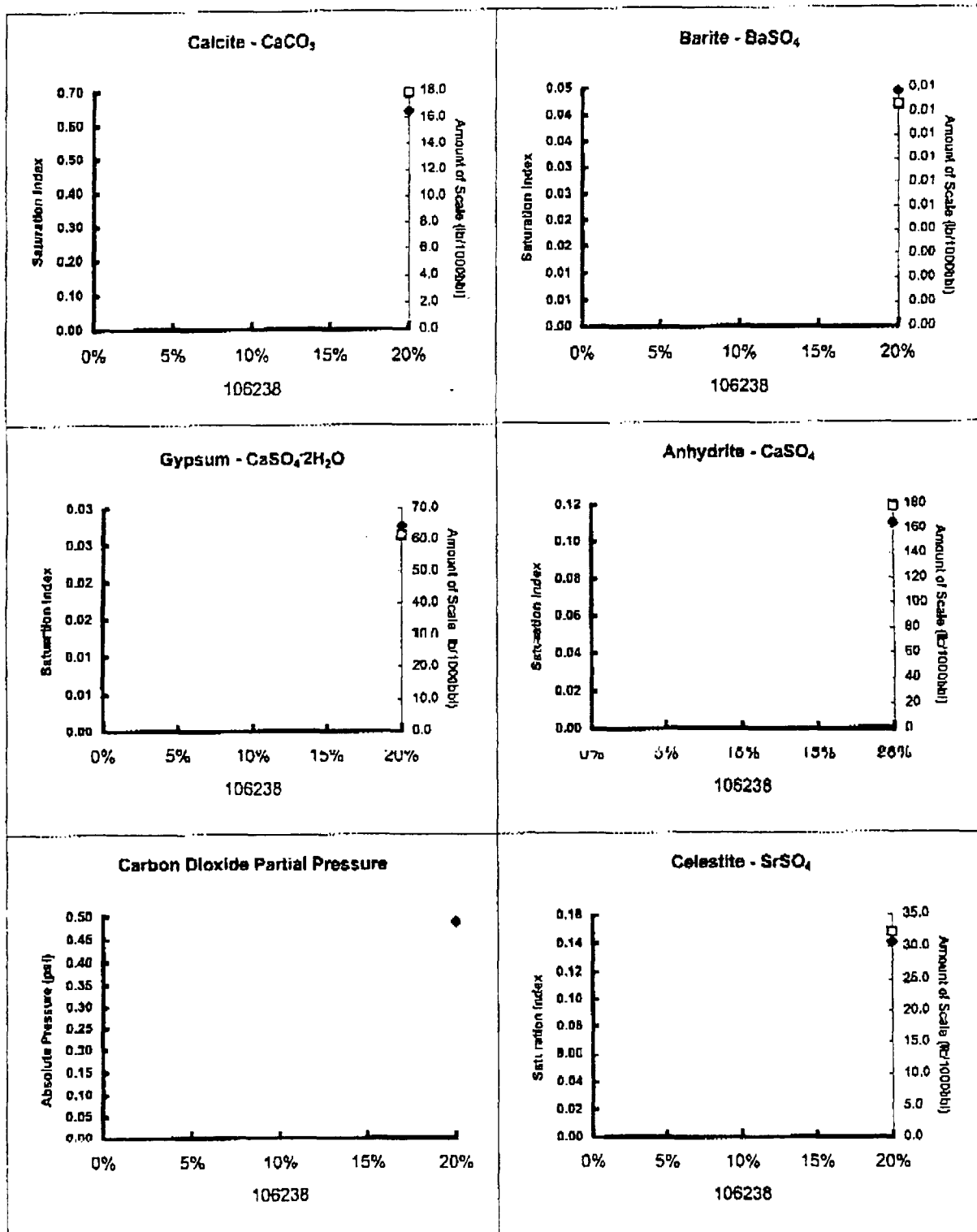
Compositions of the Mixed Waters used for the Calculations		
106238	106237	106640
20.0%	40.0%	40.0%



Analysis: 22546

Mixture Predictions from Baker-Petrolite

106238 with 106237 and with 106640 at 100°F and 0 psi





Analysis: 22546

Water Analysis Report from Baker Petrolite

Mixes at 120°F and 0 psi with 106237

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 ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106238	106640	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
20%	40%	0.59	0.71	20.5	-0.03		0.13	210	0.13	30.1	-0.13	

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: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.

