



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
Date Reported : 25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 17

Location : Well No. 04-241

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	166	mg/l
Magnesium :	0	mg/l
Barium :	191	mg/l
Strontium :	64	mg/l
Iron :	67.0	mg/l
Manganese :	10	mg/l
Sodium :	8080	mg/l

ANIONS

Chloride :	12,260	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,064	mg/l
Sulfate :	33	mg/l

pH (field) :	6.12		Specific Gravity :	1.010	grams/ml
Temperature :	89	degrees F	Total Dissolved Solids :	21,925	ppm
Ionic Strength :	0.36		CO2 in Water :	251	mg/l
Conductivity :		micromho/centimeters	Mole % CO2 in Gas :		mole %
Ammonia :		ppm	H2S in Water :	0.1	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.75	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.63	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.42	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	-0.21	Calcite PTB @ 140 F :	N/A
Calcite (CaCO3) SI @ 160 F :	0.02	Calcite PTB @ 160 F :	4.5
Calcite (CaCO3) SI @ 180 F :	0.25	Calcite PTB @ 180 F :	48.8
Calcite (CaCO3) SI @ 200 F :	0.49	Calcite PTB @ 200 F :	82.8
Gypsum (CaSO4) SI :	-2.88	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.98	Barite PTB :	26.2
Celestite (SrSO4) SI :	-1.29	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 17

Location : Well No. 04-331

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium : 224 mg/l
Magnesium : 3 mg/l
Barium : 187 mg/l
Strontium : 87 mg/l
Iron : 74.0 mg/l
Manganese : 0.7 mg/l
Sodium : 6108 mg/l

ANIONS

Chloride : 9,220 mg/l
Carbonate : 0 mg/l
Bicarbonate : 1,259 mg/l
Sulfate : 38 mg/l

pH (field) : 6.36
Temperature : 85 degrees F
Ionic Strength : 0.28

Specific Gravity : 1.010 grams/ml
Total Dissolved Solids : 17,190 ppm
CO2 in Water : 322 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.1 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters

Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI : -0.49
Calcite (CaCO3) SI @ 100 F : -0.33
Calcite (CaCO3) SI @ 120 F : -0.12
Calcite (CaCO3) SI @ 140 F : 0.10
Calcite (CaCO3) SI @ 160 F : 0.32
Calcite (CaCO3) SI @ 180 F : 0.55
Calcite (CaCO3) SI @ 200 F : 0.79
Gypsum (CaSO4) SI : -2.65
Barite (BaSO4) SI : 2.18
Celestite (SrSO4) SI : -1.14

Calcite PTB : N/A
Calcite PTB @ 100 F : N/A
Calcite PTB @ 120 F : N/A
Calcite PTB @ 140 F : 27.5
Calcite PTB @ 160 F : 78.0
Calcite PTB @ 180 F : 117.8
Calcite PTB @ 200 F : 148.1
Gypsum PTB : N/A
Barite PTB : 29.2
Celestite PTB : N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 17

Location : Well No. 04-234

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	513	mg/l
Magnesium :	18	mg/l
Barium :	198	mg/l
Strontium :	54	mg/l
Iron :	21.0	mg/l
Manganese :	0.1	mg/l
Sodium :	7057	mg/l

ANIONS

Chloride :	11,400	mg/l
Carbonate :	0	mg/l
Bicarbonate :	991	mg/l
Sulfate :	15	mg/l

pH (field) :	6.27	Specific Gravity :	1.010	grams/ml	
Temperature :	87	degrees F	Total Dissolved Solids :	20,265	ppm
Ionic Strength :	0.34	CO ₂ in Water :	217	mg/l	
Conductivity :	micromho/centimeters	Mole % CO ₂ in Gas :		mole %	
Ammonia :	ppm	H ₂ S in Water :	0.1	mg/l	
		Dissolved Oxygen :		ppm	

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.25	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.11	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	0.10	Calcite PTB @ 120 F :	38.5
Calcite (CaCO ₃) SI @ 140 F :	0.32	Calcite PTB @ 140 F :	112.1
Calcite (CaCO ₃) SI @ 160 F :	0.54	Calcite PTB @ 160 F :	177.0
Calcite (CaCO ₃) SI @ 180 F :	0.77	Calcite PTB @ 180 F :	231.3
Calcite (CaCO ₃) SI @ 200 F :	1.01	Calcite PTB @ 200 F :	278.6
Gypsum (CaSO ₄) SI :	-2.76	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	1.65	Barite PTB :	10.8
Celestite (SrSO ₄) SI :	-1.72	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 26-Nov-07
Date Reported : 29-Nov-07
20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 09-31 PAD #44

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	214	mg/l
Magnesium :	83	mg/l
Barium :	23	mg/l
Strontium :	26	mg/l
Iron :	43.0	mg/l
Manganese :	0.5	mg/l
Sodium :	7804	mg/l

ANIONS

Chloride :	11,680	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,464	mg/l
Sulfate :	213	mg/l

pH (field) :	6.50		Specific Gravity :	1.015	grams/ml
Temperature :	85	degrees F	Total Dissolved Solids :	21,550	ppm
Ionic Strength :	0.36		CO2 in Water :	220	mg/l
Conductivity :		micromho/centimeters	Mole % CO2 in Gas :		mole %
Ammonia :		ppm	H2S in Water :	0.0	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.34	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.19	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	0.02	Calcite PTB @ 120 F :	5.8
Calcite (CaCO3) SI @ 140 F :	0.24	Calcite PTB @ 140 F :	61.4
Calcite (CaCO3) SI @ 160 F :	0.46	Calcite PTB @ 160 F :	102.3
Calcite (CaCO3) SI @ 180 F :	0.70	Calcite PTB @ 180 F :	134.5
Calcite (CaCO3) SI @ 200 F :	0.93	Calcite PTB @ 200 F :	154.2
Gypsum (CaSO4) SI :	-1.98	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.88	Barite PTB :	13.4
Celestite (SrSO4) SI :	-0.89	Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 04-34 PAD #1

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	212	mg/l
Magnesium :	5	mg/l
Barium :	18	mg/l
Strontium :	18	mg/l
Iron :	10.0	mg/l
Manganese :	0.5	mg/l
Sodium :	7029	mg/l

ANIONS

Chloride :	10,280	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,403	mg/l
Sulfate :	213	mg/l

pH (field) :	6.50	Specific Gravity :	1.010	grams/ml	
Temperature :	85	degrees F	Total Dissolved Solids :	19,188	ppm
Ionic Strength :	0.32	CO2 in Water :	220	mg/l	
Conductivity :	micromho/centimeters	Mole % CO2 in Gas :		mole %	
Ammonia :	ppm	H2S in Water :	0.0	mg/l	
		Dissolved Oxygen :		ppm	

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.32	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.17	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	0.04	Calcite PTB @ 120 F :	11.6
Calcite (CaCO3) SI @ 140 F :	0.26	Calcite PTB @ 140 F :	65.2
Calcite (CaCO3) SI @ 160 F :	0.49	Calcite PTB @ 160 F :	105.7
Calcite (CaCO3) SI @ 180 F :	0.72	Calcite PTB @ 180 F :	134.7
Calcite (CaCO3) SI @ 200 F :	0.96	Calcite PTB @ 200 F :	154.2
Gypsum (CaSO4) SI :	-1.95	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.83	Barite PTB :	10.2
Celestite (SrSO4) SI :	-1.00	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 26-Nov-07
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20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 04-244 PAD #2

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	162	mg/l
Magnesium :	69	mg/l
Barium :	15	mg/l
Strontium :	16	mg/l
Iron :	10.0	mg/l
Manganese :	0.5	mg/l
Sodium :	6163	mg/l

ANIONS

Chloride :	9,080	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,464	mg/l
Sulfate :	110	mg/l

pH (field) :	6.00		Specific Gravity :	1.010	grams/ml
Temperature :	85	degrees F	Total Dissolved Solids :	17,089	ppm
Ionic Strength :	0.28		CO2 in Water :	220	mg/l
Conductivity:		micromho/centimeters	Mole % CO2 in Gas:		mole %
Ammonia :		ppm	H2S in Water :	0.0	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.33	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.18	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	0.03	Calcite PTB @ 120 F :	6.6
Calcite (CaCO3) SI @ 140 F :	0.25	Calcite PTB @ 140 F :	50.9
Calcite (CaCO3) SI @ 160 F :	0.48	Calcite PTB @ 160 F :	84.1
Calcite (CaCO3) SI @ 180 F :	0.71	Calcite PTB @ 180 F :	105.7
Calcite (CaCO3) SI @ 200 F :	0.95	Calcite PTB @ 200 F :	120.1
Gypsum (CaSO4) SI :	-2.33	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.52	Barite PTB :	8.3
Celestite (SrSO4) SI :	-1.30	Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 09-321 PAD #11

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :
cc1 :
cc2 :
cc3 :

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	205	mg/l
Magnesium :	61	mg/l
Barium :	27	mg/l
Strontium :	14	mg/l
Iron :	77.0	mg/l
Manganese :	0.5	mg/l
Sodium :	6623	mg/l

