

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

**APPLICATION OF GOODNIGHT
MIDSTREAM PERMIAN, LLC TO AMEND
ORDER NO. R-7767 TO EXCLUDE THE SAN
ANDRES FORMATION FROM THE EUNICE
MONUMENT OIL POOL WITHIN THE
EUNICE MONUMENT SOUTH UNIT AREA,
LEA COUNTY, NEW MEXICO.**

CASE NO. 24277

**APPLICATION OF GOODNIGHT
MIDSTREAM PERMIAN, LLC TO AMEND
ORDER NO. R-7765, AS AMENDED TO
EXCLUDE THE SAN ANDRES FORMATION
FROM THE UNITIZED INTERVAL OF THE
EUNICE MONUMENT SOUTH UNIT,
LEA COUNTY, NEW MEXICO.**

CASE NO. 24278

**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. 24018-24027

**EXPEDITED MOTION FOR RECONSIDERATION OF ORDER PARTIALLY
QUASHING GOODNIGHT MIDSTREAM PERMIAN, LLC'S
SUBPOENA DUCES TECUM**

Goodnight Midstream Permian, LLC (“Goodnight Midstream”), through undersigned counsel, respectfully submits this expedited motion requesting the Chair reconsider the Order issued on June 4, 2024, partially quashing Goodnight Midstream’s subpoena request for production of documents. *See* Order, attached as **Exhibit A**. Specifically, Goodnight Midstream seeks reconsideration of the Order as to Request Nos. 7-9 (the “Requests”), which ask for reserves reports and estimates for the Eunice Monument South Unit (“EMSU”) and related documents. *See* Goodnight Midstream Subpoena, attached as **Exhibit B**. These requests target discovery on technical issues at the core of these cases. Empire should be ordered to produce documents responsive to Request Nos. 7-9, especially with respect to the San Andres formation within the EMSU.

Goodnight Midstream respectfully requests resolution of this motion be addressed on an expedited basis and that argument be heard at the Commission’s June 20, 2024, hearing. If appropriate and the Chair agrees, Goodnight Midstream requests this Expedited Motion be ruled on by the full Commission at the June 20, 2024, hearing. Counsel for the Division does not oppose this request. Empire opposes the motion.

INTRODUCTION

In quashing Request Nos. 7-9, the Chair determined that the Requests “do not appear reasonably calculated to provide relevant discovery on the technical issues in these cases, but on Empire’s financial considerations for acquiring its working interest in the EMSU.” *See* Order at 3 (emphasis added). In fact, the requests target production of technical issues that go to the heart of the dispute in these cases.

Goodnight Midstream seeks the requested reserves reports and related documents because they (1) represent an independent, third-parties' scientific assessment of economic reserves within the EMSU; (2) are expected to identify the locations and estimated volumes of reserves within the EMSU as reported by Empire and its predecessors-in-interest over time; (3) will identify the source of data and information relied on in preparing the estimates; (4) will likely identify additional data, information, or documents that may be discoverable, such as development and operation costs; and (5) and are expected to undermine, if not refute, Empire's contentions.

The targeted information is directly relevant to the issues before the Commission. *See* NMSA 1978, § 70-2-8. Production of responsive documents is necessary for a full opportunity to present evidence and examine Empire's witnesses. *See* 19.15.4.17(A) NMAC.

ARGUMENT

I. The Requested Reserves Reports Are Expected to Address the Technical Issues at the Heart of this Dispute and to Undermine Empire's Factual Assertions.

With a relatively limited dataset available, it is important for Goodnight Midstream to have access to the requested reserves reports and estimates for the EMSU. Goodnight Midstream is not concerned with financial considerations that may have influenced Empire's acquisition of its interests in the EMSU. Goodnight Midstream is focused instead on obtaining information in Empire's possession and control that relates to whether economically recoverable oil exists within the San Andres formation,¹ as Empire alleges. The requested reserves reports and

¹ Because the Grayburg and San Andres are grouped together in the same "pool" and together comprise the EMSU unitized interval, it is unclear how reserves reports would break out reserves estimates for the Grayburg and San Andres formations. It is likely necessary, therefore, to review complete reserves reports prepared over time to evaluate whether and to what extent the reports allocate reserves to the San Andres.

estimates will address that issue and are expected to undermine, if not refute, Empire's contentions.

While it is true that reserves reports are "the industry standard method for . . . assigning value in the oil and gas industry,"² it is also true that they are "a scientific estimate of the oil and gas reserves" in a property. *LexMac Energy, L.P. v. Macquarie Bank Ltd.*, No. 4:08-cv-048, 2014 U.S. Dist. LEXIS 188438, at *12 (D.N.D. Feb. 19, 2014) (emphasis added). Public companies, such as Empire, are required to file reserves reports with the U.S. Securities and Exchange Commission ("SEC") and reserves reports are required by banks, which "require a high degree of certainty in reserves to make loans." *Id.* Reserves reports provide an assessment of the net present value of a property based on estimated reserves using "a culmination of data and information." *Id.* at *17. Thus, in addition to the reserves estimates, Goodnight Midstream is also focused on identifying and obtaining the data and information used to prepare the subject reports. Importantly, a reserves report is "valuable because it tells one where the reserves are estimated and the amounts and locations of reserves." *Id.* at *12 (emphasis added). Such information goes to the heart of the dispute in these cases and is the type of technical information the Commission Chair determined is subject to discovery.

Estimating reserves "is predicated upon certain historically developed principles of geoscience, petroleum engineering, and evaluation methodologies, which are in turn based on principles of physical science, mathematics, and economics." *See* Society of Petroleum Engineers ("SPE"), Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (rev. June 2019), attached as **Exhibit C**, Art. 1.2 at 5. Qualified reserves reports are

² *See also* Society of Petroleum Engineers, Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (rev. June 2019), attached as **Exhibit C** at 5 (Reserves reports "typically may include, but may not be limited to, estimates of the Reserves quantities, the future producing rates from such Reserves, the future net revenue from such Reserves, and the present value of such future net revenue.").

required to identify the geological and engineering methods used, the source of the data relied upon, as well as costs of development and operations, and other pertinent factors that inform whether reserves exist and are deemed economic. *Id.*, Art. 5.1.

Not only will such information directly address the claims and defenses at issue, but the reports also may point to additional documents and data that have not yet been identified in discovery. Empire has provided no details on when or how it plans to implement its proposed tertiary recovery in the San Andres—including what zones it would target or the costs of development and operations for an ROZ development. In addition to being inherently valuable based on their technical information, the reserves reports—and the related communications and documents—are also expected to shed light on Empire’s vague ROZ plans and whether Empire believes an ROZ exists in the San Andres or is limited to the Grayburg.

