COBRA
OIL & GAS CORPORATION

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www.cobraogc.com

August 15, 2026

Mr. Jordan Kannianen
Deputy Executive Director
North Dakota Industrial Commission
ATTN: Oil and Gas Research Program
State Capitol – 14th Floor
600 East Boulevard Avenue, Department 405
Bismarck, ND 58505-0840

Dear Mr. Kannianen:

Subject: Proposal Entitled "Enhanced Oil Recovery and Advanced Completion Design for Tight Carbonate Reservoirs in Western North Dakota"

Cobra Oil & Gas Corporation (Cobra) is pleased to submit the subject proposal to the Oil and Gas Research Program. This proposal will investigate and demonstrate the enhanced oil recovery (EOR) potential of the Stoneview-Stonewall Unit (SSU) through reservoir characterization, laboratory analysis, historical production analysis, numerical simulation, improved downhole well designs, and field implementation of targeted EOR strategies. The expectation is that the proposed project will increase oil recovery from the SSU through reservoir understanding and improved field development strategies as well as providing baseline operational EOR and completion strategies for oil production from tight carbonate reservoirs. The key successes and lessons learned through the proposed effort will be applicable to other fields producing tight carbonates both conventional and unconventional across North Dakota.

The $100 application fee was shipped to the North Dakota Industrial Commission through UPS on August 14, 2025, tracking number 1Z7804750161234546. Cobra is committed to completing the project as described in this proposal. If you have any questions, please contact me by telephone at (940) 716-5100 or by email at kgardner@cobraogc.com.

Sincerely,

DocuSigned by:
Kyle Gardner
809473914E3E4AB...

Kyle Gardner
Vice President – Engineering
Cobra Oil & Gas Corporation

KG/rlo
Attachments

c: Erin Stieg, North Dakota Industrial Commission

Oil and Gas Research Program

North Dakota

Industrial Commission

COBRA OIL & GAS CORPORATION

Application

Project Title: Enhanced Oil Recovery and Advanced Completion Design for Tight Carbonate Reservoirs in Western North Dakota

Applicant: Cobra Oil & Gas

Principal Investigator: Kyle Gardner

Date of Application: August 15, 2025

Amount of Request: $5,000,000

Total Amount of Proposed Project: $10,000,000

Duration of Project: 21 months

Point of Contact (POC): Kyle Gardner

POC Telephone: (940) 716-5100

POC Email Address: kgardner@cobraogc.com

POC Address: PO Box 8206 Wichita Falls, TX 76307

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ABSTRACT

Objective: Cobra Oil & Gas Corporation (Cobra) is seeking funding from the North Dakota Industrial Commission (NDIC) Oil and Gas Research Program (OGRP) for a research project to evaluate enhanced oil recovery (EOR) and advanced completion methods to increase oil production from tight carbonate reservoirs such as the lower Interlake Formation of the Stoneview Field in western North Dakota. The goal of the project is to identify and implement methods to increase the recovery factor of tight carbonate reservoirs through reservoir characterization and numerical simulation of different completion, stimulation, and EOR scenarios. The Stoneview-Stonewall Unit (SSU), with existing vertical and horizontal wells, provides an opportunity for field validation of modeled EOR, completion, and stimulation strategies that can be replicated in other tight reservoirs across North Dakota, including the Bakken petroleum system (Bakken).

Expected Results: The expected results will be field-validated operational and completion strategies for optimizing oil production for the lower Interlake Formation case study. Although the work will focus on the project field operated by Cobra, the learnings from this project will establish baseline operational EOR and completion strategies for oil production from the many other tight reservoirs throughout the Williston Basin, including the Bakken.

Duration: The anticipated project duration is 21 months (October 1, 2025 – June 30, 2027).

Total Project Cost: The total project cost is $10,000,000. Cobra is requesting $5,000,000 from NDIC OGRP. Cobra is providing $5,000,000 of cost share.

Participants: Cobra and the Energy & Environmental Research Center at the University of North Dakota.

PROJECT DESCRIPTION

Cobra Oil & Gas Corporation (Cobra) operates the Stoneview-Stonewall Unit (SSU) of Divide County, ND, as shown in Appendix A (Figure A-1), which, based on estimated remaining resource and previous gas and water flooding results, is an excellent candidate for evaluation and implementation of enhanced oil recovery (EOR) and advanced completion strategies. The SSU is unitized for the Salisbury interval of the lower Interlake Formation at Stoneview Field and contains both vertical and horizontal wells (Figure A-2). Statewide, the stratigraphically similar Interlake and Stonewall pools have produced approximately 83.6 million barrels of oil from 355 wells according to Department of Mineral Resources production records, with an average of ~235,500 barrels of oil per well. The Salisbury provides an analog for tight Williston Basin carbonates, and successful EOR and completion strategies will have impacts for conventional (e.g., Mission Canyon) and unconventional plays (e.g., Bakken–Three Forks) across the state.

Interlake productivity within Stonview Field was discovered by Anschutz in 1990 (Petzet, 1991). In 1991, Conoco obtained full interest of the Stoneview Interlake and formed the SSU in 1994 to implement a natural gas flood. Through reservoir characterization, Conoco concluded the SSU to be an oil-wet reservoir with a solution gas drive. Solution gas drives in oil-wet reservoirs typically yield lower primary recovery over water drives, and traditional waterflooding is not effective compared to water-wet reservoirs. Conoco began a natural gas injection in 1995 after primary recovery waned. Injection ended after 18 months, prior to any gas breakthrough, with oil production increasing for affected wells even after injection stopped. A waterflood of the field was later attempted by an operator prior to Cobra with no flood breakthrough or reserve sweep occurring, resulting in pressure maintenance of the reservoir. In addition to Conoco's natural gas flood study, in 2003 a reservoir study was conducted for CO_2 flooding the SSU, concluding that an additional 30+ years of incremental production could be possible. None of the CO_2 study recommendations were enacted.

Since July 2018, Cobra has operated the SSU and diligently collected bottomhole pressure recordings and acoustic fluid levels of producing wells. Pressure and fluid level data indicate a bottomhole pressure of ~3300 psi, which exceeds calculated bubble point pressure. Cobra is investing in redevelopment of the SSU and believes the outcomes of the proposed project will ensure the viability of EOR and advanced completion techniques to increase oil production and recovery along with informing EOR strategies for ND's many tight carbonate conventional and unconventional reservoirs.

EOR working fluids like CO_2, rich gas, natural gas liquids (NGL), and surfactants all work to change oil behavior within the reservoir to improve mobility. Currently, surfactants have a low cost and easier operational advantage over other EOR methods (Jin and others, 2025) and can be injected to alter the rock wettability within the reservoir, increasing performance of water floods. To evaluate the alteration of reservoir wettability via surfactants, the team will perform lab testing and simulation of various surfactant fluid formulations with best-performing surfactants used to treat the reservoir along with Cobra-planned stimulation and injection operations. Finding a surfactant that works well for SSU is likely to extend to other reservoirs within the Williston Basin with similar temperatures, pressures, and salinity. Lab testing and computer modeling will assess reservoir response to other EOR methods (e.g., CO_2, rich gas, and NGL) to identify their efficacy. CO_2, rich gas, and NGL are appealing, and if they become more cost-effective, both the Dakota Gasification Company (DGC) CO_2 pipeline and the Kinder Morgan Norse natural gas plant are within the boundary of the SSU (Figure 1).

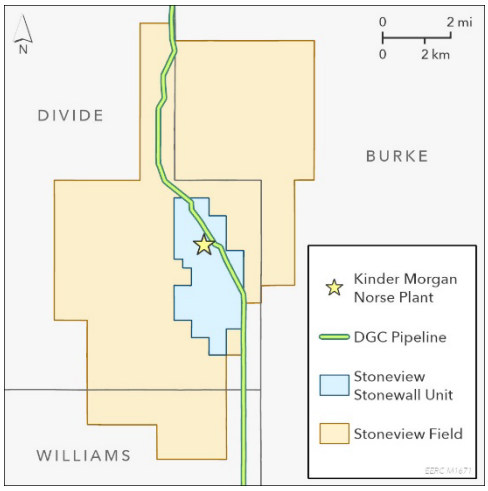

Figure 1. Stoneview Field map illustrating the proximity of the DGC pipeline and Norse gas plant to the SSU.