ANIONS

Chloride :	10,060	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,098	mg/l
Sulfate :	108	mg/l

pH (field) :	6.50
Temperature :	85 degrees F
Ionic Strength :	0.30

Specific Gravity :	1.010	grams/ml
Total Dissolved Solids :	18,273	ppm
CO2 in Water :	255	mg/l
Mole % CO2 in Gas :		mole %
H2S in Water :	0.0	mg/l
Dissolved Oxygen :		ppm

Conductivity :	micromho/centimeters
Ammonia :	ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.58
Calcite (CaCO3) SI @ 100 F :	-0.43
Calcite (CaCO3) SI @ 120 F :	-0.22
Calcite (CaCO3) SI @ 140 F :	0.00
Calcite (CaCO3) SI @ 160 F :	0.23
Calcite (CaCO3) SI @ 180 F :	0.46
Calcite (CaCO3) SI @ 200 F :	0.70
Gypsum (CaSO4) SI :	-2.25
Barite (BaSO4) SI :	1.74
Celestite (SrSO4) SI :	-1.39

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	53.2
Calcite PTB @ 180 F :	93.8
Calcite PTB @ 200 F :	123.9
Gypsum PTB :	N/A
Barite PTB :	15.5
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 26-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 04-341 PAD #1

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	203	mg/l
Magnesium :	10	mg/l
Barium :	47	mg/l
Strontium :	18	mg/l
Iron :	5.0	mg/l
Manganese :	0.5	mg/l
Sodium :	7979	mg/l

ANIONS

Chloride :	11,720	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,403	mg/l
Sulfate :	265	mg/l

pH (field) :	6.00	Specific Gravity :	1.010	grams/ml	
Temperature :	85	degrees F	Total Dissolved Solids :	21,650	ppm
Ionic Strength :	0.36	CO2 In Water :	220	mg/l	
Conductivity :	micromho/centimeters	Mole % CO2 In Gas :		mole %	
Ammonia :	ppm	H2S In Water :	0.0	mg/l	
		Dissolved Oxygen :		ppm	

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.40	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.25	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.04	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	0.18	Calcite PTB @ 140 F :	45.8
Calcite (CaCO3) SI @ 160 F :	0.40	Calcite PTB @ 160 F :	88.8
Calcite (CaCO3) SI @ 180 F :	0.64	Calcite PTB @ 180 F :	120.6
Calcite (CaCO3) SI @ 200 F :	0.87	Calcite PTB @ 200 F :	142.1
Gypsum (CaSO4) SI :	-1.90	Gypsum PTB :	N/A
Barite (BaSO4) SI :	2.29	Barite PTB :	27.4
Celestite (SrSO4) SI :	-0.95	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 26-Nov-07
Date Reported : 29-Nov-07
20-Dec-07

Delta Petroleum

Field : Vega

Lease : Vega

Location : Well No. 09-221 PAD #11

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	191	mg/l
Magnesium :	15	mg/l
Barium :	15	mg/l
Strontium :	15	mg/l
Iron :	16.0	mg/l
Manganese :	0.5	mg/l
Sodium :	6417	mg/l

ANIONS

Chloride :	9,140	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,586	mg/l
Sulfate :	318	mg/l

pH (field) :	6.50
Temperature :	85 degrees F
Ionic Strength :	0.29

Specific Gravity :	1.010	grams/ml
Total Dissolved Solids :	17,713	ppm
CO2 In Water :	220	mg/l
Mole % CO2 In Gas :		mole %
H2S In Water :	0.0	mg/l
Dissolved Oxygen :		ppm

Conductivity : micromho/centimeters

Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.21
Calcite (CaCO3) SI @ 100 F :	-0.06
Calcite (CaCO3) SI @ 120 F :	0.16
Calcite (CaCO3) SI @ 140 F :	0.37
Calcite (CaCO3) SI @ 160 F :	0.60
Calcite (CaCO3) SI @ 180 F :	0.83
Calcite (CaCO3) SI @ 200 F :	1.07

Gypsum (CaSO4) SI : -1.80

Barite (BaSO4) SI : 1.98

Celestite (SrSO4) SI : -0.88

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	40.4
Calcite PTB @ 140 F :	80.9
Calcite PTB @ 160 F :	112.2
Calcite PTB @ 180 F :	133.1
Calcite PTB @ 200 F :	146.8

Gypsum PTB : N/A

Barite PTB : 8.6

Celestite PTB : N/A



Water Analysis Report

07-Aug-08
Date Sampled : 28-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 09-224 PAD #14

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :
cc1 :
cc2 :
cc3 :

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	163	mg/l
Magnesium :	48	mg/l
Barium :	17	mg/l
Strontium :	17	mg/l
Iron :	8.0	mg/l
Manganese :	0.5	mg/l
Sodium :	6464	mg/l

ANIONS

Chloride :	9,340	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,586	mg/l
Sulfate :	213	mg/l

pH (field) :	6.00		Specific Gravity :	1.010	grams/ml
Temperature :	85	degrees F	Total Dissolved Solids :	17,856	ppm
Ionic Strength :	0.29		CO2 in Water :	220	mg/l
Conductivity:		micromho/centimeters	Mole % CO2 in Gas:		mole %
Ammonia :		ppm	H2S in Water :	0.0	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.28	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.12	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	0.09	Calcite PTB @ 120 F :	20.0
Calcite (CaCO3) SI @ 140 F :	0.30	Calcite PTB @ 140 F :	60.1
Calcite (CaCO3) SI @ 160 F :	0.53	Calcite PTB @ 160 F :	90.2
Calcite (CaCO3) SI @ 180 F :	0.76	Calcite PTB @ 180 F :	110.2
Calcite (CaCO3) SI @ 200 F :	1.00	Calcite PTB @ 200 F :	123.6
Gypsum (CaSO4) SI :	-2.04	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.86	Barite PTB :	10.0
Celestite (SrSO4) SI :	-1.00	Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 09-421 PAD #11

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	236	mg/l
Magnesium :	36	mg/l
Barium :	26	mg/l
Strontium :	20	mg/l
Iron :	61.0	mg/l
Manganese :	0.5	mg/l
Sodium :	7518	mg/l

ANIONS

Chloride :	11,140	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,586	mg/l
Sulfate :	112	mg/l

pH (field) : 8.50
Temperature : 85 degrees F
Ionic Strength : 0.34

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 20,735 ppm
CO2 In Water : 1,144 mg/l
Mole % CO2 In Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters
Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.92
Calcite (CaCO3) SI @ 100 F :	-0.76
Calcite (CaCO3) SI @ 120 F :	-0.55
Calcite (CaCO3) SI @ 140 F :	-0.33
Calcite (CaCO3) SI @ 160 F :	-0.11
Calcite (CaCO3) SI @ 180 F :	0.12
Calcite (CaCO3) SI @ 200 F :	0.36
Gypsum (CaSO4) SI :	-2.20
Barite (BaSO4) SI :	1.66
Celestite (SrSO4) SI :	-1.26

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	35.5
Calcite PTB @ 200 F :	93.5
Gypsum PTB :	N/A
Barite PTB :	14.9
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 3

Location : Well No. 10-23

Sample Point : bulk separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :

cc1 :

cc2 :

cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	188	mg/l
Magnesium :	9	mg/l
Barium :	206	mg/l
Strontium :	32	mg/l
Iron :	8.0	mg/l
Manganese :	0.0	mg/l
Sodium :	8437	mg/l

ANIONS

Chloride :	12,920	mg/l
Carbonate :	0	mg/l
Bicarbonate :	976	mg/l
Sulfate :	18	mg/l

pH (field) : 6.05
Temperature : 65 degrees F
Ionic Strength : 0.38

Specific Gravity : 1.010 grams/ml
Total Dissolved Solids : 22,794 ppm
CO2 in Water : 32 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.4 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters

Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	0.06
Calcite (CaCO3) SI @ 100 F :	0.21
Calcite (CaCO3) SI @ 120 F :	0.42
Calcite (CaCO3) SI @ 140 F :	0.64
Calcite (CaCO3) SI @ 160 F :	0.88
Calcite (CaCO3) SI @ 180 F :	1.10
Calcite (CaCO3) SI @ 200 F :	1.33
Gypsum (CaSO4) SI :	-3.11
Barite (BaSO4) SI :	1.74
Celestite (SrSO4) SI :	-1.88

Calcite PTB :	12.8
Calcite PTB @ 100 F :	45.0
Calcite PTB @ 120 F :	79.6
Calcite PTB @ 140 F :	106.6
Calcite PTB @ 160 F :	126.5
Calcite PTB @ 180 F :	141.3
Calcite PTB @ 200 F :	149.9
Gypsum PTB :	N/A
Barite PTB :	14.2
Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 10-33 PAD #3

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : wellhead
Salesman : Matt Merkel
Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	239	mg/l
Magnesium :	16	mg/l
Barium :	40	mg/l
Strontium :	17	mg/l
Iron :	5.0	mg/l
Manganese :	0.5	mg/l
Sodium :	8184	mg/l