In short, Empire’s reserves reports—prepared or vetted by third-party engineering firms under the strict guidelines of the SPE and SEC requirements—and related documents would, at a minimum, provide valuable technical information on the estimated locations and volumes of EMSU reserves, the source of data relied on to prepare them, and estimates on the costs of development and operations. Reviewing reserves reports over time can also be more informative than reviewing only one or few reports. All this targeted information goes directly to “matters within the jurisdiction” of and “pertinent to some question lawfully before” the Commission. NMSA 1978, § 70-2-8. More importantly, production of these documents is necessary to afford Goodnight Midstream a full opportunity to present evidence and examine Empire’s witnesses at the hearing in September, as required by the Commission’s rules. 19.15.4.17(A) NMAC.

II. Reserves Reports Are Commonly Produced in Discovery and Will Be Protected Against Disclosure.

Requiring production of reserves reports is not unusual in discovery. While reserves reports are generally deemed to be confidential, proprietary, or trade secret information, that status does not protect them against production. The Chair has already instructed Goodnight Midstream to sign a confidentiality and nondisclosure agreement that requires the destruction of all documents Empire is compelled to produce in discovery marked confidential or a trade secret at the conclusion of these proceedings.³ See Order at 1. No compelling reason supports preventing Empire from producing the requested reports and related documents.

Empire is routinely required to prepare reserves reports for SEC filings, banks, and other routine business purposes. See *LexMac Energy, L.P. v. Macquarie Bank Ltd.*, No. 4:08-cv-048, 2014 U.S. Dist. LEXIS 188438, at *12-13 (noting that oil and gas exploration companies are required to prepare reserves reports for a variety of regulatory and business reasons). In fact, Empire is a known client of Cawley, Gillespie and Associates, Inc.,⁴ a Texas-based petroleum engineering firm focused on providing independent, third-party reserves estimates pursuant to SEC and SPE reporting requirements.⁵ Indeed, on April 1, 2024, Empire reported on aspects of its most recent reserves report submitted to the SEC as part of its annual reporting.⁶ Request Nos. 7-9 seeks documents that are commonly prepared and relied on in the oil and gas industry for their technical information and assessment of reserves.

Production of reserves reports through discovery is also common. See, e.g., *Bays Expl., Inc. v. Pensa, Inc.*, No. CIV-07-0754-D, 2009 U.S. Dist. LEXIS 138722, at *26-28 (W.D. Okla.

³ Goodnight Midstream is in the process of preparing a confidentiality and nondisclosure agreement that comports with the Order.

⁴ <https://www.cgaus.com/clients/>, visited June 8, 2024 (identifying Empire as a client of the firm).

⁵ <https://www.cgaus.com/services/#reservereporting>, visited June 8, 2024.

⁶ <https://empirepetroleumcorp.com/empire-petroleum-announces-results-for-fourth-quarter-and-full-year-2023/>, visited June 8, 2024 (citing Empire's year-end SEC report).

Jan. 26, 2009) (compelling production of reserves reports, noting the reserves reports are likely to contain information relevant to the claims and that confidential information can be protected through a protective order); *In re TOWNER PETROLEUM Co. Sec. Litig.*, No. 84-2635, 1986 U.S. Dist. LEXIS 29069, at *17-18 (E.D. Pa. Feb. 21, 1986) (compelling production of reserves reports to determine a party's knowledge about potential prospects); *Eastham Drilling v. Exploration*, 2016 Tex. Dist. LEXIS 47566, *16 (order compelling production of reserves reports). Here, as in the cases cited, Empire's reserves reports are highly relevant to the parties' claims and defenses. Given their nature, reserves reports are often the subject of discovery in oil and gas litigation and are commonly produced in discovery. While Empire's reserves reports are confidential and proprietary, they would be protected against public disclosure through a confidentiality and nondisclosure agreement and under an exception to the Inspection of Public Records Act. *See* § 14-2-1(F).

As in any other dispute that puts at issue the presence or absence of hydrocarbons and their economic recovery, reserves reports and related documents sought in Request Nos. 7-9 will provide highly relevant technical information and should be produced.

III. Resolution of this Motion Should Be Expedited to Provide Time for Production and Review of Responsive Documents.

Goodnight Midstream requests that this Motion be addressed and resolved expeditiously to provide time for Empire to produce responsive documents and for Goodnight Midstream and its experts to review them, incorporate the information into their analyses, and seek additional discovery if appropriate. In support of this Expedited Motion, is the self-affirmed statement of Goodnight's petroleum geology expert, William J. Knights, attached as Exhibit D. He has extensive experience preparing and reviewing reserves reports. His statement confirms Request Nos. 7-9 target technical information that goes to heart of the dispute in these cases.

Accordingly, Goodnight Midstream requests the Commission or Chair address this Motion at its June 20, 2024, hearing. That provides ample time for Empire to provide a written response and for the parties to present argument before the Commission, if requested.

CONCLUSION

Empire claims that an economic residual oil zone exists in the San Andres. But if Empire is telling the SEC and its financial institutions one thing about recoverable hydrocarbon reserves in the EMSU and the Commission something different through its paid experts, such inconsistencies—and the underlying data relied on—must be brought to light. Goodnight Midstream should be permitted to discover what independent, third-party evaluators have said about potential hydrocarbon reserves in the San Andres over time. It should be permitted the opportunity to discover and review the technical basis for those reports and Empire's related communications and documents—especially as they pertain to the San Andres.

For the foregoing reasons, Goodnight Midstream respectfully requests that the Order on Request Nos. 7-9 be reversed and Empire be compelled to produce responsive documents. If appropriate and the Chair agrees, Goodnight Midstream requests this Expedited Motion be ruled on by the full Commission at the June 20, 2024, hearing.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on June 12, 2024, I served a copy of the foregoing document to the following counsel of record via Electronic Mail to:

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EXHIBIT A

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

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN, LLC TO AMEND ORDER NO. R-7765, AS AMENDED TO EXCLUDE THE SAN ANDRES FORMATION FROM THE UNITIZED INTERVAL OF THE EUNICE MONUMENT SOUTH UNIT, LEA COUNTY, NEW MEXICO.

CASE NO. 24278

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN, LLC TO AMEND ORDER NO. R-7767 TO EXCLUDE THE SAN ANDRES FORMATION FROM THE EUNICE MONUMENT OIL POOL WITHIN THE EUNICE MONUMENT SOUTH UNIT AREA, LEA COUNTY, NEW MEXICO.

CASE NO. 24277

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

CASE NOS. 23614-23617

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

CASE NOS. 24018-24027

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

ORDER PARTIALLY GRANTING EMPIRE NEW MEXICO LLC'S OBJECTIONS TO AND MOTION TO QUASH GOODNIGHT MIDSTREAM PERMIAN, LLC'S SUBPOENA DUCES TECUM

This matter, having come before the Chairman of the Oil Conservation Commission ("OCC") pursuant to 19.15.4.16(A) NMAC on the objections to and motion to quash Goodnight Midstream

Permian L.L.C.'s subpoena duces tecum by Empire New Mexico L.L.C. ("the Motion"), and further upon the OCC's delegation of consideration of this motion to the Chairman, and the Chairman, having considered written arguments of the parties and being otherwise fully advised, partially grants the Motion as set forth below, and will issue a new subpoena consistent with this order upon presentation thereof by Goodnight. This order is also subject to modification to the extent that the Commission's pending ruling on Empire's Motion to Dismiss in Case Nos. 24278 and 24277 renders certain factual issues moot.

