

March 31, 2006

Dear Oil and Gas Research Council Members,

Attached you will find a funding request for a project to be completed by Aeon Energy Corp.

Please accept this letter as a binding commitment on behalf of Aeon to complete the project as described in the application if the Commission approves the grant requested.

Sincerely,

Barry L. Snyder

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Title Page

Oil and Gas Research Council

Project

TITLE:

“Polymer Gel Treatment:
a Remediation for Produced Waters.”

Respectfully Submitted by:
Aeon Energy Corp., Applicant

Mr. Barry Snyder
Principal Investigator for Aeon Energy Corp.

A Grant proposal requesting Petroleum Council Funding
in the Amount of \$100,815

3/31/06

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Abstract

The proposed project entitled “Polymer Gel Treatment as Remediation for Produced Water” is designed to test the viability of a chemical polymer gel treatment to reduce the volume of produced water from marginally economic wells. The intent of the project is to provide Operators with a proven technique to reduce the volume of produced water, while increasing oil production. This will greatly reduce monthly operating costs while increasing cash flow from the property, thus extending the productive life of existing wells. An additional benefit will be to reduce the environmental risks of handling produced water.

A successful demonstration of this treatment will encourage other Operators to use this technique. The net result should be an incremental increase in the recoverable oil from North Dakota stripper wells and additional revenues to the State and the local communities.

It is estimated that the project will be completed in three (3) to four (4) months after final approval of the proposal. Timing will depend on the availability of services and equipment.

The project work will be performed by Aeon Energy Corp. and its field consultants. Local service companies will be utilized to provide the necessary products and equipment where possible.

Total project cost is expected to be \$201,630. Every effort will be made to complete the project at the lowest possible cost.

Project Description

The proposed project entitled "Polymer Gel Treatment as Remediation for Produced Water" is designed to test a relatively new well treatment technology that has been found to be successful in reducing the volume of produced water in economically marginal wells.

If successful the treatment technology would have wide application throughout the State of North Dakota. By reducing the volume of produced water, the treatment will greatly increase the productive life of producing wells, thus increasing revenue to the State, Landowners and local Operators.

Aeon Energy Corp. is the operator of the Lillie Farms Partnership Lease (Sec 10-T161N-R81W) in the North Maxbass Field in Bottineau County, North Dakota. The wells were drilled and completed in the late 1980's. Since completion, the two Lillie Farms wells to be used in this project have produced 34,481 barrels of oil (BO) and 2,033,441 barrels of water (BW), including the volumes from a replacement well. Currently, the two wells make 5 BOPD and 840 BWPD. Even with a disposal system in place, saltwater disposal costs are the largest single operating cost and the wells are marginally economic to produce even at today's oil prices.

These wells have many of the characteristics that are present in the Arbuckle Formation on the Central Kansas Uplift where the Polymer Gel Treatment has been developed. Both are stripper well areas producing large volumes of saltwater (500-1500 BWPD) and small amounts of low gravity oil (0.5-2.0% oil cut) from carbonate reservoirs at a depth of about 4000 feet. Bottom hole temperatures are around 120 degrees Fahrenheit. The oil bearing reservoir (+/- 25 ft in thickness) consists of dolomites with good matrix porosity and permeability overlying limestones that are exceptionally high permeability aquifers, primarily as a result of vertical fractures. Reservoir pressure changes very little over time since the underlying aquifer provides an active waterdrive for the producing zone.

These wells often produce high initial oil rates which are quickly replaced by water from the aquifer. Fluid levels, both producing and static, rise to within 500 to 1000 feet of the surface. In most instances, the production equipment is not capable of moving enough volume to draw

down the fluid level. As fluid levels rise, the ability to recover oil from the matrix rock becomes increasingly difficult.

Completion techniques are also very similar. Most of the wells have been completed openhole or perforated in a very small interval at the top of the oil zone. The reservoir is then acidized prior to placing the well on production. The acid treatment will usually increase the total volume of fluid which the well is capable of producing, but may also increase the water cut.

