STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

APPLICATIONS OF GOODNIGHT MIDSTREAM PERMIAN, LLC FOR APPROVAL OF SALTWATER DISPOSAL WELLS LEA COUNTY, NEW MEXICO

CASE NOS. 23614-23617

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN LLC TO AMEND ORDER NO. R-22026/SWD-2403 TO INCREASE THE APPROVED INJECTION RATE IN ITS ANDRE DAWSON SWD #1, LEA COUNTY, NEW MEXICO.

CASE NO. 23775

APPLICATIONS OF EMPIRE NEW MEXICO LLC TO REVOKE INJECTION AUTHORITY, LEA COUNTY, NEW MEXICO

CASE NOS. 24018-24020, 24025

APPLICATION OF GOODNIGHT PERMIAN MIDSTREAM, LLC FOR APPROVAL OF A SALTWATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

DIVISION CASE NO. 22626
ORDER NO. R-22869-A
COMMISSION CASE NO. 24123

SELF-AFFIRMED SUPPLEMENTAL STATEMENT OF PRESTON MCGUIRE

1. My name is Preston McGuire. I work for Goodnight Midstream Permian, LLC ("Goodnight Midstream"), as the Geology and Reservoir Engineering Manager. I provided written direct and rebuttal testimony in these cases that were filed with the Commission on August 26, 2024, and February 10, 2025, respectively.

2. I am supplementing my previous testimony and opinions based on pressure survey data for the EME H-20 SWD well that was recently obtained from Rice Operating Co. ("Rice") and based on discussions with Rice's general manager, Scott Curtis.

Summary of Supplemental Opinion

- The Rice EME H-20 SWD well recorded a 0.36 PSI/ft reservoir pressure gradient in 1959, the earliest known measurement for the San Andres disposal zone. This confirms the zone was naturally under-pressured before EMSU water withdrawal operations began.
- The EME H-20 early pressure data refutes Empire's claim of pressure drawdown of the San Andres disposal zone from the Grayburg producing interval indicating communication. It is highly unlikely that the San Andres disposal zone about 1.5 miles outside the EMSU and more than 1,100 feet deeper than the Grayburg oil-water contact, where the EME H-20 pressure measurement was taken, was affected by Grayburg production. The San Andres disposal zone is naturally under-pressured.
- Empire misinterprets Goodnight's near-wellbore pressure calculations as a reservoir-wide change. These calculations of reservoir pressure increase per volume injected were to show that even the near well bore pressure increase is minimal. An update calculation, provided herein, shows that the pressure increase per volume injected over a larger reservoir area is significantly less than Empire's misconstrued claim.
- Despite more than 60 years of injection totaling hundreds of millions of barrels, the pressure gradient in the San Andres disposal zone has only slightly increased from 0.36 PSI/ft to approximately 0.38 PSI/ft. This disproves Empire's claims of rapid pressure build up in the disposal reservoir and their misinterpretation of near-wellbore pressure build, while also highlighting the zone's vast disposal capacity.

RICE'S EME H-20 SWD 1959 WELL PRESSURE SURVEY

3. The Rice EME H-20 SWD (API# 30-025-12800) was drilled in June 1959 as a San Andres disposal well [Pool: 96121 San Andres] and is located about 1.5 miles north of the EMSU. *See* Exhibit B-62, pg. 1 (EME H-20 SWD identified inside red box). According to Division well records, it has an open hole completion from 4,446-5,000 ft. Measured Depth (MD) (-924 to -1478 ft. Mean Sea Level (MSL)) that is being utilized as the disposal interval. The Rice EME H-20 disposes into the Goodnight-defined water management zone, the same zone utilized at the EMSU for water supply and disposal, including all four of Goodnight's disposal wells in the EMSU (Ernie Banks SWD, Ryno SWD, Andre Dawson SWD, and the Sosa SA 17 SWD #2).

4. Exhibit B-62 includes a line of cross-section from the EME H-20 SWD to the EMSU SWD #1. Page 2 of the exhibit is a stratigraphic cross-section flattened on the Grayburg and includes the Rice EME H-20 and the Empire EMSU 1 SWD, showing that the completion intervals of these wells are correlative.

