State of New Mexico
Oil Conservation Commission

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APPLICATION OF LIGHTNING DOCK GEOTHERMAL HI-01, LLC FOR APPROVAL TO INJECT INTO A GEOTHERMAL AQUIFER THROUGH THREE PROPOSED GEOTHERMAL INJECTION WELLS AT THE SITE OF THE PROPOSED LIGHTNING DOCK GEOTHERMAL POWER PROJECT, HIDALGO COUNTY, NEW MEXICO

CASE NO. 15357

APPLICATION OF LIGHTNING DOCK GEOTHERMAL HI-01, LLC TO PLACE WELL NO. 63A-7 ON INJECTION-GEOTHERMAL RESOURCES AREA, HIDALGO COUNTY, NEW MEXICO

CASE NO. 15365

PRE-HEARING STATEMENT

This Pre-Hearing Statement is submitted on behalf of the New Mexico Oil Conservation Division ("OCD"), by and through undersigned counsel, as required by the Commission's Procedural Order dated August 5, 2015.

STATEMENT OF PARTIES AND REPRESENTATION

PARTY	ATTORNEY
New Mexico Oil Conservation Division	Allison R. Marks Assistant General Counsel Energy, Minerals and Natural Resources Department 1220 S. St. Francis Drive Santa Fe, NM 87505
AmeriCulture, Inc.	Charles N. Lakins, Esq. P.O. Box 91357 Albuquerque, NM 87199
Lightning Dock Geothermal HI-01, LLC	Michelle Henrie, Esq. P.O. Box 7035 Albuquerque, NM 87194

STATEMENT OF THE CASE

Lightning Dock Geothermal HI-01, LLC ("LDG") is a geothermal operator in the State of New Mexico. LDG has a federal lease in the area it operates in Hidalgo County. LDG filed four applications with the OCD to drill new injection wells. AmeriCulture, Inc. ("AmeriCulture") filed an application for hearing with respect to LDG's applications. AmeriCulture protests LDG's four applications and seeks denial of LDG's applications. After reviewing LDG's applications, OCD would suggest any approval of the applications have certain conditions of approval attached to them as set forth on Exhibits 1-8 hereof.

WITNESSES

Jim Griswold, Environmental Bureau Chief, Energy, Minerals and Natural Resources Department

Mr. Griswold has a B.S. in General Studies from New Mexico Institute of Mining and Technology where he majored in physics. Mr. Griswold serves as the Oil Conservation Division's Environmental Bureau Chief and, prior to holding said position, served as a Senior Hydrologist for the Division. As Bureau Chief, Mr. Griswold is responsible for the environmental permitting of oil, gas, and geothermal activities and oversees environmental corrective action associated with said activities. Mr. Griswold also has extensive knowledge of the State's underground injection control program and oversees certain activities associated therewith. In addition, Mr. Griswold's duties include providing expertise on various rulemakings that may affect his Bureau.

Mr. Griswold's testimony may include a review of the applications submitted to the OCD and the proposed conditions of approval OCD would suggest to each application. Mr. Griswold's testimony is expected to last 30 minutes.

EXHIBITS

1. Conditions of Approval for Drilling for LDG 76-7
2. Conditions of Approval for Drilling for LDG 13-7
3. Conditions of Approval for Drilling for LDG 15-8
4. Conditions of Approval for Drilling for LDG 63A-7
5. Conditions of Approval for Injection for LDG 76-7
6. Conditions of Approval for Injection for LDG 13-7
7. Conditions of Approval for Injection for LDG 15-8
8. Conditions of Approval for Injection for LDG 63A-7
9. Resume of Jim Griswold

A copy of Exhibits 1-9 are attached hereto.

PROCEDURAL MATTERS

The OCD hereby requests that, if no party or members of the Commission have any objections to OCD's conditions or questions regarding the proposed conditions set forth in Exhibits 1-8, the Exhibits be admitted to the record and no testimony regarding the conditions be taken at hearing. In the alternative, as a matter of efficiency, the OCD asks that Mr. Griswold stand for questions regarding the proposed conditions rather than reading into the record the conditions submitted with this Pre-Hearing Statement.