As a general ruling on all requests:

1. In light of Empire's reliance on orders dating back to 1984 in its pending motion to dismiss, the lack of temporal limitation in Goodnight's requests is not unreasonable.
2. To minimize the burden on responding to the subpoena, Empire may properly withhold any documents otherwise responsive to these requests that it determines in good faith are subject to attorney client or attorney work-product privilege without the necessity of creating a privilege log.
3. Goodnight shall sign a confidentiality and nondisclosure agreement that further mandates destruction after the resolution of these cases of all documents produced by Empire that it asserts constitute trade or proprietary secrets.
4. Any documents or other items responsive to requests in the subpoena that are not quashed by this order shall be produced within fourteen (14) days of the date of this order.

With respect to specific requests, the Chairman rules as follows:

Request Nos. 1-4: In light of the fact that the other information before the OCC on related matters reflect little or no dispute as to Empire's status as a working interest owner in the Eunice Monument South Unit ("EMSU"), and based on the limited issues before the OCC on the above captioned matters, these requests are unduly burdensome and overbroad. These requests should thus be limited to such agreements "that establish Empire's legal interest in the San Andres formation of

the EMSU” with the understanding that many such documents will not be specific to EMSU.

Request Nos. 5-6: These requests are unduly burdensome and overbroad with respect to documents that solely relate to the Grayburg formation and should be limited solely to the San Andres formation. To the extent that these requests are duplicative of prior requests, as asserted by Empire, the response can simply refer to past production.

Request Nos. 7-9: These requests do not appear reasonably calculated to provide relevant discovery on the technical issues in these cases, but on Empire’s financial considerations for acquiring its working interest in the EMSU. These requests are hereby quashed.

Request No. 10: This request is unduly burdensome with respect to any non-technical analysis that Empire relied upon in its plans for development as submitted to the New Mexico State Land Office. In light of Empire’s representation that it will produce all such plans, this request should be limited to any other documents that reflect technical analysis as relied upon by Empire in its development and submission of such plans.

Request No. 11: This request is unduly burdensome with respect to any non-technical analysis that Empire relied upon in its reports as submitted to the Division. In light of Empire’s representation that it will produce all such reports, this request should be limited to any other documents that reflect technical analysis as relied upon by Empire in its development and submission of such reports.

Request No. 12: As “the alleged EMSU well failures and alleged increased well costs referred to in footnote No. 2 of Empire New Mexico LLC’s Motion to Refer Cases to New Mexico Oil Conservation Commission, filed on January 3, 2024” arguably relate to the issues presented in the above cases, the Motion is denied with respect to this request, subject to the other provisions of this order.

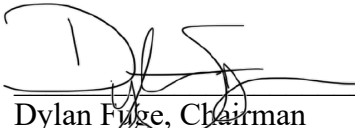
Request No. 13: This request is unduly burdensome with respect to any documents that solely concern the Grayburg formation and should be amended to read “...or potential tertiary

recovery of residual oil from the San Andres formations within the EMSU.” The Motion is otherwise denied.

Request Nos. 14 -17: The motion is denied with respect to these requests. The Chairman notes that these requests seek purely technical information relevant to the issues, and notes that the scope of the issues before the Commission are currently broader than as characterized by Empire, specifically, as noted at page 7 of Goodnight’s response to Empire’s motion to dismiss in case nos. 24277 and 24278. Furthermore, Empire states that it has already provided documents responsive to request no. 14 “subject to this objection.” Thus, to the extent that Empire has withheld any documents responsive to these requests on the basis of its objections, it is directed to provide such documents as ordered above.

Request No. 18: Empire’s objections are well-taken with respect to this request, which appears duplicative of its other requests to the extent it seeks relevant information. The subpoena is quashed within respect to this request.

SO ORDERED.



Dylan Fuge, Chairman
New Mexico Oil Conservation Commission

EXHIBIT B

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

APPLICATION OF EMPIRE NEW MEXICO LLC TO
REVOKE THE INJECTION AUTHORITY GRANTED
UNDER ORDER NO. R-22026 FOR THE ANDRE DAWSON
SWD #001 OPERATED BY GOODNIGHT MIDSTREAM
PERMIAN LLC, LEA COUNTY, NEW MEXICO.

CASE NO. 24018

APPLICATION OF EMPIRE NEW MEXICO LLC
TO REVOKE THE INJECTION AUTHORITY GRANTED
UNDER ORDER NO. R-22027 FOR THE ERNIE BANKS
SWD NO. 1 WELL OPERATED BY GOODNIGHT
MIDSTREAM PERMIAN LLC,
LEA COUNTY, NEW MEXICO.

CASE NO. 24019

APPLICATION OF EMPIRE NEW MEXICO LLC TO
REVOKE THE INJECTION AUTHORITY GRANTED BY
ADMINISTRATIVE ORDER SWD-2307 FOR THE RYNO
SWD #001 F/K/A SNYDER SWD WELL NO. 1 OPERATED
BY GOODNIGHT MIDSTREAM PERMIAN LLC,
LEA COUNTY, NEW MEXICO.

CASE NO. 24020

APPLICATION OF EMPIRE NEW MEXICO LLC TO
REVOKE THE INJECTION AUTHORITY GRANTED
UNDER ORDER NO. R-22027 FOR THE ROCKET SWD
NO. 1 WELL OPERATED BY GOODNIGHT MIDSTREAM
PERMIAN LLC, LEA COUNTY, NEW MEXICO.

CASE NO. 24021

APPLICATION OF EMPIRE NEW MEXICO LLC TO
REVOKE THE INJECTION AUTHORITY GRANTED
UNDER ADMINISTRATIVE ORDER NO. SWD-2391 FOR
THE PEDRO SWD #001 WELL OPERATED BY
GOODNIGHT MIDSTREAM PERMIAN LLC,
LEA COUNTY, NEW MEXICO.

CASE NO. 24022

APPLICATION OF EMPIRE NEW MEXICO LLC TO
REVOKE THE INJECTION AUTHORITY GRANTED
UNDER ORDER NO. R-22030 FOR THE VERLANDER
SWD WELL NO. 1 OPERATED BY
GOODNIGHT MIDSTREAM PERMIAN LLC,
LEA COUNTY, NEW MEXICO.

CASE NO. 24023

APPLICATION OF EMPIRE NEW MEXICO LLC TO
REVOKE THE INJECTION AUTHORITY GRANTED
UNDER ORDER NO. R-20855 FOR THE NOLAN RYAN

SWD #001 OPERATED BY GOODNIGHT MIDSTREAM PERMIAN LLC, LEA COUNTY, NEW MEXICO.