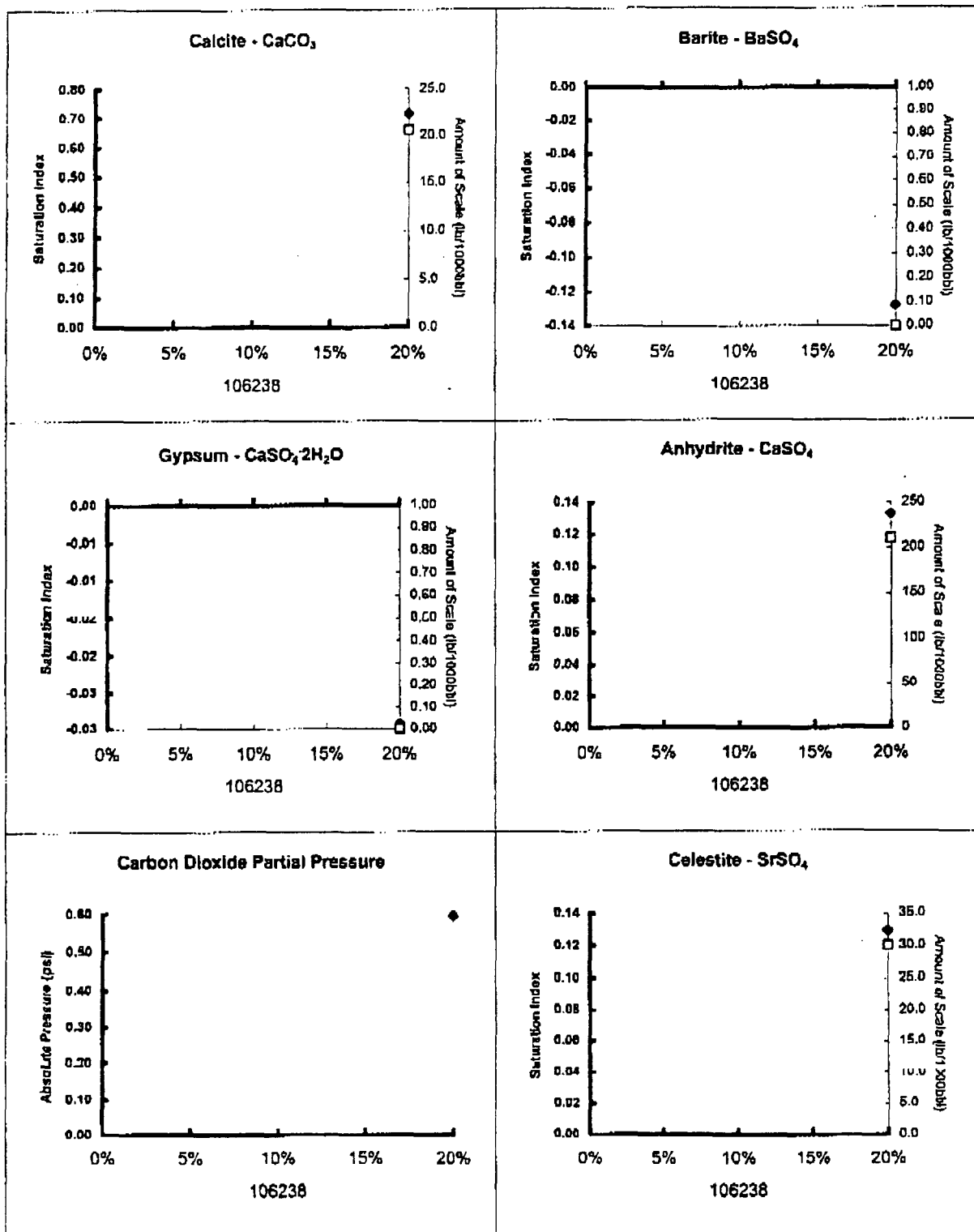
Compositions of the Mixed Waters used for the Calculations		
106238	106237	106640
20.0%	40.0%	40.0%