ANIONS

Chloride :	12,180	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,220	mg/l
Sulfate :	318	mg/l

pH (field) :	6.00
Temperature :	85 degrees F
Ionic Strength :	0.37
Conductivity:	micromho/centimeters
Ammonia :	ppm

Specific Gravity :	1.010	grams/ml
Total Dissolved Solids :	22,220	ppm
CO2 in Water :	352	mg/l
Mole % CO2 in Gas:		mole %
H2S in Water :	0.0	mg/l
Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.67
Calcite (CaCO3) SI @ 100 F :	-0.52
Calcite (CaCO3) SI @ 120 F :	-0.31
Calcite (CaCO3) SI @ 140 F :	-0.09
Calcite (CaCO3) SI @ 160 F :	0.14
Calcite (CaCO3) SI @ 180 F :	0.37
Calcite (CaCO3) SI @ 200 F :	0.61
Gypsum (CaSO4) SI :	-1.76
Barite (BaSO4) SI :	2.28
Celestite (SrSO4) SI :	-0.91

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	39.2
Calcite PTB @ 180 F :	91.4
Calcite PTB @ 200 F :	130.6
Gypsum PTB :	N/A
Barite PTB :	22.9
Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 10-22 PAD #3

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	401	mg/l
Magnesium :	131	mg/l
Barium :	53	mg/l
Strontium :	45	mg/l
Iron :	69.0	mg/l
Manganese :	0.5	mg/l
Sodium :	9469	mg/l

ANIONS

Chloride :	14,800	mg/l
Carbonate :	0	mg/l
Bicarbonate :	915	mg/l
Sulfate :	575	mg/l

pH (field) : 6.50
Temperature : 85 degrees F
Ionic Strength : 0.44

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 26,458 ppm
CO2 in Water : 264 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters
Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.67
Calcite (CaCO3) SI @ 100 F :	-0.51
Calcite (CaCO3) SI @ 120 F :	-0.30
Calcite (CaCO3) SI @ 140 F :	-0.08
Calcite (CaCO3) SI @ 160 F :	0.14
Calcite (CaCO3) SI @ 180 F :	0.37
Calcite (CaCO3) SI @ 200 F :	0.61
Gypsum (CaSO4) SI :	-1.35
Barite (BaSO4) SI :	2.54
Celestite (SrSO4) SI :	-0.32

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	46.6
Calcite PTB @ 180 F :	109.6
Calcite PTB @ 200 F :	167.1
Gypsum PTB :	N/A
Barite PTB :	30.3
Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 10-124 PAD #3

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	312	mg/l
Magnesium :	61	mg/l
Barium :	55	mg/l
Strontium :	21	mg/l
Iron :	8.0	mg/l
Manganese :	0.5	mg/l
Sodium :	9020	mg/l

ANIONS

Chloride :	13,540	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,220	mg/l
Sulfate :	590	mg/l

pH (field) : 6.50
Temperature : 85 degrees F
Ionic Strength : 0.41

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 24,827 ppm
CO2 in Water : 264 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters

Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.49
Calcite (CaCO3) SI @ 100 F :	-0.33
Calcite (CaCO3) SI @ 120 F :	-0.12
Calcite (CaCO3) SI @ 140 F :	0.10
Calcite (CaCO3) SI @ 160 F :	0.32
Calcite (CaCO3) SI @ 180 F :	0.55
Calcite (CaCO3) SI @ 200 F :	0.79
Gypsum (CaSO4) SI :	-1.42
Barite (BaSO4) SI :	2.61
Celestite (SrSO4) SI :	-0.60

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	34.1
Calcite PTB @ 160 F :	98.0
Calcite PTB @ 180 F :	149.2
Calcite PTB @ 200 F :	189.7
Gypsum PTB :	N/A
Barite PTB :	31.0
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Currier

Location : Currier 01-13

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :
cc1 :
cc2 :
cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	293	mg/l
Magnesium :	23	mg/l
Barium :	328	mg/l
Strontium :	149	mg/l
Iron :	115.0	mg/l
Manganese :	2.7	mg/l
Sodium :	7154	mg/l

ANIONS

Chloride :	11,660	mg/l
Carbonate :	0	mg/l
Bicarbonate :	366	mg/l
Sulfate :	47	mg/l

pH (field) :	6.00
Temperature :	85 degrees F
Ionic Strength :	0.34
Conductivity:	micromho/centimeters
Ammonia :	ppm

Specific Gravity :	1.010	grams/ml
Total Dissolved Solids :	20,135	ppm = 19,936 mg/l
CO2 in Water :	185	mg/l
Mole % CO2 in Gas:		mole %
H2S in Water :	1.8	mg/l
Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-1.31
Calcite (CaCO3) SI @ 100 F :	-1.15
Calcite (CaCO3) SI @ 120 F :	-0.94
Calcite (CaCO3) SI @ 140 F :	-0.72
Calcite (CaCO3) SI @ 160 F :	-0.50
Calcite (CaCO3) SI @ 180 F :	-0.27
Calcite (CaCO3) SI @ 200 F :	-0.03
Gypsum (CaSO4) SI :	-2.49
Barite (BaSO4) SI :	2.39
Celestite (SrSO4) SI :	-0.78

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	N/A
Calcite PTB @ 200 F :	N/A
Gypsum PTB :	N/A
Barite PTB :	35.6
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 12-05

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	192	mg/l
Magnesium :	9	mg/l
Barium :	38	mg/l
Strontium :	48	mg/l
Iron :	241.0	mg/l
Manganese :	8.4	mg/l
Sodium :	6740	mg/l

ANIONS

Chloride :	10,560	mg/l
Carbonate :	0	mg/l
Bicarbonate :	415	mg/l
Sulfate :	22	mg/l

pH (field) :	6.50		Specific Gravity :	1.015	grams/ml
Temperature :	85	degrees F	Total Dissolved Solids :	18,265	ppm = 17,995 mg/l
Ionic Strength :	0.31		CO2 In Water :	35	mg/l
Conductivity:		micromho/centimeters	Mole % CO2 In Gas:		mole %
Ammonia :		ppm	H2S In Water :	0.0	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.61	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.45	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.24	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	-0.03	Calcite PTB @ 140 F :	N/A
Calcite (CaCO3) SI @ 160 F :	0.20	Calcite PTB @ 160 F :	30.2
Calcite (CaCO3) SI @ 180 F :	0.43	Calcite PTB @ 180 F :	58.4
Calcite (CaCO3) SI @ 200 F :	0.67	Calcite PTB @ 200 F :	83.3
Gypsum (CaSO4) SI :	-2.98	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.20	Barite PTB :	14.5
Celestite (SrSO4) SI :	-1.54	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 12-12

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	118	mg/l
Magnesium :	12	mg/l
Barium :	1,113	mg/l
Strontium :	2,945	mg/l
Iron :	452.0	mg/l
Manganese :	11.9	mg/l
Sodium :	3297	mg/l

ANIONS

Chloride :	7,060	mg/l
Carbonate :	0	mg/l
Bicarbonate :	732	mg/l
Sulfate :	1,083	mg/l

pH (field) :	6.00		Specific Gravity :	1.005	grams/ml
Temperature :	85	degrees F	Total Dissolved Solids :	16,812	ppm = 16,728 mg/l
Ionic Strength :	0.23		CO2 In Water :	220	mg/l
Conductivity:		micromho/centimeters	Mole % CO2 In Gas:		mole %
Ammonia :		ppm	H2S In Water :	0.0	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.97	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.82	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.61	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	-0.39	Calcite PTB @ 140 F :	N/A
Calcite (CaCO3) SI @ 160 F :	-0.16	Calcite PTB @ 160 F :	N/A
Calcite (CaCO3) SI @ 180 F :	0.07	Calcite PTB @ 180 F :	11.3
Calcite (CaCO3) SI @ 200 F :	0.31	Calcite PTB @ 200 F :	41.1
Gypsum (CaSO4) SI :	-1.64	Gypsum PTB :	N/A
Barite (BaSO4) SI :	4.27	Barite PTB :	567.6
Celestite (SrSO4) SI :	1.82	Celestite PTB :	438.5



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 14-01

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : water tank

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	318	mg/l
Magnesium :	5	mg/l
Barium :	188	mg/l
Strontium :	79	mg/l
Iron :	36.0	mg/l
Manganese :	2.4	mg/l
Sodium :	9263	mg/l

ANIONS

Chloride :	14,740	mg/l
Carbonate :	0	mg/l
Bicarbonate :	439	mg/l
Sulfate :	34	mg/l

pH (field) :	7.00
Temperature :	85 degrees F
Ionic Strength :	0.42
Conductivity :	micromho/centimeters
Ammonia :	ppm