Respectfully submitted,

Allison R. Marks
Oil Conservation Division
Energy, Minerals and Natural
Resources Department
1220 S. St. Francis Drive
Santa Fe, NM 87505
(505) 476-3206
Fax (505) 476-3462
Email: AllisonR.Marks@state.nm.us
Attorney for the Oil Conservation Division

Conditions of Approval with respect to Drilling a Geothermal Resources Well (Form G-101)

Lightning Dock Geothermal HI-01, LLC (Permit **GTHT-1**)
Federal Lease NM-34970 in the Lightning Dock Known Geothermal Resource Area

Class V Injection Well **LDG 76-7**
To be located 1896 feet from the South line and 1128 feet from the East line (Unit I) of Section 7 in Township 25 South, Range 19 West NMPM, Hidalgo County, New Mexico

1. The operator (Lightning Dock Geothermal HI-01, LLC) must obtain a well bond approved by the Oil Conservation Division (OCD) prior to any drilling activity.

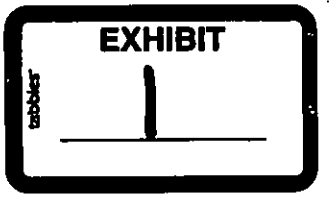
2. This injection well shall be drilled and completed as described in the operator's application (Forms G-101, G-102, G-104, G-112, and associated attachments) dated June 9, 2015.

3. Drilling pits must be constructed with liners capable of withstanding elevated temperatures associated with geothermal activity and otherwise meet all pertinent requirements of 19.15.17 NMAC. All wastes must be properly handled, managed, and disposed.

4. This well shall not be intentionally deviated except toward the vertical without prior approval from the OCD using a G-103 sundry notice with copies of that notice simultaneously provided to geothermal operators on offsetting tracts, if any. Deviations may result in the need for downhole directional surveying.

5. A successful mechanical integrity test (MIT) along with a cement bond log of the well is required before injection can occur. The MIT shall consist of a 30-minute pressure test at 600 psig on the 7" diameter surface casing. The pass/fail criteria for this test is no more than a 10% loss in pressure using a recorded calibrated no more than 90 days prior to the MIT. A G-103 sundry notice must be provided to and approved by the OCD in advance of the MIT and the OCD must be given sufficient notice such that the test can be observed.

This approval does not relieve the operator from responsibility should its operations pose a threat to public health or the environment, nor does it relieve the operator of compliance with any other federal, state, or local requirements.



Conditions of Approval with respect to Drilling a Geothermal Resources Well (Form G-101)

Lightning Dock Geothermal HI-01, LLC (Permit **GTHT-1**)
Federal Lease NM-34970 in the Lightning Dock Known Geothermal Resource Area

Class V Injection Well **LDG 13-7**
To be located 1537 feet from the North line and 504 feet from the West line (Unit E) of Section 7 in Township 25 South, Range 19 West NMPM, Hidalgo County, New Mexico

1. The operator (Lightning Dock Geothermal HI-01, LLC) must obtain a well bond approved by the Oil Conservation Division (OCD) prior to any drilling activity.

2. This injection well shall be drilled and completed as described in the operator's application (Forms G-101, G-102, G-104, G-112, and associated attachments) dated June 16, 2015.

3. Drilling pits must be constructed with liners capable of withstanding elevated temperatures associated with geothermal activity and otherwise meet all pertinent requirements of 19.15.17 NMAC. All wastes must be properly handled, managed, and disposed.

4. This well shall not be intentionally deviated except toward the vertical without prior approval from the OCD using a G-103 sundry notice with copies of that notice simultaneously provided to geothermal operators on offsetting tracts, if any. Deviations may result in the need for downhole directional surveying.

5. A successful mechanical integrity test (MIT) along with a cement bond log of the well is required before injection can occur. The MIT shall consist of a 30-minute pressure test at 600 psig on the 7" diameter surface casing. The pass/fail criteria for this test is no more than a 10% loss in pressure using a recorded calibrated no more than 90 days prior to the MIT. A G-103 sundry notice must be provided to and approved by the OCD in advance of the MIT and the OCD must be given sufficient notice such that the test can be observed.

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Conditions of Approval with respect to Drilling a Geothermal Resources Well (Form G-101)

Lightning Dock Geothermal HI-01, LLC (Permit **GTHT-1**)
Federal Lease NM-34970 in the Lightning Dock Known Geothermal Resource Area

Class V Injection Well **LDG 15-8**
To be located 2141 feet from the South line and 345 feet from the West line (Unit E) of Section 8 in Township 25 South, Range 19 West NMPM, Hidalgo County, New Mexico

1. The operator (Lightning Dock Geothermal HI-01, LLC) must obtain a well bond approved by the Oil Conservation Division (OCD) prior to any drilling activity.