Analysis: 22546

Mixture Predictions from Baker-Petrolite

106238 with 106237 and with 106640 at 120°F and 0 psi





Analysis: 22546

Water Analysis Report from Baker Petrolite

Mixes at 140°F and 0 psi with 106237

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 ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106238	106640	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
20%	40%	0.71	0.78	23.3	-0.08		0.18	28.9	0.15	29.8	-0.20	

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: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.

Compositions of the Mixed Waters used for the Calculations

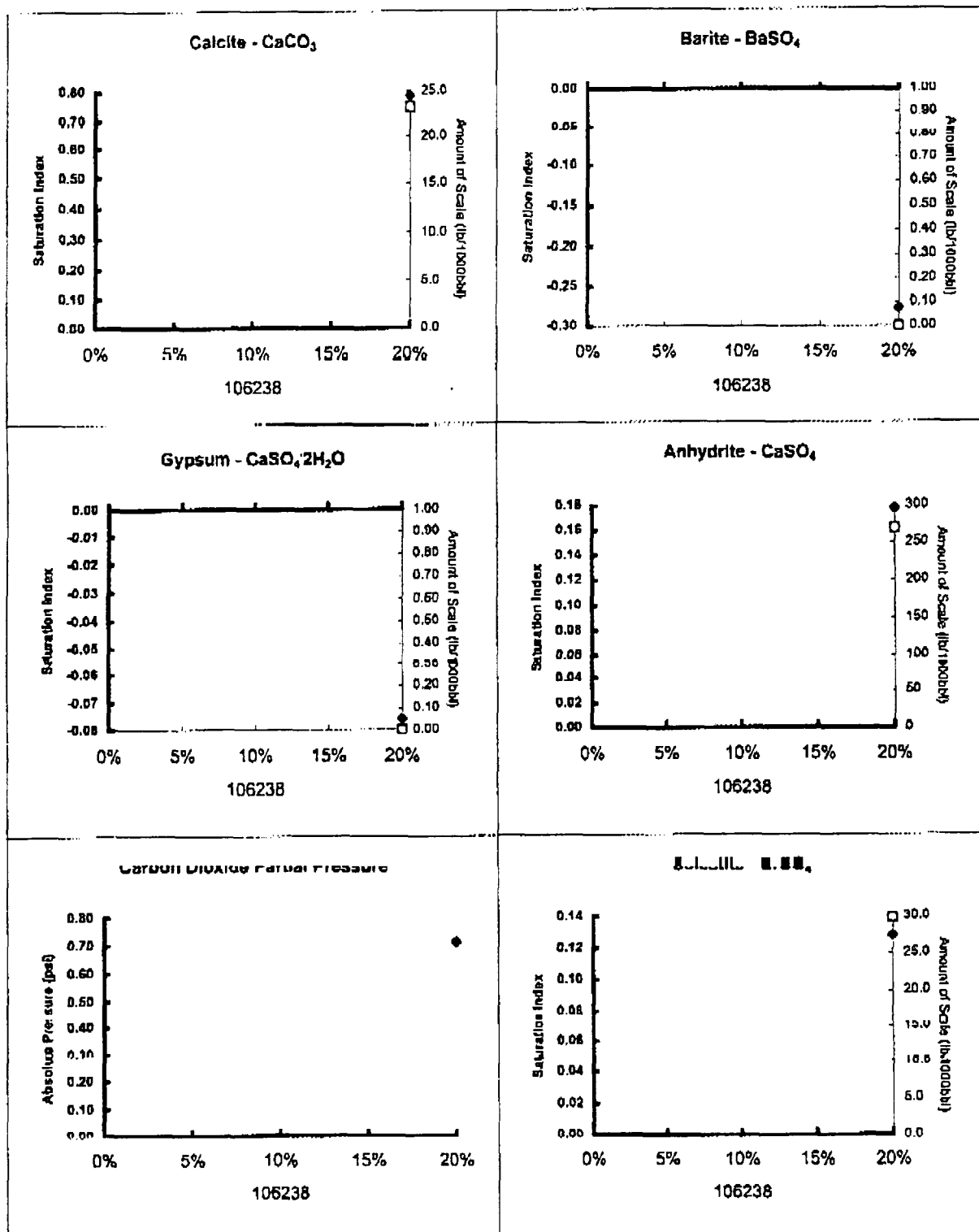
106238	106237	106640
20.0%	40.0%	40.0%



Analysis: 22546

Mixture Predictions from Baker-Petrolite

106238 with 106237 and with 106640 at 140°F and 0 psi





Analysis: 22535

Water Analysis Report from Baker Petrolite

Summary of Mixing Waters		
Sample Number	106237	106238
Company	MARATHON	COASTAL
Lease	TORANO	GERONIMO
Well	WATER PLANT	WATER PLANT
Sample Location	TANK	TANK
Anions (mg/L)		
Chloride	89,691	153,482
Bicarbonate	187	62.0
Carbonate	0.00	0.00
Sulfate	2,929	900
Phosphate	0.00	0.00
Borate	0.00	0.00
Silicate	0.00	0.00
Cations (mg/L)		
Sodium	51,718	79,884
Magnesium	1,340	2,570
Calcium	4,395	12,651
