

**BLM COAL BED METHANE DEVELOPMENT DOCUMENTS
RELATED TO THE PETROLEUM DEVELOPMENT CORPORATION
ATLANTIC RIM COAL BED METHANE PROJECT
CARBON COUNTY, WYOMING**

Submitted To:

V. A. Stephens

**Associate Director of Energy & Transportation White House Council on
Environmental Quality**

Director of White House Task Force on Energy Policy Streamlining

Submitted by:

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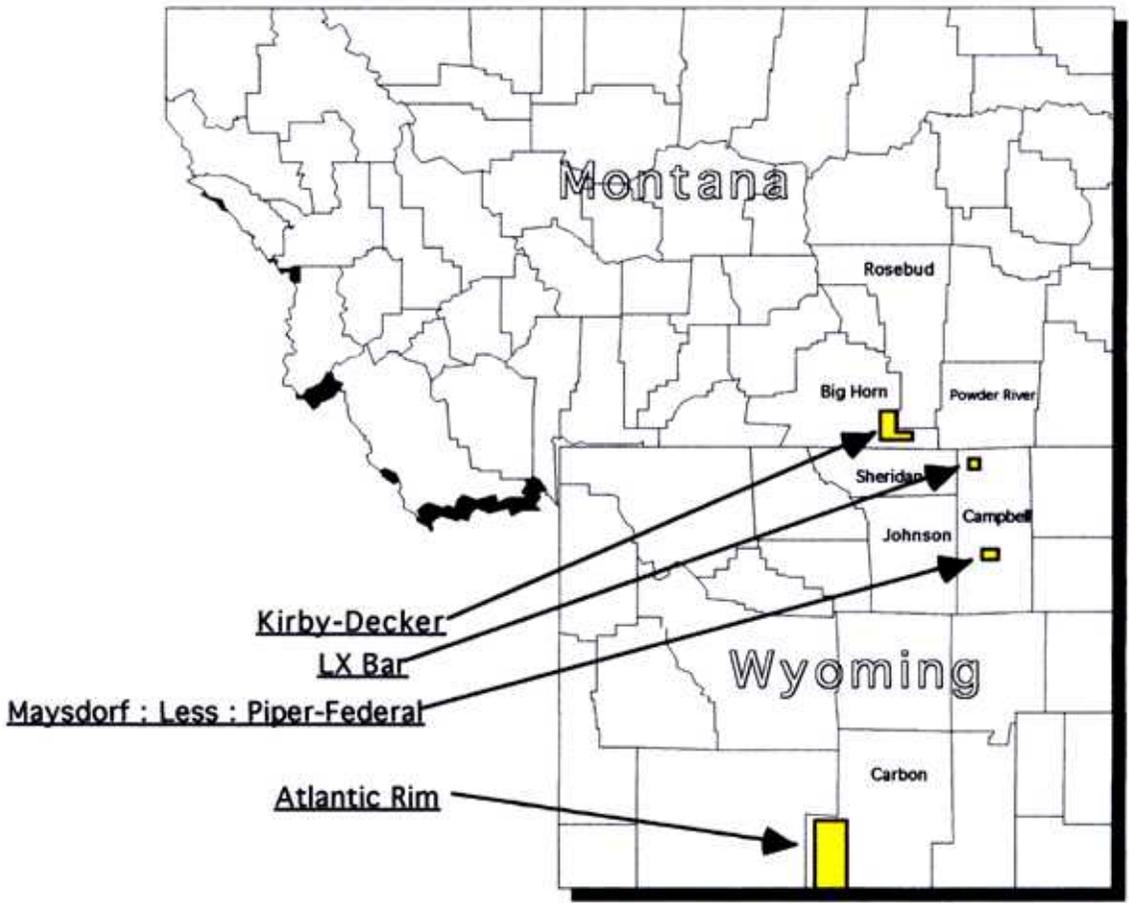
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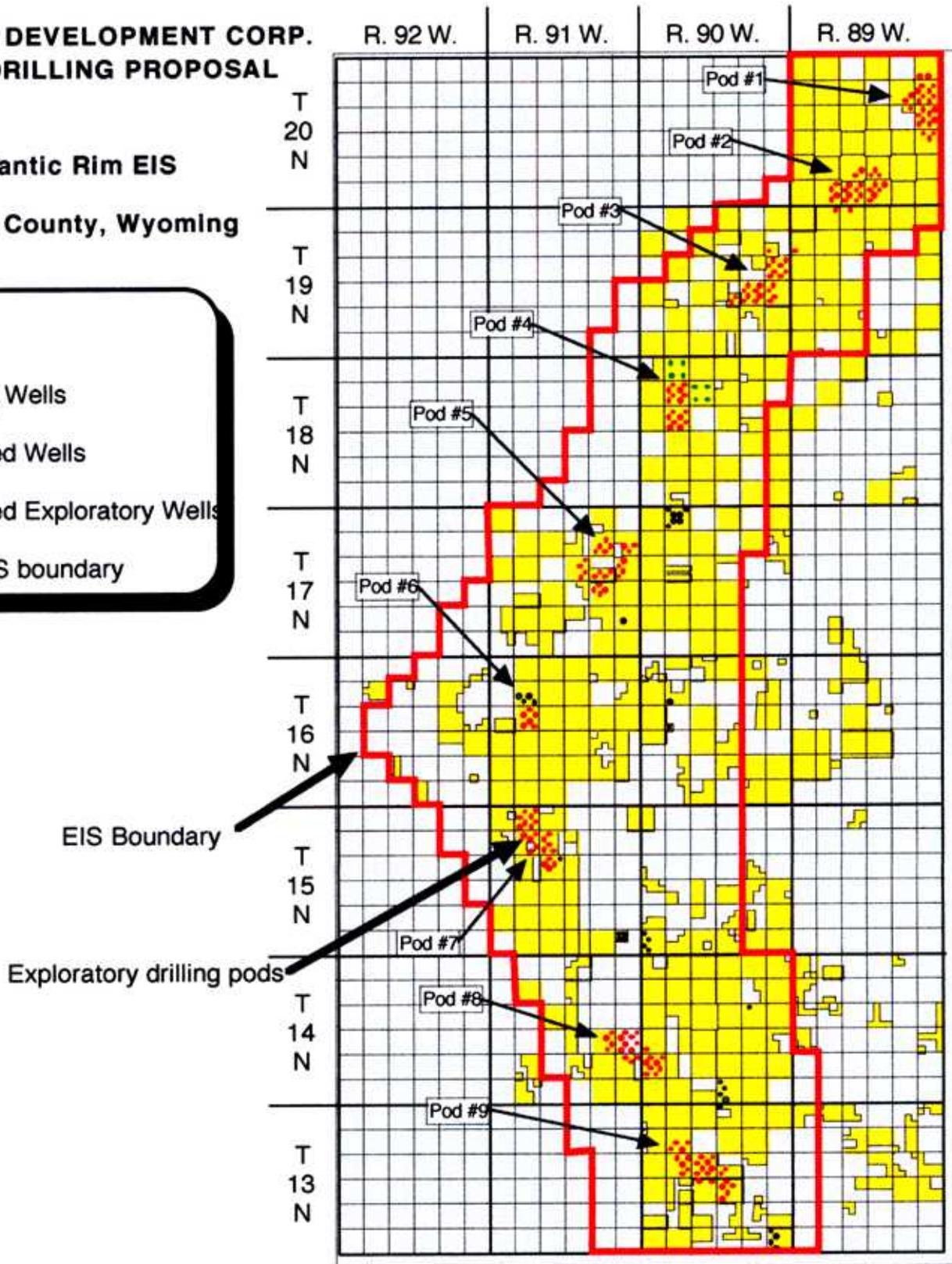


Warren Resources, Inc.
Coal Bed Methane Gas Prospects

**PETROLEUM DEVELOPMENT CORP.
INTERIM DRILLING PROPOSAL**

**Atlantic Rim EIS
Carbon County, Wyoming**

- Existing Wells
- Permitted Wells
- Proposed Exploratory Wells
- BLM EIS boundary



Map # 1

I. Coalbed Methane Overview

A. Methane gas is created in the coalification process

- 1. Biogenic methane gas is created by the degrading process of the organic materials deposited in the swamp with time, present in most coals**
- 2. Thermogenic methane is created by exposing coal to high temperatures and pressures, usually associated with higher rank coal beds**