CASE NO. 24024

APPLICATION OF EMPIRE NEW MEXICO LLC TO REVOKE THE INJECTION AUTHORITY GRANTED UNDER ORDER NO. R-21190 FOR THE SOSA SA 17 NO. 2 WELL OPERATED BY GOODNIGHT MIDSTREAM PERMIAN LLC, LEA COUNTY, NEW MEXICO.

CASE NO. 24025

APPLICATION OF EMPIRE NEW MEXICO LLC TO REVOKE THE INJECTION AUTHORITY GRANTED UNDER ADMINISTRATIVE ORDER NO. SWD-2075 FOR THE TED 28 SWD WELL NO. 1 OPERATED BY GOODNIGHT MIDSTREAM PERMIAN LLC, LEA COUNTY, NEW MEXICO.

CASE NO. 24026

APPLICATION OF EMPIRE NEW MEXICO LLC TO REVOKE THE INJECTION AUTHORITY GRANTED UNDER ORDER NO. R-20865 FOR THE YAZ 28 SWD WELL NO. 1 OPERATED BY GOODNIGHT MIDSTREAM PERMIAN LLC, LEA COUNTY, NEW MEXICO.

CASE NO. 24027

SUBPOENA

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YOU ARE HEREBY COMMANDED pursuant to NMSA 1978, §70-2-8 and Rule 19.15.4.16.A NMAC to produce the following documents at the offices of Holland & Hart LLP, 110 North Guadalupe, Santa Fe, New Mexico, 87501, within thirty (30) days of service of this subpoena:

1. Agreements of any kind, including operating agreements, between Empire New Mexico, LLC, or any of its parent companies, affiliates, or subsidiaries, and Rice Operating Company (OGRID 19174), or any of its parent companies, affiliates, or subsidiaries, including internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such agreements.

2. Agreements of any kind, including operating agreements, between Empire New Mexico, LLC, or any of its parent companies, affiliates, or subsidiaries, and Parker Energy Support Services (OGRID 245739), or any of its parent companies, affiliates, or subsidiaries, including internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such agreements.

3. Agreements of any kind, including operating agreements, between Empire New Mexico, LLC, or any of its parent companies, affiliates, or subsidiaries, and OWL SWD Operating, LLC (OGRID 308339 or 308256), or any of its parent companies, affiliates, or subsidiaries, including internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such agreements.

4. Because water production volumes from its water supply wells cited in Empire's witness testimony and exhibits submitted in Case Nos. 23614-23617 do not match publicly reported volumes, please produce internal documents reflecting total water production volumes

on a monthly basis for each Eunice Monument South Unit (“EMSU” or “Unit”) water supply well operated by Empire, including internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern water production from Empire’s water supply wells.

5. All water chemistry documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern water chemistry in the San Andres and Grayburg formations within the EMSU, from before creation of the Unit to the present.

6. All water compatibility documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or concern analyses assessing the compatibility of water between the San Andres and Grayburg formations within the EMSU, from before creation of the Unit to the present.

7. Reserve reports for the EMSU, including internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such reserve reports.

8. All internal and external estimates of proved, probable, and possible reserves of oil, gas, and hydrocarbons within the EMSU, including external reports prepared for the Empire New Mexico, LLC, or any of its parent companies, affiliates, or subsidiaries, as well as internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such reserve reports.

9. All reserve reports or reserve estimates prepared to underwrite the acquisition of the EMSU, including reserve reports prepared to underwrite any loans or partnerships that financed the acquisition of the EMSU, as well as internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such reserve reports.

10. All plans of development for the EMSU submitted to the New Mexico State Land Office from approval of the EMSU to the present, including all internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such plans of development.

11. All monthly reports submitted to the Division required under Order R-22869-A, including all internal and external communications, emails, memoranda, and summaries, that reflect on, discuss, reference, or concern such monthly reports.

12. All documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or concern the alleged EMSU well failures and alleged increased well costs referred to in footnote No. 2 of Empire New Mexico LLC's Motion to Refer Cases to New Mexico Oil Conservation Commission, filed on January 3, 2024.

13. All documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or concern whether injection volumes from each of the following wells is interfering or may interfere with EMSU operations or potential tertiary recovery of residual oil from the Grayburg or San Andres formations within the EMSU:

- a. EMSU SWD #001 (API No. 30-025-04484);
- b. N 11 SWD #001 (API No. 30-025-46577);
- c. E M E SWD #021 (API No. 30-025-21852); and
- d. P 15 SWD #001 (API No. 30-025-46579);

14. All documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or

concern whether injection volumes from each of the following wells is migrating into the unitized interval of the EMSU:

- a. Pedro SWD #1 (API No. 30-025-50079);
- a. Nolan Ryan SWD #1 (API No. 30-025-45349);
- b. Ted SWD #1(API No. 30-025-44386); and
- c. Yaz SWD #1 (API No. 30-025-46382).

15. All documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or concern whether injection volumes from each of the following wells is migrating into the unitized interval of the EMSU:

- a. Parker Energy SWD #005 (API No. 30-025-38789);
- b. E M E SWD #033M (API No. 30-025-12786); and
- c. N 7 SWD #001 (API No. 30-025-46576).

16. All documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or concern the basis for Empire’s estimate that “270 million barrels or more of residual oil can be recovered, in addition to an estimated million barrels of tertiary oil recovered from the Grayburg” by conducting a CO₂ flood in the San Andres formation within the EMSU.

17. All documents, data, reports, and analyses, including internal and external communications, emails, memoranda, and summaries that reflect on, discuss, reference, or concern the potential for CO₂ flooding in the San Andres formation within the EMSU, including such reports and communications prepared by the EMSU’s previous operators.

18. All communications, emails, letters, and agreements of any kind, including draft or proposed agreements, between Empire New Mexico, LLC, or any of its parent companies, affiliates, or subsidiaries, and DASCO Cattle Company, LLC or its owner or any of its members.

This subpoena is issued on application of Goodnight Midstream Permian, LLC through its attorney, Adam G. Rankin of Holland & Hart LLP.

Dated this 5th day of March 2024

NEW MEXICO OIL CONSERVATION DIVISION

BY:  _____

Date: 3/5/2024 _____

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Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information

(revised June 2019)

Approved by the SPE Board on 25 June 2019

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Foreword

The principles and concepts established in the original version of this document in 1977 were well-founded given the state of the petroleum industry at that time. However, the industry has now become significantly more diversified and complex through epochal changes in technology, contractual and licensing terms, corporate governance issues, and regulatory reporting and compliance. The original principles remain unchanged in this revision, but an attempt has been made to incorporate the increased need for somewhat more-stringent requirements in the expectations and standards imposed on Reserves professionals today. The 2019 revision of this document includes those modifications required to incorporate the *2018 Petroleum Resources Management System* (PRMS), published jointly by the Society of Petroleum Engineers, World Petroleum Council (WPC), American Association of Petroleum Geologists (AAPG), Society of Petroleum Evaluation Engineers (SPEE), Society of Exploration Geophysicists (SEG), Society of Petrophysicists and Well Log Analysts (SPWLA), and the European Association of Geoscientists and Engineers (EAGE). This document is the result of an ongoing update process for this and all other vital components of the PRMS, but it remains limited to those quantities contained within the system that are classified as Reserves. The second objective is to change the term “qualified reserves estimator” to “qualified reserves evaluator,” and the term “reserves auditor” to “qualified reserves auditor”. The third objective is to change the qualifications of being a qualified reserves evaluator.