Strontium	122	339
Barium	0.10	0.30
Iron	4.50	5.50
Potassium	462	919
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)	150,848	250,813
Density (g/cm)	1.10	1.16
Sampling Date	1/6/99	1/6/99
Account Manager	WAYNE PETERSON	WAYNE PETERSON
Analyst	SHEILA HERNANDEZ	SHEILA HERNANDEZ
Analysis Date		1/13/99
pH at time of sampling	7.10	6.90
pH at time of analysis		
pH used in Calculations	7.10	6.90



Analysis: 22535

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 ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106237	106238	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
0%	100%	0.05	0.60	2.7	-0.05		0.00	3	-0.06		-0.01	
10%	90%	0.06	0.65	3.6	0.01	14	0.06	56	0.02	6.7	0.07	0.02
20%	80%	0.06	0.68	4.5	0.05	79	0.10	106	0.08	26.4	0.13	0.03
30%	70%	0.07	0.71	5.5	0.09	141	0.12	153	0.13	39.7	0.18	0.04
40%	60%	0.08	0.73	6.6	0.11	197	0.14	195	0.17	47.7	0.22	0.05
50%	50%	0.09	0.74	7.6	0.12	245	0.15	230	0.20	51.7	0.25	0.05
60%	40%	0.09	0.75	8.5	0.13	283	0.15	257	0.23	52.4	0.27	0.04
70%	30%	0.10	0.75	9.4	0.13	307	0.15	271	0.24	50.5	0.28	0.04
80%	20%	0.10	0.74	10.2	0.12	311	0.13	268	0.25	48.4	0.29	0.04
90%	10%	0.11	0.73	10.8	0.10	286	0.11	241	0.25	40.6	0.28	0.03
100%	0%	0.11	0.70	11.1	0.07	218	0.08	178	0.24	33.4	0.26	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.