Any production, injection, or stimulation operation for EOR requires controlled take points and injection points within the wellbore. In openhole horizontal wells, a liner system with stages of actuating sleeves could increase this control. The Energy & Environmental

Research Center (EERC) is working to acquire an interval control valve (ICV) system, valued at over $800K, that has a very high likelihood of being installed and demonstrated through this effort. The ICV system would allow for highly controlled injection of EOR fluids along a horizontal well with the goal of optimizing oil production within the wellbore. In addition, deployment of the ICV system would allow the project team to bring funding from the U.S. Department of Energy to the project.

Objectives: Cobra is seeking to investigate approaches and strategies to increase oil recovery within tight carbonate reservoirs using the SSU in ND as an analog. The field is a tight carbonate reservoir with porosities ranging from 2% to 15%, permeabilities between 1 and 10mD, and high specific gravity oil (46˚ API). To increase the recovery factor for the field, laboratory testing, reservoir characterization, and numeric simulation will evaluate different completion and EOR scenarios and test optimization strategies with tasks defined in this proposal to work in conjunction with field testing for feedback of potential EOR and completion strategies. Viable strategies will have implications for other tight carbonate Williston Basin reservoirs in ND.

Methodology: This project will incorporate data gathering and processing, laboratory analysis, modeling and simulation, and field testing to determine optimized EOR operations and completion strategies for production from the SSU. The work will be conducted in five tasks leading to the successful completion of the stated project goal. Tasks 1–4 will be led by the EERC, which has experience in each of the tasks. The EERC's letter of support is found in Appendix B. Task 5 will be led by Cobra. Specific activities under each task are defined in the following:

Task 1 – Data Assembly: The EERC will collaborate with Cobra on data assembly to identify knowledge gaps, including data necessary for subsequent tasks. Activities in this task include collecting and conditioning public and Cobra-provided well data (e.g., well logs, core analysis) and review of assembled data for gap analysis. This will include the assessment of core data available in the Wilson M. Laird Core

and Sample Library in Grand Forks, ND. Data gathered will be summarized in maps, statistics, and PowerPoint slides to be used as input data in other tasks.

Task 2 – Reservoir Characterization: The EERC will collaborate with Cobra to create a field-scale geologic model for the lower Interlake of the Stoneview Field. This will include petrophysical evaluations and stratigraphic correlation, leveraging existing core data and geophysical well logs. Petrophysical interpretations and core analyses will be used to populate the geologic model with applicable properties (e.g., lithofacies, porosity, permeability, and saturations). Petrophysical property uncertainty analyses will be conducted to create a suite of geologic models. As applicable, a geomechanical review of the lower Interlake will be completed to better understand drilling and hydraulic fracturing. Results will be provided in maps, well interpretations, summaries of models and uncertainty analysis, applicable geomechanical summaries, and a knowledge gap assessment with data collection recommendations.

Task 3 - Laboratory Measurements: The EERC will collaborate with Cobra to collect rock and fluid samples to acquire fundamental data to develop reservoir simulation models for the evaluation of EOR effects from various working fluids (e.g., surfactants, rich gas, NGL, CO_2). Tests will be performed on rock samples from existing core available in the Wilson M. Laird Core and Sample Library. Testing will include gas chromatography (GC), minimum miscibility pressure (MMP), rock wettability, and fluid interfacial tension (IFT) to develop reservoir models and assess fluid flow within the reservoir. Oil and gas samples from the reservoir will be characterized using qualitative and quantitative GC compositional analyses. CO_2 and NGL MMP will be measured to determine reservoir pressures required to achieve miscible flooding. Rock wettability (contact angle) and IFT will be collected to identify fluid forces controlling flow within the reservoir and are useful for evaluating surfactant effectiveness for oil production in oil-wet rocks. Sequential flow-through testing will use water, surfactant, CO_2, and NGL to assess potential ultimate oil recovery for representative core samples of the reservoir. Deliverables from this work will be summarized in tables and appropriate graphics for each laboratory result.

Task 4 – Numerical Simulation for Production Optimization: The EERC will coordinate with Cobra to evaluate strategies to optimize production from the oil-wet field using numerical simulation to assess different EOR methods. The EERC-proposed activities will include the creation of a fluid model based on available pressure, volume, temperature data for the reservoir; calibration of the geologic models from reservoir characterization through a history-matching process using historical operational data for the selected field; and conducting predictive simulations designed to improve oil production from the field using advance completions and EOR methods. Working with Cobra, the EERC will develop a simulation framework and case matrix of strategic scenarios for numerical evaluation. Suggested scenarios include evaluating production changes from recompletion, operational changes, and responses from EOR methods (e.g., surfactant, rich-gas, NGL, CO_2). A sensitivity analysis will inform plans to optimize potential EOR design and support field development. Results from this task will include predicted incremental oil production and associated pressure response for the cases investigated and learnings from the sensitivity analysis, including a recommended optimization strategy.

Task 5 – Data Collection and Field Testing: To facilitate Tasks 2, 3, and 4, additional data collection may be required to fill knowledge gaps or test hypotheses against field results. Activities for this task will be discussed and designed based on Cobra's planned operations. Activities for the task could include:

- Well testing and operational changes to existing wells.
- Additional testing of existing cores and geophysical well logging.
- Hydraulic fracturing and acidized stimulation testing.
- Downhole liner system with actuating sleeves and packer isolation equipment.

Anticipated Results: Anticipated results of this project will be field-validated operational and completion strategies for optimizing oil production for the SSU. Based on current reservoir volumetric and pressure levels, the SSU could add 20+ years of incremental production to the field with a successful EOR project. Although the work will focus on the project field operated by Cobra, the learnings from this project will

establish baseline operational EOR and completion strategies for oil production from tight carbonate and other unconventional reservoirs throughout the Williston Basin, including the Bakken.

Facility, Resources, and Techniques to Be Used, Their Availability and Capability: Field efforts will take place at the Cobra-operated SSU in Divide County. Cobra brings operational knowledge, 17 operated wells (seven horizontal), tank batteries, gathering systems, previously recorded data and results, well records, and technical project field knowledge to the proposed project. At the time of this application, Cobra does not propose to drill any new wells within the project field.

Cobra's ND technical team offers over 100 years of total engineering experience and over 50 years of geological experience providing institutional knowledge and production expertise. Among technical team capabilities are advanced petrophysics, reservoir engineering, operations engineering, drilling engineering, advanced geophysics, and 8 years of dedicated research into the lower Interlake Formation. Cobra's field team offers over 100 years of field supervision experience with employee experience in ND operations, facilities construction, digital analytics, completions supervision, downhole fishing, and lease operations. Cobra also offers use of DrillingInfo, PRAMS, PHDWin, Petra, and Kingdom software subscriptions for the project. Cobra provides well-testing operations, remote production monitoring, and Echometer equipment for dynamometers and fluid levels.

Project partner EERC employs a multidisciplinary staff of about 270 employees and has 254,000 square feet of state-of-the-art offices, laboratories, and technology demonstration facilities. EERC engineering and scientific research staff are equipped with cutting edge analytical, modeling, and engineering facilities. The EERC has extensive geologic modeling and reservoir simulation capabilities, including high-end workstation computers and a dedicated high-performance computing cluster. The project team has access to commercial-grade software for use in geologic modeling, process modeling, and numerical simulation and database capabilities for managing data collected and generated during the project. The EERC has designed and implemented field activities including the drilling of stratigraphic

test wells, collection of core samples, industry-standard and advanced downhole geophysical logging, downhole pressure and temperature monitoring, and collaboration with industry partners on field pilots to evaluate EOR techniques in the Bakken play. EERC laboratory facilities may be utilized through this effort for routine and advanced core analysis, including petrophysical, petrographic, geochemical, and geomechanical rock analysis.

Core descriptions and studies will be conducted on existing core housed at the Wilson M. Laird Core and Sample Library in Grand Forks, ND.