2. This injection well shall be drilled and completed as described in the operator's application (Forms G-101, G-102, G-104, G-112, and associated attachments) dated June 9, 2015.

3. Drilling pits must be constructed with liners capable of withstanding elevated temperatures associated with geothermal activity and otherwise meet all pertinent requirements of 19.15.17 NMAC. All wastes must be properly handled, managed, and disposed.

4. This well shall not be intentionally deviated except toward the vertical without prior approval from the OCD using a G-103 sundry notice with copies of that notice simultaneously provided to geothermal operators on offsetting tracts, if any. Deviations may result in the need for downhole directional surveying.

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This approval does not relieve the operator from responsibility should its operations pose a threat to public health or the environment, nor does it relieve the operator of compliance with any other federal, state, or local requirements.

Conditions of Approval with respect to Drilling a Geothermal Resources Well (Form G-101)

Lightning Dock Geothermal HI-01, LLC (Permit **GTHT-1**)
Federal Lease NM-34970 in the Lightning Dock Known Geothermal Resource Area

Class V Injection Well **LDG 63A-7**
To be located 1934 feet from the North line and 1403 feet from the East line (Unit G) of Section 7 in Township 25 South, Range 19 West NMPM, Hidalgo County, New Mexico

1. The operator (Lightning Dock Geothermal HI-01, LLC) must obtain a well bond approved by the Oil Conservation Division (OCD) prior to any drilling activity.

2. This injection well shall be drilled and completed as described in the operator's application (Forms G-101, G-102, G-104, G-112, and associated attachments) dated June 29, 2015.

3. Drilling pits must be constructed with liners capable of withstanding elevated temperatures associated with geothermal activity and otherwise meet all pertinent requirements of 19.15.17 NMAC. All wastes must be properly handled, managed, and disposed.

4. This well shall not be intentionally deviated except toward the vertical without prior approval from the OCD using a G-103 sundry notice with copies of that notice simultaneously provided to geothermal operators on offsetting tracts, if any. Deviations may result in the need for downhole directional surveying.

5. A successful mechanical integrity test (MIT) along with a cement bond log of the well is required before injection can occur. The MIT shall consist of a 30-minute pressure test at 600 psig on the 7" diameter surface casing. The pass/fail criteria for this test is no more than a 10% loss in pressure using a recorded calibrated no more than 90 days prior to the MIT. A G-103 sundry notice must be provided to and approved by the OCD in advance of the MIT and the OCD must be given sufficient notice such that the test can be observed.

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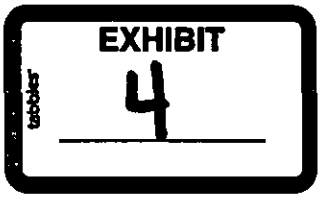

Conditions of Approval with respect to Placing a Well on Injection within a Geothermal Resources Area (Preliminary Form G-112)

Lightning Dock Geothermal HI-01, LLC (Permit **GTHT-1**)
Federal Lease NM-34970 in the Lightning Dock Known Geothermal Resource Area

Class V Injection Well **LDG 76-7**
To be located 1896 feet from the South line and 1128 feet from the East line (Unit I) of Section 7 in Township 25 South, Range 19 West NMPM, Hidalgo County, New Mexico

1. Before injection, the operator (Lightning Dock Geothermal HI-01, LLC) must be in compliance with all conditions associated with the drilling and completion of the well.

2. The operator must submit to the Oil Conservation Division (OCD) a final G-112 form along with required G-105, G-106, and G-107 forms, all containing complete information, within 60 days of well completion. Commercial injection into the well is not allowed until OCD has approved all such forms.

3. A successful mechanical integrity test (MIT) of the well is required before injection can occur. Specifics of this testing are contained in the Conditions of Approval associated with drilling of the well.

4. The operator shall install a groundwater monitoring well to be associated with this injection well. The monitoring well must be located within 100 feet of the injection well in the nominal downgradient direction hydrologically. The monitoring well must be constructed of at least 2" diameter threaded PVC well materials, incorporate a screened interval approximately 10 feet above and 20 feet below the initial static water table, and otherwise conform with applicable requirements of the Office of the State Engineer.