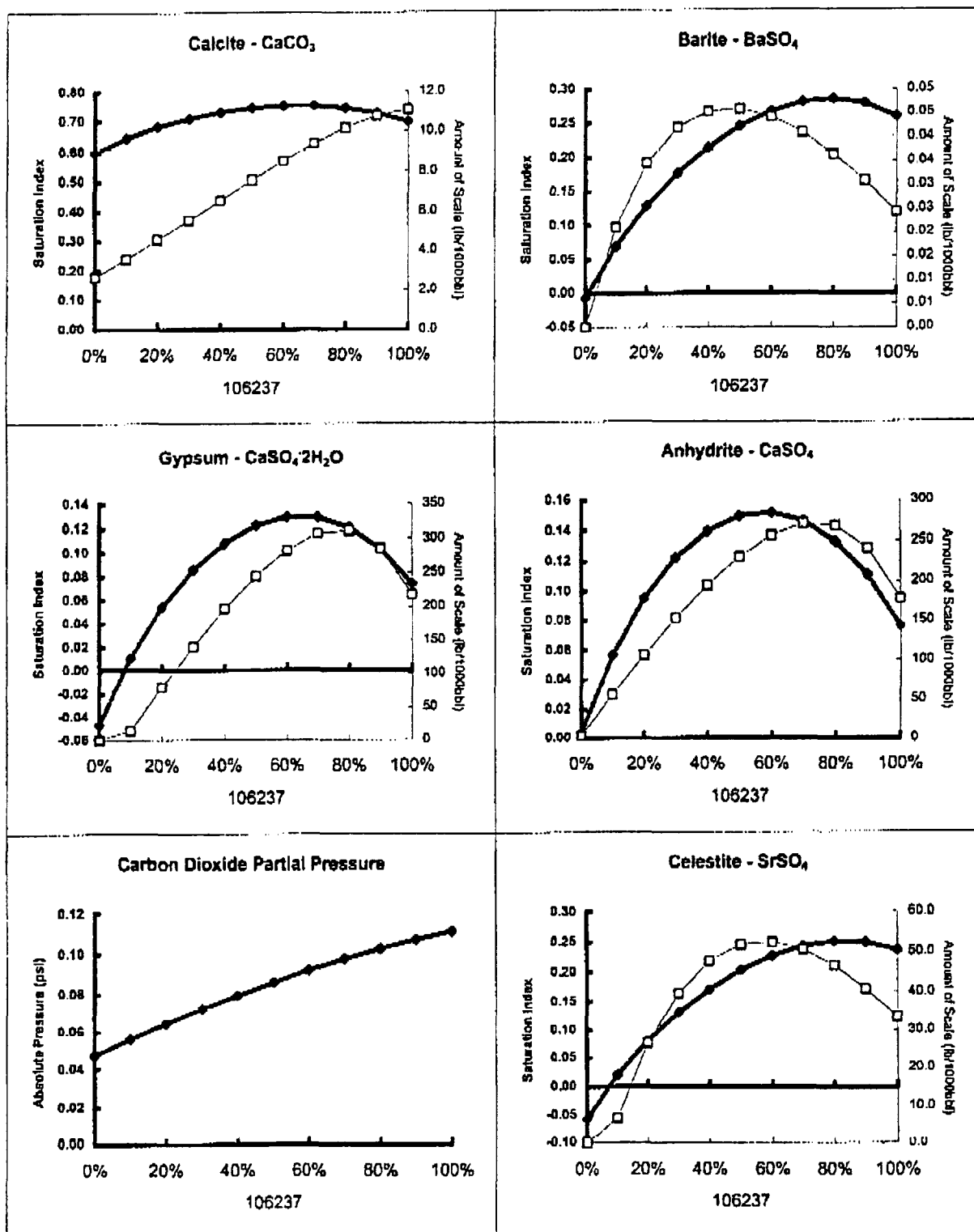
Note 3: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.