Environmental and Economic Impacts while Project Is Underway: These proposed activities are not anticipated to have any significant environmental or economic impacts above and beyond normal operations of oil and gas wells. Cobra has upgraded remote monitoring equipment on facilities for production fluid levels and emergency shut-offs.

Ultimate Technological and Economic Impacts: Because the SSU is a productive oil-wet conventional reservoir with conditions analogous to other tight carbonate reservoirs within ND, the successful demonstration of EOR and improved well completion methods through the proposed effort would provide the oil and gas industry with strategies to revitalize ND's conventional reservoirs and provide insight to support EOR deployment in the Bakken petroleum system. A 2014 study focused only on 86 unitized conventional oil fields in ND estimated an incremental oil recovery potential between 280 and 630 million barrels using tertiary EOR (ND Legislative Management, 2014). Unlocking unrecovered reserves in ND's conventional and unconventional oil reservoirs would yield generational socioeconomic impacts to the state through the growth of direct and indirect labor markets, increased income for mineral owners, and increased tax revenues for the state.

Why the Project Is Needed: Significant resources remain in ND's conventional oil reservoirs; however, there have been a lack of investment and an associated decline in production in conventional fields resulting from industry's shift in focus away from conventional reservoirs to the Bakken. Because of

Cobra's willingness to use the SSU field as a case study for EOR, the proposed project will provide the oil and gas industry with data and technical insight needed to revitalize and extend oil production in ND's many tight reservoirs, including both conventional reservoirs as well as the Bakken. Initial EOR efforts within the SSU have a proven track record of success with limited follow-through allowing for experimental geological models and numeric simulations to provide a road map to better assess EOR working fluids (e.g., CO_2, rich gas, NGL, surfactant) and completion methods to be tested in the field. The project will result in workflows and best practices that prolong field life, guarantee resources are fully utilized, and ensure long-term economic growth throughout the state.

All references can be found in Appendix C.

STANDARDS OF SUCCESS

Success will be measured according to the timely achievement of project milestones and development of deliverables that meet the goals of the project. The value to ND is improved understanding of the Interlake Formation with respect to future well operations and increased oil production along with gained knowledge of EOR methods and working fluids for Williston Basin tight carbonate reservoirs. Results may directly influence industry practices and improve oil recovery from EOR that could increase job opportunities and income revenue for ND and its citizens.

BACKGROUND/QUALIFICIATIONS

Summary of Prior Work: After acquiring the SSU in 2018, Cobra began routinely acquiring downhole pressure data via wireline measurements and acoustic fluid levels. Cobra has executed geological and petrophysical studies within the SSU and the Interlake Formation along the Nesson Anticline. From a material balance review and decline curve analysis, the field has significant remaining oil in place that will require additional development, recompletion, EOR methods, or a combination of all three.

Experience and Qualifications: Cobra is a privately held independent oil and gas company based in Wichita Falls, Texas, and has been in business for approximately 50 years. Cobra has a legacy of using

innovative geological, geophysical, and engineering technologies for exploration discoveries and operational advancements. Cobra has operated wells in 14 different states and internationally. With previous success in the Mission Canyon Formation starting in 2015, Cobra expanded its asset position in 2018 and now operates in 10 counties of North Dakota. Cobra operates wells that produce exclusively from 12 different Williston Basin conventional formations. In 2018, Cobra acquired the SSU as part of asset expansion and began evaluating the reservoir and legacy waterflood. Cobra began researching the reservoir characteristics of the lower Interlake Formation, with emphasis on wettability, field pressures, pore structure, and permeability. Cobra's Williston Basin focus for enhancing well productivity focused on petrophysical and geological evaluation of pipe pay of conventional formations and stressing of fundamental operating techniques. Cobra employs a technical staff of three full-time geologists and five full-time engineers.

The EERC is a high-tech, nonprofit branch of the University of ND, exclusively conducting applied research for a multinational client base. Through 70+ years of collaborating with industry and government on hydrogen technology development, the EERC is globally recognized for its role in advancing commercial deployment of technologies for producing, purifying, and utilizing hydrogen from coal, natural gas, and renewables. The EERC-housed research initiatives focus on techno-economic studies, technology development, and pilot- and demonstration-scale testing.

Personnel: Mr. Kyle Gardner, Cobra Vice President of Engineering, will serve as project manager and lead Cobra activities. Mr. Gardner will be supported by Mr. Josh Aaron and Mr. Bud Dillard, Cobra Geologists. Mr. Matthew Belobraydic, EERC Assistant Director for Geosciences, will oversee the entire project. Mr. Belobraydic will have project support from Dr. Lu Jin, EERC Distinguished Reservoir Engineer, and Mr. Jamie Schod, EERC Research Manager. Project advisors from the EERC include Dr. John Harju, EERC Vice President for Strategic Partnerships, and Ms. Bethany Kurz, EERC Director of Subsurface Characterization and Data Analytics. Resumes of key personnel are included in Appendix D.

MANAGEMENT

Overall management and reporting of the project will be handled by subcontractor EERC in close partnership with Cobra. Mr. Gardner will lead Cobra activities. Mr. Belobraydic will oversee the entire project, and he will be assisted in managing project activities by the EERC leadership team. The EERC manages over 200 contracts a year, with a total of more than 1300 clients in 53 countries. Systems are in place to ensure that projects remain within budget, schedule, and scope. Mr. Belobraydic will be responsible for project coordination, guidance, and supervision to ensure consistent progress and adherence to budget and schedule constraints. Status reports will be submitted to NDIC within 30 days after the end of each status period to provide timely highlights of ongoing research activities. A final report summarizing the results of the study will be provided to legislative management, NDIC, and the Oil and Gas Research Council.

TIMETABLE

Proposed project duration is 21 months with a tentative start of October 1, 2025, and ending of June 30, 2027. The timeline in Figure 2 has expected timing and duration of each task. The timeline will be adjusted if funding from NDIC OGRP is received after October 1, 2025.

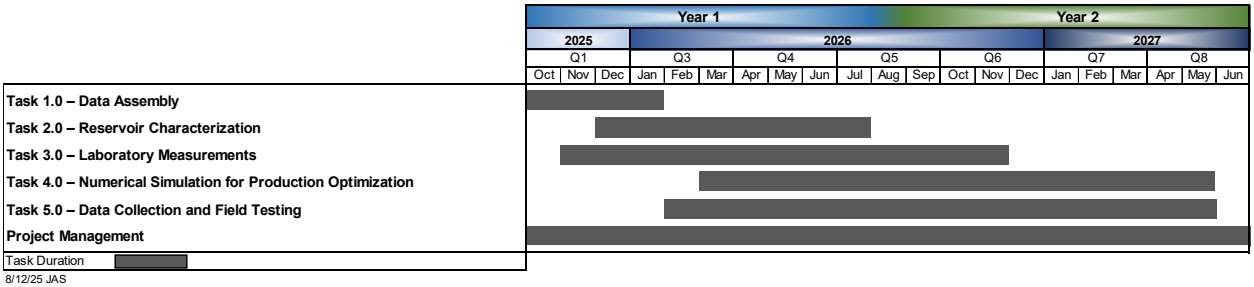

Figure 2. Project Timeline.

BUDGET

The total estimated cost for the proposed scope of work (SOW) is $10,000,000. The request from OGRP is $5,000,000. Cobra will provide $5,000,000 in cash cost share toward the project. The budget provided in the table below was developed based on estimates for the SOW and similar project experience.

Associated project expenses are driven from the five tasks listed in the methodology section. This project has significant laboratory, simulation, and field components designed to gather necessary data and test reservoir response hypotheses of different EOR and completion techniques. In addition, there is a very high likelihood of substantial cost share being provided by an existing EERC project with DOE, the details of which are in the final stages of negotiation and are unable to be explicitly shared at this time.