B. Methane gas is stored in the coal by the adsorption of the methane molecules to the surface area of the coal itself

C. Methane gas is produced by lowering the reservoir pressure of the coal beds i.e. producing the water in the coal beds

D. Typically in coalbed methane production the water production is high initially and declines over time while the gas production is initially low and inclines with time as the reservoir pressure is decreased

E. Coalbed Methane production is becoming one of the country's fastest growing natural gas reserve base

F. Coalbed Methane has been successful in several geologic basins in the U.S. with multiple trillion cubic feet of gas produced since the 1980's

- 1. San Juan Basin in Northwest New Mexico**
- 2. Black Warrior Basin in Alabama**
- 3. Powder River Basin in Northeast Wyoming**
- 4. Uinta Basin in South Central Utah**

II. The Project Participants

A. Petroleum Development Corporation

1. Wholly owned subsidiary of Warren Resources, Inc.
2. Offices in Albuquerque, NM; Beeville, TX; and Gillette, WY
3. Operates coalbed methane projects in Powder River Basin in NE Wyoming
4. Operates largest lease hold position in Atlantic Rim Project approximately 200,000 acres
5. Acts as lead operator for EIS of project

B. Anadarko Petroleum Corporation

1. Headquarters in Houston, TX
2. Second largest independent E & P company in the world
3. Owns significant mineral interest under private surface on old railroad strip
4. Has farmed-out approximately 54,000 acres in project area to Pedco
5. Concerned with Atlantic EIS results and implications on other mineral interests in region

C. Double Eagle Petroleum and Mining Company

1. Headquarters in Casper, WY
2. Small independent E & P company
3. Has second largest lease hold position in project

D. Other operators in project

1. Merit Partners L.P.
2. Julander Energy Company
3. Yates Petroleum Corporation

III. Atlantic Rim Coalbed Methane Project

- A. The project is an gas exploration and production play
- B. The project is located in Carbon County, Wyoming
- C. The area of interest consists of 310,335 acres
 - 1. 199,558 acres are federal surface managed by the BLM
 - 2. 94,621 acres are private surface
 - 3. 16,156 acres are state of Wyoming lands
 - 4. The mineral ownership are approximately the same ratio
- D. The project targets methane gas production from Cretaceous aged coal beds in the Mesa Verde formation
- E. Expected well depths are from five hundred feet to six thousand feet
- F. Project life is estimated between twenty and thirty years
- G. Operators entered into an interim drilling agreement with BLM in order to avoid piecemeal approach to project and expedite exploratory permit process (Interim Drilling Agreement is included)
- H. Scoping of the Atlantic Rim Project has begun with the document being published June 15, 2001 (Scoping notice is included)

IV. Atlantic Rim Project Economics

- A. Reserve analysis of the project have been completed by Anadarko Petroleum and Williamson Petroleum Consultants
- B. Anadarko considered only a preferential fairway composed of approximately 182,400 acres, Petroleum Development

Corporation believes the play will encompass additional acreage but with a different economic profile than this fairway

- C. Using the reserve calculation mentioned above and using one hundred sixty acre spacing of the wells to be drill produces one thousand one hundred and forty possible well locations
- D. Each well should ultimately produce between 1.5 billion cubic feet (Anadarko) and 2.2 billion cubic feet (Williamson) of gas
- E. This yields a total project reserve base for the preferential fairway of between 1.71 and 2.51 trillion cubic feet of gas
- F. Assuming \$2.58 per mcf of gas which is the historic five year average gas price for this area, the project should gross between **4.4 and 6.5 billion dollars** of revenue
- G. Assuming the ratio of federal minerals in the project area mentioned above of 64.3% and using 12.5% for the **federal royalty interest** in those lands equates to between **355 and 520 million dollars** in royalty payments to the federal government
- H. Similarly, large royalty revenue payments would also be made to both private mineral owners and the State of Wyoming
- I. In addition to royalty payments, significant severance tax, ad valorem tax, and conservation tax revenues would also be generated by the project. Approximate tax revenues are:
 - 1. \$327,000,000 in severance taxes to the State of Wyoming
 - 2. \$327,000,000 in ad valorem taxes to Carbon County
 - 3. \$27,250,000 in conservation taxes to the State of Wyoming to increase conservation resources in the state
- J. Beside the direct benefits of royalty and tax payments, local economies would enjoy the creation of additional jobs that traditionally pay quite well

- K. To date Pedco has spent approximately fifteen million dollars on lease hold and legal costs for the project and an additional seven million dollars on geologic evaluation, exploration, and environmental work
- L. Expected capital investment for the total project will be around \$450,000,000

V. Atlantic Rim Project: Issues and Concerns

A. Federal authority on private surface

- 1. Right of Way across BLM surface to access private surface and minerals
- 2. BLM authority to perform environmental inventories on private surface
- 3. BLM red tape restricts operators from completing obligations on fee mineral leases and farm-out agreements
- 4. BLM releasing data obtained through EIS process on private surface

B. Water produced from project is a lightning rod for controversy

- 1. Two-thirds of the project is the Colorado River drainage and falls under the compact of drainage states
- 2. State of Wyoming regulates ground water with guidance from NEPA, but BLM is continually interjecting authority
- 3. Land owners in the area have a need for the water and should be given first option for beneficial use
- 4. Treatment and discharge is a superior solution to re-injection where possible

C. Wildlife issues

- 1. BLM leases have wildlife stipulations attached but are continuously being revised during process

2. Status of non-listed species are affecting planning process even though they may never be listed

- D. Historic Trails legislation, the Overland Trail runs through project area**
- E. BLM district office staffing, management, and performance problems**
- F. The successful development of project will require new commitments for additional infrastructure such as pipelines and overhead electricity**

VI. Agencies involved in project: See page 6, 7, and 8 of the included EIS scoping document for complete list

Historical Summary of Pedco/BLM activity

Petroleum Development Corporation (Pedco) submitted their first federal APDs in the Atlantic Rim Project Area on August 10, 2000. Four APDs were submitted on this date to drill wells located in T16N,R91W Sec.8:S2. These permits were approved October 27, 2000.

On October 3rd and 4th, 2000, eight APDs were submitted to the WOGCC for fee wells located in T18N,R90W Sec.5 & 9. ROW applications were submitted to the BLM on October 23, 2000, for access across federal lands to access the fee wells. The WOGCC approved the APDs December 27, 2000. The BLM allowed access to fee lands May 4, 2001.

October 12, 2000, the BLM invites Pedco to Rawlins office to discuss future drilling and development plans.

October 18, 2000, Pedco meets with BLM to discuss plans to explore for CBM. BLM undecided as to whether to allow development without EIS. BLM approval of any activity delayed until this question could be resolved.

March 27, 2001, BLM tells Pedco they will allow 200 interim wells and will approve rights of way previously submitted into fee properties. BLM begins preparation of Interim Drilling Policy.

April 24, 2001, ROW into fee wells (18/90 Sec.5&9) granted. Wildlife timing stipulations attached.

April 25, exception request submitted for wildlife stips.

May 4, 2001, exception request verbally approved.

May 24, 2001, Pedco submits proposal to BLM for development in Atlantic Rim area. BLM determines significant impacts will occur and an EIS is necessary.

June 1, 2001, Interim Drilling Policy approved. Will not approve POD EAs until EIS scoping statement is out.

June 15, 2001, scoping is out for AREIS.

The following information details the dates and actions taken by Petroleum Development Corporation (Pedco) toward the submittal and approval of 6 federal drilling permits and associated facilities located in T16N,R91W Sec.17, 20 and 29, Carbon County, WY. These coal bed methane gas wells will be drilled during the ongoing Atlantic Rim EIS (AREIS) under the interim drilling policy between Pedco and the BLM. The six wells, and associated facilities, are collectively referred to as the Sun Dog POD.

Pursuant to conditions of the Interim Drilling Policy an Environmental Assessment (EA) is required to be prepared and approved for the POD prior to drilling. Because of the BLM workload, and in order to expedite its completion, Holsan Environmental Planning (HEP) and Greystone Environmental Consultants (Greystone) were hired to prepare the EAs. HEP begins work on the Sun Dog EA in March 2001. Much of the information already complete as this was part of a 32 well EA prepared by him for Stone & Wolf, the previous operator.