Specific Gravity :	1.020	grams/ml
Total Dissolved Solids :	25,100	ppm = 24,608 mg/l
CO2 In Water :	70	mg/l
Mole % CO2 in Gas :		mole %
H2S In Water :	0.0	mg/l
Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.80
Calcite (CaCO3) SI @ 100 F :	-0.65
Calcite (CaCO3) SI @ 120 F :	-0.44
Calcite (CaCO3) SI @ 140 F :	-0.22
Calcite (CaCO3) SI @ 160 F :	0.01
Calcite (CaCO3) SI @ 180 F :	0.24
Calcite (CaCO3) SI @ 200 F :	0.48
Gypsum (CaSO4) SI :	-2.84
Barite (BaSO4) SI :	1.91
Celestite (SrSO4) SI :	-1.26

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	2.2
Calcite PTB @ 180 F :	43.4
Calcite PTB @ 200 F :	80.4
Gypsum PTB :	N/A
Barite PTB :	26.4
Celestite PTB :	N/A



Water Analysis Report

07-Aug-08
Date Sampled : 17-Jul-08
Date Received : 22-Jul-08
Date Reported : 04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Weme

Location : Weme 14-12

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	430	mg/l
Magnesium :	12	mg/l
Barium :	67	mg/l
Strontium :	49	mg/l
Iron :	16.0	mg/l
Manganese :	2.2	mg/l
Sodium :	11565	mg/l

ANIONS

Chloride :	18,440	mg/l
Carbonate :	0	mg/l
Bicarbonate :	390	mg/l
Sulfate :	49	mg/l

pH (field) :	6.50
Temperature :	85 degrees F
Ionic Strength :	0.53
Conductivity:	micromho/centimeters
Ammonia :	ppm

Specific Gravity :	1.020	grams/ml
Total Dissolved Solids :	31,018	ppm = 30,410 mg/l
CO2 In Water :	158	mg/l
Mole % CO2 In Gas:		mole %
H2S In Water :	0.0	mg/l
Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-1.25
Calcite (CaCO3) SI @ 100 F :	-1.10
Calcite (CaCO3) SI @ 120 F :	-0.89
Calcite (CaCO3) SI @ 140 F :	-0.67
Calcite (CaCO3) SI @ 160 F :	-0.44
Calcite (CaCO3) SI @ 180 F :	-0.21
Calcite (CaCO3) SI @ 200 F :	0.03
Gypsum (CaSO4) SI :	-2.41
Barite (BaSO4) SI :	1.51
Celestite (SrSO4) SI :	-1.39

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	N/A
Calcite PTB @ 200 F :	5.2
Gypsum PTB :	N/A
Barite PTB :	32.5
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 14-06

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA

CATIONS

Calcium :	664	mg/l
Magnesium :	160	mg/l
Barium :	259	mg/l
Strontium :	111	mg/l
Iron :	45.0	mg/l
Manganese :	2.6	mg/l
Sodium :	9838	mg/l

ANIONS

Chloride :	16,560	mg/l
Carbonate :	0	mg/l
Bicarbonate :	731	mg/l
Sulfate :	67	mg/l

pH (field) :	6.00	Specific Gravity :	1.015	grams/ml	
Temperature :	85	degrees F	Total Dissolved Solids :	28,435	ppm = 28,015 mg/l
Ionic Strength :	0.48	CO2 in Water :	158	mg/l	
Conductivity :	micromho/centimeters	Mole % CO2 in Gas :		mole %	
Ammonia :	ppm	H2S in Water :	0.0	mg/l	
		Dissolved Oxygen :		ppm	

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.46	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.31	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.10	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	0.12	Calcite PTB @ 140 F :	40.8
Calcite (CaCO3) SI @ 160 F :	0.34	Calcite PTB @ 160 F :	106.6
Calcite (CaCO3) SI @ 180 F :	0.58	Calcite PTB @ 180 F :	165.6
Calcite (CaCO3) SI @ 200 F :	0.81	Calcite PTB @ 200 F :	213.2
Gypsum (CaSO4) SI :	-2.09	Gypsum PTB :	N/A
Barite (BaSO4) SI :	2.25	Barite PTB :	48.6
Celestite (SrSO4) SI :	-0.90	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 18-Jul-08
Date Reported : 23-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Currier

Location : Currier 10-15

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :

cc1 :

cc2 :

cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	374	mg/l
Magnesium :	26	mg/l
Barium :	262	mg/l
Strontium :	139	mg/l
Iron :	33.0	mg/l
Manganese :	0.7	mg/l
Sodium :	10017	mg/l

ANIONS

Chloride :	18,140	mg/l
Carbonate :	0	mg/l
Bicarbonate :	439	mg/l
Sulfate :	49	mg/l

pH (field) :	6.90
Temperature :	85 degrees F
Ionic Strength :	0.46

Specific Gravity :	1.020	grams/ml
Total Dissolved Solids :	27,479	ppm
CO2 In Water :	264	mg/l

Conductivity : micromho/centimeters

Mole % CO2 In Gas : mole %

Ammonia : ppm

H2S in Water : 85.0 mg/l

Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-1.36
Calcite (CaCO3) SI @ 100 F :	-1.20
Calcite (CaCO3) SI @ 120 F :	-0.99
Calcite (CaCO3) SI @ 140 F :	-0.77
Calcite (CaCO3) SI @ 160 F :	-0.55
Calcite (CaCO3) SI @ 180 F :	-0.32
Calcite (CaCO3) SI @ 200 F :	-0.08
Gypsum (CaSO4) SI :	-2.44
Barite (BaSO4) SI :	2.17
Celestite (SrSO4) SI :	-0.89

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	N/A
Calcite PTB @ 200 F :	N/A
Gypsum PTB :	N/A
Barite PTB :	37.9
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 15-16

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :
cc1 :
cc2 :
cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium : 304 mg/l
Magnesium : 22 mg/l
Barium : 338 mg/l
Strontium : 118 mg/l
Iron : 40.0 mg/l
Manganese : 2.6 mg/l
Sodium : 9168 mg/l

ANIONS

Chloride : 14,720 mg/l
Carbonate : 0 mg/l
Bicarbonate : 439 mg/l
Sulfate : 45 mg/l

pH (field) : 7.00
Temperature : 85 degrees F
Ionic Strength : 0.42
Conductivity : micromho/centimeters
Ammonia : ppm

Specific Gravity : 1.020 grams/ml
Total Dissolved Solids : 25,194 ppm = 24,700 mg/l
CO2 in Water : 150 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI : -1.15
Calcite (CaCO3) SI @ 100 F : -1.00
Calcite (CaCO3) SI @ 120 F : -0.79
Calcite (CaCO3) SI @ 140 F : -0.57
Calcite (CaCO3) SI @ 160 F : -0.35
Calcite (CaCO3) SI @ 180 F : -0.11
Calcite (CaCO3) SI @ 200 F : 0.13
Gypsum (CaSO4) SI : -2.54
Barite (BaSO4) SI : 2.29
Celestite (SrSO4) SI : -0.97

Calcite PTB : N/A
Calcite PTB @ 100 F : N/A
Calcite PTB @ 120 F : N/A
Calcite PTB @ 140 F : N/A
Calcite PTB @ 160 F : N/A
Calcite PTB @ 180 F : N/A
Calcite PTB @ 200 F : 24.9
Gypsum PTB : N/A
Barite PTB : 34.9
Celestite PTB : N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 17-Jul-08
Date Reported : 22-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 15-10

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium : 425 mg/l
Magnesium : 96 mg/l
Barium : 917 mg/l
Strontium : 895 mg/l
Iron : 49.0 mg/l
Manganese : 2.7 mg/l
Sodium : 9945 mg/l

ANIONS

Chloride : 17,270 mg/l
Carbonate : 0 mg/l
Bicarbonate : 464 mg/l
Sulfate : 33 mg/l

pH (field) : 7.00
Temperature : 85 degrees F
Ionic Strength : 0.50

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 30,094 ppm = 29,049 mg/l
CO2 in Water : 123 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters

Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI : -0.97
Calcite (CaCO3) SI @ 100 F : -0.81
Calcite (CaCO3) SI @ 120 F : -0.60
Calcite (CaCO3) SI @ 140 F : -0.38
Calcite (CaCO3) SI @ 160 F : -0.16
Calcite (CaCO3) SI @ 180 F : 0.07
Calcite (CaCO3) SI @ 200 F : 0.31

Gypsum (CaSO4) SI : -2.61

Barite (BaSO4) SI : 2.46

Celestite (SrSO4) SI : -0.32

Calcite PTB : N/A

Calcite PTB @ 100 F : N/A

Calcite PTB @ 120 F : N/A

Calcite PTB @ 140 F : N/A

Calcite PTB @ 160 F : N/A

Calcite PTB @ 180 F : 14.5

Calcite PTB @ 200 F : 62.4

Gypsum PTB : N/A

Barite PTB : 23.6

Celestite PTB : N/A

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Vernal District Technical Services



Water Analysis Report

07-Aug-08
Date Sampled : 18-Jul-08
Date Received : 23-Jul-08
Date Reported : 04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Currier

Location : Currier 09-15

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :
cc1 :
cc2 :
cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	202	mg/l
Magnesium :	9	mg/l
Barium :	148	mg/l
Strontium :	81	mg/l
Iron :	66.0	mg/l
Manganese :	1.2	mg/l
Sodium :	8045	mg/l