Project-Associated Expense	NDIC Share	Cobra Share (cash)	Total Project
Labor – Engineering and Field	$427,270	$427,270	$854,540
Facilities, Equipment, Gathering	$235,000	$235,000	$470,000
Stimulation	$750,000	$750,000	$1,500,000
Field Services – Rigs, Wireline, Testing, Coil	$900,000	$900,000	$1,800,000
Downhole Production Equipment	$1,250,000	$1,250,000	$2,500,000
Subcontractor – EERC	$1,437,730	$1,437,730	$2,875,460
Total Project Cost	$5,000,000	$5,000,000	$10,000,000

If less funding is available than requested, the project scope can be scaled down. For example, the model area can be reduced, fewer EOR strategies can be assessed, or lab scenarios can be removed. Reduced scope may only be a partial answer for operational strategies to optimize oil production for the lower Interlake Formation. Recommendations from the reduced scope will focus on remaining knowledge gaps. Project applicability to other Williston Basin plays and fields will be more uncertain.

AFFIDAVIT OF TAX LIABILITY

Cobra has no outstanding tax liability to the state of ND or any of its political subdivisions.

CONFIDENTIAL INFORMATION/PATENTS/RIGHTS TO TECHNICAL DATA

No confidential information is in this proposal. No patentable technologies are expected from this work.

STATUS OF ONGOING PROJECTS

Cobra has Contract G-058-144, “Maximizing Production from Residual Oil Zones in Western ND,” and Contract G-061-119, “Maximizing Lateral Well Oil Production from Conventional Carbonate Mission Canyon Reservoirs in ND,” funded through OGRP in progress. These projects are in good standing, current with reporting, within scope and budget, and projected to be delivered on time.

APPENDIX A

STONEVIEW FIELD MAPS

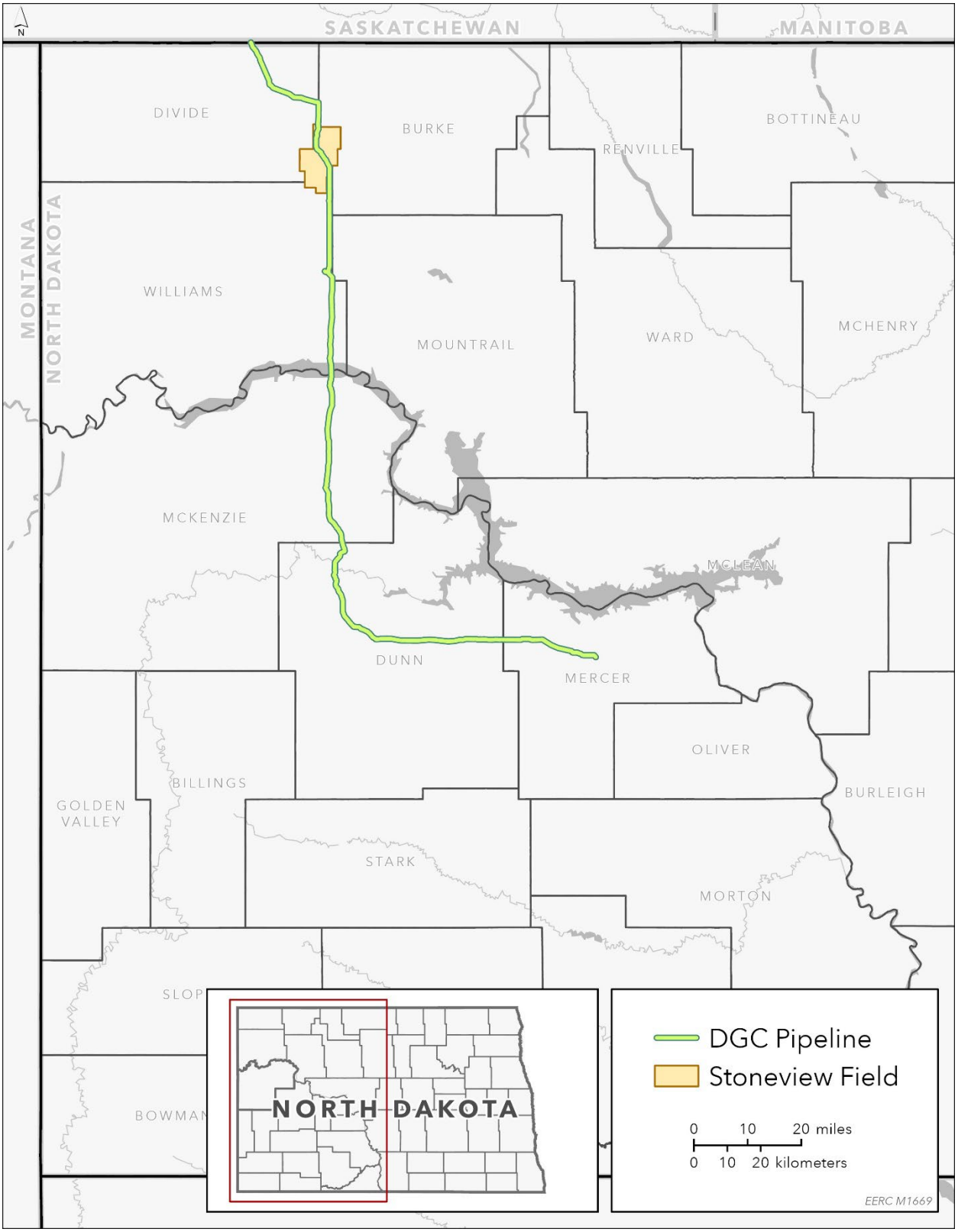

Figure A-1 Location map of Stoneview Field.

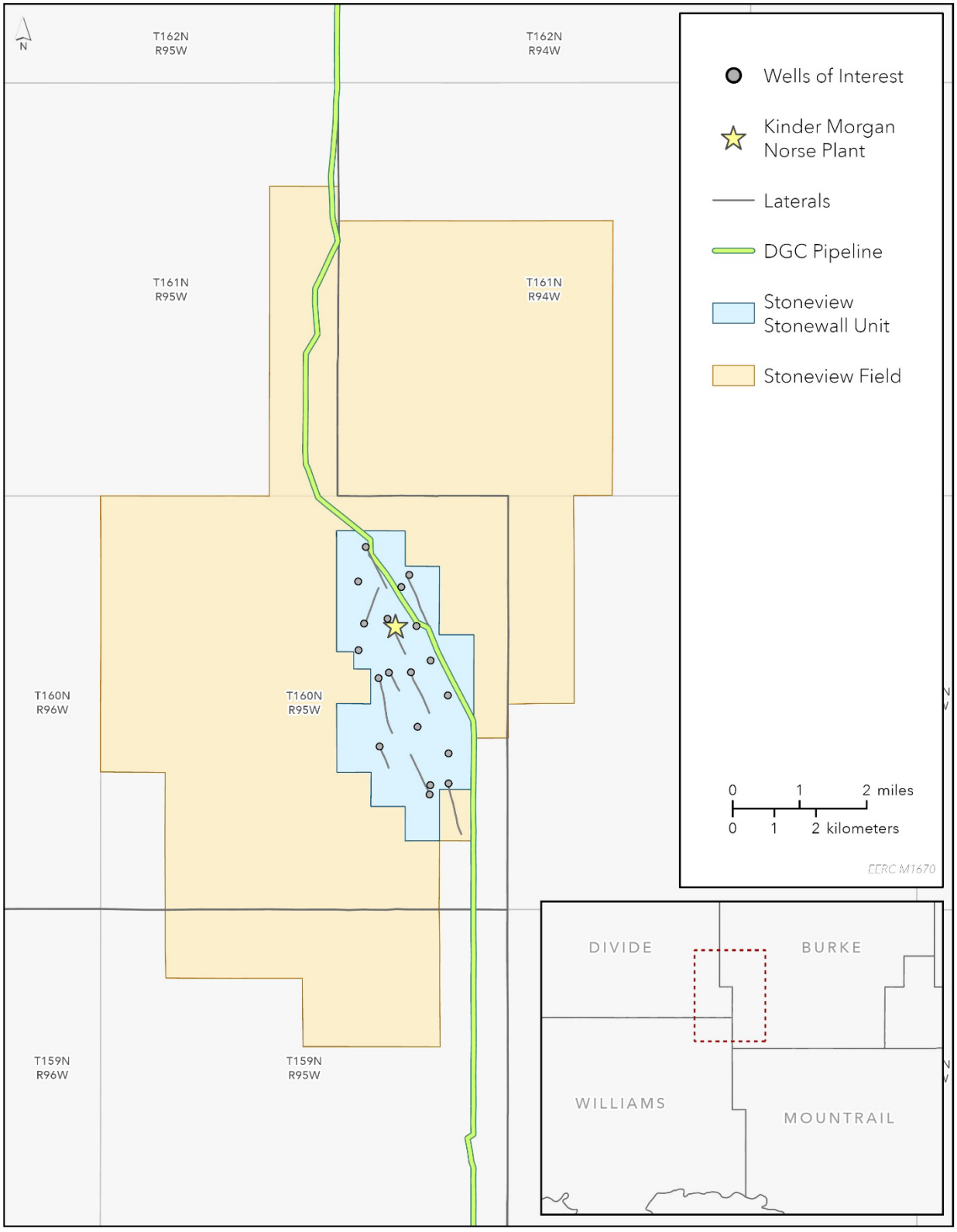

Figure A-2. Map of Stoneview Field with oil and gas wells, Dakota Gasification pipeline, and Norse Natural Gas Plant.