5. Rice recently provided from its business records a bottom hole pressure survey for the EME H-20 SWD that was taken July 1959, prior to commencing injection, which is shown as Exhibit B-63. The exhibit indicates that the fluid level in this well was shown to be at 1050 feet from the surface and the pressure measured at 5000 feet was 1800 PSI. The exhibit establishes a reservoir pressure gradient of 0.36 PSI/ft for the San Andres disposal zone as of 1959. This is a significant datapoint because it is the earliest known measurement of the reservoir pressure for the San Andres disposal zone. It is also significant because the pressure survey was taken more than 25 years before the EMSU water supply wells were drilled and completed into the San Andres water management zone and well before they started producing substantial volumes of water for the EMSU Grayburg waterflood.

6. The EME H-20 SWD pressure survey refutes two of Empire's arguments.

7. First, Empire has claimed that San Andres disposal zone pressure was drawn down due to communication with the producing Grayburg zone. The data from the EME H-20 SWD refutes that claim because that well is about 1.5 miles outside of the EMSU and measured the San Andres at a depth of -1478 MSL (5,000 MD). This measurement was taken between 1,128 and 1,153 feet below the EMSU oil-water contact of -325 to -350 feet MSL. Given this substantial vertical offset, it is highly unlikely that the cumulative production from the Grayburg at the EMSU as of mid-1959 could affect the pressures in the San Andres disposal zone more than 1,100 feet deeper than the productive interval when there is known reservoir and pressure isolation that occurs in the Grayburg as shown by the well-documented conformance issues with the waterflood. The EME H-20 SWD data therefore confirms that the San Andres disposal interval was a naturally sub-normally pressured reservoir before the EMSU water supply wells were drilled in the area. As of 1959 only disposal had occurred in this interval. From this it can be inferred that the San Andres disposal zone original reservoir pressure was at or near a 0.36 PSI/ft gradient. The fact that the EMSU water supply wells lost circulation while drilling through the water management zone of the San Andres in the 1980s, as documented by Mitchell and Salvo in their 1991 SPE paper titled The EMSU Waterflood Project: A Case History of Infill Drilling, Completions, and Workovers, is further confirmation that an extensive and durable seal exists between the San Andres disposal zone and the Grayburg productive interval. It also is further confirmation that the San Andres is a naturally under-pressured reservoir.

8. As part of my review of the EME H-20 SWD pressure survey, I had a discussion on March 26, 2025, with Rice's general manager, Scott Curtis, who provided the pressure survey from Rice's business records. He confirmed that the San Andres SWDs Rice recently drilled in the EMSU—the N-11 (API No. 30-025-46577) and the P-15 (API No. 30-025-46579)—both

experienced complete loss of returns while drilling through the San Andres disposal zone but held circulation in the Grayburg interval. This matches Goodnight's experience drilling its SWDs. In addition, he confirmed that Rice has been able to operate its SWDs that dispose into the San Andres on vacuum without a pump and have not experienced any loss of injection capacity over a 60-year injection history. Mr. Curtis's review of Rice's drilling and operation experiences further confirms that there is an extensive geologic seal that effectively isolates the San Andres disposal zone from the Grayburg producing interval.

9. Second, the EME H-20 SWD data (0.36 PSI/ft gradient) shows that the reservoir pressure of the San Andres disposal zone is minimally increasing after hundreds of millions of barrels have been disposed of over the last 60-plus years when compared to current-day reservoir pressure. Goodnight Exhibit B-21 shows the average San Andres disposal zone reservoir pressure gradient at the Goodnight disposal wells is 0.381 PSI/ft as of July 2024. The 2024 gradient of 0.381 PSI/ft and the 1959 gradient of 0.36 PSI/ft compare favorably when considering the volume of water injected into the San Andres disposal zone.

10. The EME H-20 SWD data also establishes that Empire has misconstrued Goodnight's analysis regarding the extent to which the San Andres disposal zone is increasing in pressure. Goodnight Exhibit B-37 is a table showing how the San Andres aquifer pressure has increased over time at individual Goodnight disposal wells. Empire's witnesses have erroneously asserted that these values align with their interpretation that the pressure in the reservoir as a whole is increasing by about 4-10 PSI per 1 MM BW injected. This table instead shows that near well bore pressures are increasing minimally for the volume of water disposed into each well, individually, and not that the reservoir pressure is increasing by that amount over a large area. This 4-10 PSI increase per 1 MM BW injected is an incredibly low near well bore pressure increase

when compared to the majority of the disposal wells that operate in the Permian Basin.