Analysis: 22535

Mixture Predictions from Baker-Petrolite

106237 with 106238 at 80°F and 0 psi





Analysis: 22535

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	Calcito CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Rarita BaSO ₄	
106237	106238	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
0%	100%	0.06	0.62	3.0	-0.13		-0.01		-0.08		-0.21	
10%	90%	0.08	0.66	4.1	-0.07		0.04	41	-0.01		-0.13	
20%	80%	0.09	0.70	5.2	-0.03		0.08	92	0.05	18.3	-0.07	
30%	70%	0.10	0.73	6.3	0.01	13	0.11	139	0.10	32.5	-0.02	
40%	60%	0.11	0.75	7.5	0.03	63	0.13	183	0.15	41.5	0.02	0.00
50%	50%	0.12	0.77	8.6	0.05	104	0.14	219	0.18	46.3	0.05	0.01
60%	40%	0.13	0.78	9.7	0.06	135	0.15	248	0.20	47.7	0.07	0.01
70%	30%	0.13	0.78	10.8	0.06	150	0.14	265	0.22	46.4	0.08	0.02
80%	20%	0.14	0.77	11.7	0.05	144	0.13	265	0.23	42.9	0.09	0.01
90%	10%	0.15	0.76	12.5	0.04	109	0.11	241	0.23	37.6	0.08	0.01
100%	0%	0.16	0.73	12.9	0.01	30	0.08	182	0.21	30.8	0.06	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.

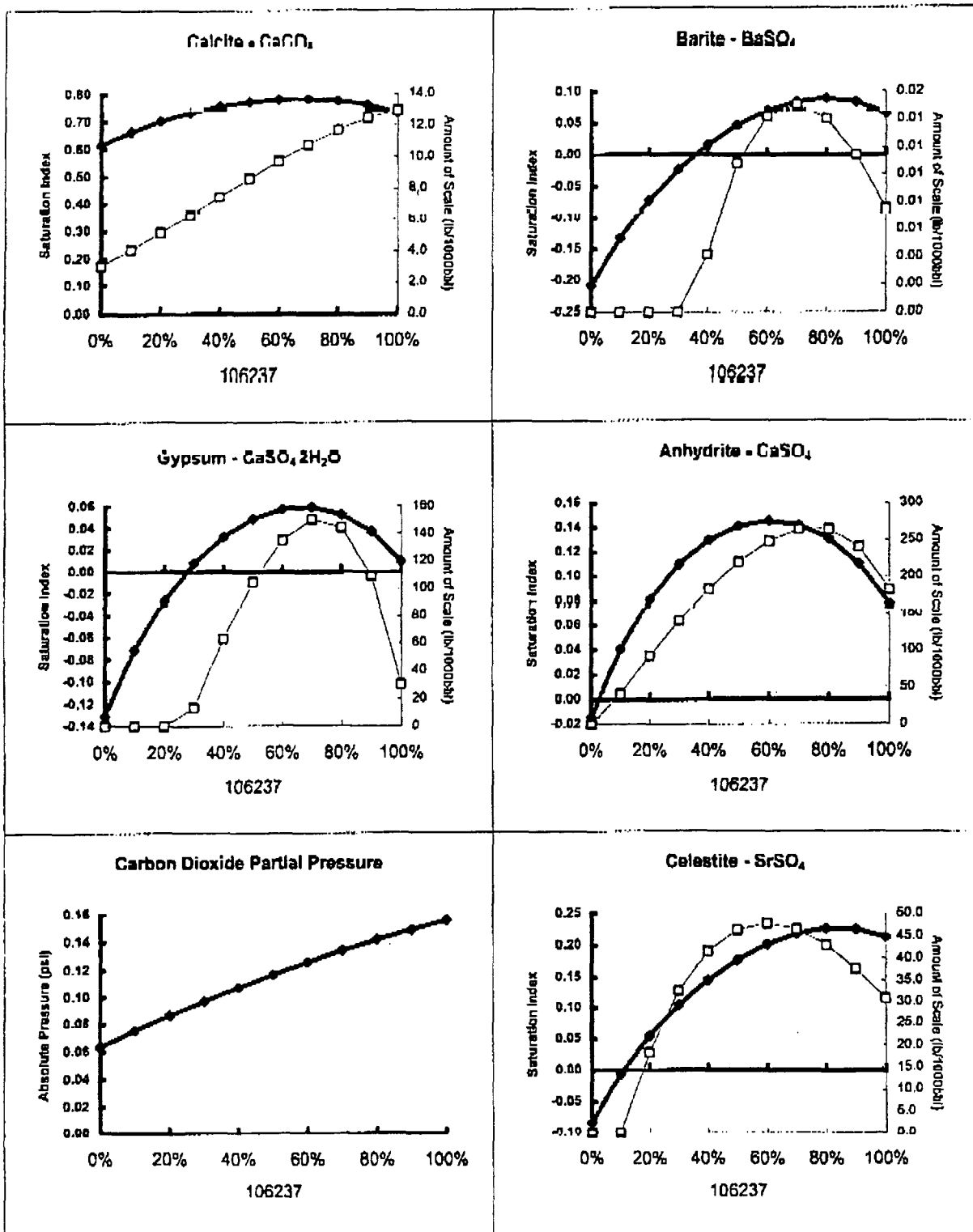
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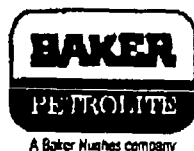