APPENDIX B

ENERGY & ENVIRONMENTAL RESEARCH CENTER LETTER OF SUPPORT

EERC SERVICES®

EERC Services • 15 North 23rd Street, Stop 9017 • Grand Forks, ND 58202-9017 • USA • 701.777.5130

August 14, 2025

Mr. Kyle Gardner
Vice President – Engineering
Cobra Oil & Gas Corporation
PO Box 8206
Wichita Falls, TX 76307

Dear Mr. Gardner:

Subject: EERC Services Commitment to Cobra Submission to NDIC OGRP

EERC Services is excited to partner with Cobra Oil & Gas Corporation (Cobra) to investigate and demonstrate the enhanced oil recovery (EOR) potential of the Stoneview-Stonewall Unit (SSU) in Western North Dakota. EERC Services is committed to participating as a subcontractor in Cobra's proposal entitled "Enhanced Oil Recovery Design for Oil-Wet Carbonate Reservoirs in Western North Dakota" submitted to the North Dakota Industrial Commission Oil and Gas Research Program (OGRP).

This commitment letter confirms that EERC Services is dedicated to providing all resources needed, including access to information, data, and consultation with project management, report design review, data assembly, reservoir characterization, laboratory measurements, and numerical simulation for production optimization to satisfy the required deliverables for this EOR study.

We welcome this opportunity to partner with Cobra on addressing the critical challenges associated with accessing the significant resources remaining in North Dakota's conventional oil reservoirs. We thrive on efficiency and create value through energy production, reduction of emissions, and a positive impact in the communities where we work. We understand that this letter is intended to be used as an attachment to the project's OGRP application. We are fully supportive of this venture and agree to be referenced in this context.

We look forward to the opportunity to continue our collaborations with Cobra on this exciting project in North Dakota. If you have any questions, please contact me by phone at (701) 777-5355 or by email at cgorecki@undeerc.org.

Sincerely,

DocuSigned by:
29499751F2B84D7...
Charlie D. Gorecki
CEO and President

CDG/kal

APPENDIX C

REFERENCES

REFERENCES

Jin, L., Badrouchi, N., He, K., Gilmer, C., Jiang, T., Smith, S., Wan, X., Ren, G., Bosshart, N., and Sorensen, J., 2025, Enhanced oil recovery using high-performance surfactants in high-temperature, high-salinity, tight reservoirs: *Paper presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference*, Houston, Tex., June 9–11, 2025, Paper Number URTEC-4229496-MS, 22 p.

Petzet, G.A., 1991, Nesson anticline L. Interlake oil area growing: *Oil & Gas Journal*, v. 89, no. 15, April 15, 1991, p. 15–17

North Dakota Legislative Management (NDLM), 2014, North Dakota oil and gas industry impacts study 2014–2019: Bismarck, N. Dak., North Dakota Legislative Management, prepared by KLJ, Inc., 215 p.

APPENDIX D

RESUMES

KYLE GARDNER
Vice President – Engineering, Owner
Cobra Oil & Gas Corporation
2201 Kell Blvd, Wichita Falls, TX, 76308
Phone: 940-716-5100 Email: kgardner@cobraogc.com

Professional Summary

Mr. Kyle Gardner has over 14 years of experience as a petroleum engineer with privately held oil & gas companies. He currently manages Cobra Oil & Gas Corporation's operations, production & engineering team. He is also leader of Cobra's technical reservoir and petrophysical team. Kyle has a background in drilling engineering and a forte in carbonate petrophysical formation evaluation. He has a B.S. degree in Petroleum Engineering from Texas Tech University in Lubbock, Texas.

- 14 years of operational experience of managing daily production, drilling activities and completion efforts.
- Have planned, executed, and managed the vertical & horizontal drilling & completions of wells Cobra has operated in 9 different states of depths from 4,000' TVD to 18,000' TVD, most of which were wildcats of conventional and unconventional targets.
- Lead petrophysical formation evaluator with emphasis in bypassed conventional pay zones of carbonates.
- Experienced in residual oil zone research and field application in the Permian & Williston Basin's.
- Evaluates Cobra acquisitions and divestitures, creates operational budgeting, manages company operating expenses.
- Experienced in economic evaluation software, Echometer equipment and software, remote production management software.
- Board Member of the North Dakota Petroleum Council.
- Board Member of the Texas Alliance of Energy Producers.
- Member of SPE, AADE & AAPG.

Bud Dillard
(682) 429.5285
bud@cobraogc.com mailto:budpdillard@gmail.com

EDUCATION

Robert L. Bolin Graduate School of Geology—Fall 2016 – May 2020
Midwestern State University, Wichita Falls, Texas

- M.S. Geology with Petroleum Geology Emphasis—GPA: 4.0
- Thesis Topic: Lower Spraberry, Jo-Mill Sandstone, Permian Basin -- Borden, Dawson, Howard and Martin Counties, West Texas

University of Texas at Arlington, Texas–Graduated in December 2014

- B.S. in Geology; Minor in Biology

Texas Christian University, Fort Worth, Texas—Fall 2008 – Fall 2011

WORK EXPERIENCE

Cobra Oil & Gas Corporation, Wichita Falls, Texas—May 2020 – Present
Williston Basin Geologist

- Working legacy fields with existing conventional PDP, stacked reservoirs on the Northern Madison Shelf, in addition to the Nesson and Billings Anticline areas.
- Provide subsurface interpretation and project management as well as conduct local and regional field studies to evaluate potential behind-pipe pay zones

Cobra Oil & Gas Corporation, Wichita Falls, Texas—May 2017 – May 2020
Entry Level Geologist; Geo-Technician

- Proficient in IHS Petra software; some experience with IHS Kingdom and GeoGraphix software.
- Worked NW Shelf Delaware Basin, Permian San Andres D in Lea and Eddy Counties, New Mexico; Hardeman Basin, Mississippian Chappel Limestone in Hardeman County, TX.

Stivers Consulting, Inc., Graham, Texas—January 2015 – May 2016
Mud Logger

- Analyze/describe rock lithology via microscopy, evaluate hydrocarbon shows, monitor drilling activity, prepare mud log

University of Texas at Arlington, Arlington, Texas—August – November 2014
Student Research

- Assisted PhD student with processing rock samples for dissertation work: Reconstructing Paleogene paleoclimate & paleoenvironment for terrestrial rock of the Green River Basin, SW Wyoming, using carbon isotope ratio in sediments

LEADERSHIP & ADDITIONAL ORGANIZATIONS

Society of Sigma Gamma Epsilon, Texas Epsilon Zeta Chapter—Fall 2017 – Spring 2020

- National Honor Society for the Earth Sciences

American Association of Petroleum Geologists Student Chapter—Fall 2016 – Fall 2018
- Chapter President – Spring 2018 – Fall 2018
- Chapter Senator, Student Government Association – Fall 2016 – Fall 2017

North Texas Geological Society—Fall 2016 – Present

Fort Worth Geological Society—Fall 2022 – Present

JOSH AARON
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jaaron@cobraogc.com

EXPERIENCE

JANUARY 2020 – PRESENT
WILLISTON BASIN PETROLEUM GEOLOGIST, cobra oil and gas co.