5. The top of pipe elevation of the groundwater monitoring well must be determined to an accuracy of at least 0.01 feet. The depth to groundwater within the monitoring well must be gauged to an equivalent accuracy on a weekly basis beginning at least one week before injection begins and continuing for two months thereafter. Depth to water determinations must be made at least once a month throughout the injection well's useful life. All acquired data must be retained by the operator and reported to the OCD on a regular basis.

6. Appropriate sampling and analysis of groundwater from the monitoring well must be undertaken in accordance with the OCD-approved water quality monitoring plan for this geothermal project. All acquired water quality data must be retained by the operator and reported to the OCD on a regular basis. The OCD retains the right to modify the monitoring plan based upon available information.

This approval does not relieve the operator from responsibility should its operations pose a threat to public health or the environment, nor does it relieve the operator of compliance with any other federal, state, or local requirements.

Conditions of Approval with respect to Placing a Well on Injection within a Geothermal Resources Area (Preliminary Form G-112)

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Class V Injection Well **LDG 13-7**
To be located 1537 feet from the North line and 504 feet from the West line (Unit E) of Section 7 in Township 25 South, Range 19 West NMPM, Hidalgo County, New Mexico

1. Before injection, the operator (Lightning Dock Geothermal HI-01, LLC) must be in compliance with all conditions associated with the drilling and completion of the well.

2. The operator must submit to the Oil Conservation Division (OCD) a final G-112 form along with required G-105, G-106, and G-107 forms, all containing complete information, within 60 days of well completion. Commercial injection into the well is not allowed until OCD has approved all such forms.

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4. The operator shall install a groundwater monitoring well to be associated with this injection well. The monitoring well must be located within 100 feet of the injection well in the nominal downgradient direction hydrologically. The monitoring well must be constructed of at least 2" diameter threaded PVC well materials, incorporate a screened interval approximately 10 feet above and 20 feet below the initial static water table, and otherwise conform with applicable requirements of the Office of the State Engineer.

5. The top of pipe elevation of the groundwater monitoring well must be determined to an accuracy of at least 0.01 feet. The depth to groundwater within the monitoring well must be gauged to an equivalent accuracy on a weekly basis beginning at least one week before injection begins and continuing for two months thereafter. Depth to water determinations must be made at least once a month throughout the injection well's useful life. All acquired data must be retained by the operator and reported to the OCD on a regular basis.

6. Appropriate sampling and analysis of groundwater from the monitoring well must be undertaken in accordance with the OCD-approved water quality monitoring plan for this geothermal project. All acquired water quality data must be retained by the operator and reported to the OCD on a regular basis. The OCD retains the right to modify the monitoring plan based upon available information.

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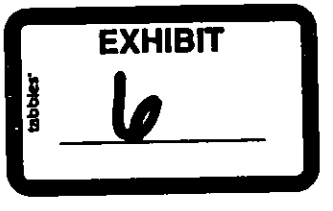

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4. The operator shall install a groundwater monitoring well to be associated with this injection well. The monitoring well must be located within 100 feet of the injection well in the nominal downgradient direction hydrologically. The monitoring well must be constructed of at least 2" diameter threaded PVC well materials, incorporate a screened interval approximately 10 feet above and 20 feet below the initial static water table, and otherwise conform with applicable requirements of the Office of the State Engineer.

5. The top of pipe elevation of the groundwater monitoring well must be determined to an accuracy of at least 0.01 feet. The depth to groundwater within the monitoring well must be gauged to an equivalent accuracy on a weekly basis beginning at least one week before injection begins and continuing for two months thereafter. Depth to water determinations must be made at least once a month throughout the injection well's useful life. All acquired data must be retained by the operator and reported to the OCD on a regular basis.

6. Appropriate sampling and analysis of groundwater from the monitoring well must be undertaken in accordance with the OCD-approved water quality monitoring plan for this geothermal project. All acquired water quality data must be retained by the operator and reported to the OCD on a regular basis. The OCD retains the right to modify the monitoring plan based upon available information.