Article I—The Basis and Purpose of Developing Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information¹

1.1 The Nature and Purpose of Estimating and Auditing Oil and Gas Reserves Information

Estimates of Reserves information are made by or for entities as a part of their ongoing business practices. Such Reserves information typically may include, but may not be limited to, estimates of the Reserves quantities, the future producing rates from such Reserves, the future net revenue from such Reserves, and the present value of such future net revenue. The exact type and extent of Reserves information must necessarily take into account the purpose for which such Reserves information is being prepared and, correspondingly, statutory and regulatory provisions, if any, that are applicable to the intended use of the Reserves information. Reserves information may be limited to Proved Reserves or may involve other categories of Reserves as appropriate to the estimate.

1.2 Estimating and Auditing Reserves Information in Accordance With Generally Accepted Engineering and Evaluation Principles

The estimating and auditing of Reserves information is predicated upon certain historically developed principles of geoscience, petroleum engineering, and evaluation methodologies, which are in turn based on principles of physical science, mathematics, and economics. Although these generally accepted geological, engineering, and evaluation principles are predicated on established scientific concepts, the application of such principles involves extensive judgments by qualified individuals and is subject to changes in existing knowledge and technology; fiscal and economic conditions; applicable contractual, statutory, and regulatory provisions; and the purposes for which the Reserves information is to be used.

1.3 The Inherently Imprecise Nature of Reserves Information

The reliability of Reserves information is considerably affected by several factors. Initially, it should be noted that Reserves information is imprecise as a result of the inherent uncertainties in, and the limited nature of, the accumulation and interpretation of data upon which the estimating and auditing of Reserves information is predicated. Moreover, the methods and data used in estimating Reserves information are often necessarily indirect or analogical in character rather than direct or deductive. Furthermore, the persons estimating and auditing Reserves information are required, in applying generally accepted petroleum engineering and evaluation principles, to make numerous unbiased judgments on the basis of their educational background, professional

¹These Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information (the "Standards") are not intended to bind the members of the Society of Petroleum Engineers (the "Society") or anyone else, and the Society imposes no sanctions for the nonuse of these Standards. Each person estimating and auditing oil and gas Reserves information is encouraged to exercise his or her own judgment concerning the matters set forth in these Standards. The Society welcomes comments and suggested changes in regard to these Standards.

In the context used herein, it is recommended that experience and competency levels should generally include a clear understanding of several areas of knowledge pertinent to the circumstances and conditions to which they are being applied, which could include industry accepted practices related to the creation and understanding of geological maps and models, the judicious selection of and reliance upon appropriate reservoir analogs, suitable application of and reliance upon seismic information in Reserves evaluation, fundamentals and limitations of reservoir simulation, basic knowledge and applicability of probabilistic and deterministic assessment methodologies, the use of numerous performance-evaluation techniques to confirm and/or refine geological interpretations, the consequences of reliance on computer software without a full understanding of the internal calculation processes, various forms of production licensing and fiscal systems, ongoing training in the relevant or pertinent Reserves definitions, and ethics training—all of which should be refreshed periodically through some form of internally or externally provided continuing education.

QREs and QRAs are encouraged to recognize the professional obligation to secure ongoing training in the areas described above, whether or not this is provided or required by their employer. A QRE should decline an assignment for which he or she is not qualified.

3.3 Professional Qualifications of a QRA

A QRA shall be considered professionally qualified in such capacity if he or she has sufficient educational background, professional training (similar to that of a QRE), and professional experience to enable him or her to exercise prudent professional judgment while assuming responsible charge for the conduct of an audit of Reserves information estimated by others. The determination of whether a QRA is professionally qualified should be made on an individual-by-individual basis, with the recognition and respect of his or her peers. A QRA normally would be considered to be qualified if he or she has a minimum of 10 years of practical experience in petroleum engineering or petroleum production geology, with at least 5 years of such experience being in responsible charge of the estimation and evaluation of Reserves information, and either has obtained, from a college or university of recognized stature, a bachelor's or advanced degree in petroleum engineering, geology, or other discipline of engineering or physical science or has received, and is maintaining in good standing, a registered or certified professional engineer's license or a registered or certified professional geologist's license, or the equivalent thereof, from an appropriate governmental authority or professional organization. A QRA should decline an assignment for which he or she is not qualified.

Article IV—Standards of Independence, Objectivity, and Confidentiality for QREs and QRAs

4.1 The Importance of Independent or Objective QREs and QRAs

In order that users of Reserves information may be assured that the Reserves information has been estimated or audited in an unbiased and objective manner, it is important that QREs and QRAs maintain, respectively, the levels of independence and objectivity set forth in this Article IV. The determination of the independence and objectivity of QREs and QRAs should be made on a

case-by-case basis. To facilitate such determination, the Society has adopted standards of independence for consulting QREs and QRAs and standards of objectivity for QRAs employed internally by entities to which the Reserves information relates. To the extent that the applicable standards of independence and objectivity set forth in this Article IV are not met by QREs and QRAs in estimating and auditing Reserves information, such lack of conformity with this Article IV shall be disclosed in any report or opinion relating to Reserves information that purports to have been estimated or audited in accordance with these Standards.

4.2 Requirement of Independence for Consulting QREs and QRAs

Consulting QREs and QRAs, or any firm of petroleum consultants of which such individuals are stockholders, proprietors, partners, or employees, must be independent from any entity with respect to which such QREs, QRAs, or consulting firms estimate or audit Reserves information that purports to have been estimated or audited in accordance with these Standards. A statement of such independence shall be made a part of any report containing Reserves information.

4.3 Standards of Independence for Consulting QREs and QRAs²

Consulting QREs and QRAs, and any firm of petroleum consultants of which such individuals are stockholders, proprietors, partners, or employees, would not normally be considered independent with respect to an entity if, during the term of their professional engagement, the QRE, QRA, or consulting firm participated in:

- (a) **Investments**—Either owned or acquired, or were committed to acquire, directly or indirectly, any material financial interest in an entity or any corporation or other person affiliated therewith or any property with respect to which Reserves information is to be estimated or audited. Any such financial interest, stock, or other ownership in the properties held through direct ownership, trusts, partnerships, or incorporated entities should be disclosed in writing to the entity to determine materiality by the entity and maintained on file by the entity for review by financial auditors.
- (b) **Joint Business Ventures**—Either owned or acquired, or were committed to acquire, directly or indirectly, any material joint business investment with an entity or any officer, director, principal stockholder, or other person affiliated therewith.
- (c) **Borrowings**—Were indebted to an entity or any officer, director, principal stockholder, or other person affiliated therewith, provided, however, that retainers, advances against work-in-progress, and trade accounts payable arising from the purchase of goods and services in the ordinary course of business shall not constitute indebtedness within the meaning of this Section 4.3(c).