ANIONS

Chloride :	12,620	mg/l
Carbonate :	0	mg/l
Bicarbonate :	464	mg/l
Sulfate :	55	mg/l

pH (field) : 6.50
Temperature : 85 degrees F
Ionic Strength : 0.38

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 21,690 ppm
CO2 in Water : 264 mg/l

Conductivity : micromho/centimeters

Mole % CO2 in Gas : mole %

Ammonia : ppm

H2S in Water : 0.0 mg/l

Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-1.45
Calcite (CaCO3) SI @ 100 F :	-1.29
Calcite (CaCO3) SI @ 120 F :	-1.08
Calcite (CaCO3) SI @ 140 F :	-0.86
Calcite (CaCO3) SI @ 160 F :	-0.64
Calcite (CaCO3) SI @ 180 F :	-0.41
Calcite (CaCO3) SI @ 200 F :	-0.17
Gypsum (CaSO4) SI :	-2.58
Barite (BaSO4) SI :	2.11
Celestite (SrSO4) SI :	-0.97

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	N/A
Calcite PTB @ 200 F :	N/A
Gypsum PTB :	N/A
Barite PTB :	43.2
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 18-Jul-08
Date Reported : 23-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 16-12

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :
cc1 :
cc2 :
cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	258	mg/l
Magnesium :	5	mg/l
Barium :	167	mg/l
Strontium :	76	mg/l
Iron :	37.0	mg/l
Manganese :	0.6	mg/l
Sodium :	9767	mg/l

ANIONS

Chloride :	15,420	mg/l
Carbonate :	0	mg/l
Bicarbonate :	366	mg/l
Sulfate :	63	mg/l

pH (field) : 6.40
Temperature : 85 degrees F
Ionic Strength : 0.44

Specific Gravity : 1.010 grams/ml
Total Dissolved Solids : 26,159 ppm = 25,900 mg/l
CO2 in Water : 220 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters

Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-1.57
Calcite (CaCO3) SI @ 100 F :	-1.42
Calcite (CaCO3) SI @ 120 F :	-1.21
Calcite (CaCO3) SI @ 140 F :	-0.99
Calcite (CaCO3) SI @ 160 F :	-0.77
Calcite (CaCO3) SI @ 180 F :	-0.53
Calcite (CaCO3) SI @ 200 F :	-0.30
Gypsum (CaSO4) SI :	-2.47
Barite (BaSO4) SI :	2.11
Celestite (SrSO4) SI :	-1.02

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	N/A
Calcite PTB @ 200 F :	N/A
Gypsum PTB :	N/A
Barite PTB :	49.8
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 18-Jul-08
Date Reported : 23-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 16-01

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :

cc1 :

cc2 :

cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	97	mg/l
Magnesium :	10	mg/l
Barium :	62	mg/l
Strontium :	1	mg/l
Iron :	140.0	mg/l
Manganese :	1.7	mg/l
Sodium :	2208	mg/l

ANIONS

Chloride :	3,460	mg/l
Carbonate :	0	mg/l
Bicarbonate :	244	mg/l
Sulfate :	52	mg/l

pH (field) :	8.00	Specific Gravity :	1.005	grams/ml	
Temperature :	85	degrees F	Total Dissolved Solids :	6,275	ppm = 6,244 mg/l
Ionic Strength :	0.10	CO2 In Water :	440	mg/l	
Conductivity :		micromho/centimeters	Mole % CO2 In Gas :		mole %
Ammonia :		ppm	H2S In Water :	0.0	mg/l
			Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-1.93	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-1.78	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-1.57	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	-1.35	Calcite PTB @ 140 F :	N/A
Calcite (CaCO3) SI @ 160 F :	-1.12	Calcite PTB @ 160 F :	N/A
Calcite (CaCO3) SI @ 180 F :	-0.89	Calcite PTB @ 180 F :	N/A
Calcite (CaCO3) SI @ 200 F :	-0.65	Calcite PTB @ 200 F :	N/A
Gypsum (CaSO4) SI :	-2.67	Gypsum PTB :	N/A
Barite (BaSO4) SI :	2.24	Barite PTB :	34.7
Celestite (SrSO4) SI :	-2.52	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 18-Jul-08
Date Reported : 23-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 15-12

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :

cc1 :

cc2 :

cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium : 83 mg/l
Magnesium : 2 mg/l
Barium : 103 mg/l
Strontium : 24 mg/l
Iron : 0.0 mg/l
Manganese : 1.4 mg/l
Sodium : 3746 mg/l

ANIONS

Chloride : 5,820 mg/l
Carbonate : 0 mg/l
Bicarbonate : 268 mg/l
Sulfate : 35 mg/l

pH (field) : 6.50
Temperature : 85 degrees F
Ionic Strength : 0.17

Specific Gravity : 1.005 grams/ml
Total Dissolved Solids : 10,081 ppm = 10,031 mg/l
CO2 in Water : 343 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters
Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI : -2.04
Calcite (CaCO3) SI @ 100 F : -1.89
Calcite (CaCO3) SI @ 120 F : -1.88
Calcite (CaCO3) SI @ 140 F : -1.46
Calcite (CaCO3) SI @ 160 F : -1.23
Calcite (CaCO3) SI @ 180 F : -1.00
Calcite (CaCO3) SI @ 200 F : -0.76
Gypsum (CaSO4) SI : -2.99
Barite (BaSO4) SI : 2.11
Celestite (SrSO4) SI : -1.44

Calcite PTB : N/A
Calcite PTB @ 100 F : N/A
Calcite PTB @ 120 F : N/A
Calcite PTB @ 140 F : N/A
Calcite PTB @ 160 F : N/A
Calcite PTB @ 180 F : N/A
Calcite PTB @ 200 F : N/A
Gypsum PTB : N/A
Barite PTB : 27.6
Celestite PTB : N/A



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 18-Jul-08
Date Reported : 23-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 21-01

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :

cc1 :

cc2 :

cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	928	mg/l
Magnesium :	85	mg/l
Barium :	1,053	mg/l
Strontium :	863	mg/l
Iron :	616.0	mg/l
Manganese :	13.6	mg/l
Sodium :	11546	mg/l

ANIONS

Chloride :	20,180	mg/l
Carbonate :	0	mg/l
Bicarbonate :	268	mg/l
Sulfate :	813	mg/l

pH (field) :	6.00
Temperature :	85 degrees F
Ionic Strength :	0.59

Specific Gravity :	1.020	grams/ml
Total Dissolved Solids :	36,352	ppm
CO2 in Water :	792	mg/l

Conductivity : micromho/centimeters

Mole % CO2 in Gas : mole %

H2S in Water : 0.0 mg/l

Ammonia : ppm

Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-2.00
Calcite (CaCO3) SI @ 100 F :	-1.84
Calcite (CaCO3) SI @ 120 F :	-1.63
Calcite (CaCO3) SI @ 140 F :	-1.41
Calcite (CaCO3) SI @ 160 F :	-1.19
Calcite (CaCO3) SI @ 180 F :	-0.96
Calcite (CaCO3) SI @ 200 F :	-0.72
Gypsum (CaSO4) SI :	-0.95
Barite (BaSO4) SI :	3.80
Celestite (SrSO4) SI :	0.97

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	N/A
Calcite PTB @ 180 F :	N/A
Calcite PTB @ 200 F :	N/A
Gypsum PTB :	N/A
Barite PTB :	574.4
Celestite PTB :	343.6



Water Analysis Report

Date Sampled : 07-Aug-08
Date Received : 18-Jul-08
Date Reported : 23-Jul-08
04-Aug-08

Delta Petroleum

Field : Buzzard Creek
Lease : Buzzard Creek

Location : Buzzard Creek 16-10

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA

CATIONS

Calcium : 183 mg/l
Magnesium : 15 mg/l
Barium : 309 mg/l
Strontium : 84 mg/l
Iron : 11.0 mg/l
Manganese : 0.2 mg/l
Sodium : 8945 mg/l

ANIONS

Chloride : 13,860 mg/l
Carbonate : 0 mg/l
Bicarbonate : 854 mg/l
Sulfate : 44 mg/l

pH (field) : 8.80
Temperature : 85 degrees F
Ionic Strength : 0.41

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 24,305 ppm = 23,946 mg/l
CO2 in Water : 220 mg/l

Conductivity : micromho/centimeters

Mole % CO2 in Gas : mole %

Ammonia : ppm

H2S in Water : 0.0 mg/l

Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI : -0.95
Calcite (CaCO3) SI @ 100 F : -0.80
Calcite (CaCO3) SI @ 120 F : -0.58
Calcite (CaCO3) SI @ 140 F : -0.37
Calcite (CaCO3) SI @ 160 F : -0.14
Calcite (CaCO3) SI @ 180 F : 0.09
Calcite (CaCO3) SI @ 200 F : 0.33
Gypsum (CaSO4) SI : -2.75
Barite (BaSO4) SI : 2.28
Celestite (SrSO4) SI : -1.10

Calcite PTB : N/A
Calcite PTB @ 100 F : N/A
Calcite PTB @ 120 F : N/A
Calcite PTB @ 140 F : N/A
Calcite PTB @ 160 F : N/A
Calcite PTB @ 180 F : 20.0
Calcite PTB @ 200 F : 62.5
Gypsum PTB : N/A
Barite PTB : 35.0
Celestite PTB : N/A



Water Analysis Report

27-Jun-12
Date Sampled : 04-Jun-12
Date Received : 18-Jun-12
Date Reported : 28-Jun-12

Laramie Energy

Field : Bruton
Lease : Bruton 19-14

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Location : Bruton 19-10C

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Aimee Massey

Comments : Phosphorus= 0.849ppm. Metals analyzed by ICP.