The POD EAs cannot be submitted until the scoping notice for the EIS is published. Scoping goes out June 15, 2001 and ends July 15th.

June 15, 2001 - APDs for 6 federal wells located in T16N,R91W Sec.17 (Sun Dog POD) are mailed to the BLM.

July 23, 2001, Brenda Vosika Neuman, BLM Project Manager, agrees to review preliminary draft EA for Blue Sky POD and forward her comments to Greystone. Report is e-mailed to her.

July 24, 2001 – Brenda received Sun Dog EA from HEP and Blue Sky EA from Greystone yesterday. Her goal is to review them by August 6th and forward comments to HEP and Greystone.

August 1-3 – Onsite with BLM for Sun Dog and Blue Sky PODS.

August 8, 2001 – Brenda Neuman to review draft EAs today.

August 13, 2001 – Brenda Neuman has told the IDT to report back to her next Wednesday on what they want to keep, what is not needed, what is lacking in EAs. Will use format from both HEP and Greystone reports.

August 17, 2001 – HEP making changes to Chapter 4. Frank Blaumquist (wildlife specialist) has not been out to the Sun Dog POD yet for his inspection and report. BLM hopes to have Sun Dog EA posted on website next week.

August 23, 2001 – Meeting in Rawlins for EIS kickoff.

August 29, 2001- Brenda Vosika Neuman said they are having trouble with Chapter 4 (environmental consequences) of Sun Dog EA. Not close enough yet to mail out notices.

September 4, 2001 – HEP has made revisions to Chapter 4 and submitted to BLM for review. Western Water to get process started for age dating of water.

September 5, 2001 – HEP, Brenda Neuman (BLM), John Spehar (BLM) and George Blankenship (contractor) are to have conference call on cumulative impacts for Sun Dog POD.

September 11, 2001 – HEP will have revisions made and hard copy of EA to BLM by this Friday. BLM closes office at 10:30am today due to terrorist attack on World Trade Center.

September 14, 2001 – Still a couple changes to be made to Chapter 4 of Sun Dog EA.

September 21, 2001, Sun Dog EA posted on website for 30 day comment period.

September 25, 2001 – Pedco submits APDs for six federal wells in Doty Mountain POD (T17N,R91W Sec.14:S2 Sec.22:NENE,NESE) APDs for eight fee wells in this POD submitted to WOGCC on September 26th.

October 11, 2001 – Greystone has provided BLM with preliminary draft EA for Blue Sky EA. IDT to report to Brenda on October 22nd.

October 15, 2001 – BLM notifies Pedco of a 5 cent commercial disposal well fee for water transported and disposed off lease.

October 16, 2001 – Pedco notified the BLM will not schedule on-site for Doty Mountain POD until Double Eagle submits APDs for their proposed 6 wells in the Pod.

October 17, 2001 – IDT to report to Brenda Neuman on Blue Sky EA next Monday.

October 22, 2001 – BLM wants analysis of age dating of water sent to them. They will write letter to Fish and Wildlife.

October 22, 2001, end of 30 day comment period. BLM to review comments.

October 25, 2001 – Per BLM, may be as late as November 5th until they write the decision record for Sun Dog EA.

October 31, 2001 – State Solicitor needed to address some of the comments from Sun Dog EA (I think issues with legality of Interim Drilling Policy). Decision Record may be written in 1 – 2 weeks.

November 5, 2001 – Double Eagle has submitted APDs to BLM for their wells in Doty Mountain Pod.

November 14, 2001 – Greystone told by the BLM won't be able to review Blue Sky EA until the week of November 26th. BLM putting together the last response to BioDiversity. May have decision record written next week.

November 19, 2001 – Per Brenda Neuman, right now everything is complete for Sun Dog EA. John Spehar is reviewing it. Cultural is not finished yet. Need cultural report before

Decision Record can be released. If cultural report finished in next day or two the Decision Record could be out Monday or Tuesday next week.

November 27, 2001 – Formatting for Sun Dog EA about done. Cultural still not finished. Nearly finished with review of Blue Sky EA. Possibility of posting Blue Sky EA next week.

November 28, 2001 – Pedco makes a direct call to Sarah Crump who is responsible for cultural report on Sun Dog EA. Sarah upset that we call her directly, informs us to ask NRS about her progress. She says she is working on other projects as well as Pedcos, will work overtime on ours and will not have it done this week. Will not commit to a completion date.

December 3, 2001 – Brenda Neuman to have John Spehars comments on Blue Sky EA today. Will review his comments and forward to Greystone. Brenda will be gone Tuesday – Friday next week. Is her goal to have Blue Sky EA posted before she leaves. Cultural report still not complete on Sun Dog EA.

December 4, 2001 – Will schedule on-site for Doty Mountain Pod when the weather allows.

December 6, 2001 – Cultural not completed on Sun Dog Pod. Brenda will ask John Spehar to review the Blue Sky EA next week, in her absence, and post it if it meets with his approval.

December 10, 2001 – Cultural report on Sun Dog EA is complete. Decision Record is being written. John Ahlbrandt (NRS – BLM) and Janelle Wrigley (Realty – BLM) are out today and they will need to review the Decision Record before it is posted. The entire BLM network is shut down per court order so it cannot be post until the network comes up. Brenda Neuman has no idea when that may be. Brenda out of office tomorrow through Friday. Has asked John Spehar to take over responsibilities of getting the Decision Record posted while she is gone. Brenda will review the revisions to Blue Sky EA next week when she returns. May be able to post Blue Sky EA next week.



PETROLEUM DEVELOPMENT CORP.

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May 3, 2001

Brenda Vosika Neuman, Project Manager
USDI-BLM
Rawlins Field Office
Box 2407
1300 N. 3rd. Street
Rawlins, Wyoming 82301-2407

Re: Termination of MEMORANDUM OF UNDERSTANDING No. WY-030-2000-05-63

Dear Brenda:

August 9, 2000, Pedco entered into that certain **MEMORANDUM OF UNDERSTANDING No. WY-030-2000-05-63** (MOU) between Petroleum Development Corp. (Pedco) and the Bureau of Land Management related to the preparation of an Environmental Assessment for the Atlantic Rim Coalbed Methane Project.

It has been determined that an Environmental Impact Study (EIS) will take place which will encompass the lands of the above referenced MOU. Therefore, subject to the initiation of the EIS and pursuant to "Article IV. B. - Termination" of the MOU, Pedco hereby submits written notice of its intent to terminate the MEMORANDUM OF UNDERSTANDING No. WY-030-2000-05-63 and the related Environmental Assessment.

Yours truly,



Ken Gobble, Operations Manager

MEMORANDUM OF UNDERSTANDING No. WY-030-2000-05-63
BETWEEN
PETROLEUM DEVELOPMENT CORPORATION
AND
BUREAU OF LAND MANAGEMENT
U.S. DEPARTMENT OF THE INTERIOR

FOR THE PURPOSE OF
PREPARING AN ENVIRONMENTAL ASSESSMENT FOR
THE ATLANTIC RIM COALBED METHANE PROJECT

I. BACKGROUND AND PURPOSE

The U.S. Department of Interior, Bureau of Land Management (BLM), has determined that an environmental assessment (EA), is required for the proposed Atlantic Rim Coalbed Methane Exploration and Development Project (Project). The project proponent is Petroleum Development Corporation (hereafter referred to as PEDCO).

The project is located in Townships 13 through 16 North, and Ranges 90 and 91 West, Carbon County, Wyoming, as shown on Map 1. The BLM and PEDCO have agreed on a proposed EA study area of approximately 8,000 acres.

The EA will be in conformance with the Great Divide Resource Management Plan (RMP). The EA will comply with all applicable provisions of the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. Sec. 4321, et seq., and related requirements, including the Council on Environmental Quality (CEQ) Regulations, 40 CFR Parts 1500-1508 and Department of the Interior Requirements listed in Departmental Manual 516, Environmental Quality. It will also comply with guidance listed in BLM Handbook, H-1790-1.

Petroleum Development Corporation has agreed to contract the EA preparation with a consulting firm. It is understood, therefore, that PEDCO will engage a consultant, approved by the BLM, to participate in the environmental analysis process and to prepare an EA at PEDCO's expense. It is also understood that, at any time during the completion of the EA, if the impacts of the project warrant, the EA may be elevated to an EIS.