Analysis: 22535

Mixture Predictions from Baker-Petrolite

106237 with 106238 at 100°F and 0 psi





Analysis: 22535

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 ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106237	106238	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
0%	100%	0.08	0.63	3.5	-0.20		-0.01		-0.10		-0.39	
10%	90%	0.10	0.68	4.6	-0.14		0.05	50	-0.02		-0.31	
20%	80%	0.11	0.72	5.8	-0.09		0.09	103	0.04	14.2	-0.25	
30%	70%	0.13	0.75	7.1	-0.06		0.12	154	0.09	28.9	-0.20	
40%	60%	0.14	0.77	8.4	-0.03		0.14	201	0.13	38.3	-0.16	
50%	50%	0.16	0.79	9.7	-0.01		0.16	242	0.16	43.5	-0.13	
60%	40%	0.17	0.80	11.0	-0.00		0.16	276	0.19	45.3	-0.10	
70%	30%	0.18	0.80	12.2	0.00	2.28	0.16	298	0.21	44.3	-0.09	
80%	20%	0.19	0.80	13.3	-0.00		0.15	305	0.21	41.1	-0.08	
90%	10%	0.20	0.79	14.3	-0.02		0.14	290	0.21	36.1	-0.09	
100%	0%	0.21	0.76	14.9	-0.04		0.11	241	0.20	29.4	-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.