CATIONS

Calcium : 194 mg/l
Magnesium : 20 mg/l
Barium : 96 mg/l
Strontium : 24 mg/l
Iron : 8.0 mg/l
Manganese : 0.2 mg/l
Sodium : 8767 mg/l

ANIONS

Chloride : 13,400 mg/l
Carbonate : 0 mg/l
Bicarbonate : 1,013 mg/l
Sulfate : 1 mg/l

pH (field) : 6.70
Temperature : 85 degrees F
Ionic Strength : 0.39
Dissolved Solids : 23,523 ppm
Resistivity : ohm-meters
Ammonia : ppm

Specific Gravity : 1.010 grams/ml

CO₂ in Water : 92 mg/l
Mole % CO₂ in Gas : mole %
H₂S in Water : 0.0 mg/l
H₂S in gas : ppm
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.37	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.22	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	-0.01	Calcite PTB @ 120 F :	N/A
Calcite (CaCO ₃) SI @ 140 F :	0.21	Calcite PTB @ 140 F :	46.4
Calcite (CaCO ₃) SI @ 160 F :	0.44	Calcite PTB @ 160 F :	84.8
Calcite (CaCO ₃) SI @ 180 F :	0.67	Calcite PTB @ 180 F :	114.0
Calcite (CaCO ₃) SI @ 200 F :	0.91	Calcite PTB @ 200 F :	134.5
Gypsum (CaSO ₄) SI :	-4.35	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	0.14	Barite PTB :	0.2
Celestite (SrSO ₄) SI :	-3.27	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<-0.0	Under Saturated for Calcite; non-scaling
-0.0 to 0.0	Slightly supersaturated; likelihood for scale formation is marginal
0.0 to 1.0	Scale is likely to occur but should not be severe
1.0 to 2.0	Scale almost certain to occur, should be strongly scaling
>2.0	Severe scaling situation



Water Analysis Report

27-Jun-12

Date Sampled : 04-Jun-12

Date Received : 18-Jun-12

Date Reported : 28-Jun-12

Laramie Energy

Field : Bruton

Lease : Bruton 19-14

Location : Bruton 30-02B

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Almee Massey

Comments : Phosphorus= 0.619ppm. Metals analyzed by ICP.

CATIONS

Calcium :	183	mg/l
Magnesium :	17	mg/l
Barium :	72	mg/l
Strontium :	26	mg/l
Iron :	12.0	mg/l
Manganese :	0.2	mg/l
Sodium :	8158	mg/l

ANIONS

Chloride :	12,400	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,049	mg/l
Sulfate :	1	mg/l

pH (field) :	6.69
Temperature :	85 degrees F
Ionic Strength :	0.37
Dissolved Solids :	21,918 ppm
Resistivity :	ohm-meters
Ammonia :	ppm

Specific Gravity :	1.013	grams/ml
CO ₂ in Water :	94	mg/l
Mole % CO ₂ in Gas :		mole %
H ₂ S in Water :	0.0	mg/l
H ₂ S in gas :		ppm
Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.35	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.19	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	0.02	Calcite PTB @ 120 F :	5.0
Calcite (CaCO ₃) SI @ 140 F :	0.24	Calcite PTB @ 140 F :	50.0
Calcite (CaCO ₃) SI @ 160 F :	0.46	Calcite PTB @ 160 F :	85.0
Calcite (CaCO ₃) SI @ 180 F :	0.69	Calcite PTB @ 180 F :	111.3
Calcite (CaCO ₃) SI @ 200 F :	0.93	Calcite PTB @ 200 F :	129.4
Gypsum (CaSO ₄) SI :	-4.36	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	0.04	Barite PTB :	0.1
Celestite (SrSO ₄) SI :	-3.21	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<0.0	Under Saturated for Calcite; non-scaling
0.0-0.5	Slightly supersaturated; likelihood for scale formation is marginal
0.5-1.0	Scale is likely to occur but should not be severe
1.1-2.0	Scale almost certain to occur, should be strongly scaling
>2.0	Severe scaling situation

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Champion Technologies, Inc.

Vernal District Technical Services



Water Analysis Report

27-Jun-12

Date Sampled :

04-Jun-12

Date Received :

18-Jun-12

Date Reported :

28-Jun-12

Laramie Energy

Field : Bruton

Lease : Bruton 19-14

Location : Bruton 19-06C

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Aimee Massey

Comments : Phosphorus= 2.318ppm. Metals analyzed by ICP.

CATIONS

Calcium :	224	mg/l
Magnesium :	23	mg/l
Barium :	105	mg/l
Strontium :	29	mg/l
Iron :	8.0	mg/l
Manganese :	0.1	mg/l
Sodium :	9028	mg/l

ANIONS

Chloride :	14,000	mg/l
Carbonate :	0	mg/l
Bicarbonate :	793	mg/l
Sulfate :	1	mg/l

pH (field) :	6.82
Temperature :	85 degrees F
Ionic Strength :	0.41
Dissolved Solids :	24,211 ppm
Resistivity :	ohm-meters
Ammonia :	ppm

Specific Gravity :	1.015	grams/ml
CO ₂ in Water :	60	mg/l
Mole % CO ₂ in Gas :		mole %
H ₂ S in Water :	0.0	mg/l
H ₂ S in gas :		ppm
Dissolved Oxygen :		ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.36	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.21	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	0.00	Calcite PTB @ 120 F :	N/A
Calcite (CaCO ₃) SI @ 140 F :	0.22	Calcite PTB @ 140 F :	49.0
Calcite (CaCO ₃) SI @ 160 F :	0.45	Calcite PTB @ 160 F :	88.8
Calcite (CaCO ₃) SI @ 180 F :	0.68	Calcite PTB @ 180 F :	120.9
Calcite (CaCO ₃) SI @ 200 F :	0.92	Calcite PTB @ 200 F :	145.4
Gypsum (CaSO ₄) SI :	-4.31	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	0.15	Barite PTB :	0.2
Celestite (SrSO ₄) SI :	-3.20	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<0.0	Under Saturated for Calcite: non-scaling
0.0-0.5	Slightly supersaturated; likelihood for scale formation is marginal
0.5-1.0	Scale is likely to occur but should not be severe
1.1-2.0	Scale almost certain to occur, should be strongly scaling
>2.0	Severe scaling situation

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Vernal District Technical Services



Water Analysis Report

27-Jun-12
04-Jun-12
18-Jun-12
28-Jun-12

Date Sampled :
Date Received :
Date Reported :

Laramie Energy

Field : Bruton
Lease : Bruton 19-14

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Location : Bruton 19-14B

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Aimee Massey

Comments : Phosphorus= 0.00ppm. Metals analyzed by ICP.

CATIONS

Calcium : 318 mg/l
Magnesium : 22 mg/l
Barium : 33 mg/l
Strontium : 63 mg/l
Iron : 44.0 mg/l
Manganese : 0.6 mg/l
Sodium : 8841 mg/l

ANIONS

Chloride : 14,000 mg/l
Carbonate : 0 mg/l
Bicarbonate : 561 mg/l
Sulfate : 1 mg/l

pH (field) : 6.67
Temperature : 85 degrees F
Ionic Strength : 0.40
Dissolved Solids : 23,883 ppm
Resistivity : ohm-meters
Ammonia : ppm

Specific Gravity : 1.014 grams/ml
CO₂ in Water : 160 mg/l
Mole % CO₂ in Gas : mole %
H₂S in Water : 0.0 mg/l
H₂S in gas : ppm
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.92	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.77	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	-0.56	Calcite PTB @ 120 F :	N/A
Calcite (CaCO ₃) SI @ 140 F :	-0.34	Calcite PTB @ 140 F :	N/A
Calcite (CaCO ₃) SI @ 160 F :	-0.11	Calcite PTB @ 160 F :	N/A
Calcite (CaCO ₃) SI @ 180 F :	0.12	Calcite PTB @ 180 F :	26.1
Calcite (CaCO ₃) SI @ 200 F :	0.36	Calcite PTB @ 200 F :	73.9
Gypsum (CaSO ₄) SI :	-4.15	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	-0.34	Barite PTB :	N/A
Celestite (SrSO ₄) SI :	-2.87	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<0.0	Under Saturated for Calcite; non-scaling
0.0-0.5	Slightly supersaturated; likelihood for scale formation is marginal
0.5-1.0	Scale is likely to occur but should not be severe
1.1-2.0	Scale almost certain to occur, should be strongly scaling
>2.0	Severe scaling situation

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Vernal District Technical Services



Water Analysis Report

07-Aug-08
Date Sampled : 26-Nov-07
Date Received : 29-Nov-07
Date Reported : 20-Dec-07

Delta Petroleum

Field : Vega
Lease : Vega

Location : Well No. 34-124 PAD #13

Attention :
cc1 :
cc2 :
cc3 :

Sample Point : wellhead

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : METALS ANALYZED BY ICP/AA.