11. The fact that these pressures are near well bore pressures is demonstrated by the data associated with the Goodnight Piper 26 #2 SWD. This well was shut-in for two months prior to the last pressure measurement taken in the well. The reservoir pressure in the well dropped 165 PSI over the period since its last pressure measurement indicating that the near well bore pressure was able to dissipate into the reservoir over a relatively short period of time. Additionally, the last pressure measurement taken at the Piper 26 #2 SWD shows that this well is currently at a 0.352 PSI/ft gradient which is lower than the gradient measured in 1959 in the Rice EME H-20 SWD of 0.36 PSI/ft. It should be noted that the Piper SWD well has the largest cumulative volume disposed out of all the Goodnight SWDs. It appears that the San Andres disposal reservoir is not currently back to the original reservoir pressure due to the fluid withdrawal from the water supply wells in the area. Currently more water was taken out of the reservoir from the water supply wells than has been injected from disposal operations, which likely explains why the Piper 26 #2 SWD currently has a lower pressure gradient than the 1959 measurement from the EME H-20 SWD.

12. If the area of interest for this calculation is expanded to include more disposal volumes from additional SWDs beyond Section 17, then the resulting increase in reservoir pressure per 1MM BW will be substantially lower than 1.86 PSI. This is because the analysis must now account for the additional volumes from the newly included SWDs that contribute to the pressure increase over the larger area being analyzed. For instance, page two of Goodnight Exhibit B-64 presents the same calculation as the first page of the exhibit but now includes data from the next closest Goodnight SWD, Yaz 28 #1 SWD. The total volume disposed from all five wells listed are now taken into consideration in the calculation, now including the Yaz SWD. Since a greater volume is now being considered for the same measured increase in reservoir pressure at the wells,

the pressure increase per 1 MM BW decreases to 1.50 PSI/1 MM BW. Thus, if the area is further expanded to include more volumes from additional SWDs then the reservoir pressure increase per volume injected will calculate to be even lower.

13. The EME H-20 SWD pressure survey data corroborates this data and shows that Empire misconstrues Goodnight's analysis. It shows that the reservoir pressure of the San Andres disposal zone has increased minimally after hundreds of millions of barrels have been injected over more than 60 years, from the 1959 gradient of 0.36 PSI/ft to 2024 gradient of 0.381 PSI/ft. This data is contrary to Empire's claim that this reservoir will pressure out in the immediate future.

14. The 1959 Rice EME H-20 SWD bottomhole pressure survey is highly relevant in this case as it refutes Empire's claims about pressures within the San Andres disposal zone. It shows that the San Andres disposal zone pressures were not affected by Grayburg production in the EMSU and that the reservoir is naturally under pressured as this well is more than a mile outside of the EMSU and the pressure was taken about 1,100 feet below the producing reservoir in the Grayburg. The bottom hole pressure survey also confirms that the San Andres disposal zone has minimally increased from 0.36 PSI/ft gradient to 0.38 PSI/ft. This assumes that the 0.38 PSI/ft is the current static reservoir pressure and ignores the Piper 26 #2 SWD data of 0.352 PSI/ft, which indicates that the San Andres disposal zone has not yet returned to the reservoir pressure recorded at the EME H-20 SWD in 1959. Thus, to the extent the reservoir pressure has increased in the San Andres disposal zone since 1959, it has been a small increase. This small increase in pressure occurred over more than 60 years of disposal history with hundreds of millions of barrels having been injected. Taken together, this data shows that the San Andres is a world class disposal reservoir which has an enormous capacity to safely accommodate large volumes of water.

15. I affirm under penalty of perjury under the laws of the State of New Mexico that the foregoing statements are true and correct. I understand that this self-affirmed statement will be used as written testimony in this case. This statement is made on the date next to my signature below.

