Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-35573
5. Indicate Type of Lease STATE [X] FEE [ ]
6. State Oil & Gas Lease No. B-2118

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Leamex
1. Type of Well: Oil Well [ ] Gas Well [X] Other Injection
8. Well Number 061
2. Name of Operator: ConocoPhillips Company
9. OGRID Number 217817
3. Address of Operator: 600 West Illinois Avenue; Midland, Texas 79701
10. Pool name or Wildcat: Maljamar; Grayburg-San Andres
4. Well Location
Unit Letter C : 660 feet from the North line and 1940 feet from the West line
Section 25 Township 17S Range 33E NMPM Lea County
11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 4112'

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]	CHANGE PLANS [ ]	COMMENCE DRILLING OPNS. [ ]	P AND A [ ]
PULL OR ALTER CASING [ ]	MULTIPLE COMPL [ ]	CASING/CEMENT JOB [ ]	
DOWNHOLE COMMINGLE [ ]			
CLOSED-LOOP SYSTEM [ ]			
OTHER: Amend WFX-775 [X]		OTHER: [ ]	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Per recent discussion w/Mr. Goetze, the request below is respectfully submitted.

ConocoPhillips Company proposes to add an additional produced water source to four Leamex injectors from Caprock wells, Yeso formation which is expected increase production from Leamex producing wells. This minor amendment to WFX-775 is detailed in Attachment 1. Attachment 2 is the Geologist Statement, Attachment 3 contains the Produced Water Compatibility Analysis and Attachment 4 is a schematic.

Average daily rate of injected fluid is expected to be 3,200 BWPD during the first year of operation with a maximum daily rate of injected fluid of 6,000 BWPD. Injection pressure is expected to average 2,000 psig with a maximum injection surface pressure of 2,140 psig as authorized in IPI – 166.

Acid cleanup may be needed with 15% HCL on the Leamex Injectors before adding Caprock water to the waterflood. Expected pumping maximum pressure should not exceed 500 psi.

The Caprock Yeso Area (CYA) C 101H well is expected to start production around 11/15/21. Thank you for your time spent on this matter.

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Susan B. Maunder TITLE Senior Regulatory Coordinator DATE 10/18/2021

Type or print name Susan B. Maunder E-mail address: Susan.B.Maunder@conocophillips.com PHONE: 432-269-4378

For State Use Only

APPROVED BY: Phillip R. Goetze TITLE UIC Manager DATE 11/02/2021
Conditions of Approval (if any):

Attachment 1 - Leamex WF Source Addition Request

Purpose:

ConocoPhillips (COP) wishes to increase water injection rates to the Leamex Pressure Maintenance project located in Lea County New Mexico. Natural decline combined with a decreasing well count has resulted in sub-optimum injection rates relative to production. To accomplish this, COP plans to use excess produced water from the planned CYA C 101H appraisal well located in a deeper producing horizon than the Leamex lease. This well is expected to begin production in late November 2021 and will test the productivity of the eastern Yeso play on the Northwest Shelf (NWS).

Request:

As allowed in the injection program manual, COP is seeking minor permit modification to WFX-775 to combine at the surface, produced water from the Yeso formation with produced water from the Grayburg/San Andres (GB/SA) formation. Yeso water will be piped 1.5 miles from the Caprock 23 CTB to the Leamex 8 facility where it will be combined in water storage tanks with Leamex GB/SA production. It is estimated that a maximum of 6,000 BWPD will be available for injection between the four Leamex wells.

Injection Wells to receive additional source:

Leamex 58	30-025-35570	O-24-17S-32E
Leamex 59	30-025-35571	M-24-17S-32E
Leamex 60	30-025-35572	K-24-17S-32E
Leamex 61	30-025-35573	C-24-17S-32E

Method of Analysis:

COP has been under injecting water for several years due to lack of make-up water availability. Average reservoir pressure is estimated to be between 300 psig and 500 psig based on fluid buildup levels in the Leamex producers. Based on the historic rate and duration of under-injection it may take 2 months to see a pressure response at the injectors and 6 months before response in the producers is observed. COP has not noticed water breakthrough events since WF operations commenced over 35 years ago which indicates a low risk of watering out producers.

Historic performance of the Leamex Water Maintenance Project indicates a successful response to water injection. From the period of 2001 to 2010, production increased from 30 BOPD to 50 BOPD and GOR decreased from 6000 to 2000 SCF/STB.

The decline rate from the start of significant flood operations until present also shows good flood response with an annual nominal decline rate of 6%. This is compared to pre-waterflood decline rate of 20%. As injection rates have declined in the past 10 years, oil decline rate has slightly increased.

It is expected that an increase in water injection rate will increase oil production similar to the historical performance. This will result in additional oil production to COP and royalty income to the State of New Mexico.

Another key indicator of waterflood performance is the ratio of injected fluids to extracted fluids or Voidage Replacement Ratio (VRR). Since 2011 the VRR has averaged 0.70 which is well below the optimum value of 1.1, indicating sub-optimal water injection. A long-term trend of VRR below 1.1 will tend to de-pressure the reservoir leading to lower recoveries.

Modeling of Water Chemistry:

Water samples from several nearby Yeso producers and the Leamex lease were analyzed for chemical composition and ionic content. A representative Yeso producer and a representative GB/SA producer were chosen and inputted into a fluid model to simulate any adverse chemical reactions resulting from their mixing. The model results are attached and show no predicted precipitation or corrosion tendencies if these two sources were mixed.

Analogs on NWS:

Several analogies of nearby Yeso-GB/SA commingle projects exist where COP is the operator. The Gemstone Yeso water is commingled with GB/SA production in the MCA Unit with no adverse scaling or corrosion behaviors. Similarly in the Vacuum area, VGEU produced water is commingled with EVGSAU produced water with no adverse scaling or corrosion effects.

Request:

COP respectfully requests permission to add Yeso produced water from the Caprock area acreage as a source for waterflood makeup water to support the pressure maintenance activities in the Leamex lease. Injection pressure is expected to average 2,000 psig with a maximum injection surface pressure of 2,140 psig as authorized in IPI – 166. Average daily rate of injected fluid is expected to be 3,200 BWPD during the first year of operation with a maximum daily rate of injected fluid of 6,000 BWPD.

