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. 30-025-20516
5. Indicate Type of Lease STATE [X] FEE [ ]
6. State Oil & Gas Lease No. B-2229

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: Philmex
1. Type of Well: Oil Well [ ] Gas Well [X] Other Injection
8. Well Number 009
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 B : 660 feet from the North line and 1980 feet from the East line
Section 26 Township 17S Range 33E NMPM Lea County
11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 4148'

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 SWD-126 & R-3668	[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 Philmex 009 injector from Caprock wells, Yeso formation which is expected increase production from Philmex producing wells. This minor amendment to SWD-126/R-3668 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 1,000 BWPD during the first year of operation with a maximum daily rate of injected fluid of 2,000 BWPD. Injection pressure is expected to average 1,200 psig with a maximum injection surface pressure of 1,540 psig as authorized previously.

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

The Caprock Yeso Area (CYA) C 101H well is expected to start production ~ 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 10/20/2021

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 - Philmex WF Source Addition Request

Purpose:

ConocoPhillips (COP) wishes to increase water injection rates to the Philmex 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 Philmex 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 permit modification to SWD-126 and R-3668 to combine at the surface the produced water from the Yeso formation with the produced water from the Grayburg/San Andres (GB/SA) formation. The 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 the Leamex GB/SA production. Water will then be transferred to the Philmex #9 through an existing line. It is estimated that a maximum of 1,500 BWPD will be available for injection in the Philmex injector.

Injection Well to receive additional source:

Philmex 9 30-025-20516 B-26-17S-33E

Method of Analysis:

Waterflood operations began in 1986 and secondary recovery response has been good. The pattern decline rate during this WF period has averaged 7% annual nominal, well below the primary recovery decline rate of 34%.

COP has not noticed water breakthrough events since WF operations commenced over 35 years ago indicating a low risk of watering out producers. WOR ratios have averaged 10 BW/BO over the last few years also indicating no significant breakthrough events and normal WF behavior. GORs have remained relatively constant at 4,400 SCF/STB suggesting good pressure support from the injected water. An increasing GOR would be expected if reservoir pressures were not being maintained through effective water injection.

It is expected that an increase in water injection rate will increase oil production by approx. 5 BOPD in the offset producers. This will result in additional oil production to COP and royalty income to the State of New Mexico.

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 the Yeso produced water from the Caprock area acreage as a source for waterflood makeup water to support the pressure maintenance activities in the Philmex lease. Injection pressure is expected to average 1,200 psig with a maximum injection surface pressure of 1,570 psig as authorized previous correspondence. Average daily rate of injected fluid is expected to be 1,000 BWPD during the first year of operation with a maximum daily rate of injected fluid of 2,000 BWPD.

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 Philmex Waterflood Project well listed below.

Philmex 9 30-025-20516 B-26-17S-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 Philmex 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

10/19/2021

Date

SSP Mixing – Scale Risk Evaluation

Leamex 28 & Garnet 5 & 2

ChampionX
Global Headquarters
2445 Technology Forest
Building 4, 12th Floor
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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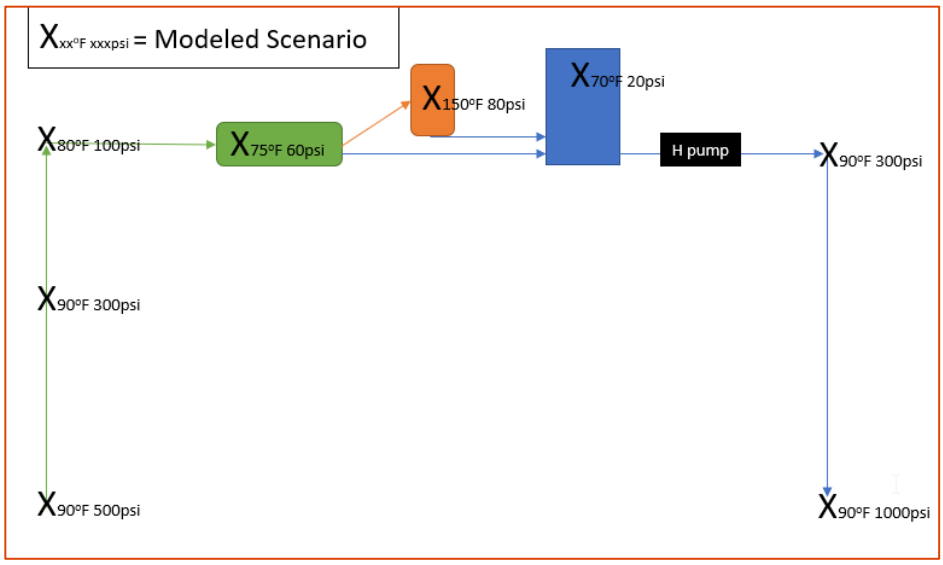
Project Overview

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

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
PHILMEX 09W

District	Field Name	API / UWI	County	State/Province
PERMIAN CONVENTIONAL	DISTRICT - CAPROCK SUB-DIS	3002520516	LEA	NEW MEXICO

Original Spud Date	Surface Legal Location	E/W Dist (ft)	E/W Ref	N/S Dist (ft)	N/S Ref
11/19/1962	Section 26-17S-33E	1,980.00	E	660.00	N

VERTICAL, MAIN HOLE, 10/19/2021 9:45:58 AM

MD (ftKB)	Incl (°)	Vertical schematic (actual)
0.0		
12.8		
13.1		
335.0		
2,799.9		
3,000.0		
4,367.8		
4,374.0		
4,429.1		
4,435.0		
4,436.7		
4,437.0		
4,439.0		
4,443.6		
4,445.9		
4,542.0		4,542.0-4,550.0
4,549.9		
4,636.2		PBTD; 4,636.0
4,658.1		
4,664.0		4,658.0-4,676.0
4,675.9		
4,680.1		4,680.0-4,684.0
4,684.1		
4,690.9		4,691.0-4,695.0
4,694.9		
4,847.1		
4,850.1		
4,872.0		4,872.0-4,876.0
4,876.0		
4,960.0		4,960.0-5,010.0
5,009.8		
5,069.9		5,070.0-5,090.0
5,089.9		
5,850.1		
6,250.0		
6,299.9		
6,700.1		
10,190.0		
10,589.9		
10,990.2		
11,299.9		
11,479.0		
11,482.0		

Report Printed: 10/19/2021

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1625 N. French Dr., Hobbs, NM 88240
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District II
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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

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