² For purposes of this Section 4.3, the term “affiliated” shall, with respect to an entity, describe the relationship of a person to such entity under circumstances in which such person directly or indirectly, through one or more intermediaries, controls or is controlled by, or is under common control with, such entity; provided, however, that commercial banks and other bona-fide financial institutions shall not be considered to be affiliated with the entity to which the Reserves information relates unless such banks or institutions actively participate in the management of the properties of such entity. Unless the context requires otherwise, the term “material” shall, for purposes of this Section 4.3, be interpreted with reference to the net worth of the consulting QRE or the consulting QRA, or any firm of petroleum consultants of which such individuals are stockholders, proprietors, partners, or employees.

- (d) **Guarantees of Borrowings**—Were indebted to any individual, corporation, or other person under circumstances in which the payment of such indebtedness was guaranteed by an entity or any officer, director, principal stockholder, or other person affiliated therewith.
- (e) **Loans to Clients**—Extended credit to an entity or any officer, director, principal stockholder, or other person affiliated therewith or any person having a material interest in any property with respect to which Reserves information was estimated or audited, provided, however, that trade accounts receivable arising in the ordinary course of business from the performance of petroleum engineering and related services shall not constitute the extension of credit within the meaning of this Section 4.3(e).
- (f) **Guarantees for Clients**—Guaranteed any indebtedness owed by an Entity or any officer, director, principal stockholder, or other person affiliated therewith or payable to any individual, corporation, entity, or other person having a material interest in the Reserves information pertaining to such entity.
- (g) **Purchases and Sales of Assets**—Purchased any material asset from, or sold any material asset to, an entity or any officer, director, principal stockholder, or other person affiliated therewith.
- (h) **Certain Relationships With Client**—Were directly or indirectly connected with an entity as a promoter, underwriter, officer, director, or principal stockholder, or in any capacity equivalent thereto, or were otherwise not separate and independent from the operating and investment decision-making process of such entity.
- (i) **Trusts and Estates**—Were trustees, participants, or beneficial owners in any trust, or executors, administrators, or beneficiaries of any estate, if such trust or estate had any direct or indirect interest material to it in such entity or in any property with respect to which Reserves information was estimated or audited.
- (j) **Contingent Fee**—Were engaged by an entity to estimate or audit Reserves information pursuant to any agreement, arrangement, or understanding whereby the remuneration or fee paid by such entity was contingent upon, or related to, the results or conclusions reached in estimating or auditing Reserves information.

The independence of consulting QREs and QRAs, and the independence of any firm of petroleum consultants of which such individuals are stockholders, proprietors, partners, or employees, shall not be considered impaired merely because other petroleum engineering and related services were performed for an entity or any officer, director, principal stockholder, or other person affiliated therewith or in regard to any property with respect to which Reserves information was estimated or audited, provided, however, that such other services must have been of a type normally rendered by the petroleum engineering profession and should be clearly disclosed in all reports relating to independent audits of, or reports containing, Reserves information.

4.4 Requirement of Objectivity for QRAs Employed Internally by Entities

A QRA employed internally by an entity should be empowered by that entity to be objective with respect to auditing of Reserves information relating to such entity if the information purports to have been estimated or audited in accordance with these Standards.

4.5 Standards of Objectivity for QRAs Employed Internally by Entities

A QRA employed internally by an entity would normally be considered to be in a position of objectivity with respect to that entity if, during the time period in which Reserves information was audited, the QRA exhibited:

- (a) **Accountability to Management**—Assigned to an internal-audit group that is accountable to senior-level management or the board of directors of the entity and kept separate and independent from the operating and investment decision-making process of such entity.
- (b) **Freedom to Report Irregularities**—Granted complete and unrestricted freedom to report, to one or more of the principal executives or the board of directors of the entity, any substantive or procedural irregularities of which the QRA became aware during auditing of Reserves information pertaining to that entity. Certain regulatory guidelines may require, or at least suggest, that such reporting by an internal auditor or auditing group be made routinely, directly, and exclusively to a board of directors, a board committee, or one or more of the members of the entity management team. It may further be appropriate to consider that internal QRAs and their supervisors, if any, be excluded from any Reserves-based compensation incentive plans or the budget-allocation processes of the entity. If Reserves-based compensation incentive plans for internal QREs, QRAs, supervisors, or management exist within the entity, then such incentive plans should be clearly disclosed in any Reserves reporting external to the entity. Further disclosures may be appropriate in any circumstance(s) in which the internal QRA(s) and the entity QRE(s) have been unable to reach agreement within the prescribed tolerances for a single property or group of properties.

4.6 Requirement of Confidentiality

QREs, QRAs, and any firm of petroleum consultants of which such individuals are stockholders, proprietors, partners, or employees, should retain in strictest confidence Reserves information and other data and information furnished by, or pertaining to, an entity, and such Reserves information, data, and information should not be disclosed to others without the prior consent of the entity. This practice should be followed whether or not a confidentiality agreement has been executed.

Article V—Standards for Estimating Reserves and Other Reserves Information

5.1 General Considerations in Estimating Reserves Information

Reserves information may be estimated through the use of generally accepted geological and engineering methods that are consistent with both these Standards and any statutory and regulatory provisions that are applicable to such Reserves information, in accordance with its intended use. In estimating Reserves information for a property or group of properties, QREs will determine the geological and engineering methods to be used in estimating Reserves information by considering the sufficiency and reliability of the database; the stage of development; the performance history; the experience of the QRE with respect to such property or group of properties, and with respect to similar properties; and the significance of such property or group of properties to the aggregate oil and gas properties and interests being estimated or evaluated.

The subsequent report on Reserves information should set forth information regarding the manner in which, and the assumptions pursuant to which, the report was prepared. Such disclosure should include, where appropriate: definitions of the significant terms used in the report; the geological and engineering methods and measurement base used in preparing the Reserves information and the source of the data used with regard to ownership interests and to oil and gas production and other performance data; costs of development, operations, and abandonment; product prices; and agreements relating to current and future operations, transportation, and sales of production. Reference is made herein to the PRMS, published jointly in 2018 by the Society, WPC, AAPG, SPEE, SEG, SPWLA, and EAGE. However, these Standards apply regardless of the specified system being used in the evaluation.

5.2 Adequacy of Database in Estimating Reserves Information

The sufficiency and reliability of the database are of primary importance in the estimation of Reserves and other Reserves information. The type and extent of the data required will necessarily vary in accordance with the methods used to estimate Reserves and other Reserves information. In this regard, information must be available with respect to each property or group of properties as to ownership and fiscal terms, marketing arrangements (including product prices), operating interests, expense interests, revenue interests, and future changes in any of such interests that, based on current circumstances, are expected to occur. Additionally, if future net revenue from Reserves, or the present value of such future net revenue, is to be estimated, the database should include, with respect to each property or group of properties, estimated future expenditures for capital required in field development and continued production maintenance, including but not limited to workovers and compression costs, operating costs, taxes, fees, transportation charges, and ultimate dismantlement costs, if appropriate. The foregoing is not intended as a complete listing of all items required for consideration in the estimation of Reserves and other Reserves information.