Acid cleanup operations may be needed with 15% HCL on the Leamex Injectors before adding Caprock water to the waterflood. Procedure is below.

Acid Procedure:
1. Shut in casing and tubing to prepare for treatment down tubing.
2. Pressure tubing up to 300 psi.
3. Load up to 3000 gallons of 15% HCL acid.
4. Pump acid pill down the tubing. Expected maximum pressure should not exceed 500 psi.
5. Flush with water.
6. Shut-in well for 4-6 hours or per COP specs. Contact MSO and inform that well is shut in.

Attachment 2

Geologist Statement

I have examined the available geologic and engineering data and have found no evidence of open faults or any other hydrologic connection between any underground sources of drinking water and the injection zone for the Leamex Waterflood Project wells listed below.

Leamex 058	30-025-35570	O-24-17S-32E
Leamex 059	30-025-35571	M-24-17S-33E
Leamex 060	30-025-35572	K-24-17S-33E
Leamex 061	30-025-35573	C-25-17S-33E

Compatibility analysis of the produced waters from the Grayburg Formation in the Caprock area, and from the Yeso Formation in the Gemstone area shows that a precipitation/scaling issue is unlikely to happen when mixing these two fluids. In addition, there are two fields (MCA and Vacuum) within 8-10 miles radius of the Leamex Waterflood where ConocoPhillips has been injecting Yeso water to the Grayburg/San Andres Formation for several years without any scaling and corrosion issues. Therefore, new water source is not expected to cause any clogging of the pore spaces and negatively impacting production.

Zsofia Poros, ConocoPhillips Company
Senior Petroleum Geologist

10/11/2021

Date

SSP Mixing – Scale Risk Evaluation

Leamex 28 & Garnet 5 & 2

ChampionX
Global Headquarters
2445 Technology Forest
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The Woodlands, TX 77381
Telephone: +1-281-403-5772
championX.com

The safety of our associates, customers and communities is vitally important. From the way we operate, to the products we develop, to how we partner with customers, our goal is zero: zero accidents, zero incidents, and zero environmental releases. At ChampionX, safety is more than a metric, it is a mindset. It is how we conduct ourselves, every day, everywhere it matters.

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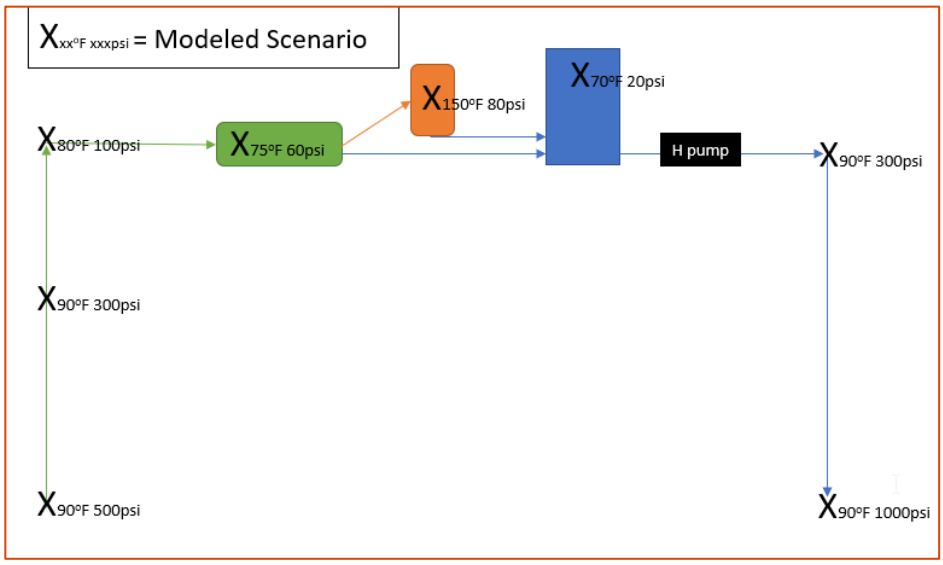
Project Overview

ChampionX was asked to evaluate scale risk for the Leamex 28 and Garnet 5 and 2 using the Rice University ScaleSoftPitzer™ model. ChampionX modeled the following temperature and pressure nodes based on information provided by the customer. Project goal was to understand scale risk at all potential mixing ratios, which would allow COP to minimize operational risk related to mixing waters.

Figure 1: Modeled temperature and pressure scenarios/nodes used for mixing ratios



Scale Modeling Inputs

ChampionX used the more accurate modeling option using the provided gas analysis from the customer showing mole% CO2 ~0.71. *These results should be considered worst case sicario as organic acid data was not input into the model and would likely decrease the overall modeled scale risk.*

Table 1: SSP Scale Risk Matrix

Calcium & Iron Carbonate		Barite, Celestite, Iron Sulfide, Gypsum, Hemihydrate, Anhydrite, Halite	
SI	Scale Problems	SI	Scale Problems
0 - 0.49	Minimal Risk	0 - 0.29	Minimal Risk
0.5 - 0.99	Low Risk	0.3 - 0.49	Low Risk
1.0 - 1.49	Medium Risk	0.5 - 0.99	Medium Risk
1.5+	High Risk	> 1.0	High Risk
PTB	Scale Problems	PTB	Scale Problems
< 100	Minimal Risk	< 50	Minimal Risk
100 - 200	Low Risk	50 - 100	Low Risk
200 - 300	Medium Risk	100 - 150	Medium Risk
>300	High Risk	>150	High Risk