Preston McGuire

4/6/2025
Date

San Andres SWDs

AGU Outline

EMSU Outline

EMSU -B

5 mile buffer

Exhibit Goodnight B-62

Rice EME H-20 SWD

Cross-Section

Lea

Andrews

19S 35E | 19S 36E | 19S 37E | 19S 38E | 19S 39

20S 35E | 20S 36E | 20S 37E | 20S 38E | 20S 39

21S 34E | 21S 35E | 21S 36E | 21S 37E | 21S 38E

22S 34E | 22S 35E | 22S 36E | 22S 37E | 22S 38E

23S 34E | 23S 35E | 23S 36E | 23S 37E | 23S 38E

04/2007 Cum-Unk bbls

03/1995 16,213,712 bbls

12/1960 >34,298,306 bbls

08/1960 >36,263,770 bbls

11/1952 >35,373,897 bbls

03/2017 7,328,882 bbls

03/1982 >27,493,283 bbls

11/1959 >48,817,372 bbls

07/2002 14,020,497 bbls

07/1959 >14,502,855 bbls

07/1991 >12,279,855 bbls

12/1968 >70,804 bbls

04/1960 >59,869,210 bbls

08/2005 1,086,652 bbls

03/1987 >4,377,706 bbls

01/2023 7,711,885 bbls

08/2018 18,793,977 bbls

03/2021 24,895,196 bbls

01/2023 11,582,987 bbls

09/1966 >43,135,269 bbls

11/2020 8,212,084 bbls

11/2020 2,280 bbls

10/2019 20,273,359 bbls

12/1968 Cum-Unk bbls

11/2019 22,373,070 bbls

03/2019 21,019,264 bbls

07/2022 22,068,281 bbls

02/2020 14,612,041 bbls

11/2020 22,185 bbls

01/2012 27,668,670 bbls

10/2008 36,294,097 bbls

03/2015 8,356,146 bbls

07/2012 4,431,749 bbls

12/1960 Cum Unk bbls

09/1975 >1,683,747 bbls

04/2007 20,009,787 bbls

07/1969 >2,197,003 bbls

07/2005 39,056,630 bbls

09/2000 1,628,929 bbls

08/2005 16,441,071 bbls

08/2005 13,803,207 bbls

09/1975 >3,807,793 bbls

09/1975 >507,899 bbls

09/1975 >14,493,382 bbls

09/1975 >1,358,957 bbls

09/1975 Cum Unk bbls

05/1974 >53,821,987 bbls

08/1968 >40,741,717 bbls

09/2019 4,282,885 bbls

09/1989

06/1992 >1,241,394 bbls

09/1979 >2,515,836 bbls

Cum Unk bbls

01/1978 >111,566,215 bbls

10/2005 70,037,890 bbls

12/1995 43,615 bbls

03/1976 >5,918,047 bbls

01/1978 >1,617,790 bbls

12/1995 7,865,595 bbls

01/1969 >3,418,357 bbls

03/2004 16,507,154 bbls

04/2016 9,755 bbls

12/1968 >23,690,428 bbls

12/1985 415,434 bbls

03/2004 726,532 bbls

07/1994 32,835,408 bbls

10/1985 >3,376,045 bbls

New Mexico

APACHE	PLUGGED
ACTIVE	KEY ENERGY SERVICES
PLUGGED	ACTIVE
BASIC ENERGY SERVICES	LEGACY RESERVES OPERATING
PLUGGED	ACTIVE
CAMERON O&G	PLUGGED
ACTIVE	MAVERICK PERMIAN LLC
PLUGGED	ACTIVE
CHESAPEAKE OPERATING	MONUMENT DISPOSAL
PLUGGED	PLUGGED
CHEVRON	OWL SWD OPERATING
PLUGGED	ACTIVE
CONOCOPHILLIPS	PARKER ENERGY SUPPORT
PLUGGED	ACTIVE
EMPIRE NEW MEXICO	PERMIAN LINE SERVICE
ACTIVE	ACTIVE
EXXON MOBIL	RICE OPERATING
PLUGGED	ACTIVE
FAE II OPERATING	PENDING
ACTIVE	PLUGGED
GOODNIGHT MIDSTREAM	SHELL OIL
ACTIVE	PLUGGED
PENDING	SOUTHWEST ROYALTIES
GRIZZLY OPERATING	ACTIVE
PLUGGED	TARGA MIDSTREAM SERVICES
HANSON OIL	ACTIVE
PLUGGED	UNICHEM INTERNATIONAL
J COOPER ENTERPRISES	PLUGGED
ACTIVE	