The purpose of this MOU is to establish an understanding between PEDCO and the BLM regarding their responsibilities and conditions and procedures to be followed in the preparation of the EA.

A. PROPOSED ACTION

The proposed action consists of normal operations associated with coalbed methane (CBM) drilling and production. These activities include minor upgrading of existing roads, some new road construction, construction of well pads, and installation of pipelines and processing facilities. Operational activities include well testing and completion, maintenance of existing facilities, collection and transport of coalbed methane. Additionally, if any wells are plugged and abandoned, all surface disturbances shall be appropriately reclaimed.

PEDCO proposes to explore and potentially develop three coalbed methane CBM areas (henceforth referred to as pods), located within the administrative boundary of the BLM Rawlins Field Office. The pods, known as the Dry Creek or northern pod, the Deep Creek (middle) pod, and the Cottonwood Creek (southern) pod are generally located in Townships 13 through 16 North, and Ranges 90 and 91 West, Carbon County, Wyoming, as shown on Map 1. The total project area encompasses approximately 8,000 acres, of which 7,920 acres are federal surface and 80 acres of private surface.

The initial exploratory pod program consists of drilling, completing, and producing approximately 32 wells located in each pod for evaluation. The three pods contain approximately 96 wells, with a spacing density of 8 eight wells per section. Initial drilling operations are proposed to begin in August 2000.

B. DEVELOPMENT AUTHORIZED CONCURRENT WITH EA PREPARATION

During the preparation of the EA, the BLM's authority to authorize the drilling of exploratory, confirmation, or delineation wells on federal mineral estate is limited. The CEQ Regulations, section 1506.1, limitations on actions during the NEPA process, provide the following regarding limitation on concurrent authorizations:

- (a) Until an agency issues a record of decision as provided in § 1505.2 (except as provided in paragraph (c) of this section), no action concerning the proposal shall be taken which would:
 - (1) Have an adverse environmental impact; or
 - (2) limit the choice of reasonable alternatives.
- (b) If any agency is considering an application from a non-Federal entity, and is aware that the applicant is about to take an action within the agency's jurisdiction that would meet either of the criteria in paragraph (a) of this section, then the agency shall promptly notify the applicant that the agency will take appropriate action to insure that the objectives and procedures of NEPA are achieved.
- (c) While work on a required program environmental impact statement [environmental assessment] is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:
 - (1) Is justified independently of the program;
 - (2) Is itself accompanied by an adequate environmental impact statement; and
 - (3) Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives.
- (d) This section does not preclude development by applicants of plans or designs or performance of other work necessary to support an application for Federal, State or local permits or assistance....

The following criteria will be used by BLM to delineate new activities allowed on federal surface and/or minerals during preparation of the Atlantic Rim CBM EA. It also establishes conditions under which those activities will be authorized.¹ The intent of these criteria and conditions is to keep all activity at a reasonable level, to allow drilling activity for acquisition of additional data necessary for completion of the EA, and to prevent unnecessary hardship on lease holders. These criteria may be modified by the BLM authorized officer if any of the allowed activities are viewed as significantly affecting the environment or are prejudicing the completion of the Atlantic Rim EA as outlined in the CEQ regulations quoted above.

¹ **Note:** Authorization means, that if following the review of an APD or ROW application, all the necessary site specific environmental analysis, cultural clearances, wildlife clearances, etc., have been completed and no sensitive resources such as crucial wildlife habitat, nesting raptors, black-footed ferret habitat, mountain plover, etc., would be affected, the BLM will approve the action.

1. Wells and their associated rights-of-way (ROW) on federal surface/minerals authorized prior to signing of this MOU will be allowed.
2. Proposed wells and associated roads and pipelines on any private surface/private minerals where the operator/lessee has already obtained legal access (i.e., a county road, an approved BLM ROW grant, or an access road on private surface to a private mineral lease) may be developed as deemed appropriate by the operator/lessee.
3. Wells and related ROWs will be authorized on federal leases to prevent drainage caused by wells drilled on adjacent sections (i.e., those wells drilled as a result of changes in well spacing approved by the Wyoming Oil and Gas Conservation Commission) provided the activity is not located in sensitive resource areas as determined by the BLM authorized officer.
4. Four wells per pod will be authorized for the three pod areas for exploratory, confirmation/delineation, and data gathering purposes. Wells selected to be drilled will be at the discretion of PEDCO, subject to submittal of APDs, ROWs and other required permits, and authorized by the BLM following the appropriate site specific NEPA analysis.
5. Water disposal, whether it be injection, surface discharge, or transportation to an approved facility, shall be authorized by the BLM. If surface discharge is selected for water disposal, PEDCO must submit a water management plan and acquire any required Wyoming Department of Environmental Quality permits. BLM authorization of any surface water discharge proposal will be on a case-by-case basis and actual water discharge will be limited to five days.

II. AUTHORITIES

This Memorandum is entered into under the following authorities.

- A. National Environmental Policy Act of 1969, as amended (PL 91-190, 42 U.S.C.)
- B. Federal Land Policy and Management Act of 1976 (PL 94-579).
- C. Mineral Leasing Act of 1920, as amended (PL 93-153).

III. AREAS OF COOPERATION

A. BLM Responsibilities

1. The BLM is the lead federal agency and is responsible for ensuring full compliance of the EA document with the requirements of NEPA and CEQ regulations, as well as BLM regulations, that apply to leasing federal oil and gas. BLM shall also ensure that all necessary consultation and coordination are performed with all federal, state and local governments and private organizations under applicable laws, rules, regulations and orders.
2. The BLM, Rawlins Field Manager, will oversee the Contractor hired by PEDCO to prepare the EA in accordance with accepted third-party contracting procedures, 40 CFR 6.604(g)(3) and 40 CFR 1506.5(c). Brenda Vosika Neuman, Rawlins Field Office, will be the sole point of contact for the BLM on all matters related to

preparation of the EA for PEDCO and their contractor, hereinafter referred to as the Contractor.

3. The BLM will consult with and keep PEDCO informed on the progress of the EA and any additional data needs or changes as necessary.
4. The BLM, in cooperation with the Contractor and PEDCO, will develop both a key date schedule (Exhibit 1) and a key person contact list. The date schedule will indicate key events in the preparation of the EA. Individuals from all participating offices will be included on the key person contact list. Both will be included as part of the EA Preparation Plan. A complete copy of the MOU will be furnished to all parties after approval by the BLM Field Office Manager. Updates or changes to either the key person contact list or the schedule will be furnished to all parties on the key contact list.
5. The BLM will ensure that PEDCO and the Contractor are involved in the preparation of the description of the proposed action. The BLM will also consult with PEDCO throughout the preparation of this EA, particularly during impact analysis, in order to assess the impacts from the project accurately.
6. The BLM will be responsible for maintaining the confidentiality of any appropriate information designated as confidential by PEDCO, as identified by PEDCO or as addressed in 43 CFR 3481.3 (3) and (4), and 43 CFR 3590.1, to the extent permitted by law. In the event that any confidential or proprietary information is required by law to be released by the BLM, the BLM shall provide PEDCO prior written notice of any such proposed release at least 30 days in advance of such releases.
7. The BLM has full responsibility for complying with NEPA procedures and implementing regulations including, but not limited to, public review of the EA, public distribution of the EA, and any required decision documentation. The BLM shall ensure that the EA presents a reasonable range of alternatives and includes relevant environmental issues and impacts, including cumulative impacts. The BLM will provide a mailing list to the Contractor for distribution of the EA and will coordinate with the Contractor to ensure adequate public participation.
8. The BLM will arrange, announce, and conduct any necessary scoping meetings and hearings and will analyze the results; PEDCO will be furnished a copy of the results and BLM analysis.
9. The BLM will ensure that the Contractor considers existing data and environmental analyses available from PEDCO, the BLM, and other sources and that it does not duplicate work already done, unless the BLM determines that the existing data is not adequate for use in the EA. The BLM and the Contractor will jointly assess applicable existing NEPA documents to determine if any must be modified or redone. The BLM will notify PEDCO of any determinations to redo any of the existing analyses along with rationale for doing so. The BLM will ensure that the Contractor provides adequate copies of all maps, reports, and draft documents to each person on the key contact list to allow for a timely review of the product.
10. The BLM will invite PEDCO and the Contractor to attend meetings related to the project with federal, state, regional, and local agencies, and other groups (e.g., they will participate in discussions on the proposed action and on special or critical resource needs, i.e., water resources etc.).