COP

Scale Risk

Leamex 28 & Garnett 5 & 2 Mixing

Table 2: Target and source waters used for SSP mixing models

		1	2	3
Parameters	Units	Input	Input	Input
Select the brines	Select fluid by checking the box(es) in row 3.	☑	☐	☐
Sample ID		AQ65520	AP62490	AP48714
Date		01/27/2021	07/31/2020	07/14/2020
Operator		CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY	CONOCOPHILLIPS COMPANY
Well Name		Well 28	Well 5	Well 2
Location		Target	Src. Yeso	Src. 2nd
Field		Leamex	Garnett	Garnett
Na^+	(mg/L)	52,200.00	72,600.00	90,600.00
K^+ (if not known =0)	(mg/L)	899.00	519.00	944.00
Mg^{2+}	(mg/L)	3,290.00	840.00	1,510.00
Ca^{2+}	(mg/L)	4,700.00	3,200.00	3,760.00
Sr^{2+}	(mg/L)	121.00	75.40	86.00
Ba^{2+}	(mg/L)	0.24	0.08	0.20
Fe^{2+}	(mg/L)	0.13		101.00
Zn^{2+}	(mg/L)		0.10	0.21
Pb^{2+}	(mg/L)			
Cl^-	(mg/L)	91,554.00	119,676.00	145,456.00
SO_4^{2-}	(mg/L)	1,806.55	2,421.00	2,306.00
F^-	(mg/L)			
Br^-	(mg/L)	170.41	131.00	207.00
Silica	(mg/L as Si)	7.06	3.57	3.91
Total Alkalinity	(mg/L as HCO3)	292.80	341.60	183.00
CO_3^{2-} Alkalinity	(mg/L as CO3)			
Carboxylates	(mg/L as Acetate)			
Ammonia	(mg/L as NH3)			
Borate	(mg/L as B)			
TDS (Measured)	(mg/l)	156,013.00	200,963.00	246,234.00
Calc. Density (STP)	(g/ml)	1.104	1.104	1.104
CO_2 Gas Analysis	(%)	0.71	0.71	0.71
Use H_2S Gas Analysis	1-Yes / 0-No	0	0	0
Gas H2S% or H2Saq	% H2S; mg/L H2S	171.0000	34.2000	17.1000
pH, measured	pH	6.65	7.17	6.92
Gas/day(thousand cf/day)	(Mcf/D)	1.00	30.00	46.00
Oil/Day	(B/D)	5.30	3.00	10.00
Water/Day	(B/D)	6.00	40.00	39.00

Scale Modeling Results

Both source waters mixed with the target show a low/minimal risk of all scale types modeled at injection and downhole reservoir conditions. Scale risk particularly anhydrite ($CaSO_4$) and calcium carbonate ($CaCO_3$) increases at surface facility conditions in separators, heater treaters and water tanks. The heater treater conditions show the greatest scale risk. This makes sense as the loss of CO_2 gas under lower pressures and higher temperatures increases pH and drives carbonate formation. Further, anhydrite is more likely to form at high temperatures >122°F.

COP
Scale Risk
Leamex 28 & Garnett 5 & 2 Mixing

Table 3: Leamex 28 target & Garnett well 5 source mixing scenarios – calcite, barite, halite

Field	Well	Mixture	Calcite SI Initial T,P	Calcite SI Final T,P	Calcite PTB Initial	Calcite PTB Final	Barite SI Initial T,P	Barite SI Final T,P	Barite PTB Initial T,P	Barite PTB Initial T,P	Halite SI Initial T,P	Halite SI Final T,P	Halite PTB Initial T,P	Halite PTB Final T,P
Leamex	well 28	100% target producer	-0.32	-0.02	0.00	0.00	0.07	0.21	0.02	0.05	-1.06	-1.05	0.00	0.00
		90/10 target/source	-0.11	0.46	0.00	36.15	-0.01	0.12	0.00	0.02	-0.92	-0.91	0.00	0.00
		80/20	-0.02	0.63	0.00	46.69	-0.08	0.05	0.00	0.01	-0.85	-0.84	0.00	0.00
Initial T °F	90.00	70/30	0.03	0.71	3.47	51.89	-0.12	0.00	0.00	0.00	-0.82	-0.81	0.00	0.00
Final T °F	90.00	60/40	0.07	0.77	7.00	55.03	-0.16	-0.04	0.00	0.00	-0.79	-0.78	0.00	0.00
Initial P	500.00	50/50	0.09	0.80	9.50	57.14	-0.19	-0.07	0.00	0.00	-0.78	-0.77	0.00	0.00
Final P (psia)	300.00	40/60	0.11	0.83	11.35	58.67	-0.22	-0.09	0.00	0.00	-0.77	-0.76	0.00	0.00