Printed Date: January 14, 2025

N W E S

Miles

1 in = 1 miles

1 inch = 5,220 feet

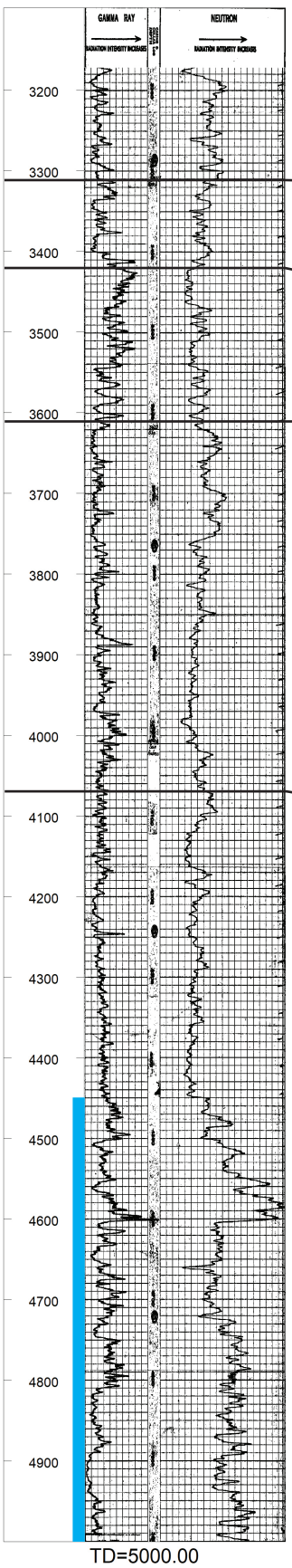
Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

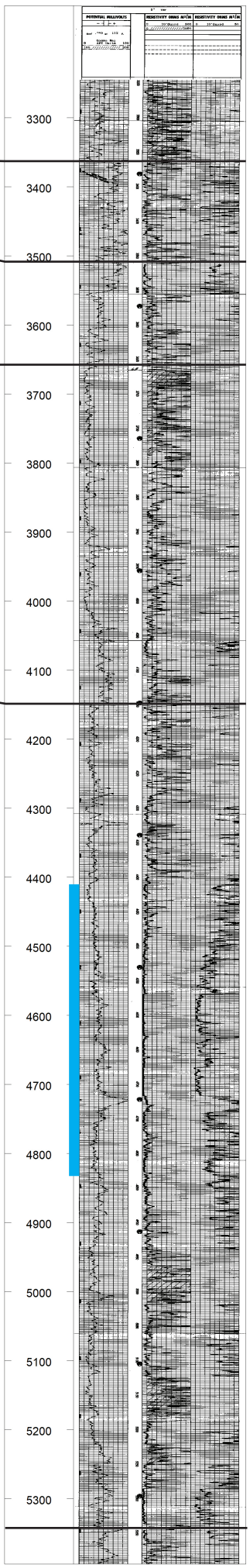
GOODNIGHT MIDSTREAM
5910 N. CENTRAL EXPWY SUITE 800 | DALLAS, TX 75206

Alt ID=12800 — 20608 ft — Alt ID=04484

RICE OPERATING COMPANY
E M E SWD 020
TWP: 20 S - Range: 37 E - Sec. 20
Datum = 3522.00

Empire New Mexico LLC
EMSU 1
TWP: 21 S - Range: 36 E - Sec. 4
Datum = 3595.00





Queen
Penrose
Grayburg
San Andres
Glorieta

0
-500
-1000
-1500

Disposal Interval

Exhibit Goodnight B-63

JOHN W. WEST ENGINEER & COMPANY
412 NORTH DAL PASO, HOBBS, NEW MEXICO
TELEPHONES 3-3342
3-6770

BOTTOM HOLE PRESSURE SURVEY REPORT

OPERATOR Rice Engineering & Operating Inc.
LEASE
WELL NO. E. M. E. H-20 (Before injection)
FIELD
DATE July 15, 59 TIME 2:50 P. M.

STATUS Shut in TEST DEPTH 5000
TIME S.I. LAST TEST DATE Initial test
CAS. PRES. BHP LAST TEST
TUB. PRES. 0 BHP CHANGE
ELEV. FLUID TOP 1050
DATUM WATER TOP
TEMP RUN BY B. T.
CLOCK NO. 2547 GAUGE NO. 12434
ELEMENT NO. 14659-N

DEPTH	PRESSURE	GRADIENT
000	0	
500	7	.014
1000	26	.038
1500	247	.442
2000	462	.430
3000	905	.443
4000	1347	.442
5000	1800	.453