- *Provide subsurface interpretation and project management for oil and gas exploration in the conventional reservoirs (Ordovician-Mississippian, & Permian-Triassic Fms.) of the Williston Basin. Conduct local and regional field studies to determine extent and volumetric estimates of conventional oil & gas reservoirs and prioritize existing PDNP behind-pipe zones with greatest potential.*
- *Assisted on other projects including the Hardeman Basin (Mississippian Chappel Limestone), Uintah Basin (Entrada Sands), and Clay County, TX (Strawn Formation).*

JANUARY 2019 – JANUARY 2020
GEO TECHNICIAN/ ENTRY LEVEL GEOLOGIST, lmh energy

- *Performed all mud logging and actively participated in well logging and completions on exploration, and development wells. Constructed well log correlation and subsurface mapping on conventional prospects in KMA and Archer County fields, North Texas.*

MAY 2017 – AUGUST 2018
PRODUCTION OPERATOR, msb operating

- *Sustain production, maintain rig equipment, operate work-over rig, service flow and injection lines.*

EDUCATION

AUGUST 2017- DECEMBER 2019
MASTER OF SCIENCE IN PEROLEUM GEOLOGY, midwestern state university
The Robert L. Bolin Graduate School of Petroleum Geology
GPA: 4.0

- **THESIS**: Subsurface Isopach Mapping of the Major Depositional Sequences of the Ordovician Bromide Formation, South Central Oklahoma (Advisor: Jesse Carlucci, Ph. D.)
- ***LABORATORY/GRADUATE TEACHING ASSISTANT-*** *Lead multiple geology laboratory courses as an independent instructor. Developed management and oversight skills while directing these courses.*

AUGUST 2013- MAY 2017
BACHELOR OF SCIENCE IN GEOSCIENCES, midwestern state university

- **UNDERGRADUATE STUDENT RESEARCH**- Preformed facies examination through X-ray powder diffractometry (Rigaku Miniflex) on the Pontotoc Sandstone Submember of the Bromide Formation, Oklahoma.

MATTHEW L. BELOBRAYDIC
Assistant Director for Geoscience
Energy & Environmental Research Center (EERC), University of North Dakota (UND)
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Principal Areas of Expertise

Mr. Belobraydic's principal areas of interest and expertise include stratigraphic and structural interpretations, geologic characterization, data science, process automation, geostatistical analysis, geomodeling, and uncertainty analysis.

Education and Training

M.S., Geology, Ball State University, 2006. Thesis: "Drainage Basin Analysis and Fluvial Geomorphic Reconstruction Plan for the Killbuck–Mud Creek Subwatershed, Delaware County, Indiana."

B.S., Geology, University of Idaho, 2003. Senior Project: "Drainage Analysis for Colfax South, Diamond, Dusty, Thera, Thornton Quadrangles and an Experimental Quadrangle of Eastern Washington."

Research and Professional Experience

September 2022–Present: Assistant Director for Geoscience, EERC, UND. Mr. Belobraydic collaborates with EERC subject matter experts, principal investigators, and leadership to prepare proposals and pursue new business opportunities and leads and manages projects in the areas of enhanced oil recovery (EOR) in conventional and unconventional formations, CO_2 and produced gas storage, natural resource management, critical materials resource characterization and recovery, geologic and synthetic materials characterization, produced water management, and the environmental aspects of energy development.

- Manages a team of petrophysicists and subsurface data management professionals.
- Coaches and mentors more than ten geoscientists in geology, stratigraphy, geostatistical, geologic modeling, and uncertainty methods.
- Develops strategic plans for petrophysical products and data-handling procedures for subsurface teams.
- Assists the Director of Analytical Solutions by providing business directions for technical reports and technical expertise.
- Creates project proposals and maintains client relationships.

December 2020–September 2022: Principal Geoscientist, Geoscience and Engineering Group, EERC, UND. Mr. Belobraydic collaborated with EERC subject matter experts and principal investigators to create geological interpretations and prepared proposals in the areas of EOR in conventional and unconventional formations, CO_2 and produced gas storage, natural resource management, geologic materials characterization, produced water management, and environmental aspects of energy development.

- Mentored geoscientists as subject matter expert in geology and geological modeling for more than ten federal, state, and private contracts.
- Coached modeling team members through team-building and workflow improvement exercises.
- Characterized reservoirs and depositional environments for projects to maximize subsurface understanding and minimize development risk.

- Managed resources, budgets, and timelines on projects to successfully complete within deadlines and scope.

October 2020 – December 2020: Geoscientist, EERC, UND. Mr. Belobraydic produced geology and geological modeling results for CO_2 storage projects as part of an integrated team of EERC subject matter experts. Specific activities included the following:

- Produced 3D geologic models for CO_2 storage for select clastic formation within the Williston Basin.
- Coached three geoscientists through geostatistical and geomodeling methods as on-the-job training.

September 2008–April 2020: Senior III Reservoir Geologist, Schlumberger, Denver, Colorado. Mr. Belobraydic produced data-driven client solutions as part of a multidisciplinary consulting team, improving internal technical processes and workflows to increase efficiency and maximize profits. Specific activities included the following:

- Managed team of petrophysicist, geophysicist, geologist, and reservoir engineers from proposal to project close as technical lead for more than ten client projects.
- Introduced Agile and Scrum project management to local consulting team, changing work processes, shortening turnaround times by 66% and increasing bottom line.
- Reviewed green energy workflows and processes for internal geothermal and carbon capture and storage teams as subject matter expert to mitigate risk and uncertainty.
- Initialized and maintained backlog for basin interpretation cloud subscription service as Scrum product owner to capture previously inaccessible market share.
- Adapted working style and deliverables to become trusted technical advisor for more than 20 client organizations, each with unique business priorities.
- Coordinated stakeholders and potential clients for four cloud subscription service offerings to maximize value, drive communication, and quantify feedback of results.
- Created harmonious and integrated team environments for technical staff from both Schlumberger and client organizations for project collaborations.
- Characterized petroleum systems and depositional environments for client acreage to maximize reservoir understanding and minimize development risk.
- Interpreted structure and stratigraphy for full 3D models, combining seismic data for conventional and unconventional plays in more than ten basins and 30 fields globally.
- Analyzed raw and interpreted data to generate geostastically accurate static reservoir models in Petrel on more than five projects per year for worldwide clients.
- Published and automated uncertainty optimization technique, reducing dynamic simulation iterations by 80% and generating a positive feedback loop to initial inputs.
- Built custom Python, SQL, and Petrel workflows, increasing productivity by up to 900%.
- Coached and mentored more than 30 individuals through organized team-building activities and formal career development.
- Created advanced modeling curriculum and training programs in Petrel for more than 25 junior geoscientists.
- Published results and methodologies for select client work as posters and papers to technical conferences and professional societies.
- Requested presenter to professional societies for geology, data science, and machine learning.
- Prepared and reviewed proposals, reports, and project documentation, effectively communicating technical results and methodology to clients and working teams.

September 2006–August 2008: CO_2 Enhanced Oil Recovery Research Assistant, UND. Mr. Belobraydic researched CO_2 enhanced oil recovery and sequestration potential for the Williston Basin alongside the EERC. Specific activities included the following:

- Generated systematic approach for assessing enhanced oil recovery and carbon dioxide sequestration for fields of interest.
- Produced 3D reservoir models to simulate enhanced oil recovery and carbon dioxide sequestration potential.

May 2005–May 2006: National Science Foundation GK–12 Fellow, Ball State University, Muncie, Indiana. Mr. Belobraydic provided in classroom support to Indianapolis Public Schools (IPS) teachers through inquiry-based lessons and assisted in professional development for K–8 science standards. Specific activities included the following:

- Developed middle school Earth science curriculum and lessons for IPS.
- Provided aid in the professional development of IPS teachers as a knowledge resource.

Professional Activities

Member, American Association of Petroleum Geologists
Member, Rocky Mountain Association of Geologists

Publications

Mr. Belobraydic has authored or coauthored numerous professional publications.