		30/70	0.13	0.85	12.79	59.82	-0.24	-0.11	0.00	0.00	-0.76	-0.75	0.00	0.00
		20/80	0.14	0.87	13.93	60.71	-0.25	-0.13	0.00	0.00	-0.75	-0.74	0.00	0.00
		Oct-90	0.15	0.88	14.86	61.44	-0.27	-0.15	0.00	0.00	-0.74	-0.73	0.00	0.00
Garnet	well 5	100% source producer	0.16	0.89	15.63	62.03	-0.28	-0.16	0.00	0.00	-0.74	-0.73	0.00	0.00
Leamex	well 28	100% target producer	-0.28	-0.02	0.00	0.00	0.08	0.21	0.02	0.05	-1.06	-1.05	0.00	0.00
		90/10 target/source	0.02	0.46	1.50	36.15	-0.01	0.12	0.00	0.02	-0.92	-0.91	0.00	0.00
		80/20	0.13	0.63	12.64	46.69	-0.07	0.05	0.00	0.01	-0.85	-0.84	0.00	0.00
Initial T OF	80.00	70/30	0.20	0.71	18.70	51.89	-0.12	0.00	0.00	0.00	-0.82	-0.81	0.00	0.00
Final T OF	75.00	60/40	0.24	0.77	22.55	55.03	-0.16	-0.04	0.00	0.00	-0.79	-0.78	0.00	0.00
Initial P	100.00	50/50	0.27	0.80	25.21	57.14	-0.19	-0.07	0.00	0.00	-0.78	-0.77	0.00	0.00
Final P (psia)	60.00	40/60	0.30	0.83	27.17	58.67	-0.21	-0.09	0.00	0.00	-0.76	-0.76	0.00	0.00
		30/70	0.32	0.85	28.67	59.82	-0.23	-0.11	0.00	0.00	-0.75	-0.75	0.00	0.00
		20/80	0.33	0.87	29.85	60.71	-0.25	-0.13	0.00	0.00	-0.75	-0.74	0.00	0.00
		Oct-90	0.34	0.88	30.81	61.44	-0.26	-0.15	0.00	0.00	-0.74	-0.73	0.00	0.00
Garnet	well 5	100% source producer	0.35	0.89	31.60	62.03	-0.28	-0.16	0.00	0.00	-0.74	-0.73	0.00	0.00
Leamex	well 28	100% target producer	-0.13	0.27	0.00	21.26	-0.30	0.25	0.00	0.06	-1.09	-1.05	0.00	0.00
		90/10 target/source	0.58	0.86	41.56	55.77	-0.38	0.16	0.00	0.03	-0.94	-0.90	0.00	0.00
		80/20	0.84	1.04	55.41	64.17	-0.44	0.09	0.00	0.02	-0.87	-0.84	0.00	0.00
Initial T OF	150.00	70/30	0.99	1.13	62.11	68.25	-0.49	0.04	0.00	0.01	-0.84	-0.80	0.00	0.00
Final T OF	70.00	60/40	1.08	1.19	66.12	70.72	-0.53	0.00	0.00	0.00	-0.81	-0.78	0.00	0.00
Initial P	80.00	50/50	1.15	1.23	68.81	72.37	-0.56	-0.03	0.00	0.00	-0.80	-0.76	0.00	0.00
Final P (psia)	20.00	40/60	1.19	1.25	70.74	73.56	-0.58	-0.05	0.00	0.00	-0.78	-0.75	0.00	0.00
		30/70	1.23	1.28	72.20	74.47	-0.60	-0.07	0.00	0.00	-0.78	-0.74	0.00	0.00
		20/80	1.26	1.29	73.33	75.17	-0.62	-0.09	0.00	0.00	-0.77	-0.74	0.00	0.00
		Oct-90	1.29	1.30	74.25	75.74	-0.64	-0.11	0.00	0.00	-0.76	-0.73	0.00	0.00
Garnet	well 5	100% source producer	1.31	1.32	75.00	76.20	-0.65	-0.12	0.00	0.00	-0.76	-0.73	0.00	0.00
Leamex	well 28	100% target producer	-0.28	-0.38	0.00	0.00	0.08	0.06	0.02	0.02	-1.06	-1.07	0.00	0.00
		90/10 target/source	0.02	-0.25	1.50	0.00	-0.01	-0.03	0.00	0.00	-0.92	-0.92	0.00	0.00
		80/20	0.13	-0.20	12.64	0.00	-0.07	-0.09	0.00	0.00	-0.85	-0.86	0.00	0.00
Initial T OF	90.00	70/30	0.20	-0.16	18.70	0.00	-0.12	-0.14	0.00	0.00	-0.82	-0.82	0.00	0.00
Final T OF	90.00	60/40	0.24	-0.14	22.55	0.00	-0.16	-0.17	0.00	0.00	-0.79	-0.80	0.00	0.00
Initial P	300.00	50/50	0.27	-0.12	25.21	0.00	-0.19	-0.20	0.00	0.00	-0.78	-0.78	0.00	0.00
Final P (psia)	1000.00	40/60	0.30	-0.11	27.17	0.00	-0.21	-0.23	0.00	0.00	-0.76	-0.77	0.00	0.00
		30/70	0.32	-0.10	28.67	0.00	-0.23	-0.25	0.00	0.00	-0.75	-0.76	0.00	0.00
		20/80	0.33	-0.09	29.85	0.00	-0.25	-0.26	0.00	0.00	-0.75	-0.75	0.00	0.00
		Oct-90	0.34	-0.08	30.81	0.00	-0.26	-0.28	0.00	0.00	-0.74	-0.75	0.00	0.00
Garnet	well 5	100% source producer	0.35	-0.08	31.60	0.00	-0.28	-0.29	0.00	0.00	-0.74	-0.74	0.00	0.00