CATIONS

Calcium :	588	mg/l
Magnesium :	158	mg/l
Barium :	0	mg/l
Strontium :	38	mg/l
Iron :	36.0	mg/l
Manganese :	0.5	mg/l
Sodium :	5649	mg/l

ANIONS

Chloride :	9,880	mg/l
Carbonate :	0	mg/l
Bicarbonate :	488	mg/l
Sulfate :	108	mg/l

pH (field) : 6.00
Temperature : 85 degrees F
Ionic Strength : 0.29

Specific Gravity : 1.010 grams/ml
Total Dissolved Solids : 16,945 ppm
CO2 in Water : 220 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
Dissolved Oxygen : ppm

Conductivity : micromho/centimeters
Ammonia : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.75
Calcite (CaCO3) SI @ 100 F :	-0.59
Calcite (CaCO3) SI @ 120 F :	-0.38
Calcite (CaCO3) SI @ 140 F :	-0.16
Calcite (CaCO3) SI @ 160 F :	0.06
Calcite (CaCO3) SI @ 180 F :	0.29
Calcite (CaCO3) SI @ 200 F :	0.53
Gypsum (CaSO4) SI :	-1.84
Barite (BaSO4) SI :	-0.09
Celestite (SrSO4) SI :	-1.00

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	N/A
Calcite PTB @ 160 F :	15.3
Calcite PTB @ 180 F :	65.7
Calcite PTB @ 200 F :	109.5
Gypsum PTB :	N/A
Barite PTB :	N/A
Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 13

Location : Well No. 33-42

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : bul separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	188	mg/l
Magnesium :	7	mg/l
Barium :	67	mg/l
Strontium :	47	mg/l
Iron :	11.0	mg/l
Manganese :	0.0	mg/l
Sodium :	9778	mg/l

ANIONS

Chloride :	14,380	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,903	mg/l
Sulfate :	19	mg/l

pH (field) :	6.27	Specific Gravity :	1.015	grams/ml	
Temperature :	81	degrees F	Total Dissolved Solids :	26,398	ppm
Ionic Strength :	0.44		CO2 in Water :	142	mg/l
Conductivity:	micromho/centimeters	Mole % CO2 in Gas:		mole %	
Ammonia :	ppm	H2S in Water :	0.1	mg/l	
		Dissolved Oxygen :		ppm	

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.13	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	0.06	Calcite PTB @ 100 F :	17.8
Calcite (CaCO3) SI @ 120 F :	0.27	Calcite PTB @ 120 F :	63.5
Calcite (CaCO3) SI @ 140 F :	0.49	Calcite PTB @ 140 F :	99.1
Calcite (CaCO3) SI @ 160 F :	0.71	Calcite PTB @ 160 F :	122.6
Calcite (CaCO3) SI @ 180 F :	0.95	Calcite PTB @ 180 F :	138.5
Calcite (CaCO3) SI @ 200 F :	1.18	Calcite PTB @ 200 F :	148.3
Gypsum (CaSO4) SI :	-3.12	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.22	Barite PTB :	14.1
Celestite (SrSO4) SI :	-1.74	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 2

Location : Well No. 34-14

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : test separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	139	mg/l
Magnesium :	6	mg/l
Barium :	27	mg/l
Strontium :	21	mg/l
Iron :	3.0	mg/l
Manganese :	0.0	mg/l
Sodium :	9566	mg/l

ANIONS

Chloride :	14,200	mg/l
Carbonate :	0	mg/l
Bicarbonate :	1,420	mg/l
Sulfate :	27	mg/l

pH (field) :	8.09	Specific Gravity :	1.010	grams/ml	
Temperature :	84	degrees F	Total Dissolved Solids :	25,409	ppm
Ionic Strength :	0.42	CO2 in Water :	127	mg/l	
Conductivity :	micromho/centimeters	Mole % CO2 in Gas :		mole %	
Ammonia :	ppm	H2S in Water :	0.1	mg/l	
		Dissolved Oxygen :		ppm	

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.41	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.25	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.04	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	0.18	Calcite PTB @ 140 F :	34.2
Calcite (CaCO3) SI @ 160 F :	0.41	Calcite PTB @ 160 F :	65.5
Calcite (CaCO3) SI @ 180 F :	0.64	Calcite PTB @ 180 F :	86.4
Calcite (CaCO3) SI @ 200 F :	0.88	Calcite PTB @ 200 F :	100.7
Gypsum (CaSO4) SI :	-3.08	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.00	Barite PTB :	12.4
Celestite (SrSO4) SI :	-1.91	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
Date Reported : 25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 14

Location : Well No. 34-431

Sample Point : test unit separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Attention :

cc1 :

cc2 :

cc3 :

Comments : Metals analyzed by AA.

CATIONS

Calcium :	26	mg/l
Magnesium :	26	mg/l
Barium :	155	mg/l
Strontium :	73	mg/l
Iron :	17.0	mg/l
Manganese :	0.2	mg/l
Sodium :	10461	mg/l

ANIONS

Chloride :	15,900	mg/l
Carbonate :	0	mg/l
Bicarbonate :	795	mg/l
Sulfate :	41	mg/l

pH (field) :	6.97	Specific Gravity :	1.015	grams/ml	
Temperature :	76	degrees F	Total Dissolved Solids :	27,494	ppm
Ionic Strength :	0.46	CO2 in Water :	320	mg/l	
Conductivity:	micromho/centimeters	Mole % CO2 in Gas:	mole %		
Ammonia :	ppm	H2S in Water :	0.1	mg/l	
		Dissolved Oxygen :	ppm		

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-2.17	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-1.93	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-1.72	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	-1.50	Calcite PTB @ 140 F :	N/A
Calcite (CaCO3) SI @ 160 F :	-1.27	Calcite PTB @ 160 F :	N/A
Calcite (CaCO3) SI @ 180 F :	-1.04	Calcite PTB @ 180 F :	N/A
Calcite (CaCO3) SI @ 200 F :	-0.80	Calcite PTB @ 200 F :	N/A
Gypsum (CaSO4) SI :	-3.65	Gypsum PTB :	N/A
Barite (BaSO4) SI :	1.93	Barite PTB :	33.5
Celestite (SrSO4) SI :	-1.24	Celestite PTB :	N/A



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 14

Location : Well No. 34-224

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium :	242	mg/l
Magnesium :	2	mg/l
Barium :	200	mg/l
Strontium :	89	mg/l
Iron :	4.0	mg/l
Manganese :	0.0	mg/l
Sodium :	10101	mg/l

ANIONS

Chloride :	15,580	mg/l
Carbonate :	0	mg/l
Bicarbonate :	976	mg/l
Sulfate :	51	mg/l

pH (field) : 6.16
Temperature : 77 degrees F
Ionic Strength : 0.46

Specific Gravity : 1.015 grams/ml
Total Dissolved Solids : 27,245 ppm
CO2 in Water : 93 mg/l

Conductivity : micromho/centimeters

Mole % CO2 in Gas : mole %

H2S in Water : 0.1 mg/l

Ammonia : ppm

Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.48
Calcite (CaCO3) SI @ 100 F :	-0.25
Calcite (CaCO3) SI @ 120 F :	-0.03
Calcite (CaCO3) SI @ 140 F :	0.18
Calcite (CaCO3) SI @ 160 F :	0.41
Calcite (CaCO3) SI @ 180 F :	0.64
Calcite (CaCO3) SI @ 200 F :	0.88
Gypsum (CaSO4) SI :	-2.60
Barite (BaSO4) SI :	2.12
Celestite (SrSO4) SI :	-1.07

Calcite PTB :	N/A
Calcite PTB @ 100 F :	N/A
Calcite PTB @ 120 F :	N/A
Calcite PTB @ 140 F :	46.3
Calcite PTB @ 160 F :	92.6
Calcite PTB @ 180 F :	129.0
Calcite PTB @ 200 F :	157.9
Gypsum PTB :	N/A
Barite PTB :	40.8
Celestite PTB :	N/A



Water Analysis Report

27-Jun-12
Date Sampled : 04-Jun-12
Date Received : 18-Jun-12
Date Reported : 28-Jun-12

Laramie Energy

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Comments : Phosphorus= 0.584ppm. Metals analyzed by ICP.