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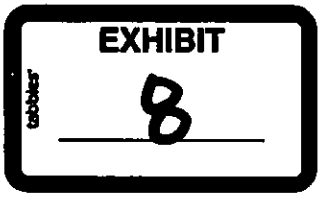

Resume of Jim Griswold

Education

Bachelor of Science in General Studies. 1983. New Mexico Tech (major in physics, minor in mathematics)

Experience

• *Environmental Bureau Chief (2014 to present) and Senior Hydrologist (2008 to 2014)*
Oil Conservation Division
New Mexico Energy Minerals & Natural Resources Department
Santa Fe, New Mexico
2008 – Present

My responsibilities as a bureau chief are many. Beyond the purely administrative functions, the most significant is regulatory oversight of the investigation and remediation by responsible parties for hydrocarbon and produced water releases affecting soil and groundwater from the oil and gas industry in New Mexico. We are also responsible for all environmental permitting associated with the oil & gas and geothermal industries in the state. This includes waste management, discharge permits, underground injection control, hydrogen sulfide contingency plans, and the recycling of produced water. I fulfill a lead role with respect to all environmental corrective actions associated with orphan sites utilizing monies from the Oil & Gas Reclamation Fund. This entails contracting (a portion of which is facilitated through our state universities), fiscal management, workplan development, contractor management, technical review, along with cooperative interactions with federal, state, county, and local governmental agencies, the legislature, as well as private stakeholders. I review technological advancements and trends within the oil and gas industry in an effort to address regulatory reforms which may be necessary. It has been very important to have developed a strong working relationship with not only OCD staff here in Santa Fe, but also the personnel in each of our district offices throughout the state. I also provide expertise to the Division Director with regard to the efficient and competent regulation of the industry along with pending or proposed modifications to existing regulations.

• *Associate*
Billings & Associates, Inc. (BAI)
Albuquerque, New Mexico
2004 – 2008

BAI is an environmental services firm founded in 1974 principally engaged in the investigation and remediation of sites where soil and groundwater were contaminated with refined petroleum hydrocarbons. I was responsible for the completion of all field activities including drilling, well installation, sampling (soil, water, and air), pilot testing, remedial system installation, remedial operation, as well as compliance and performance monitoring. As BAI is a small firm, I also spent significant time in the development of scopes of work, associated costing, scheduling, contractor oversight, regulatory and client interactions, preparation of investigation reports, development of remediation approaches and designs, all permitting, as-built reporting, data analysis and interpretation, preparation of monitoring reports, marketing, proposal development and presentation. I also spent time completing Phase I environmental site assessments associated with property transfers.

• *President (2002 and 2003); Vice President for Operations (1999 thru 2001).*
Construction Analysis & Management, Inc. (CAMI)
Albuquerque, New Mexico
1999 – 2003.

CAMI was primarily a civil, mechanical, and environmental engineering firm, as well as being a general contractor. During my time as Vice President, I directly supervised completion surface hydrology studies in advance of facility and residential construction, groundwater resource development and water rights evaluations for developers involved in both subdivision and golf course development, Phase I environmental site assessments, roadway and

stormwater conveyance design, subdivision development, commercial HVAC design, traffic signalization, along with the rehabilitation of a 377 unit low-income housing project.

As President of CAMI, beyond my executive responsibilities, I was also intimately involved with environmental investigations and remedial system installation at hazardous waste sites in New Mexico, Arizona, and Colorado, alternative wastewater treatment design and marketing to various Indian tribes and municipalities in New Mexico, and the engineering and architecture of an up-scale resort facility in Taos.

• Hydrologist
GRAM, Inc.
Albuquerque, New Mexico and Las Vegas, Nevada
1998

During my brief time with GRAM, I was involved in sensitivity analysis and general debugging of hydrogeologic and geographic information related to numeric groundwater flow (MODFLOW) and solute transport (using both MOC and PTRACK) modeling of the Frenchman's Flat nuclear weapons underground test area within the Nevada Test Site under subcontract to the Department of Energy.

• Sole Proprietor
Resource
Albuquerque, New Mexico
1997 – 1998

This personal consulting business was engaged in providing mineral reserve estimation based on borehole assays, computer production simulations of mining operations, evaluation of the value of potash removed from exploitation by the Waste Isolation Pilot Plant (WIPP) in southeastern New Mexico, technical support for litigation concerning brine flooding as part of secondary oil recovery, safety issues concerning the development of oil and natural gas reserves situated beneath underground mine workings, Phase I environmental site assessments, and the environmental investigation of a property upon which a small fuel refinery had previously operated.

• Project Manager
Billings & Associates, Inc (BAI).
Albuquerque, New Mexico
1989 – 1997.