The following list summarizes the similarities between the Madison zone of Bottineau County in the Lillie Farms wells and the Arbuckle Formation of Central Kansas:

- 1) Top of pay zone approximately 4000 feet.
- 2) Formation temperature 112 degrees.
- 3) Stratigraphic section:
 - a) 6-10' porous and permeable dolomite, oil saturated (primary pay)
 - b) 20'+ limestone, oil stained, lower permeability matrix rock, with permeability greatly enhanced by vertical fractures.
- 4) Oil production primarily from upper porous dolomite section.
- 5) Water production probably comes from lower fractured limestone section.
- 6) Current production-stripper wells:
 - a) Lillie Farms #2 3 BOPD + 228 BWPD (1.2% oil cut; **8' perforations**)
 - b) Lillie Farms #3 1.6 BOPD + 611 BWPD (0.3% oil cut; **9' openhole**)
- 7) Fluid level:
 - a) Lillie Farms #2 1500 ft from the surface
 - b) Lillie Farms #3 500 ft from the surface
- 8) Pumping equipment is not capable of drawing down fluid level.
- 9) Water disposal is the single largest monthly operating expense, even with Saltwater Disposal system in place.

Polymer gel treatments are designed to selectively reduce produced water volumes without decreasing the oil volume. The goal is to place the polymer gel into the high

permeability fractures and large vugs that connect the wellbore to the aquifer. When properly designed and executed, polymer gel treatments will significantly decrease water production, lower producing fluid levels, decrease water to oil ratio, and extend the economic life of the well. In most instances, treatments result in a significantly higher oil producing rate.

While treatments are designed to fit the individual conditions of a particular well, in general treatment of a carbonate reservoir is preceded by an acid job (up to 3000 gal) that is pumped at a rate of 6 to 10 barrels per minute at a pressure of 1100 to 2000 psi. The acid is then displaced with 100 to 150 barrels of water to make sure that the acid reaches as far as possible into the reservoir. The acid is used to ensure that fractures are free of scale that could inhibit polymer injection and to treat the oil reservoir to allow higher rates of oil production after the polymer treatment.

The Polymer Treatment will be designed by Tiorco Inc., the service company that has developed many of the techniques and products used in the treatment. The polymer volume and concentration will be dictated by the properties of the individual well. Since the objective of the treatment is to place a polymer plug in the fracture system that carries the water from the aquifer, displacing the polymer to clear permeability within the oil portion of the reservoir is desirable, but care must be taken to avoid displacement of the plug to a position below the oil-water contact. If the plug is displaced too far, a connection between the aquifer and the wellbore will be re-established.

Barry Snyder and field consultants employed by Aeon Energy Corp. will supervise the planning and execution of the job. Wherever possible, all work to prepare the well for the treatment will be performed by local consultants and service companies. The polymer treatment will be mixed and pumped by a self-contained unit that Tiorco, Inc. will provide. All preparatory work and the polymer gel treatment will use standard oilfield techniques, procedures and products and does not involve any unusual risk to the environment or the personnel.

It is estimated that the project will be completed in three (3) to four (4) months after final approval of the proposal. Timing will depend on the availability of services and equipment.

Total project cost is expected to be \$201,630 to treat two (2) wells. A two well package offers a significant per well cost reduction and offers the opportunity to demonstrate that the Polymer-Gel process will reduce water production in both perforated and openhole completions.