11. The BLM has full responsibility for ensuring that the EA adequately and objectively analyzes the impacts of the proposed action and the identified alternatives. BLM will make the final determination on the inclusion or exclusion of information in the EA, and will be the final authority in all questions related to the content of the EA, including data, analyses, and conclusions.
12. The BLM shall be responsible for all costs associated with the preparation, reproduction, and mailing of the FONSI/DR.

B. Company Responsibilities

1. PEDCO shall designate a single-point contact for the BLM on all matters relating to the preparation of the EA.
2. PEDCO shall ensure that the selected Contractor signs a "No Conflict of Interest" or "Disclosure Statement" that states that the Contractor does not have any interest, financial or otherwise, in the outcome of the project. A copy of the signed statement must be provided to the BLM after approval of the selection of the Contractor by the BLM Rawlins Field Manager.
3. PEDCO shall provide any reasonably justifiable, necessary or relevant technical or environmental information it may have which is needed, at the BLM's discretion, for the environmental analysis.
4. Except for the BLM's obligations set forth in III. A., BLM Responsibilities, PEDCO shall identify and obtain all required federal, state, and local permits, licenses and other entitlements that must be obtained to implement the project and coordinate the terms of those permits with the BLM.
5. PEDCO shall provide, directly to the BLM, responses to data requests (e.g., descriptions of proposed action) and provide review comments within the time limits established by the BLM, to the extent reasonably possible, or the schedule will be adjusted accordingly. The BLM is responsible for providing this information to the Contractor in a timely manner.
6. PEDCO shall attend meetings and provide additional information for the analysis as requested by the BLM.
7. In executing this MOU and taking any other action contemplated hereby, PEDCO reserves the right to contest, in any administrative or judicial proceedings, any and all decisions concerning issues in the EA or any other Federal requirements relating to the proposed project. PEDCO recognizes that nothing in this MOU commits the BLM to take favorable action upon all or any part of the proposal.
8. PEDCO will specify in the contract with the Consultant that the Consultant shall be responsible to respond, as necessary, to BLM requests for input for responding to public comments arising from the EA, appendices to the EA, plans, and technical reports, as deemed necessary by the BLM during preparation of all environmental documents, and as necessary during the preparation of the FONSI/DR.
9. PEDCO will be responsible for stenographic, clerical, graphics, and layout services; printing to established BLM standards; and all costs associated with analyses, review (preliminary analysis), and final copies of the documents prepared by the Contractor. PEDCO shall be solely responsible for the costs of preparing and providing the

number of copies of the completed documents as may be necessary for public review.

10. PEDCO will be responsible for providing an electronic copy of the final EA document to the BLM in PDF format on an acceptable medium.

IV. ADMINISTRATIVE AND LEGAL PROVISIONS

A. Modifications

Modifications to this MOU may be proposed by PEDCO or the BLM and shall become effective upon the written approval of both parties. Changes to this MOU must be initialed and dated on each replacement page by an authorized agent of each party.

B. Termination

1. Any party may terminate their participation in this MOU after thirty (30) days by written notice to the other parties of their intention to do so.
2. In the event of termination of the MOU, and at the request of PEDCO, the BLM will initiate preparation of any remaining analysis and documentation covered by this MOU consistent with staff and budget limitations. PEDCO will be required to submit to the BLM adequate information in support of continuing preparation of the EA.

C. Effective Date

This MOU will become effective when it is signed by all parties. The MOU will remain in effect until the BLM issues a decision on the proposal or until the MOU is terminated in accordance with provisions listed above in IV. B., Termination.

D. Limitations

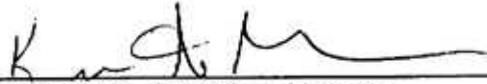
Nothing in this agreement will be construed as limiting or affecting in any way the authority or responsibility of the BLM, or as binding on the BLM to perform beyond its authority.

E. Miscellaneous

1. The BLM and PEDCO agree to comply with all applicable laws governing activities under this MOU.
2. In carrying out the terms of the MOU, there shall be no discrimination against any persons because of race, creed, color, sex, or national origin.
3. The terms of this MOU are effective only to the extent the BLM is authorized to take actions and to the extent funds are appropriated or otherwise made available.
4. All documents released to the public must reflect the independent judgment of the BLM. The BLM is responsible for the adequacy and objectivity of all such documents.
5. **Officials Not to Benefit:** No member of or delegate to Congress or resident commissioners shall be admitted to any share or part of this agreement or to any benefit that may arise therefrom.

V. SIGNATURES

OPERATOR DESIGNATED POINT OF CONTACT

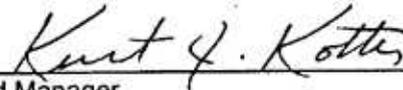


Mr. Ken Gobble, Operations Manager
Pedco, Inc.
801 E. 4th, Suite 23
Gillette, Wyoming 82716

8/9/00

Date

BUREAU OF LAND MANAGEMENT



Field Manager

8/17/00

Date



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Rawlins Field Office
1300 North Third Street
Rawlins, Wyoming 82301-4376

received
6-4-01

1793
Atlantic Rim CBM EIS

JUN - 1 2001

Mr. Ken Gobble
Operations Manager
Petroleum Development Corporation
801 E. 4th Street, Suite 23
Gillette, Wyoming 82716

Re: Interim Drilling Policy

Dear Mr. Gobble:

Please find enclosed the Interim Drilling Policy (Policy) for the Atlantic Rim Coalbed (CBM) Project, which was developed to guide exploration activity during the preparation of the project environmental impact statement (EIS). This Policy identifies actions which will be considered for authorization by our office during the development of the EIS. The intent of this Policy is to keep all activity at a reasonable level, to allow limited drilling activity for the acquisition of additional data necessary for the EIS, and to prevent unnecessary hardship on leaseholders.

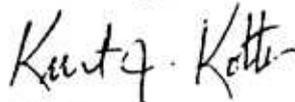
A maximum of 200 coalbed methane wells will be allowed to be drilled within the project area during the preparation of the EIS. These wells will be completed within nine "pod" areas as identified through discussions with the Bureau of Land Management's (BLM) Reservoir Management Group. A pod is defined as two or more production wells with supporting infrastructure such as access roads, injection wells, product pipelines, water pipelines, power lines, and other ancillary facilities designed specifically to assess the development potential of the play. The Policy states that a maximum of 24 CBM wells will be allowed in each of these pods; however, total drilling during interim activities is not to exceed the 200 well cap.

When any federal lands are involved in pod development (including right-of-ways), a detailed Plan of Development/Surface Use Plan (POD/SUP) and Master Drilling Plan will be submitted to our office prior to surface-disturbing activities. The POD/SUP will describe all activities proposed on all lands located within each pod, whether that land contains federal, state, or private surface or mineral estate. Also, an environmental assessment (EA), including a detailed Water Management Plan, will be prepared and approved prior to initiating pod development.

The criteria described in the Policy may be modified by BLM if any of the allowed activities are viewed as having a potentially significant effect on the environment or prejudice the ultimate decision on the project EIS.

If you have any questions concerning the Interim Drilling Policy please contact Brenda Vosika Neuman, Project Leader, at the above address or phone (307) 328-4389.

Sincerely,



Field Manager

1 Enclosure:

1 - Interim Drilling Policy

**INTERIM DRILLING POLICY
DEVELOPMENT AUTHORIZED CONCURRENT WITH EIS PREPARATION
FOR THE ATLANTIC RIM COALBED METHANE PROJECT**

During the preparation of the Atlantic Rim Coalbed Methane Environmental Impact Statement (EIS), the Bureau of Land Management's (BLM) authority to allow drilling on the federal mineral estate is limited. The Council on Environmental Quality (CEQ) Regulations and 40 CFR 1506.1, *limitations on actions during NEPA process* to comply with the National Environmental Policy Act (NEPA) provide the following regarding limitation on concurrent authorizations:

Section 1506.1

(a) Until an agency issues a record of decision as provided in para. 1505.2 (except as provided in paragraph (c) of this section), no action concerning the proposal shall be taken which would:

- (1) Have an adverse environmental impact; or*
- (2) Limit the choice of reasonable alternatives.*

(b) If any agency is considering an application from a non-federal entity, and is aware that the applicant is about to take an action within the agency's jurisdiction that would meet either of the criteria in paragraph (a) of this section, then the agency shall promptly notify the applicant that the agency will take appropriate action to insure that the objectives and procedures of NEPA are achieved.