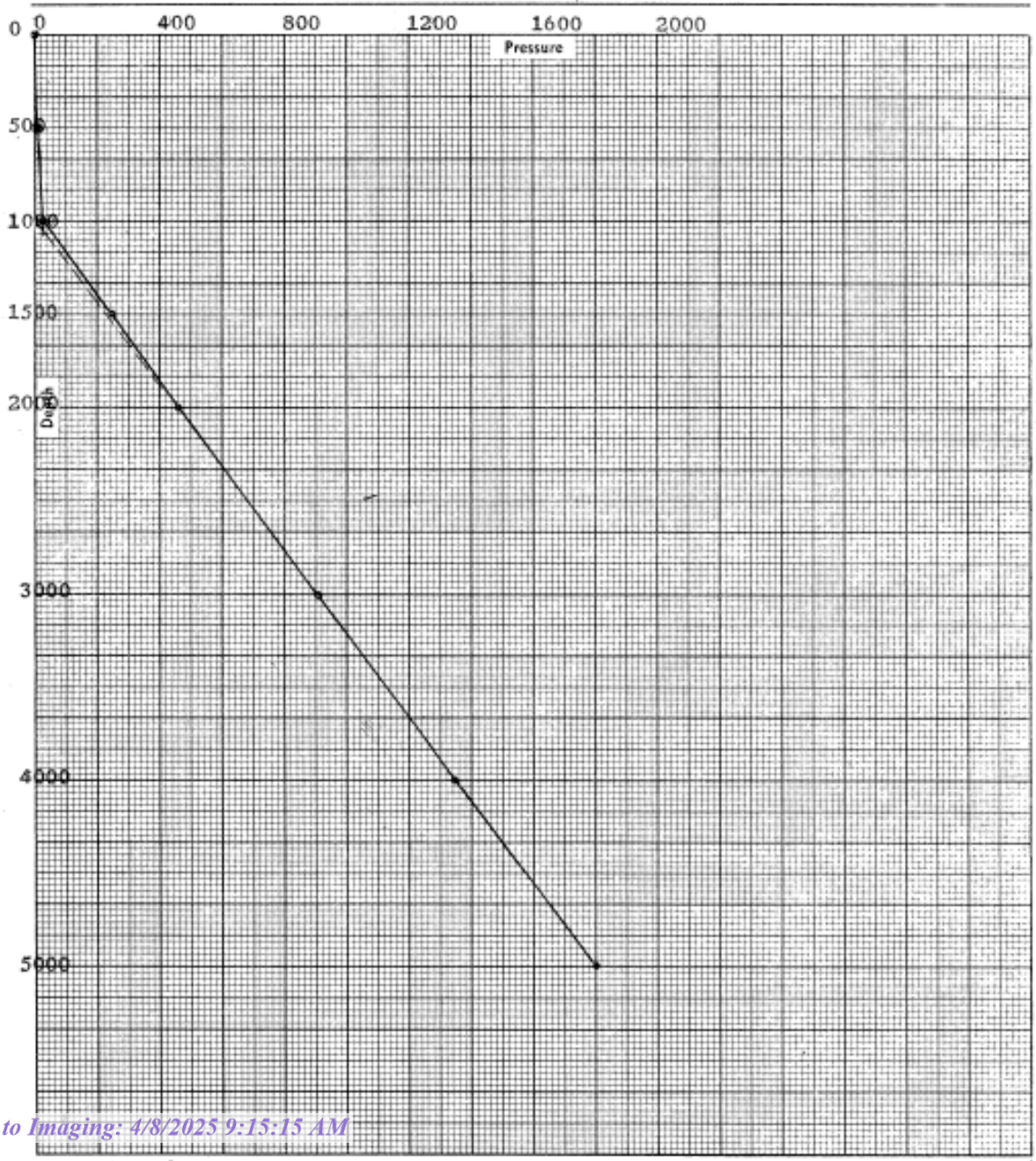


Exhibit Goodnight B-64

Well		FL Date	All Four Well Cum Vol	SI Time	SITP	FL (from SL)	Top Perf	Mid Perf	Base Perf	BHP at Mid Perf	Gradient	Res PSI Increse per 1MMBBL Injected	
Dawson #1	*	12/29/2022	21,856,480	NA	0	1000				1836	0.371		**SW Gradient**
Dawson #1		6/13/2023	28,435,245	18-days	-13	960	4370	4948	5525	1841	0.372		0.465
Dawson #1		12/18/2023	40,572,092	~20-min	-13	868				1884	0.381		
Dawson #1		7/20/2024	51,788,865	72-min	-13	894				1872	0.378	1.21	
	*	*FL during completion*											
Ernie Banks #1	*	1/17/2023	22,631,916	NA	0	1000				1839	0.371		
Ernie Banks #1		6/13/2023	28,435,245	~20-min	-13	961	4490	4955	5420	1844	0.372		
Ernie Banks #1		12/18/2023	40,572,092	~20-min	-13	849				1896	0.383		
Ernie Banks #1		7/20/2024	51,788,865	110-min	-13	860				1891	0.382	1.79	
	*	*FL during completion*											
Ryno 17 #1		4/7/2022	14,033,807	~20-min	-9	1069				1805	0.363		
Ryno 17 #1		11/11/2022	19,702,142	~20-min	-10	993				1839	0.370		
Ryno 17 #1		6/13/2023	28,435,245	~20-min	-10	969	4380	4970	5560	1850	0.372		
Ryno 17 #1		12/18/2023	40,572,092	~20-min	-12	849				1904	0.383		
Ryno 17 #1		7/20/2024	51,788,865	95-min	-13	868				1894	0.381	2.37	
Sosa 17 #2		4/7/2022	14,033,807	~20-min	-11	1074				1796	0.362		
Sosa 17 #2		11/11/2022	19,702,142	~20-min	-10	1003				1830	0.369		
Sosa 17 #2		6/13/2023	28,435,245	~20-min	-12	986	4592	4961	5330	1836	0.370		
Sosa 17 #2		12/18/2023	40,572,092	~20-min	-13	897				1877	0.378		
Sosa 17 #2		7/20/2024	51,788,865	126-min	-13	901				1875	0.378	2.08	
												1.86	
												Avg. BHP Increse per 1MM BW Injected	

Well		FL Date	All Five Well Cum Vol	SI Time	SITP	FL (from SL)	Top Perf	Mid Perf	Base Perf	BHP at Mid Perf	Gradient	Res PSI Increse per 1MMBBL Injected	