COP

Scale Risk

Leamex 28 & Garnett 5 & 2 Mixing

Table 4: Leamex 28 target & Garnett well 5 source mixing scenarios – gypsum, hemihydrate, anhydrite, celestite

Field	Well	Mixture	Gypsum SI Initial T,P	Gypsum SI Final T,P	Gypsum PTB Initial T,P	Gypsum PTB Final T,P	Hemihydrate SI Initial T,P	Hemihydrate SI Final T,P	Hemihydrate PTB Initial T,P	Hemihydrate PTB FinalT,P	Anhydrite SI Initial T,P	Anhydrite SI Final T,P	Anhydrite PTB Initial T,P	Anhydrite PTB Final T,P	Celestite SI Initial T,P	Celestite SI Final T,P	Celestite PTB Initial T,P	Celestite PTB Final T,P
Leamex	well 28	100% target producer	-0.14	-0.14	0.00	0.00	-0.81	-0.82	0.00	0.00	-0.35	-0.46	0.00	0.00	-0.03	-0.04	0.00	0.00
		90/10 target/source	-0.13	-0.13	0.00	0.00	-0.78	-0.79	0.00	0.00	-0.32	-0.43	0.00	0.00	-0.01	-0.02	0.00	0.00
		80/20	-0.12	-0.12	0.00	0.00	-0.77	-0.79	0.00	0.00	-0.31	-0.42	0.00	0.00	-0.01	-0.02	0.00	0.00
Initial T °F	90.00	70/30	-0.12	-0.12	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.31	-0.41	0.00	0.00	-0.01	-0.02	0.00	0.00
Final T °F	90.00	60/40	-0.12	-0.12	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
Initial P	500.00	50/50	-0.12	-0.13	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
Final P (psia)	300.00	40/60	-0.12	-0.13	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
		30/70	-0.12	-0.13	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
		20/80	-0.12	-0.13	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.02	-0.03	0.00	0.00
		Oct-90	-0.12	-0.13	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.02	-0.03	0.00	0.00
Garnet	well 5	100% source producer	-0.12	-0.13	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.02	-0.04	0.00	0.00
Leamex	well 28	100% target producer	-0.14	-0.14	0.00	0.00	-0.80	-0.82	0.00	0.00	-0.34	-0.46	0.00	0.00	-0.03	-0.04	0.00	0.00
		90/10 target/source	-0.12	-0.13	0.00	0.00	-0.77	-0.79	0.00	0.00	-0.31	-0.43	0.00	0.00	-0.01	-0.02	0.00	0.00
		80/20	-0.12	-0.12	0.00	0.00	-0.76	-0.79	0.00	0.00	-0.30	-0.42	0.00	0.00	-0.01	-0.02	0.00	0.00
Initial T OF	80.00	70/30	-0.12	-0.12	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.01	-0.02	0.00	0.00
Final T OF	75.00	60/40	-0.12	-0.12	0.00	0.00	-0.76	-0.78	0.00	0.00	-0.30	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
Initial P	100.00	50/50	-0.12	-0.13	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
Final P (psia)	60.00	40/60	-0.12	-0.13	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
		30/70	-0.12	-0.13	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
		20/80	-0.12	-0.13	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
		Oct-90	-0.12	-0.13	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.41	0.00	0.00	-0.01	-0.03	0.00	0.00
Garnet	well 5	100% source producer	-0.12	-0.13	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.41	0.00	0.00	-0.01	-0.04	0.00	0.00
Leamex	well 28	100% target producer	-0.12	-0.15	0.00	0.00	-0.62	-0.83	0.00	0.00	0.03	-0.50	52.20	0.00	0.08	-0.04	41.76	0.00
		90/10 target/source	-0.10	-0.14	0.00	0.00	-0.58	-0.81	0.00	0.00	0.07	-0.48	123.79	0.00	0.10	-0.03	42.71	0.00
		80/20	-0.10	-0.13	0.00	0.00	-0.57	-0.80	0.00	0.00	0.08	-0.47	150.82	0.00	0.10	-0.03	39.09	0.00
Initial T OF	150.00	70/30	-0.09	-0.13	0.00	0.00	-0.57	-0.80	0.00	0.00	0.09	-0.46	164.01	0.00	0.10	-0.03	36.04	0.00
Final T OF	70.00	60/40	-0.09	-0.13	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	171.48	0.00	0.10	-0.04	33.70	0.00
Initial P	80.00	50/50	-0.09	-0.14	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	176.17	0.00	0.09	-0.04	31.91	0.00
Final P (psia)	20.00	40/60	-0.09	-0.14	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	179.32	0.00	0.09	-0.04	30.51	0.00
		30/70	-0.09	-0.14	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	181.55	0.00	0.09	-0.04	29.38	0.00
		20/80	-0.09	-0.14	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	183.19	0.00	0.09	-0.04	28.46	0.00
		Oct-90	-0.09	-0.14	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	184.45	0.00	0.09	-0.05	27.70	0.00
Garnet	well 5	100% source producer	-0.09	-0.14	0.00	0.00	-0.56	-0.80	0.00	0.00	0.09	-0.46	185.43	0.00	0.08	-0.05	27.05	0.00
Leamex	well 28	100% target producer	-0.14	-0.16	0.00	0.00	-0.80	-0.83	0.00	0.00	-0.34	-0.38	0.00	0.00	-0.03	-0.05	0.00	0.00
		90/10 target/source	-0.12	-0.14	0.00	0.00	-0.77	-0.80	0.00	0.00	-0.31	-0.34	0.00	0.00	-0.01	-0.03	0.00	0.00
		80/20	-0.12	-0.14	0.00	0.00	-0.76	-0.79	0.00	0.00	-0.30	-0.33	0.00	0.00	-0.01	-0.03	0.00	0.00
Initial T OF	90.00	70/30	-0.12	-0.14	0.00	0.00	-0.76	-0.79	0.00	0.00	-0.30	-0.33	0.00	0.00	-0.01	-0.03	0.00	0.00
Final T OF	90.00	60/40	-0.12	-0.14	0.00	0.00	-0.76	-0.79	0.00	0.00	-0.30	-0.33	0.00	0.00	-0.01	-0.03	0.00	0.00
Initial P	300.00	50/50	-0.12	-0.14	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.32	0.00	0.00	-0.01	-0.03	0.00	0.00
Final P (psia)	1000.00	40/60	-0.12	-0.14	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.32	0.00	0.00	-0.01	-0.03	0.00	0.00
		30/70	-0.12	-0.14	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.32	0.00	0.00	-0.01	-0.03	0.00	0.00
		20/80	-0.12	-0.14	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.32	0.00	0.00	-0.01	-0.03	0.00	0.00
		Oct-90	-0.12	-0.14	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.32	0.00	0.00	-0.01	-0.03	0.00	0.00
Garnet	well 5	100% source producer	-0.12	-0.14	0.00	0.00	-0.75	-0.78	0.00	0.00	-0.29	-0.32	0.00	0.00	-0.01	-0.03	0.00	0.00

COP

Scale Risk

Leamex 28 & Garnett 5 & 2 Mixing

Table 5: Leamex 28 target & Garnett well 2 source mixing scenarios – calcite, barite, halite