Field : Hawxhurst Ranch

Lease : Hawxhurst Ranch 29-04

Location : Hawxhurst 25-01B

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Aimee Massey

CATIONS

Calcium : 234 mg/l
Magnesium : 35 mg/l
Barium : 79 mg/l
Strontium : 31 mg/l
Iron : 121.0 mg/l
Manganese : 2.3 mg/l
Sodium : 10039 mg/l

ANIONS

Chloride : 15,400 mg/l
Carbonate : 0 mg/l
Bicarbonate : 1,134 mg/l
Sulfate : 4 mg/l

pH (field) : 6.47
Temperature : 85 degrees F
Ionic Strength : 0.45
Dissolved Solids : 27,077 ppm
Resistivity : ohm-meters
Ammonia : ppm

Specific Gravity : 1.016 grams/ml
CO2 In Water : 182 mg/l
Mole % CO2 in Gas : mole %
H2S in Water : 0.0 mg/l
H2S in gas : ppm
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.56	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.41	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.20	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	0.02	Calcite PTB @ 140 F :	6.4
Calcite (CaCO3) SI @ 160 F :	0.24	Calcite PTB @ 160 F :	60.7
Calcite (CaCO3) SI @ 180 F :	0.48	Calcite PTB @ 180 F :	107.1
Calcite (CaCO3) SI @ 200 F :	0.72	Calcite PTB @ 200 F :	140.7
Gypsum (CaSO4) SI :	-3.71	Gypsum PTB :	N/A
Barite (BaSO4) SI :	0.58	Barite PTB :	2.3
Celestite (SrSO4) SI :	-2.61	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<0.0	Under Saturated for Calcite: non-scaling
0.0-1.0	Slightly supersaturated; likelihood for scale formation is marginal
1.0-2.0	Scale is likely to occur but should not be severe
2.0-3.0	Scale almost certain to occur, should be strongly scaling
>3.0	Severe scaling situation

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Water Analysis Report

27-Jun-12
Date Sampled : 04-Jun-12
Date Received : 18-Jun-12
Date Reported : 28-Jun-12

Laramie Energy

Field : Hawxhurst Ranch
Lease : Hawxhurst Ranch 29-04

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Location : Hawxhurst 24-15A

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Aimee Massey

Comments : Phosphorus= 1.421ppm. Metals analyzed by ICP.

CATIONS

Calcium : 172 mg/l
Magnesium : 25 mg/l
Barium : 38 mg/l
Strontium : 38 mg/l
Iron : 41.0 mg/l
Manganese : 0.7 mg/l
Sodium : 8508 mg/l

ANIONS

Chloride : 12,900 mg/l
Carbonate : 0 mg/l
Bicarbonate : 1,073 mg/l
Sulfate : 30 mg/l

pH (field) : 6.62
Temperature : 85 degrees F
Ionic Strength : 0.38
Dissolved Solids : 22,823 ppm
Resistivity : ohm-meters
Ammonia : ppm

Specific Gravity : 1.013 grams/ml

CO₂ In Water : 104 mg/l
Mole % CO₂ in Gas : mole %
H₂S In Water : 0.0 mg/l
H₂S in gas : ppm
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.41	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.26	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	-0.05	Calcite PTB @ 120 F :	N/A
Calcite (CaCO ₃) SI @ 140 F :	0.17	Calcite PTB @ 140 F :	35.3
Calcite (CaCO ₃) SI @ 160 F :	0.40	Calcite PTB @ 160 F :	72.9
Calcite (CaCO ₃) SI @ 180 F :	0.63	Calcite PTB @ 180 F :	99.9
Calcite (CaCO ₃) SI @ 200 F :	0.87	Calcite PTB @ 200 F :	119.3
Gypsum (CaSO ₄) SI :	-2.92	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	1.23	Barite PTB :	17.7
Celestite (SrSO ₄) SI :	-1.60	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<0.0	Under Saturated for Calcite non-scaling
0.0-0.5	Slightly supersaturated; likelihood for scale formation is marginal
0.5-1.0	Scale is likely to occur but should not be severe
1.1-2.0	Scale almost certain to occur, should be strongly scaling
>2.0	Severe scaling situation

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Water Analysis Report

DEC 7 - 2012

COGCC

Date Sampled :

Date Received :

Date Reported :

27-Jun-12

04-Jun-12

18-Jun-12

28-Jun-12

Laramie Energy

Rifle

Co

Attention : Steve Johnson

cc1 :

cc2 :

cc3 :

Comments : Phosphorus= 0.053ppm. Metals analyzed by ICP.

Field : Hawxhurst Ranch

Lease : Hawxhurst Ranch 29-04

Location : Hawxhurst 19-13A

Sample Point : Separator

Salesman : Rick Crosby

Analyst : Aimee Massey

CATIONS

Calcium : 586 mg/l
Magnesium : 52 mg/l
Barium : 56 mg/l
Strontium : 108 mg/l
Iron : 67.0 mg/l
Manganese : 0.9 mg/l
Sodium : 11822 mg/l

ANIONS

Chloride : 19,100 mg/l
Carbonate : 0 mg/l
Bicarbonate : 744 mg/l
Sulfate : 1 mg/l

pH (field) : 6.32
Temperature : 85 degrees F
Ionic Strength : 0.55
Dissolved Solids : 32,536 ppm
Resistivity : ohm-meters
Ammonia : ppm

Specific Gravity : 1.020 grams/ml
CO₂ in Water : 186 mg/l
Mole % CO₂ in Gas : mole %
H₂S in Water : 0.0 mg/l
H₂S in gas : ppm
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO ₃) SI :	-0.65	Calcite PTB :	N/A
Calcite (CaCO ₃) SI @ 100 F :	-0.49	Calcite PTB @ 100 F :	N/A
Calcite (CaCO ₃) SI @ 120 F :	-0.28	Calcite PTB @ 120 F :	N/A
Calcite (CaCO ₃) SI @ 140 F :	-0.06	Calcite PTB @ 140 F :	N/A
Calcite (CaCO ₃) SI @ 160 F :	0.16	Calcite PTB @ 160 F :	52.0
Calcite (CaCO ₃) SI @ 180 F :	0.39	Calcite PTB @ 180 F :	116.1
Calcite (CaCO ₃) SI @ 200 F :	0.63	Calcite PTB @ 200 F :	172.1
Gypsum (CaSO ₄) SI :	-3.98	Gypsum PTB :	N/A
Barite (BaSO ₄) SI :	-0.29	Barite PTB :	N/A
Celestite (SrSO ₄) SI :	-2.76	Celestite PTB :	N/A

SI	Saturation Index Interpretation
<0.0	Under Saturated for Calcite non-scaling
0.0-1.0	Slightly supersaturated, likelihood for scale formation is marginal
1.0-2.0	Scale is likely to occur but should not be severe
2.0-3.0	Scale almost certain to occur, should be strongly scaling
>3.0	Severe scaling situation

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Champion Technologies, Inc.

Vernal District Technical Services



Water Analysis Report

Date Sampled : 25-Aug-08
Date Received : 14-Aug-08
Date Reported : 18-Aug-08
25-Aug-08

Delta Petroleum

Field : Vega
Lease : Pad 14

Location : Well No. 34-421

Attention :

cc1 :

cc2 :

cc3 :

Sample Point : separator

Salesman : Matt Merkel

Analyst : Karen Hawkins Allen

Comments : Metals analyzed by AA.

CATIONS

Calcium : 328 mg/l
Magnesium : 24 mg/l
Barium : 272 mg/l
Strontium : 118 mg/l
Iron : 80 mg/l
Manganese : 0.2 mg/l
Sodium : 10815 mg/l

ANIONS

Chloride : 17,160 mg/l
Carbonate : 0 mg/l
Bicarbonate : 639 mg/l
Sulfate : 38 mg/l

pH (field) : 6.36
Temperature : 78 degrees F
Ionic Strength : 0.50
Conductivity : micromho/centimeters
Ammonia : ppm
Specific Gravity : 1.020 grams/ml
Total Dissolved Solids : 29,400 ppm
CO2 In Water : 156 mg/l
Mole % CO2 in Gas : mole %
H2S In Water : 0.1 mg/l
Dissolved Oxygen : ppm

SI calculations based on Tomson-Oddo parameters

Calcite (CaCO3) SI :	-0.98	Calcite PTB :	N/A
Calcite (CaCO3) SI @ 100 F :	-0.75	Calcite PTB @ 100 F :	N/A
Calcite (CaCO3) SI @ 120 F :	-0.54	Calcite PTB @ 120 F :	N/A
Calcite (CaCO3) SI @ 140 F :	-0.32	Calcite PTB @ 140 F :	N/A
Calcite (CaCO3) SI @ 160 F :	-0.10	Calcite PTB @ 160 F :	N/A
Calcite (CaCO3) SI @ 180 F :	0.13	Calcite PTB @ 180 F :	31.2
Calcite (CaCO3) SI @ 200 F :	0.37	Calcite PTB @ 200 F :	82.4
Gypsum (CaSO4) SI :	-2.63	Gypsum PTB :	N/A
Barite (BaSO4) SI :	2.07	Barite PTB :	29.9
Celestite (SrSO4) SI :	-1.11	Celestite PTB :	N/A