



NASDAQ:LINE

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April 14, 2015

New Mexico State Lands Office
310 Old Santa Fe Trail
Santa Fe, NM 87501

ATTENTION: Mr. Terry Warnell
Director of Oil, Gas and Minerals Division

Mr. Warnell:

Linn Operating Inc. operates the East Hobbs San Andres Pressure Maintenance Unit in Lea County, New Mexico. Commission Order R-11980-A sets forth a statutory unit for this purpose. In the Order, Paragraph 9, required that no fresh water be used as make-up water or otherwise be injected. We, with a partner Tabula Rasa Energy, intend to initiate a carbon dioxide flood in the near future. The reservoir however needs to be re-pressured in order for the tertiary process to work efficiently. The best and possibly only way to do so is to use fresh water from the City of Hobbs water system. Thus, we are looking to amend the Order to allow fresh water makeup at a May 7, 2015 hearing before the Oil and Gas Commission.

It is estimated that 8,600 barrels of water per day is required for two years to raise the reservoir pressure to approximately 1,225 psi. Once this is accomplished, carbon dioxide injection will replace any make up water volumes. An additional 12.5% recovery of oil from the San Andres is expected.

The City of Hobbs water system solution was the result of an effort to locate produced oil field water or grey-water from the City. The closest producing oil field to the project is the South Hobbs Unit. Unfortunately, they too have a new carbon dioxide flood in need of makeup water and they bought the City of Hobbs' grey-water. There are other fields to the north but piping water several miles for two years or less was not practical for this small project. In the end, the City will get 3,300 feet of new city main built at our costs and outside city limits water rates.

I have attached water compatibility tests that show good compatibility via reduced scale formation with the combined waters.

Should you have any questions regarding this project, please do not hesitate to contact Bob Sutherland with Tabula Rasa @ bobs@tr-energy.net or 281.668.8478.

Sincerely,

Debra Gordon
Regulatory Compliance Manager

cc: B. Sutherland-TR
Attachment: EHS AU Water Compatibility Testing Data

Oil Conservation Commission
Case No. 15284
Exhibit No. 5

East Hobbs San Andres Unit Water Compatibility Testing

Unit Produced Water is 11850 City Water is 57773

Mixed Water Analysis Report

Mixes at 100°F and 0 psi

Mixes of 11859 and 57773.		Predictions of Saturation Index and Amount of Scale in lb/1000bbl										CO ₂ Fugacity psf
		Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄		
11859	57773	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psf
	100%	0.09	1.8	-1.50		1.57		N/A		N/A		0.21
1%	99%	-0.05		1.51		1.52		-2.35		1.27		0.33
2%	98%	-0.13		-1.47		1.47		-2.03		0.95		0.40
3%	97%	-0.18		-1.43		1.43		-1.84		0.77		0.57
5%	95%	0.24		-1.35		1.35		-1.60		0.52		0.83
10%	90%	0.26		-1.21		1.21		1.27		0.18		1.25
15%	85%	0.26		-1.09		1.10		1.07		0.02	0.00	2.04
20%	80%	-0.23		-1.00		1.01		-0.92		0.17	0.01	2.05
25%	75%	0.10		0.93		0.93		-0.81		0.28	0.02	3.24
30%	70%	0.10		0.86		0.85		0.72		0.38	0.03	3.31
40%	60%	-0.03		0.75		0.75		0.57		0.52	0.05	5.17
50%	50%	-0.02		0.65		-0.67		0.40		0.64	0.07	6.14
60%	40%	0.04	7.8	0.59		0.59		-0.37		0.73	0.09	7.73
70%	30%	0.09	20.8	0.53		0.53		0.30		0.81	0.11	9.09
75%	25%	0.12	27.8	0.50		0.50		-0.25		0.84	0.11	9.66
80%	20%	0.14	35.2	-0.47		0.47		0.23		0.88	0.12	10.3
85%	15%	0.16	42.8	-0.45		0.44		-0.20		0.91	0.13	11.0
90%	10%	0.18	50.7	-0.42		0.42		-0.17		0.94	0.14	11.8
95%	5%	0.21	58.8	0.40		0.40		0.14		0.96	0.15	12.3
97%	3%	0.21	62.1	0.39		0.39		0.13		0.97	0.15	12.6
98%	2%	0.22	63.6	0.39		0.39		0.12		0.98	0.16	12.7
99%	1%	0.22	65.5	-0.38		0.38		-0.10		0.98	0.16	12.8
100%		0.23	67.1	-0.36		0.37		-0.12		0.99	0.16	13.0

Precipitation of each scale is considered separately; total scale will be less than the sum of the amounts of the five scales.

The amount of scale indicates the severity of the problem; the index (equivalent to Stiff-Davis SI) indicates how difficult it is to control the problem.

For clarity, only the amount of scale is shown in this report; the index is shown in parentheses next to the amount of scale.

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BEFORE THE OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

Exhibit No. 4

Submitted by: Linn Operating

Hearing Date: 5/7/2015