Standards of Success

Success will be assessed through the following measures:

1. Ideally, daily water rates will decrease, daily oil rates will increase, oil cuts will increase as a percentage of the total fluid volume, thus decreasing operating costs while increasing cash flow and prolonging the economic life of the well.
2. Monitoring production for 1 year to establish the commercial potential of the treatment. To be of economic value to producers, the treatment must offer a long term solution to the problem of produced water.
3. Use of the treatment by Operators throughout the State of North Dakota. For this procedure to become universally accepted by operators throughout the State, it will need to provide economic benefits for the producers. It must provide a relatively short payout period and incremental increases in profits for a period of 3 to 5 years.
4. Value to North Dakota:
 - a. Provide increased revenues to the State as well as landowners, royalty owners and producers.
 - b. Provide additional jobs in the oilfield services sector by prolonging the life of stripper wells, increasing the ultimate oil recovery of the individual wells and thus their profitability.
 - c. Decreased water production will improve oil well economics and encourage additional drilling and production activities.
 - d. Decrease the environmental problems created by produced water.
 - e. A successful demonstration of this treatment will encourage other Operators to use the technique. This procedure has been used in sandstone and

carbonate reservoirs, oil wells and gas wells, and at depths and temperatures that far exceed any conditions present in the State of North Dakota. This particular polymer has been used at formation temperatures up to 240 degrees Fahrenheit. Depths are only a factor as they relate to formation temperatures.

Background/Qualifications of Participants

Aeon Energy Corp. is a privately owned oil and gas exploration company that has been operating in the Rocky Mountain Area since April 1979. The company is headquartered in Lakewood, Colorado.

Since inception, Aeon has been involved in the assembly of oil and gas prospects which have resulted in the drilling of more than 350 development wells in Colorado, North Dakota, Montana, and Wyoming.

Until five years ago, Aeon was a non-operating working interest owner; not involved drilling and completions operations. The company now operates nine (9) wells in Colorado and North Dakota and currently is planning development programs in both states.

Aeon prefers to utilize consultants that are specialists in our areas of interest, since a small staff cannot possibly be knowledgeable about all areas in the Rocky Mountain Region.

Barry Snyder

Mr. Snyder has worked the Williston Basin of North Dakota since 1970 and has generated and managed numerous exploration, development, drilling, and production projects in the State during this time. He has worked for Amerada Petroleum as an explorationist, was the Division Geologist for Universal Resources, Chief Geologist for Rainbow Resources and is currently the President of Aeon Energy Corp.

Tiorco Inc.

Tiorco, Inc. has been involved in the design and application of polymer gel treatments since 1977. Jay Portwood is the Regional Manager for the Company. The company is headquartered in Englewood, Colorado and has field offices in Odessa, Texas, Hayes, Kansas,

and Gillette, Wyoming. The company has been at the forefront in the development of cross-linked polymer gel treatments to reduce the volume of water produced from marginally economic wells.

As Tiorco's Southern Regional Manager Mr. Portwood has been responsible for company operations in Kansas, Oklahoma, Louisiana, New Mexico and Texas. His experience includes engineering design, project supervision, and project performance evaluation of polymer gel water shutoff treatments.

Management

The project coordination and supervision and the Grant and contract administration will be performed by Barry Snyder of Aeon Energy Corp. Treatment design and application will be the responsibility of Jay Portwood and other Tiorco, Inc. personnel.

Timetable

It is estimated that the project will be completed in three (3) to four (4) months after final approval of the proposal. Timing will depend on the availability of services and equipment. It will require four (4) days to pull the rods and tubing, run in the hole with a packer, acidize the well, swab back the spent acid, treat the tubing with corrosion inhibitor and rig down the completion rig in preparation for the polymer treatment.

Pumping the 4000 barrels of polymer at a rate of three-fourths (.75) barrel per minute will require 4 days (89 hours) of continuous pumping. This is the maximum treatment size and may not be pumped. A bottom hole pressure bomb will be lowered into the hole to monitor pressure buildup as the job progresses. If a pre-determined maximum pressure is reached, the job will be terminated and the polymer will be displaced with water. Once the polymer is in place, the well will be shut-in for a period of seven to fourteen days to allow the polymer to set up.

It will then require one to two days to run rods and tubing and put the well back on production. Start to finish the project will take up to 24 days.

The success of the treatment will be apparent almost immediately upon the return to production. Some initial problems with emulsions and "bleed back" of polymer may occur, but should not be of long duration.