Dawson #1	*	12/29/2022	33,406,193	NA	0	1000				1836	0.371		**SW Gradient**
Dawson #1		6/13/2023	41,543,712	18-days	-13	960	4370	4948	5525	1841	0.372		0.465
Dawson #1		12/18/2023	56,664,305	~20-min	-13	868				1884	0.381		
Dawson #1		7/20/2024	70,394,738	72-min	-13	894				1872	0.378	0.98	
	*	*FL during completion*											
Ernie Banks #1	*	1/17/2023	34,613,977	NA	0	1000				1839	0.371		
Ernie Banks #1		6/13/2023	41,543,712	~20-min	-13	961	4490	4955	5420	1844	0.372		
Ernie Banks #1		12/18/2023	56,664,305	~20-min	-13	849				1896	0.383		
Ernie Banks #1		7/20/2024	70,394,738	110-min	-13	860				1891	0.382	1.46	
	*	*FL during completion*											
Ryno 17 #1		4/7/2022	22,891,909	~20-min	-9	1069				1805	0.363		
Ryno 17 #1		11/11/2022	30,724,384	~20-min	-10	993				1839	0.370		
Ryno 17 #1		6/13/2023	41,543,712	~20-min	-10	969	4380	4970	5560	1850	0.372		
Ryno 17 #1		12/18/2023	56,664,305	~20-min	-12	849				1904	0.383		
Ryno 17 #1		7/20/2024	70,394,738	95-min	-13	868				1894	0.381	1.88	
Sosa 17 #2		4/7/2022	22,891,909	~20-min	-11	1074				1796	0.362		
Sosa 17 #2		11/11/2022	30,724,384	~20-min	-10	1003				1830	0.369		
Sosa 17 #2		6/13/2023	41,543,712	~20-min	-12	986	4592	4961	5330	1836	0.370		
Sosa 17 #2		12/18/2023	56,664,305	~20-min	-13	897				1877	0.378		
Sosa 17 #2		7/20/2024	70,394,738	126-min	-13	901				1875	0.378	1.65	
Yaz 28 #1		11/11/2022	30,724,384	~2-days	-9	935				1888	0.376		
Yaz 28 #1		6/13/2023	41,543,712	~3-days	-8	903	4650	5014	5378	1904	0.380		
Yaz 28 #1		12/18/2023	56,664,305	~20-min	-10	798				1950	0.389		
Yaz 28 #1		7/20/2024	70,394,738	90-min	-10	801				1949	0.389	1.55	
												1.50	
												Avg. BHP Increse per 1MM BW Injected	