During my first employment experience with BAI, I was initially tasked with development of a regional groundwater flow model for areas of the Jemez, Zia, and Santa Ana Pueblos under contract to the US Department of Justice and the Bureau of Indian Affairs as part of an effort to develop future tribal usage of surface water flow within the Jemez River along with the diversion of poor quality water from the Rio Salado into the Rio Grande. After this work was completed, I became a primary Project Manager for BAI supervising the investigation and active remediation of over 50 leaking underground storage tank sites nationwide including projects in New Mexico, Colorado, Oklahoma, Texas, Iowa, Michigan, Minnesota, Florida, Massachusetts, and South Carolina.

Highlights included: Development of a patented method of remediation (generally known as biosparging) which has become perhaps the most widely applied method over the last 15 years for mitigation of organic contaminants. Membership on select committees concerning enhanced bioremediation convened by Battelle, the American Petroleum Institute, the Oregon Graduate Institute, and the Air Force Center for Environmental Excellence. Participation in the development of investigation and remediation guidelines by the American Society for the Testing of Materials (ASTM). Development of perhaps the first commercially available system for the remote monitoring and control of active remedial systems. Participation in implementing the first true "pay-for-performance" environmental remediation contracts in the industry. Installation and demonstration of a highly successful soil and groundwater remediation system at a Superfund site in southeastern Michigan for the USEPA resulting in the reversal of the Record of Decision from soil excavation coupled with groundwater pumping to biosparging as the primary remedial method.

While at BAI, I was also responsible for hydrologic testing and analysis, remedial pilot testing, modeling of intrinsic bioremediation, and atmospheric dispersion modeling for permitting of air emissions from our remedial systems as well as for a toxic tort litigation involving a large chemical manufacturing plant located in west Texas. We were also able to develop one of the first practical methods for the gathering of free-phase hydrocarbon using hydrophobic filters along with a device for abating hydrocarbon vapor emissions using microorganisms.

• *Principal and Research Scientist*
HDI Research
Albuquerque, New Mexico
1982 – 1989

HDI was a private venture attempting to commercialize various aspects associated with pulsed power. The most successful of these endeavors was development of patented devices for enhancing the ignition system of internal combustion engines. Cooperative research and testing was undertaken with General Motors Corporation, Ford Motor Company, the Chrysler Corporation, Champion Spark Plugs, and Evinrude Marine, as well as with several Indy car and outboard marine racing teams. Other significant breakthroughs were made in the areas of sub-nanosecond measurement of electrical discharges, high-voltage discoidal feed-through ceramic capacitors, robust triggering of small semiconductor switches allowing high current operation, and the enhancement of photovoltaic power generation.

• *Junior Field Engineer and Operator*
Dresser Atlas Division of Dresser Industries
Sonora, Texas and Hobbs, New Mexico
1981 – 1982.

My principal function was the open-hole geophysical logging of exploratory and production oil wells. I was responsible for equipment, personnel, preliminary log evaluation, and client interaction at drilling sites. Various established methods were undertaken including measurement of natural background radiation, electrical resistivity measured by inductive techniques, measurement of bulk porosity using radioactive isotopes, and the determination of the presence of hydrocarbons by neutron absorption. I was also involved in completion and workover operations (perforating and cased-hole logging) at numerous established wellfields.

• *Field Technician*
Tecolote Corporation
Albuquerque, New Mexico
1980 – 1981

The bulk of my work involved radiometric traverses on foot using portable scintillometers and gamma ray spectrometers in northern New Mexico in support of the National Uranium Resource Evaluation under contract to the US Department of Energy and the NM Bureau of Mines. This effort also involved limited geochemical sampling of rock formations and surface water. Other efforts while with Tecolote included the assessment of private mining claims along with cartographic and library research of economic mineral inventories in New Mexico under contract to the US Department of the Interior's Bureau of Land Management.

• *Research Assistant*
Irving Langmuir Laboratory for Atmospheric Research
Operated by NM Tech
Socorro, New Mexico
1977 – 1980

While working at Langmuir Lab, I was responsible for the design, fabrication, and research use of instrumentation involved with the study of atmospheric electricity generated during thunderstorms. This included work with various sensors deployed on the ground, on free and tethered balloons, in solid fuel rockets, and in fixed-wing aircraft. "Off season" efforts centered on the reduction and evaluation of field data along with the refurbishment

and enhancement of scientific equipment. These efforts were funded by the National Science Foundation, NASA, the Naval Research Lab, the Air Force Weapons Lab, and research grants from the State of New Mexico.

Publications

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I hereby certify that a true and correct copy of the foregoing Pre-Hearing Statement was e-mailed and sent via U.S. mail, postage prepaid, to the following on September 1, 2015:

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