(c) While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:

- (1) Is justified independently of the program;*
- (2) Is itself accompanied by an adequate environmental impact statement; and*
- (3) Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to determine subsequent development or limit alternatives.*

(d) This section does not preclude development by applicants of plans or designs or performance of other work necessary to support an application for Federal, State or local permits or assistance....

The above regulations and the following criteria and conditions will be used by the BLM to determine new exploratory activities allowed on Federal surface and/or minerals during preparation of the EIS. They also establish conditions under which these activities will be approved. The intent of these criteria and conditions are to keep all activity within the scope of existing analysis and at a reasonable level, to allow limited drilling activity for acquisition of additional data necessary for completion of the EIS, and to prevent unnecessary hardship to leaseholders. These criteria may be modified by the BLM authorized officer (AO) if any of the allowed activities are viewed as having a potentially significant effect on the environment or prejudice the ultimate decision on the drilling program for the EIS as outlined in the CEQ regulations quoted above.

ACTIVITIES ALLOWED ON FEDERAL LANDS AND MINERALS DURING EIS PREPARATION

1. A maximum of 200 coalbed methane wells will be allowed within the project area, for research and exploratory purposes, during the interim period in which the EIS is prepared. Wells will only be

allowed in the nine pods the operators have proposed and a maximum of only 24 coalbed methane wells will be allowed within any pod, regardless of multiple zones to be evaluated (see map).

2. Activities within individual pods will be authorized by BLM. For any pod location which overlaps the boundary of a sensitive resource area for sage grouse, mountain plover, raptors, big game migration corridors, and sensitive plants, appropriate stipulations and mitigation will be applied to protect any sensitive resources present (see Term Definitions below). Some sensitive resources such as high density paleontological or cultural resources sites, are not mapped and will also be handled on a pod basis.
3. Existing coalbed methane wells (two wells re-completed as coalbed methane producers in the Cow Creek Unit by Double Eagle and one new well completed by Petroleum Development Corporation, to the east of this unit) will count toward the above well limits. As Federal 1691 #10-8 has been plugged and abandoned, it will not count toward the above well limit. In addition, the six coalbed methane wells originally permitted by North Finn LLC and drilled in Section 5, T. 17 N., R. 90 W., and the well located in Section 36 of T. 15 N., R. 91 W., will not count toward the allowed well number, as long as they are not included as part of any proposed pod. In addition, required injection wells and monitoring wells will not count toward the well limit.
4. Any modifications proposed to the approved pods (i.e. changing pod locations, drilling wells outside of the current pod locations, or increasing the total number of wells allowed during interim drilling), will only be approved if geologic, hydrologic, or reservoir characteristics support a change. These changes will be allowed after review by, and concurrence of, the Reservoir Management Group and authorization by the BLM, Rawlins Field Office. Additional federal drainage protection wells may be required.
5. During preparation of the EIS, coalbed methane wells and associated roads and pipelines on any private surface/private mineral where the operator has, or has obtained legal access (i.e., county roads, approved BLM ROW grant or private access road) prior to approval of the interim drilling plan, may be developed as deemed appropriate by the operator/lessee. However, these wells will count toward the total number of wells allowed to be drilled under this interim drilling policy.

THE FOLLOWING CRITERIA AND CONDITIONS APPLY TO INTERIM DRILLING OPERATIONS

1. A detailed Plan of Development/Surface Use Plan (POD/SUP) and Master Drilling Plan for each individual pod, using guidance provided by the BLM Rawlins Field Office, will be submitted and approved prior to surface disturbing activities.
2. The operator(s) agree to supply the geologic, coal, and water data information discussed in Attachment 1 of this document.
3. Prior to initiating interim drilling, an environmental assessment (EA), including a detailed Water Management Plan will be prepared and approved for each individual pod. Because of the current BLM workload, and in order to expedite the completion of the EAs, it is recommended that these documents be prepared by a third-party contractor.
4. All pod EA's will be submitted to the BLM in PDF format and each document will be placed on the BLM Wyoming web page. A 30-day public review of each document will occur from the date the document is placed on the site. BLM will be responsible for writing the Decision Record for each EA.
5. A 1/4 mile buffer is required between surface disturbing activities and the Overland Trail.

6. Block surveys for cultural resources will be required for each pod.
7. No interim drilling will be allowed in the Sand Hills Area of Critical Environmental Concern as described in the Great Divide Resource Management Plan Record of Decision (RMP-1990).
8. The Great Divide RMP states the BLM will include intensive land-use practices to mitigate salt and sediment loading caused by surface disturbing activities within the Muddy Creek watershed. The Muddy Creek Coordinated Resource Management (CRM) group was established as an advisory group to address this issue. Because this area overlaps with the Muddy Creek CRM effort, and since road use contributes the most in increasing the amount of sediment in the Muddy Creek drainage, the POD/SUP will be reviewed by the Muddy Creek CRM Road Committee and recommendations of the group will be considered by BLM. Changes to the POD/SUP will be made prior to initiating work on the pod EA.
9. Surface discharge as a method of disposal for produced coalbed methane waters will be considered for each individual pod during interim drilling activities within the Great Divide Basin. This is subject to the approval of the Water Management Plan and upon obtaining all required federal, state and local permits.
10. Prior to completion of the EIS, water produced from coalbed methane wells located in the Colorado River Basin will be disposed of by re-injection. The only exception to this would be waters produced from the Double Eagle's coalbed methane existing and proposed wells located in the Cow Creek POD (POD #6). Double Eagle has applied to the Wyoming Department of Environmental Quality (WDEQ) for a National Pollutant Discharge Elimination System (NPDES) permit for their two existing wells and four wells permitted recently by BLM. Should Double Eagle receive their state permit, they will be allowed to surface discharge from these six wells. Prior to any additional drilling of CBM wells by Double Eagle in POD#6, an environmental assessment, including a Water Management Plan, will be prepared and submitted to BLM which will examine the environmental impacts from these wells. Double Eagle will be allowed to dispose of produced CBM waters to the surface only after completion of the environmental analysis and a determination is made that the additional surface discharge will cause no significant impact to the environment.
11. No drilling activities will be allowed in prairie dog towns during interim operations. However, drilling will be allowed in each individual pod containing prairie dog towns upon the completion of black-footed ferrets survey using methods approved by the United States Fish and Wildlife Service. These surveys will clear the pod for a one year period. The operators also have the option of completing surveys in the whole EIS area which would clear the area for the life of the project.
12. No drilling or disturbance will be allowed in those areas determined to be critical winter habitat for sage grouse.
13. No drilling or disturbance will be allowed in areas where any two or more big game (elk, deer, or antelope) crucial winter ranges overlap.
14. The operators will be required to submit a drilling schedule as part of the Master Drilling Plan. This schedule will be reviewed, and approved by BLM, to ensure that activities are limited within proven big game migration corridors at critical use times during the year.
15. Pipelines, power lines, waterlines, fiber optic lines will be buried and, where possible, will follow the road rights-of-way.
16. Fish passage structures will be installed for roads which cross drainages with fisheries concerns as identified by BLM.

TERM DEFINITIONS

SENSITIVE RESOURCE AREAS are defined as those areas containing stabilized sand dunes, sensitive plant areas, raptor nesting concentration areas, prairie dog towns, two-mile buffer around sage grouse leks, mountain plover aggregation areas or potential habitat, big game migration corridors and crucial big game winter ranges, and areas with high density cultural or paleontological resource sites. Field inspections by the BLM will be conducted to verify presence of these resource values and potential impacts prior to considering authorization of any proposed development activity on Federal surface and/or minerals.

