

CARDINAL

ANALYTICAL SERVICE
LABORATORY

44304
03-31-80

COMPANY CITIES SERVICE
ADDRESS
ATTENTION
RECENT TREATMENT

COUNTY
FIELD
FORMATION
DATE 03-27-80
SAMPLED

LEASE SMGSAU
WELL NO. 409
DEPTH
SAMPLE
SOURCE

WATER ANALYSIS

SPECIFIC GRAVITY	1.1350 AT 75F	PH	7.60		
	MG/L	MEQ		MG/L	MEQ
CHLORIDE	106000.00	2985.92	CALCIUM	2800.00	140.00
BICARBONATE	717.36	11.76	MAGNESIUM	960.00	80.00
SULFATE	4800.00	100.00	DISS. IRON	3.00	0.11
SULFIDE	NIL		SODIUM	66184.06	2877.57
TOTAL HARDNESS	11000.00		TOTAL DISSOLVED	181464.42	6195.35
			SOLIDS		
RESISTIVITY	0.052 OHM METERS AT 75F				

SCALING TENDENCIES

CALCIUM CARBONATE STABILITY INDEX	TEMP.	CUN.	CALCIUM SULFATE SOL.	TEMP.	INDX.
1.42	60F	100.00	92.54	50F	7.46
1.83	99F	100.00	92.54	95F	7.46
2.55	140F	100.00	91.83	122F	8.17
3.50	180F	100.00	92.54	176F	7.46

INDICES GREATER THAN ZERO INDICATE POSITIVE SCALING TENDENCIES
STABILITY INDEX LESS THAN ZERO INDICATES POSITIVE CORROSION TENDENCIES
ERROR IN STABILITY INDEX IS DIRECTLY PROPORTIONAL TO THE
LOSS OF ANY ACID GASES FROM SAMPLE WHILE IN TRANSIT TO LAB

REMARKS SURFACE TENSION: 64.3 DYNES/CM

ANALYST KLEIN
REPRESENTATIVE SMITH

Part VII (5)
Attachment 4
Injection Zone Water Analysis
From: S.E. Maljamar GBSA Unit #409
2615' FNL, 25' FWL, Sec 29-17S-33E