Project Budget

Polymer-Gel Treatment Cost Estimates

This cost estimate represents the cost to treat each well, but is based on treating 2 wells so that mobilization, transportation and certain other costs, such as labor, can be equally shared. The costs for a single well job are significantly higher.

	JOB DESCRIPTION	UNITS	\$/UNIT	DAYS	JOB COST
COMPLETION RIG	PULL RODS & TUBING		\$3000	1	\$3000
	ACID JOB		\$3000	1	\$3000
	SWAB ACID BACK		\$3000	2	\$6000 (1)
	RUN TUBING & RODS to POP		\$3000	1.5	\$4500
BOP RENTAL	JOB SAFETY	1	\$100	23	\$2300
PACKER RENTAL	ACID JOB	1	\$500		\$500
ACID JOB	3000 GAL PRE-TREATMENT		\$20000		\$20000 (2)
BIOCIDE	PRE-TREATMENT	55 GAL	\$16		\$880
CORROSION INHIBITOR	PRE-TREATMENT	55 GAL	\$12		\$660
ELECTRICAL HOOKUP	POLYMER TREATMENT	1	\$500		\$500
TANK RENTAL	WTR FOR POLYMER MIXING	3	\$30	6	\$540
TANK RENTAL	POST TREATMENT PROD	1	\$30	3	\$90
WATER	MIX WATER 4500 BBLS	189	\$10		\$1890 (3)
WATER DISPOSAL					\$500
POLYMER TREATMENT	4000 BBL TREATMENT				\$36555 (4)
BOTTOM HOLE PRESSURE	JOB MONITORING	1	\$600	4	\$2400
TRUCKING	MISC TRUCKING				\$2500
CONSULTANTS & LABOR					\$6500
CONTINGENCY 10%					\$8500
TOTAL JOB COST PER WELL					\$100,815 (5)

(1) Time to swab back acid will depend on the volume of acid actually pumped.

- (2) A 3000 gal acid treatment is the maximum size job. The size may be reduced depending on the pressure and rate during treatment
- (3) If produced water is compatible with the polymer, this cost will be reduced to trucking costs of the produced water.
- (4) This is the maximum billable cost assuming 4000 barrels of polymer are pumped. The actual cost will be based on volume of polymer that is pumped into the formation in each well.
- (5) This total represents an estimate of the costs of the project. Actual costs may be higher or lower.

AEON ENERGY CORP. RESERVES THE RIGHT TO TERMINATE THE JOB PRIOR TO COMPLETION IF, IN OUR SOLE JUDGEMENT, CONDITIONS ARE ENCOUNTERED THAT WOULD JEOPARDIZE THE CHANCES FOR A SUCCESSFUL POLYMER-GEL TREATMENT.

TOTAL PROJECT BUDGET FOR TREATING 2 WELLS

LILLIE FARMS #2	\$100,815
<u>LILLIE FARMS #3</u>	<u>\$100,815</u>
TOTAL COST	\$201,630

PROJECT MATCHING FUNDS

RESEARCH GRANT PORTION	50%	\$100,815
AEON ENERGY CORP	50%	\$100,815

The funding requested is necessary to achieve the project's objectives within the proposed timetable.

Confidential Information

None of the information in this application is of a confidential nature. Tiorco, Inc. or Aeon Energy Corp. intends to find a suitable forum, such as the horizontal conference, to present results to industry.

Patents and Rights to Technical Data

There are no patents or rights that the applicant wishes to reserve.

Tax Liability

I, _____, do hereby confirm that the North Dakota Oil & Gas Division does not have an outstanding tax liability owed to the State of North Dakota or any of its political subdivisions.

(Affiant's Signature)

STATE OF _____)

)ss

COUNTY OF _____)

On _____,
known to me to be the person described in and who executed the foregoing instrument,
personally appeared before me and acknowledged that (s)he executed the same as a free act and
deed.

Notary Notary Public

Seal State of _____, County of _____

My Commission expires _____