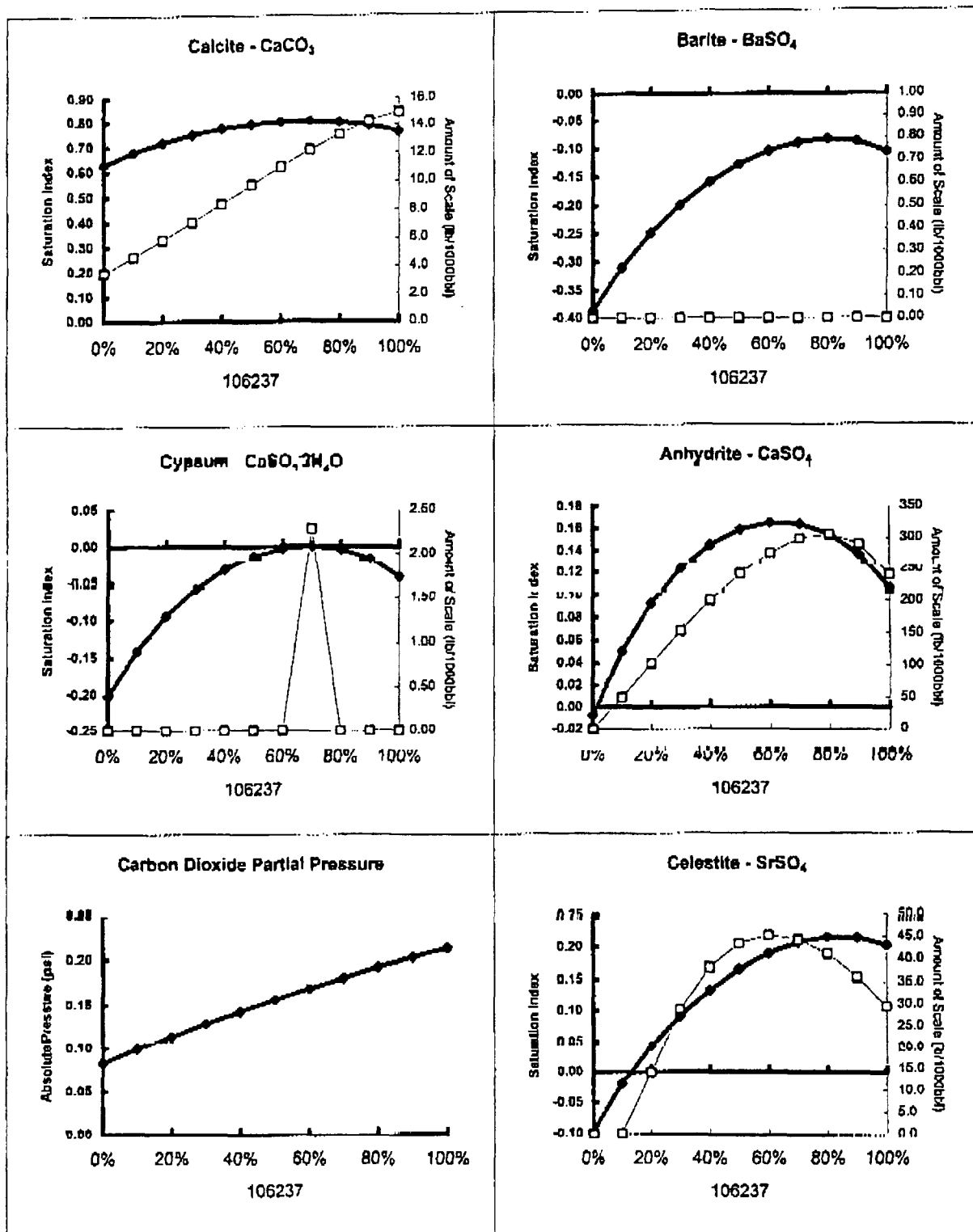
Note 3: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.



Analysis: 22535

Mixture Predictions from Baker-Petrolite

106237 with 106238 at 120°F and 0 psi





Analysis: 22535

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 lh/1000hbl												
Mix Waters		CO ₂	Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
106237	106238	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
0%	100%	0.11	0.64	3.9	-0.26		0.02	19	-0.10		-0.54	
10%	90%	0.13	0.69	5.2	-0.20		0.08	79	-0.02		-0.46	
20%	80%	0.15	0.73	6.6	-0.15		0.13	136	0.04	13.4	-0.40	
30%	70%	0.17	0.77	8.0	-0.11		0.16	192	0.09	28.1	-0.35	
40%	60%	0.19	0.79	9.5	-0.09		0.18	244	0.13	37.6	-0.31	
50%	50%	0.20	0.81	10.9	-0.07		0.20	291	0.16	42.9	-0.28	
60%	40%	0.22	0.82	12.4	-0.05		0.21	331	0.19	44.7	-0.26	
70%	30%	0.24	0.83	13.8	-0.05		0.21	362	0.20	43.8	-0.24	
80%	20%	0.25	0.82	15.1	-0.05		0.20	379	0.21	40.7	-0.23	
90%	10%	0.27	0.81	16.3	-0.06		0.18	375	0.21	35.7	-0.24	
100%	0%	0.29	0.79	17.1	-0.09		0.16	339	0.20	29.2	-0.25	

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: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.



Analysis: 22535

Mixture Predictions from Baker-Petrolite

106237 with 106238 at 140°F and 0 psi