Field	Well	Mixture	Calcite SI Initial T,P	Calcite SI Final T,P	Calcite PTB Initial	Calcite PTB Final	Barite SI Initial T,P	Barite SI Final T,P	Barite PTB Initial T,P	Barite PTB Initial T,P	Halite SI Initial T,P	Halite SI Final T,P	Halite PTB Initial T,P	Halite PTB Final T,P
Leamex	well 28	100% target producer	-0.32	-0.28	0.00	0.00	0.07	0.08	0.02	0.02	-1.06	-1.06	0.00	0.00
		90/10 target/source	-0.23	-0.09	0.00	0.00	0.08	0.09	0.02	0.02	-0.79	-0.78	0.00	0.00
		80/20	-0.22	-0.05	0.00	0.00	0.09	0.09	0.02	0.02	-0.67	-0.66	0.00	0.00
Initial T °F	90.00	70/30	-0.21	-0.03	0.00	0.00	0.10	0.10	0.02	0.03	-0.60	-0.60	0.00	0.00
Final T °F	90.00	60/40	-0.21	-0.02	0.00	0.00	0.10	0.10	0.03	0.03	-0.55	-0.55	0.00	0.00
Initial P	500.00	50/50	-0.21	-0.01	0.00	0.00	0.10	0.11	0.03	0.03	-0.52	-0.52	0.00	0.00
Final P (psia)	300.00	40/60	-0.21	-0.01	0.00	0.00	0.11	0.11	0.03	0.03	-0.50	-0.50	0.00	0.00
		30/70	-0.21	-0.01	0.00	0.00	0.11	0.11	0.03	0.03	-0.48	-0.48	0.00	0.00
		20/80	-0.21	-0.01	0.00	0.00	0.11	0.11	0.03	0.03	-0.47	-0.47	0.00	0.00
		Oct-90	-0.21	0.00	0.00	0.00	0.11	0.11	0.03	0.03	-0.46	-0.46	0.00	0.00
Garnet	well 2	100% source producer	-0.21	0.00	0.00	0.00	0.11	0.11	0.03	0.03	-0.45	-0.45	0.00	0.00
Leamex	well 28	100% target producer	-0.13	-0.02	0.00	0.00	0.16	0.21	0.04	0.05	-1.05	-1.05	0.00	0.00
		90/10 target/source	0.23	0.40	16.14	25.52	0.17	0.21	0.04	0.05	-0.78	-0.77	0.00	0.00
		80/20	0.31	0.48	18.86	27.14	0.17	0.21	0.04	0.05	-0.66	-0.66	0.00	0.00
Initial T OF	80.00	70/30	0.34	0.52	19.38	27.06	0.18	0.22	0.04	0.05	-0.59	-0.59	0.00	0.00
Final T OF	75.00	60/40	0.36	0.54	19.43	26.74	0.18	0.22	0.04	0.05	-0.55	-0.54	0.00	0.00
Initial P	100.00	50/50	0.37	0.55	19.36	26.41	0.18	0.22	0.04	0.05	-0.52	-0.51	0.00	0.00
Final P (psia)	60.00	40/60	0.38	0.56	19.25	26.12	0.19	0.23	0.04	0.05	-0.49	-0.49	0.00	0.00
		30/70	0.38	0.56	19.14	25.87	0.19	0.23	0.04	0.05	-0.48	-0.47	0.00	0.00
		20/80	0.39	0.57	19.04	25.65	0.19	0.23	0.04	0.05	-0.46	-0.46	0.00	0.00
		Oct-90	0.39	0.57	18.94	25.47	0.19	0.23	0.04	0.05	-0.45	-0.45	0.00	0.00
Garnet	well 2	100% source producer	0.39	0.58	18.86	25.31	0.19	0.23	0.04	0.05	-0.44	-0.44	0.00	0.00
Leamex	well 28	100% target producer	-0.13	0.27	0.00	21.26	-0.30	0.25	0.00	0.06	-1.09	-1.05	0.00	0.00
		90/10 target/source	0.54	0.81	31.52	42.66	-0.29	0.25	0.00	0.06	-0.81	-0.77	0.00	0.00
		80/20	0.71	0.91	35.12	41.80	-0.29	0.25	0.00	0.06	-0.69	-0.65	0.00	0.00
Initial T OF	150.00	70/30	0.79	0.96	35.78	40.52	-0.30	0.26	0.00	0.05	-0.62	-0.58	0.00	0.00
Final T OF	70.00	60/40	0.85	0.98	35.83	39.49	-0.30	0.26	0.00	0.05	-0.58	-0.54	0.00	0.00
Initial P	80.00	50/50	0.88	1.00	35.74	38.69	-0.30	0.26	0.00	0.05	-0.55	-0.51	0.00	0.00
Final P (psia)	20.00	40/60	0.91	1.01	35.60	38.06	-0.30	0.26	0.00	0.05	-0.53	-0.49	0.00	0.00
		30/70	0.93	1.02	35.47	37.55	-0.30	0.26	0.00	0.05	-0.51	-0.47	0.00	0.00
		20/80	0.95	1.02	35.34	37.14	-0.30	0.26	0.00	0.05	-0.50	-0.46	0.00	0.00
		Oct-90	0.96	1.03	35.22	36.80	-0.30	0.26	0.00	0.05	-0.49	-0.45	0.00	0.00
Garnet	well 2	100% source producer	0.98	1.03	35.12	36.51	-0.30	0.26	0.00	0.05	-0.48	-0.44	0.00	0.00
Leamex	well 28	100% target producer	-0.28	-0.38	0.00	0.00	0.08	0.06	0.02	0.02	-1.06	-1.07	0.00	0.00
		90/10 target/source	-0.09	-0.40	0.00	0.00	0.09	0.07	0.02	0.02	-0.78	-0.79	0.00	0.00
		80/20	-0.05	-0.42	0.00	0.00	0.09	0.08	0.02	0.02	-0.66	-0.67	0.00	0.00
Initial T OF	90.00	70/30	-0.03	-0.43	0.00	0.00	0.10	0.09	0.03	0.02	-0.60	-0.60	0.00	0.00
Final T OF	90.00	60/40	-0.02	-0.44	0.00	0.00	0.10	0.09	0.03	0.02	-0.55	-0.56	0.00	0.00
Initial P	300.00	50/50	-0.01	-0.45	0.00	0.00	0.11	0.10	0.03	0.02	-0.52	-0.53	0.00	0.00
Final P (psia)	1000.00	40/60	-0.01	-0.45	0.00	0.00	0.11	0.10	0.03	0.02	-0.50	-0.50	0.00	0.00
		30/70	-0.01	-0.46	0.00	0.00	0.11	0.10	0.03	0.02	-0.48	-0.49	0.00	0.00
		20/80	-0.01	-0.46	0.00	0.00	0.11	0.10	0.03	0.02	-0.47	-0.47	0.00	0.00
		Oct-90	0.00	-0.46	0.00	0.00	0.11	0.10	0.03	0.02	-0.46	-0.46	0.00	0.00
Garnet	well 2	100% source producer	0.00	-0.46	0.00	0.00	0.11	0.10	0.03	0.02	-0.45	-0.45	0.00	0.00

COP

Scale Risk

Leamex 28 & Garnett 5 & 2 Mixing

Table 6: Leamex 28 target & Garnett well 2 source mixing scenarios – gypsum, hemihydrate, anhydrite, celestite