WILL BE AUTHORIZED means BLM will authorize the action if, following the environmental review of the APD or ROW application, sensitive resource areas are protected with appropriate stipulations or mitigation and the criteria established under CEQ regulation 40 CFR 1506.1 have been met. An environmental assessment (EA) will be completed for each individual pod prior to authorizing the proposal. Consultation and Coordination with the Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service will occur when applicable for proposed activity within sensitive resource areas. The pod EA will identify the most environmentally acceptable access route, well site, and pipeline location. Mitigation measures developed from nearby project EISs and EAs for protection of resource values may be considered in the assessment. Any action proposed must be in conformance with the Great Divide Resource Management Plan (RMP) and mineral lease terms and conditions.

A coalbed methane pod may consist of two or more production wells, injection wells, access roads, product pipelines, water pipelines, power lines and other ancillary facilities designed specifically to assess the development potential of the play.

ATTACHMENT 1 DATA SUBMISSION REQUIREMENTS

GEOLOGIC AND COAL INFORMATION REQUIRED TO BE SUBMITTED BY OPERATORS DURING INTERIM DRILLING ACTIVITIES

The geologic and coal information needs identified below are those that the Reservoir Management Group, in consultation with the United States Geologic Survey, has determined are needed based on their experience with coalbed methane development in the Powder River Basin. The information will be used to define the potential gas resource and provide valuable data for the NEPA assessment including the determination of future development potential.

1. Operators will provide copies of all geologic information obtained to the Rawlins Field Office and the Reservoir Management Group as required under 43 CFR 3162.4.
2. The suite of logs required to evaluate coal beds in the project area are high resolution gamma ray, resistivity, density, and neutron logs. The full suite will be required during this phase but may be reviewed for changes during any later drilling phase.
3. Detailed geologic and coal information will be required and obtained for a minimum of one well within each of the nine pods. Information required includes; coal cores, fluid level, and production analysis. From this data information can be obtained on coal rank, adsorption and desorption gas content, core density, specific gravity, orientation of cleats and joints, initial saturations, coal permeability, and desorption pressure.
4. Initial reservoir pressure for each pod drilled.
5. Agree to standard stratigraphic nomenclature for all operators to use in preparing reports to the BLM and Wyoming Oil and Gas Conservation Commission.
6. Obtain an initial reservoir pressure for each coal bed in three of the pods.
7. Obtain reservoir pressure at the end of one year and two years, for each coal bed in three of the pods.

WATER ASSESSMENT/MONITORING DATA NEEDS

Recognizing that surface and ground water resources can be affected by large coalbed methane drilling projects, the following data submission requirements will be necessary to complete the assessment of impacts and develop baseline water conditions. Also water monitoring data has been found to be vital when reviewing drainage situations.

1. The operator(s) will obtain aquifer hydraulic baseline data for all pods in the initial exploration phase. This will include hydraulic conductivity and storativity derived from a multiple well pumping test conducted at each pod. This information could be used to provide data for the NEPA document and to assess monitoring needs for full field development.
2. Identify all domestic/industrial wells in the area and make a baseline and annual measurement of each.

3. Prepare a well mitigation agreement for existing wells and offer it to all groundwater appropriators in the vicinity.
4. Monitoring wells need to be installed both in an updip and downdip direction, completed in coal and overburden, from the pods selected. Details of this requirement will be done in coordination with the Rawlins Field Office hydrologist.
5. Measure initial static water levels in all production wells.
6. Collect water quality analyses for each pod.
7. Each well must have a continuous flow meter installed to measure water production rates for the duration of the project. All water production data will be furnished to the Bureau.
8. Baseline surface water quality should be collected in each stream or receiving water that will collect or transport discharge water. The analysis will include all BLM category I, II and III constituents.
9. The operator will provide to BLM a geologic map of the area/watershed where the produced water is to be re-injected. This should include surficial and bedrock geology, with a clear definition of recharge zones of the receiving formation/unit. The pre-injection water levels and water quality should be monitored and that data provided to BLM. The receiving aquifer should be pump tested and aquifer hydraulics reported to BLM. The reported parameters will include hydraulic conductivity, water levels and storativity for each receiving aquifer.

RECEIVED
8-13-01



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Rawlins Field Office
1300 North Third Street
Rawlins, Wyoming 82301-4376

1790

JUN 14 2001

Re: Scoping Notice
Atlantic Rim Coalbed Methane Project

Dear Reader:

The enclosed Scoping Notice, as required by the National Environmental Policy Act, initiates the analysis process for Atlantic Rim Coalbed Methane Project. If you are interested in participating in the scoping process, we request you respond by supplying your written or e-mail comments or concerns about the proposed activity by July 25, 2001. Please submit your written comments to:

Brenda Vosika Neuman, Project Manager
Bureau of Land Management
Rawlins Field Office
P.O. Box 2407
1300 North Third Street
Rawlins, Wyoming 82301
e-mail: rawlins_wymail@blm.gov

Additionally, the Scoping Notice will be posted on the Wyoming Bureau of Land Management (BLM) homepage at www.wy.blm.gov. Your response is important and will be considered in the environmental analysis process. If you do respond, we will keep you informed of decisions resulting from the analysis. Please note that public comments submitted for this scoping review, including names, e-mail addresses, and street addresses of the respondents, will be available for public review and disclosure at the above address during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays. Individual respondents may request confidentially. If you wish to withhold your name, e-mail address, or street address from public review or from disclosure under the Freedom of Information Act, you must state this plainly at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Two public meetings have been schedule to discuss the proposed project as follows:

July 10, 2001, at 7 p.m.
Little Snake River School
100 Meeker
Baggs, Wyoming 82321

July 11, 2001, at 7 p.m.
Rawlins Field Office
1300 North Third Street
Rawlins, Wyoming 82301

If you have questions concerning this proposal or if you need additional information, please contact Brenda Vosika Neuman, Project Manager, at the above e-mail, street address, or phone (307) 328-4389.

Sincerely,


Field Manager

Enclosure

**SCOPING STATEMENT
THE ATLANTIC RIM COALBED METHANE PROJECT
Petroleum Development Corporation
Bureau of Land Management
Rawlins Field Office**

Description of Project

Petroleum Development Corporation (PEDCO) of Gillette, Wyoming, has notified the Bureau of Land Management (BLM), Rawlins Field Office, that PEDCO and other operators, including Merit Energy Company, Double Eagle Petroleum and Mining Company, and Julander Energy Company, propose to explore and potentially develop coalbed methane (CBM) located within the administrative boundary of the BLM's Rawlins Field Office. The proposed Atlantic Rim CBM project area is generally located in Townships 13 through 20 North, and Ranges 89 through 92 West, Carbon County, Wyoming, as shown on the attached Exhibit. The total project area encompasses approximately 310,335 acres, of which 199,558 acres are federal surface, 16,156 acres are State of Wyoming lands, and 94,621 acres are private surface.