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

**APPLICATION OF GOODNIGHT
MIDSTREAM PERMIAN, LLC TO AMEND
ORDER NO. R-7767 TO EXCLUDE THE SAN
ANDRES FORMATION FROM THE EUNICE
MONUMENT OIL POOL WITHIN THE
EUNICE MONUMENT SOUTH UNIT AREA,
LEA COUNTY, NEW MEXICO.**

CASE NO. 24277

**APPLICATION OF GOODNIGHT
MIDSTREAM PERMIAN, LLC TO AMEND
ORDER NO. R-7765, AS AMENDED TO
EXCLUDE THE SAN ANDRES FORMATION
FROM THE UNITIZED INTERVAL OF THE
EUNICE MONUMENT SOUTH UNIT,
LEA COUNTY, NEW MEXICO.**

CASE NO. 24278

**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, 24432, 24434, 24436

**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 STATEMENT OF WILLIAM J. KNIGHTS


1. My name is William J. Knights. I work for Netherland, Sewell & Associates, Inc. as Vice President and Senior Technical Advisor for petroleum geology and geophysics. I have been retained by Goodnight Midstream Permian, LLC (“Goodnight Midstream”) to testify as an expert in these consolidated cases.

2. I have not previously testified before the New Mexico Oil Conservation Commission as an expert witness in petroleum geology. I have attached my current curriculum vitae as **Exhibit D-1**. In 1981, I obtained a Bachelor of Science Degree from Texas Christian University. In 1984, I received a Master of Science Degree in Geology. Before joining Netherland, Sewell & Associates, Inc. in 1991, I worked as an independent petroleum geologist, evaluating domestic and international exploration and development projects. Since 2002 I have had extensive experience in all the productive and emerging unconventional shale plays in the United States and Canada, and in many prospective unconventional plays internationally. I have been involved in the estimation and classification of hydrocarbon volumes from prospective and contingent resources through to proved, probable, and possible reserves in both unconventional and conventional reservoirs. I have extensive experience preparing and reviewing oil and gas reserves reports.

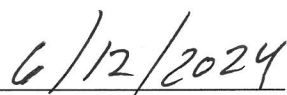
3. It is my opinion that Goodnight Midstream Permian LLC’s Subpoena Request Nos. 7-9 target information and data that would directly inform the technical issues that are being

disputed in these contested cases. The information and data contained in a reserves report is the type of information I normally review as part of an assessment of the potential for economic hydrocarbons within a given field or formation. Having the information targeted in Request Nos. 7-9 would substantially inform my analysis and assessment of the potential for economic hydrocarbons in the San Andres formation within the Eunice Monument South Unit. Because the San Andres has been considered to be part of the same pool as the Grayburg, any current or past reserve reports relating to the Grayburg would also be informative as to the amount of recoverable oil within the EMSU. Changes in reserves estimates over time can sometimes be more informative than any individual report. Moreover, the reserves reports and related documents requested may identify additional relevant sources of information and data that that have yet not been subject to discovery.

4. 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.



William J. Knights



Date

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WILLIAM J. KNIGHTS

Vice President – Senior Technical Advisor

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www.linkedin.com/in/william-knights-29a15118/

Education: M.S., Geology, Texas Christian University; B.S., Geology, Texas Christian University.

Certifications/Associations: Licensed Professional Geoscientist in the State of Texas. AAPG Certified Petroleum Geologist. Member of the American Association of Petroleum Geologists, Dallas Geological Society, and Society of Professional Well Log Analysts.

Bill has been a petroleum geologist with NSAI since 1991. His work includes oil and gas resources and reserves classification and estimation using both deterministic and probabilistic methods. He performs field studies with an emphasis on integrating geological, geophysical, petrophysical, and engineering data. Responsibilities include structural/stratigraphic analysis using geophysical, geological, and petrophysical data interfaced with reservoir modeling. His primary focus is on unconventional resources and reserves evaluations.

PROJECT EXPERIENCE

UNCONVENTIONAL OIL AND GAS

Bill's unconventional work began in the Barnett Shale in 1986, but he has been immersed in unconventional play evaluations since 2002 with the first successful horizontal well in the Barnett Shale. He has been the lead geologist for reserves analysis for the Bakken, Barnett, Bone Spring, Eagle Ford, Fayetteville, Haynesville, Mancos, Marcellus, Montney, Muskwa, Spraberry, Utica, Vaca Muerta, Wolfcamp, and Woodford Shales and has been involved since their inception. This has given Bill the unique opportunity to evaluate the full unconventional reservoir development cycle, from initial exploration and resources delineation to reserves and resources evaluations, for fields throughout North America and the world. Bill has also developed unique and innovative unconventional data analysis and mapping applications to integrate horizontal and vertical well data with completion and performance data on both the basin and play levels and to integrate these smart data sets into basin wide databases for analysis.

Industry Unconventional Presentations:

- International Shale Opportunities
 - Riverstone Global Shale Opportunities Workshop – April 201, London
- The Future of Tight Oil Across Multiple Plays –Critical questions to be answered-
 - SPE Tight Oil and Liquids-Rich Workshop –May 2016, Austin
- Improvements in Unconventional Oil and Gas Development Across Multiple Plays in the United States
 - SPE Argentina E&P of Unconventional Resources Symposium-Aug 2018, Neuquen
- Seminars on unconventional oil and gas exploration and evaluation worldwide, including in Adelaide, Austin, Brisbane, Buenos Aires, Dallas, Kassel (Germany), London, Mumbai, New York, Neuquen (Argentina), Perth, Singapore, and Sydney.

Listed below are some of Bill's significant and recent projects focusing on shales:

- Annual reserves evaluations for Ascent Resources Utica Holdings, LLC; Chesapeake Energy Corporation; Chief Oil & Gas LLC; Eclipse Resources Corporation; Endeavor Energy Resources, LP;



WILLIAM J. KNIGHTS (Continued)

Exco Resources, Inc.; Korea National Oil Company; Ovintiv USA Inc.; Reliance Holding USA, Inc.; and Southwestern Energy Production Company, including evaluations of the **Barnett** Shale in North Texas, **Eagle Ford** Shale in South Texas, **Fayetteville Shale** in Arkansas, **Haynesville** Shale in East Texas and Louisiana, **Marcellus** Shale in Pennsylvania and West Virginia, **Mississippian** and **Woodford** Shales in Central Oklahoma, Utica Shale and Point Pleasant Formation in Ohio, and Wolfcamp and Spraberry Formations in the Midland Basin.