Field	Well	Mixture	Gypsum PTB Final T,P	Hemihydrate SI Initial T,P	Hemihydrate SI Final T,P	Hemihydrate PTB Initial T,P	Hemihydrate PTB FinalT,P	Anhydrite SI Initial T,P	Anhydrite SI Final T,P	Anhydrite PTB Initial T,P	Anhydrite PTB Final T,P	Celestite SI Initial T,P	Celestite SI Final T,P	Celestite PTB Initial T,P	Celestite PTB Final T,P
Leamex	well 28	100% target producer	0.00	-0.81	-0.80	0.00	0.00	-0.35	-0.34	0.00	0.00	-0.03	-0.03	0.00	0.00
		90/10 target/source	0.00	-0.75	-0.74	0.00	0.00	-0.29	-0.28	0.00	0.00	0.01	0.02	6.28	8.13
		80/20	0.00	-0.71	-0.71	0.00	0.00	-0.25	-0.24	0.00	0.00	0.04	0.04	16.42	17.40
Initial T °F	90.00	70/30	0.00	-0.69	-0.69	0.00	0.00	-0.23	-0.22	0.00	0.00	0.05	0.05	21.60	22.11
Final T °F	90.00	60/40	0.00	-0.68	-0.67	0.00	0.00	-0.21	-0.20	0.00	0.00	0.06	0.06	24.65	24.88
Initial P	500.00	50/50	0.00	-0.67	-0.66	0.00	0.00	-0.20	-0.19	0.00	0.00	0.07	0.07	26.64	26.67
Final P (psia)	300.00	40/60	0.00	-0.66	-0.66	0.00	0.00	-0.19	-0.18	0.00	0.00	0.07	0.07	28.03	27.92
		30/70	0.00	-0.66	-0.65	0.00	0.00	-0.19	-0.18	0.00	0.00	0.08	0.08	29.05	28.83
		20/80	0.00	-0.65	-0.64	0.00	0.00	-0.18	-0.17	0.00	0.00	0.08	0.08	29.83	29.52
		Oct-90	0.00	-0.65	-0.64	0.00	0.00	-0.18	-0.17	0.00	0.00	0.08	0.08	30.43	30.07
Garnet	well 2	100% source producer	0.00	-0.64	-0.64	0.00	0.00	-0.17	-0.17	0.00	0.00	0.08	0.08	30.93	30.50
Leamex	well 28	100% target producer	0.00	-0.81	-0.82	0.00	0.00	-0.41	-0.46	0.00	0.00	-0.03	-0.04	0.00	0.00
		90/10 target/source	0.00	-0.75	-0.76	0.00	0.00	-0.35	-0.39	0.00	0.00	0.01	0.00	3.18	0.35
		80/20	0.00	-0.72	-0.73	0.00	0.00	-0.31	-0.36	0.00	0.00	0.03	0.02	12.29	9.43
Initial T OF	80.00	70/30	0.00	-0.70	-0.71	0.00	0.00	-0.29	-0.33	0.00	0.00	0.04	0.03	17.07	14.28
Final T OF	75.00	60/40	0.00	-0.69	-0.69	0.00	0.00	-0.28	-0.32	0.00	0.00	0.05	0.04	19.93	17.21
Initial P	100.00	50/50	0.00	-0.68	-0.68	0.00	0.00	-0.26	-0.30	0.00	0.00	0.06	0.05	21.82	19.16
Final P (psia)	60.00	40/60	0.00	-0.67	-0.68	0.00	0.00	-0.26	-0.30	0.00	0.00	0.06	0.05	23.14	20.54
		30/70	0.00	-0.66	-0.67	0.00	0.00	-0.25	-0.29	0.00	0.00	0.06	0.06	24.12	21.56
		20/80	0.00	-0.66	-0.66	0.00	0.00	-0.24	-0.28	0.00	0.00	0.07	0.06	24.87	22.34
		Oct-90	0.00	-0.65	-0.66	0.00	0.00	-0.24	-0.28	0.00	0.00	0.07	0.06	25.46	22.97
Garnet	well 2	100% source producer	0.00	-0.65	-0.66	0.00	0.00	-0.23	-0.27	0.00	0.00	0.07	0.06	25.94	23.47
Leamex	well 28	100% target producer	0.00	-0.62	-0.83	0.00	0.00	0.03	-0.50	52.20	0.00	0.08	-0.04	41.76	0.00
		90/10 target/source	0.00	-0.56	-0.78	0.00	0.00	0.10	-0.44	171.62	0.00	0.11	-0.01	48.43	0.00
		80/20	0.00	-0.53	-0.74	0.00	0.00	0.13	-0.40	235.20	0.00	0.12	0.01	47.63	4.16
Initial T OF	150.00	70/30	0.00	-0.51	-0.72	0.00	0.00	0.15	-0.38	273.60	0.00	0.12	0.02	46.04	8.55
Final T OF	70.00	60/40	0.00	-0.49	-0.71	0.00	0.00	0.17	-0.36	299.14	0.00	0.12	0.03	44.56	11.23
Initial P	80.00	50/50	0.00	-0.49	-0.70	0.00	0.00	0.18	-0.35	317.31	0.00	0.12	0.03	43.32	13.01
Final P (psia)	20.00	40/60	0.00	-0.48	-0.69	0.00	0.00	0.18	-0.34	330.88	0.00	0.12	0.04	42.29	14.28
		30/70	0.00	-0.47	-0.68	0.00	0.00	0.19	-0.33	341.39	0.00	0.11	0.04	41.43	15.22
		20/80	0.00	-0.47	-0.68	0.00	0.00	0.19	-0.33	349.78	0.00	0.11	0.04	40.70	15.94
		Oct-90	0.00	-0.47	-0.67	0.00	0.00	0.20	-0.32	356.62	0.00	0.11	0.04	40.09	16.51
Garnet	well 2	100% source producer	0.00	-0.46	-0.67	0.00	0.00	0.20	-0.32	362.30	0.00	0.11	0.04	39.56	16.98
Leamex	well 28	100% target producer	0.00	-0.80	-0.83	0.00	0.00	-0.34	-0.38	0.00	0.00	-0.03	-0.05	0.00	0.00
		90/10 target/source	0.00	-0.74	-0.77	0.00	0.00	-0.28	-0.31	0.00	0.00	0.02	0.00	8.13	0.00
		80/20	0.00	-0.71	-0.74	0.00	0.00	-0.24	-0.27	0.00	0.00	0.04	0.02	17.41	10.94
Initial T OF	90.00	70/30	0.00	-0.69	-0.72	0.00	0.00	-0.22	-0.25	0.00	0.00	0.05	0.04	22.11	17.01
Final T OF	90.00	60/40	0.00	-0.67	-0.70	0.00	0.00	-0.20	-0.23	0.00	0.00	0.06	0.05	24.88	20.62
Initial P	300.00	50/50	0.00	-0.66	-0.69	0.00	0.00	-0.19	-0.22	0.00	0.00	0.07	0.06	26.67	22.98
Final P (psia)	1000.00	40/60	0.00	-0.66	-0.68	0.00	0.00	-0.18	-0.21	0.00	0.00	0.07	0.06	27.92	24.63
		30/70	0.00	-0.65	-0.68	0.00	0.00	-0.18	-0.21	0.00	0.00	0.08	0.07	28.83	25.85
		20/80	0.00	-0.64	-0.67	0.00	0.00	-0.17	-0.20	0.00	0.00	0.08	0.07	29.52	26.78
		Oct-90	0.00	-0.64	-0.67	0.00	0.00	-0.17	-0.20	0.00	0.00	0.08	0.07	30.07	27.52
Garnet	well 2	100% source producer	0.00	-0.64	-0.66	0.00	0.00	-0.17	-0.19	0.00	0.00	0.08	0.08	30.50	28.11