DR. JOHN A. HARJU
Vice President for Strategic Partnerships
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Principal Areas of Expertise

Dr. Harju's principal areas of interest and expertise include carbon sequestration, enhanced oil recovery, unconventional oil and gas development, waste management, geochemistry, technology development, hydrology, and analytical chemistry, especially as applied to the upstream oil and gas industry.

Education and Training

Ph.D., Petroleum Engineering, University of North Dakota, 2022.
M.Eng., Petroleum Engineering, University of North Dakota, 2020.
B.S., Geology, University of North Dakota, 1986.

Research and Professional Experience

2002–Present: EERC, UND.
July 2015–Present: Vice President for Strategic Partnerships. Dr. Harju leads efforts to build and grow dynamic working relationships with industry, government, and research entities globally in support of the EERC's mission to provide practical, pioneering solutions to the world's energy and environmental challenges. He represents the EERC regionally, nationally, and internationally in advancing its core research priorities: coal utilization and emissions, carbon management, oil and gas, alternative fuels and renewable energy, and energy–water.

2003–June 2015: Associate Director for Research. Dr. Harju led a team of scientists and engineers building industry–government–academic partnerships to carry out research, development, demonstration, and commercialization of energy and environmental technologies.

2002–2003: Senior Research Advisor. Dr. Harju developed, marketed, managed, and disseminated research programs focused on the environmental and health effects of power and natural resource production, contaminant cleanup, water management, and analytical techniques.

2017–Present: Adjunct Lecturer, Department of Petroleum Engineering, UND.

1999–2002: Vice President, Crystal Solutions, LLC, Laramie, WY. Dr. Harju's firm was involved in commercial E&P produced water management, regulatory permitting and compliance, and environmental impact monitoring and analysis.

1997–2002: Gas Research Institute (GRI) (now Gas Technology Institute [GTI]), Chicago, IL.
2000–2002: Principal Scientist, Produced Water Management. Dr. Harju developed and deployed produced water management technologies and methodologies for cost-effective and environmentally responsible management of oil and gas produced water.
1998–2000: Program Team Leader, Soil, Water, and Waste. Dr. Harju managed projects and programs related to the development of environmental technologies and informational products related to the

North American oil and gas industry; formulated RFPs, reviewed proposals, and formulated contracts; performed technology transfer activities; and supervised staff and contractors. He served as Manager of the Environmentally Acceptable Endpoints project, a multiyear program focused on rigorous determination of appropriate cleanup levels for hydrocarbons and other energy-derived contaminants in soils. He led GRI/GTI involvement with industry environmental consortia and organizations, such as PERF, SPE, AGA, IPEC, and API.

1997–1998: Principal Technology Manager (1997–1998) and Associate Technology Manager (1997), Soil and Water Quality.

1988–1996: EERC, UND.
1994–1996: Senior Research Manager, Oil and Gas Group. Dr. Harju served as:
- Program Manager for assessment of the environmental transport and fate of oil- and gas-derived contaminants, focused on mercury and sweetening and dehydration processes.
- Project Manager for field demonstration of innovative produced water treatment technology using freeze crystallization and evaporation at oil and gas industry site.
- Program Manager for environmental transport and fate assessment of MEA and its degradation compounds at Canadian sour gas-processing site.
- Program Manager for demonstration of unique design for oil and gas surface impoundments.
- Director of the National Mine Land Reclamation Center for the Western Region.
- Co-PI on project exploring feasibility of underground coal gasification in southern Thailand.
- Consultant to an International Atomic Energy Agency program entitled “Solid Wastes and Disposal Methods Associated with Electricity Generation Fuel Chains.”

1988–1994: Research Manager (1994), Hydrogeologist (1990–1994), Research Specialist (1989–1990), and Laboratory Technician (1988–1989).

Professional Activities
Member, National Coal Council (appointed 2018)
Member, National Petroleum Council (appointed 2010)
Member, Mainstream Investors, LLC, Board of Governors (2014–present)
Member, DOE Unconventional Resources Technology Advisory Committee (2012–2014)
Member, Interstate Oil and Gas Compact Commission (appointed 2010)
Member, Rocky Mountain Association of Geologists

Publications
Dr. Harju has authored or coauthored more than 100 professional publications and nearly 300 technical presentations.

BETHANY A. KURZ
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Principal Areas of Expertise

Ms. Kurz's principal areas of interest and technical expertise include carbon capture, utilization, and storage (CCUS); produced natural gas storage; enhanced oil recovery (EOR) in conventional and unconventional oil and gas reservoirs; application of machine learning and data analytics to CCUS and oil and gas development; produced water and drilling waste management; assessment of critical materials in coal and produced brine; and resource management related to energy development.

Education and Training

M.S., Hydrogeology, University of North Dakota, Grand Forks, ND, 1998.
B.S., Geochemistry, Bridgewater State University, Bridgewater, MA, 1995.

Research and Professional Experience

May 2021–Present: Director of Analytical Solutions, EERC, UND. Ms. Kurz is responsible for developing business and research opportunities to address challenges in all areas of energy and natural resources development and management. She leads programs and projects related to CCUS; application of machine learning and artificial intelligence to CCUS and conventional and unconventional oil and gas development; EOR; produced water and drilling waste management; and critical materials resource assessments. Ms. Kurz also leads the EERC's research laboratories and a multidisciplinary team of scientists and engineers focused on addressing the needs of our partners and clients in areas related to energy development and management and environmental stewardship.

July 2018–April 2021: Assistant Director of Integrated Analytical Solutions, EERC, UND. Ms. Kurz was responsible for assisting the EERC's leadership team with developing business opportunities and successfully executing research projects related to oil and gas; natural resource management; and carbon capture, utilization, and storage. She oversaw a multidisciplinary team of scientists and engineers who work in the EERC's applied research laboratories. In that role, she was responsible for ensuring the quality assurance/quality control of data and results generated by the EERC's laboratories and integrating those results into the applied research efforts conducted by the Subsurface R&D team.

2011–July 2018: Principal Hydrogeologist, Laboratory Analysis Group Lead, EERC, UND. Ms. Kurz oversaw a multidisciplinary team of scientists and engineers and several of the EERC's analytical research laboratories that focus on classical and advanced wet-chemistry analyses; petrochemical, geochemical and geomechanical evaluation of rocks and soils; and advanced characterization of various materials, including metals, alloys, catalysts, and corrosion and scale products. Her primary areas of interest included the evaluation of water supply sources for the oil and gas industry, produced water management, characterization of geologic media for carbon storage and development and testing of proppants for use in hydraulic fracturing.

2002–2011: Senior Research Manager, Water Management and Flood Mitigation Strategies, EERC, UND. Ms. Kurz's responsibilities included project management, technical report and proposal writing, public outreach, and the development of new research focus areas. Research activities included the evaluation of nontraditional water supply sources for municipal and industrial use, flood and drought mitigation, watershed-scale water quality assessments using hydrologic models, and public education and outreach on various water and energy issues.

1998–2002: Research Scientist, Subsurface Remediation Research, EERC, UND. Ms. Kurz's responsibilities included managing and conducting research involving remediation technologies for contaminated groundwater and soils, groundwater sampling and analysis, technical report writing, and proposal research and preparation.

Publications

Ms. Kurz has coauthored numerous professional publications.

DR. LU JIN
Distinguished Reservoir Engineer
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Education and Training

Ph.D., Petroleum Engineering, Louisiana State University, 2013.
M.S., Petroleum Engineering, Louisiana State University, 2009.
B.S., Petroleum Engineering, Northeast Petroleum University, 2005.

Research and Professional Experience

October 2022–Present: Distinguished Reservoir Engineer, EERC, UND.