- Acquisition work for **Eagle Ford, Fayetteville, Haynesville, Marcellus, Utica, and Wolfcamp** properties for Ares Management LLC; BHP Billiton Petroleum Holdings (USA) Inc.; The Blackstone Group; Elliott Management Corporation; EQT Production Company; Kohlberg Kravis Roberts & Co.; Magnetar Capital LLC; Petrocap, LLC; Pioneer Natural Resources USA, Inc.; Riverstone Holdings, LLC; and Seneca Resources Corporation.
- Reserves and acquisition work on various **Marcellus Shale** properties in Pennsylvania and West Virginia, including annual reserves evaluations for CONSOL Energy Inc./CNX Gas Corporation; Enerplus Resources (USA) Corporation; EQT Production Company; Pennsylvania General Energy, LLC; Range Resources Corporation; Rex Energy Corporation; Seneca Resources Corporation; Tug Hill Operating Company; and Ultra Petroleum Corp.
- Resources assessments for Alpine Energy; Hallwood Petroleum, LLC; and Kerogen Exploration LLC of the **Barnett and Woodford** Shales of West Texas.
- Resources assessments for Armour Energy Ltd., AWE Ltd., Beach Energy Ltd., Buru Energy Ltd., Drillsearch Energy Ltd., Falcon Oil and Gas Ltd., New Standard Energy Ltd., Pangaea Resources Pty Ltd., and Santos Ltd. in the Beetaloo, Canning, Cooper, and MacArthur Basins of Australia.
- Resources assessments for 3Legs Resources plc of the Silurian/Ordovician and Cambrian Shales in the Baltic Basin in Poland.
- Resources assessments for Questerre Energy Corp., Junex Inc., and Canadian Quantum Energy Corp. of the Utica Shale in the St. Lawrence Lowlands area, Quebec, Canada.
- Evaluations of the **Montney** Shale in eastern British Columbia, the **Muskwa** Shale in the Horn River Basin in northeastern British Columbia, the **Duvernay** Shale in southern Alberta, the **Bakken** Shale in Montana and North Dakota in northern United States, the Mancos and Niobrara Shales in the Uinta and Piceance Basins in the western United States.
- Additional international unconventional projects include; **Vaca Muerta** Shale in the Neuquen Basin in Argentina, **Bramer** Basin in India, **Bowland** and **Weald** Shales in United Kingdom, Various Permian and Paleozoic shales in the Amedeus, Arkaringa, Beetaloo, Canning, Cooper, Georgina, and Perth Basins in Australia, the **Karoo** Shale in the Karoo Basin in South Africa, **La Luna** Limestone (Source Rock) in Columbia, and various exploration projects in Poland, France, Hungary, Germany, Middle East and Asia.

NORTH AMERICA

- Experience in Piceance and Uinta Basins tight gas and oil sands.
- Performed geologic evaluations and reserves estimations for properties located onshore Gulf Coast and offshore Gulf of Mexico; in the Anadarko Basin, Permian Basin, and Delaware Basin of New Mexico and Texas; and in the Michigan Basin, North Louisiana Basin, Williston Basin, and Rocky Mountain Region.
- Conducted petrophysical evaluations of Natural Buttes (Cretaceous) Field, Uinta County, Utah; various Lodgepole (Mississippian) fields, Stark County, North Dakota; McAllen Ranch (Vicksburg) Field, Hidalgo County, Texas; Southwest Speaks (Wilcox) Field, Lavaca County, Texas; Berry R. Cox (Wilcox) Field, Webb County, Texas; various Travis Peak Sandstone (Cretaceous) fields in East Texas; various Red Fork Sandstone (Pennsylvanian) fields in western Oklahoma; and Middle Ground Shoal and Beluga River (Tertiary) Fields, Cook Inlet, Alaska.
- Evaluated multiple fields for Pemex Exploración y Producción, including the Burgos Basin fields Arcabuz-Culebra-Peña Blanca, OCP, Reynosa, Monterey, Brasil, and Geminis-Quitrín-Troncón; Southern Onshore fields Jujo-Teco, Eden-Jolote, and Jacinto-Paredon; Southern Offshore fields



WILLIAM J. KNIGHTS

(Continued)

Ku-Maloob-Zaap and Cantarell; Northern Onshore Tamaulipas-Constituciones Field; and Northern Offshore fields Arenque and Jurel.

SOUTH AMERICA

- Performed geologic evaluations for fields in the Oriente, Talara, and Marañon Basins of Peru.
- Performed geologic field studies and exploration projects in the Ucayali Basin of Peru.
- Conducted behind-pipe reserves study of fields in southern Trinidad.
- Conducted petrophysical evaluation of El Trapijal (Cretaceous) Field, Argentina.
- Conducted resources review of the Vaca Muerta Shale in the Neuquen Basin in Argentina.

OTHER INTERNATIONAL

- Performed integrated geologic evaluations for all major onshore and offshore fields of Qatar.
- Conducted petrophysical evaluations of Soku, Ibewa, and Obiafu/Obrikom (Tertiary) Fields in Nigeria.
- Conducted petrophysical evaluations of Mokoko-Abana, Ekoundou, and Kombo Centre (Tertiary) Fields, offshore Cameroon.
- Involved in evaluations in Bolivia, offshore Côte d'Ivoire, Egypt, Kazakhstan, and offshore China.
- Participated in the second equity redetermination of Markham Field located in the Netherlands and United Kingdom Continental Shelf North Sea.
- Participated in the third-party resolution of the Snorre Field equity redetermination in the Norwegian sector of the North Sea on behalf of a consortium of 8 companies.

ENHANCED OIL RECOVERY

- Performed review of integrated CO₂ flood models for Altura Energy Permian Basin property divestiture.
- Analyzed CO₂, waterflood, gravity drainage, and steamflooding performance at Yates Field for Conoco internal reserves group.

PRIOR EXPERIENCE

Bill's prior experience consists of 10 years in reservoir analysis for both onshore and offshore projects in the Gulf Coast area. His work included a regional horizontal drilling potential study of the Cretaceous Austin and Selma Chalks for Harper Petroleum Engineering; a field study of Pewitt Ranch Field, Texas, for Hall Exploration; field and well-site work in the Lower Magdalena Valley of Colombia for Eglington Oil and Gas; prospect generation and well-site work in the Fort Worth Basin for Circle Seven Oil and Gas; acquisition evaluations of oil and gas properties in the Devonian shales of West Virginia and Mission Canyon carbonates of the Williston Basin for Snyder Oil Corporation; and prospect generation in the Fort Worth Basin for Originala Petroleum. Bill has attended open-hole logging seminars by Schlumberger, Gearhart Industries, and Welex and a cased-hole logging seminar by N. L. McCullough.

REFERENCES

Marcia Simpson – Chief Oil & Gas LLC, Dallas, Texas
 Angelo Acconcia – The Blackstone Group, New York, New York
 Ward Polzin – Camino Natural Resources, LLC, Denver, Colorado
 Greg Avra – Diamondback Energy, Inc., Midland, Texas
 Kevin Ryan – Independent Consultant, Houston, Texas
 Bhabesh Deka – Reliance Holding USA, Inc., Houston, Texas