Recommendation

Based on modeling there is a very low risk for scale downhole however the higher risk at surface may warrant the need of a surface scale inhibitor treatment. ChampionX recommends reviewing historical field solids issues and facility failures/solid build up to make the decision if the scale inhibitor is needed or not.

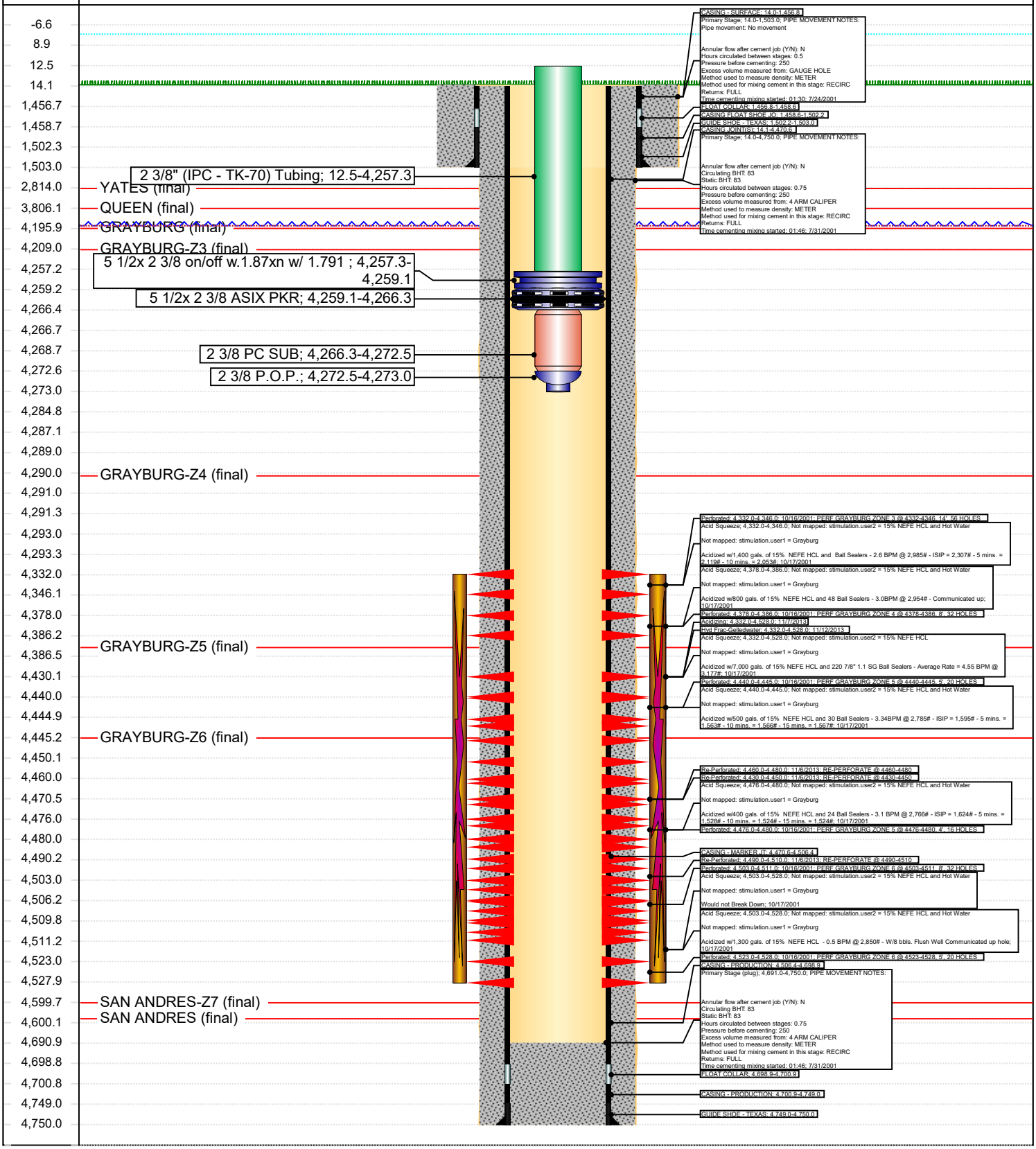
ConocoPhillips

ATTACHMENT 4
CURRENT SCHEMATIC
LEAMEX 61W

District	Field Name	API / UWI	County	State/Province
PERMIAN CONVENTIONAL	MALJAMAR	3002535573	LEA	NEW MEXICO

Original Spud Date	Surface Legal Location	E/W Dist (ft)	E/W Ref	N/S Dist (ft)	N/S Ref
7/22/2001	SEC. 25, T17S, R33E, UL C	1,940.00	W	660.00	N

VERTICAL, Main Hole, 8/26/2021 4:24:12 PM



District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 56563

CONDITIONS

Operator: CONOCOPHILLIPS COMPANY 600 W. Illinois Avenue Midland, TX 79701	OGRID: 217817
	Action Number: 56563
	Action Type: [C-103] NOI General Sundry (C-103X)

CONDITIONS

Created By	Condition	Condition Date
pgoetze	None	11/2/2021