- Develops novel methods for renewable energy development in Williston Basin, including geothermal development in Bakken Formation and hydrogen conversion in oil reservoirs.
- Leads scientific research activities on machine learning applications, enhanced oil recovery (EOR) technologies, database development for EOR operations, effective simulation methods for unconventional reservoirs, etc.
- Serves as task lead and key reservoir engineer for U.S. Department of Energy (DOE)-sponsored project, "Williston Basin Resource Study for Commercial-Scale Subsurface Hydrogen Storage."
- Serves as principal investigator (PI) for North Dakota Industrial Commission (NDIC)-sponsored project, "Extending the Shale Revolution from Oil and Gas to Geothermal Development in North Dakota."
- Serves as PI for NDIC-sponsored project, "Examination of In Situ Hydrogen Conversion in Oil Reservoirs."
- Serves as task lead and key reservoir engineer for U.S. Department of Energy (DOE)-sponsored project, "CO_2 Enhanced Oil Recovery Improvement in Conventional Fields Using Rich Gas."
- Serves as task lead and key reservoir engineer for DOE-sponsored project, "Improving Enhanced Oil Recovery Performance Through Data Analytics and Next-Generation Controllable Completions."
- Serves as task lead and key reservoir engineer for NDIC-sponsored project, "Unitized Legacy Oil Fields: Prototypes for Revitalizing Conventional Oil Fields in North Dakota."

Principal areas of interest and expertise include reservoir modeling and simulation, CO_2/rich gas EOR and associated CO_2 storage in both conventional and unconventional reservoirs, engineering optimization, water coning control, and multiphase flow in porous media, with particular interest in subsurface oil–water–gas interactions, EOR techniques and development of old oil fields/unconventional resources.

January 2020–October 2022: Principal Reservoir Engineer, EERC, UND.

- Developed dynamic numerical models for CO_2/rich gas enhanced oil recovery in different reservoirs.
- Oversaw technical areas in reservoir engineering, including conventional, unconventional and enhanced oil and gas production, geologic storage of CO_2 and natural gas, natural resource development, geocellular modeling, numerical simulation.
- Served as task lead and key reservoir engineer for DOE-sponsored project, "CO_2 Enhanced Oil Recovery Improvement in Conventional Fields Using Rich Gas."

- Served as task lead and key reservoir engineer for DOE-sponsored project, “Improving Enhanced Oil Recovery Performance Through Data Analytics and Next-Generation Controllable Completions.”
- Served as key reservoir engineer for DOE-sponsored project, “Bakken Rich Gas Enhanced Oil Recovery Project.”
- Served as co-PI for NDIC-sponsored project, “Exploration of Opportunities and Challenges for a North Dakota Petrochemical Industry.”

July 2018–January 2020: Senior Reservoir Engineer, EERC, UND.

- Developed dynamic numerical models for CO_2 flow monitoring and prediction in different reservoirs; designed well testing plans for both producers and injectors to support long-term success of field operations; developed innovative fractured reservoir models for Bakken unconventional petroleum system; and served as simulation task lead for variety of seismic projects.
- Served as task lead and key reservoir engineer for DOE-sponsored project, “Joint Inversion of Time-Lapse Seismic Data.”
- Served as key reservoir engineer for DOE-sponsored project, “Scalable, Automated, Semi-permanent Seismic Method for Detecting CO_2 Plume Extent During Geological CO_2 Injection – Phase II.”

February 2015–July 2018: Reservoir Engineer, Reservoir Modeling and Simulation, EERC, UND.

- Developed geophysical models of subsurface and ran dynamic simulations to determine long-term fate of produced/injected fluids, including hydrocarbons, CO2 storage, and brine, using oil and gas industry simulation software.
- Served as task lead and key reservoir engineer for DOE-sponsored project, “Plains CO_2 Reduction (PCOR) Partnership Phase III – Bell Creek Test Site.”
- Served as Co-PI and key reservoir engineer for DOE-sponsored project, “Improved Characterization and Modeling of Tight Oil Formations for CO_2 Enhanced Oil Recovery Potential and Storage Capacity Estimation.”
- Served as key reservoir engineer for DOE-sponsored project, “Scalable, Automated, Semi-permanent Seismic Method for Detecting CO_2 Plume Extent During Geological CO_2 Injection – Phase I.”

January 2014–February 2015: Reservoir Engineer, InPetro Technologies, Inc., Houston, Texas.

- Developed simulation and analytical models for unconventional reservoir development, especially for shale oil reservoirs; analyzing fluid PVT (pressure, volume, temperature) change during depletion and considering pore-size distribution (PSD) in simulations. Application of new model in Eagle Ford and Bakken Formations shows that oil reserves could be improved as much as 30% by integrating PVT and PSD effects.

August 2007–December 2013: Research Assistant and Reservoir Consultant, Department of Petroleum Engineering, Louisiana State University (LSU), Baton Rouge, Louisiana.

- Modeled and evaluated performance of downhole water loop (DWL) well system in different oil fields, developed economical models for evaluation of DWL system in various reservoir and market conditions, and identified best reservoir candidates for system; oil production rate could be improved as much as 200%. Constructed software (toolbox) using ECLIPSE and VBA for complex well system simulation, applied batch processing technology in simulation, achieved automatic task queuing, and reduced simulation time 67%.
  January 2013–December 2013: Reservoir Consultant, Joint Industrial Program (JIP), LSU, and Pluspetrol, Baton Rouge, Louisiana. Simulated cold production of heavy oil in Massambala Field, Angola, identifying mechanisms of high water cut in current wells, optimizing perforation length for

conventional wells, and proposing two well systems, which could improve cumulative oil up to 80% or reduce produced water 75%, respectively.
May 2012–August 2012: Internship, High Plains Operating Company, LLC (HPOC), San Francisco, California. Simulated and analyzed extra water production problems in Ojo Encino Field, New Mexico, designing DWS well system to produce oil from thick transition zone, which could improve oil production rate by up to 20%.
May 2011–August 2011: Internship, JIP, LSU, and HPOC, Baton Rouge, Louisiana. Simulated performance of vertical and horizontal wells in Ojo Encino Field, New Mexico, diagnosing water coning/cresting problems in thick transition zone, determining best location for water injection to minimize pressure interference, and suggesting well type to develop field, which saved costs up to 30%.
January 2011–January 2013: Senior Teaching Assistant, Drilling Fluids Laboratory, LSU, Baton Rouge, Louisiana. Served as lecturer and oversaw four teaching assistants and 80–100 students each year as well as supervised three senior students completing their senior design projects.

September 2005–August 2007: Production Consultant, JIP, China University of Petroleum, and CNPC.

- Optimized a large gas pipeline network in China, proposed new optimization algorithm, and programmed software package for best operation in different conditions, reducing operational cost up to 23% (more than $20,000/day).

Professional Activities
Member, Society of Petroleum Engineers

Publications
Has authored or coauthored numerous peer-reviewed and other professional publications.

JAMIE A. SCHOD
Research Manager
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Principal Areas of Expertise

Mr. Schod's primary areas of interest and expertise are igneous and metamorphic petrology, remediation, reclamation, stormwater management, and project management.

Education and Training

B.S., Geology, University of North Dakota, 2019. Thesis: "Distribution and Spatial Autocorrelation Analysis of Martian Periglacial Polygon Formations."

Research and Professional Experience

June 2023–Present: Research Manager, EERC, UND. Mr. Schod is responsible for working with principal investigators and project managers to facilitate scientific research; coordinate and write proposals in response to federal, state, and commercial funding opportunities; monitor project progress; support project management activities; coordinate scopes of work; plan budgets and timelines; and execute research activities.

March 2021–May 2023: Staff Geologist and Project Manager, Terracon Consultants, Inc. Specific activities included the following:

- Perform work in environmental due diligence, remediation, reclamation, stormwater management, and geotechnical industries.
- Proposal writing, project management, budget management, site investigations, report preparation and writing, project close out, billing, and quality control.
- Coordinate with senior staff to develop proposals, contracts, scopes of work, and plan budgets and timelines as required by the client.
- Expand department services and clientele by utilizing previous education, work connections, and experience through existing avenues.
- Provide technical and nontechnical assistance and guidance to team members where applicable.
- Monitor project progress and proactively communicate with client and senior staff to ensure adherence to strict deadlines and deliverables.
- Specialized work in Phase I Environmental Site Assessments (ESAs), Limited Site Investigations (LSIs), water and soil sampling and analysis, core logging, delineation and remediation of contaminated soils, and GIS implementation and analysis.

Professional Activities

Member, North Dakota Geological Society
Member, The Planetary Society