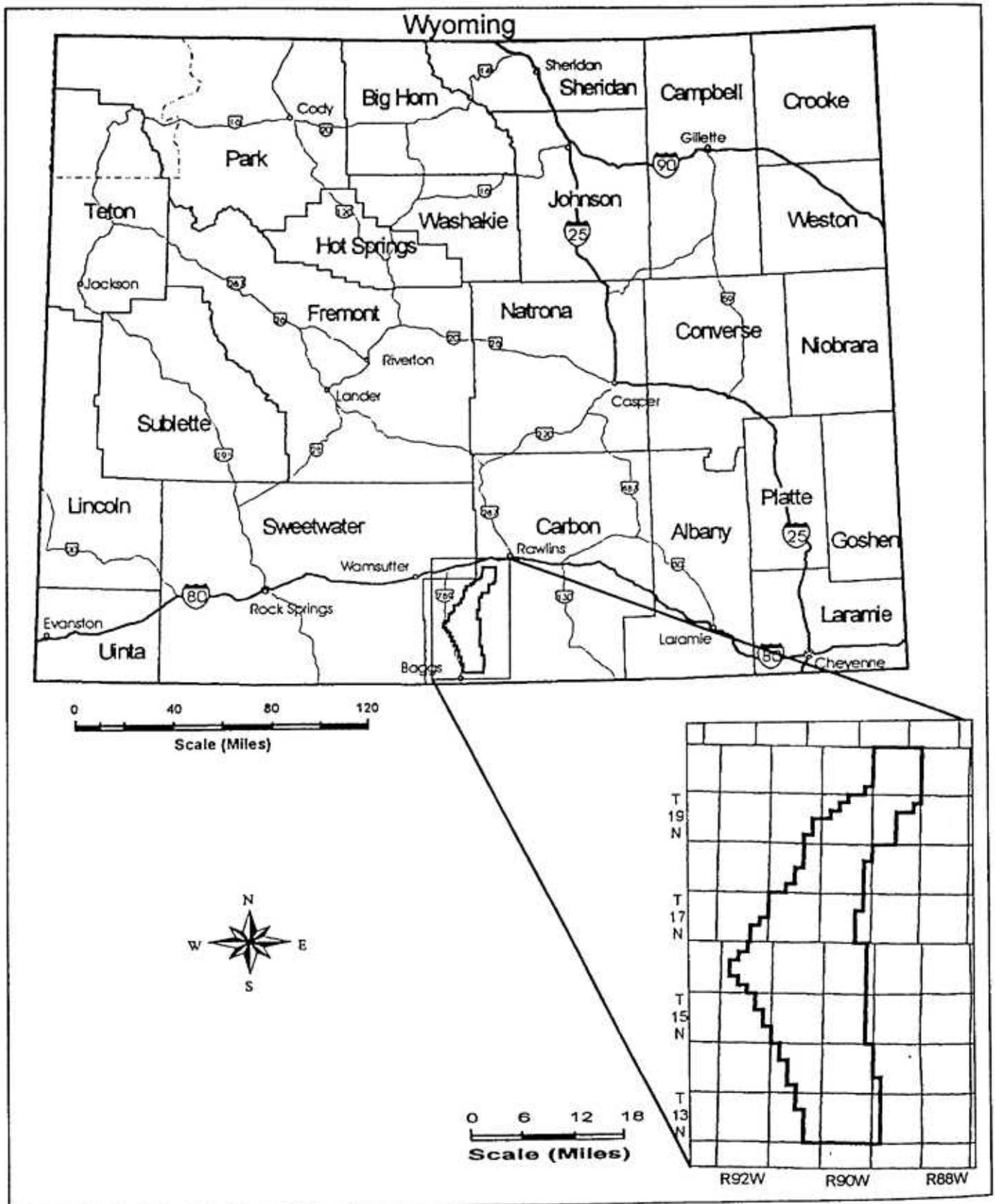
Petroleum Development Corporation's proposal for CBM exploration and potential development began as the 96 well CBM project initiated by Stone & Wolf. A scoping notice describing the 96 well project was mailed out to the public on February 25, 2000. During the preparation of the environmental assessment for its CBM exploration program, Stone & Wolf sold its operating rights to PEDCO. In addition to the Stone & Wolf properties, PEDCO had also acquired additional lease holdings on private and federal lands located north of the Stone & Wolf proposal. After evaluating the geologic characteristics of both areas, PEDCO determined that CBM gas production appeared optimal on the coal structure west of the original CBM proposal. In addition, lease holdings located to the north (just south of the Interstate-80 corridor) would allow PEDCO to access existing infrastructure (i.e., roads, pipelines, powerlines) located in that area. Petroleum Development Corporation notified BLM on May 3, 2001, that it wished to withdraw its application for the 96 well project. In a letter dated May 24, 2001, PEDCO submitted its new proposal to the BLM for CBM exploration and development of the lands shown on the attached Exhibit.

BLM determined upon review of PEDCO's proposal that the increase in CBM drilling and development activity could potentially result in significant impacts and that an environmental impact statement (EIS) would be necessary. PEDCO has also requested that the BLM look at a full field development scenario during preparation of the EIS.

For purposes of conducting an environmental analysis, PEDCO and the other operators have indicated that a maximum of 3,880 CBM wells may be drilled in the Atlantic Rim project area. Drilling is expected to last for approximately 6-10 years, with a life-of-project (LOP) of 20-30 years.

Proposed Drilling Operations

Approximately 7 to 10 days would be required to drill, log, and case each well utilizing a truck or trailer-mounted drilling rig and associated rig equipment. Three additional days would be required to run a bond log, perforate the well casing and run an electric pump utilizing a small CBM completion rig. The estimated size of each drill site location is 200 feet by 200 feet, of which only those areas necessary to conduct drilling and completion operations would be cleared of vegetation.



Location of the Atlantic Rim Project Area in Southcentral Wyoming.

Some site disturbance may be required to place the drill rig on level ground. A small reserve pit would be constructed at each drill site location to hold drilling fluids and cuttings. The reserve pit would be 12 feet wide by 60 feet long by 10 feet deep, although larger pits may be required depending on the depth of the well. Drilling depths would vary within the project area with the deeper wells located toward the western edge of the project area, and would vary between 300 feet and 6,000 feet.

Each well would require a water discharge line and gas line. Methods to dispose of water produced during CBM production may include disposal in injection wells, treatment of the water prior to disposal, surface discharge, or some combination of the three. When surface discharge is used as the method of water disposal, water quality and quantity would be monitored to ensure compliance with federal, state, and local requirements.

Following drilling and completion, flowlines and gathering facilities would be installed, with the required power supply. Gas lines from 10-15 wells would be tied into a small compressor for transmission to a larger centralized compressor. The large compressor would boost the gas line pressure for transmission to the sales line. An average of three small and one large compressors would be required for each pod. Gas volumes would dictate the size of compressors.

Several wells in each pod (i.e., a group of CBM wells drilled to maximize gas production) would be tested for an estimated maximum of 30 days. If the tests are successful, the remaining wells in each pod may require testing, but the duration of these tests may be decreased to 3 to 7 days. An estimated 6 to 12 months of continuous producing status would be needed to fully evaluate the economics of any additional development.

The proposed project area is currently accessed by existing developed and undeveloped roads. The gas produced within the project area would be transported by an existing pipeline, new pipelines, and new gathering lines. A road network would be developed that would include upgraded and two-track unimproved trails.

If the wells are non-productive or non-economical, all disturbed areas would be reclaimed to appropriate federal, state, or private landowner specifications.

Relationship to Existing Plans and Documents

Resource Management Plan - The document that directs management of BLM-administered lands within the analysis area is the Great Divide Resource Management Plan (RMP, November 8, 1990). The objective for management of oil and gas resources, as stated in the RMP, is to provide for leasing, exploration, and development of oil and gas while protecting other resource values.

The development of coalbed methane within the Atlantic Rim project area is in conformance with the RMP. The environmental analysis that will be prepared on the PEDCO proposal will incorporate appropriate decisions, terms, and conditions of use described in the RMP.

Since the levels of oil and gas development under this proposal will likely exceed the levels of development analyzed in the RMP, it is anticipated that an RMP review will be conducted concurrently with the preparation of the Atlantic Rim CBM EIS.

Use Authorizations - Use authorizations (i.e., rights-of-way, permits, etc.) for roads, powerlines, pipelines, and well site facilities would be processed through the BLM application for Permit to Drill (APD) and Sundry Notice permitting process as long as the facilities remain on-lease and are owned and operated by the unit operator. Any facility located off-lease would require individual rights-of-way permits.

Lease Stipulations - Some leases within the proposed area include special stipulations on occupancy. These are in addition to the standard lease terms. These stipulations are designed to protect surface resources such as soils, water, and wildlife by restricting periods of activity and areas of disturbance. Application of these lease stipulations will be handled on a case-by-case basis for each APD submitted to the BLM.

National Environmental Policy Act

On reviewing the proposal from PEDCO and the other Operators, the BLM has determined that permitting this project would constitute a major federal action that could significantly affect the quality of the human environment. Pursuant to NEPA and Council on Environmental Quality regulations on implementing NEPA, the BLM will prepare an EIS describing and evaluating the probable impacts resulting from the Atlantic Rim proposed action and alternatives. The purpose of an EIS is to provide the public and decision-makers with sufficient information to understand the environmental consequences of the proposal and identify and develop appropriate mitigation measures to minimize environmental impacts.

One element of the NEPA process is scoping. Scoping activities are initiated early in the process to:

- identify reasonable development alternatives to be evaluated in the EIS;
- identify environmental/socio-economic issues of concern related to the proposed project; and
- determine the depth of analysis for issues addressed in the EIS.

Additionally, NEPA requires that a "no action" alternative be considered in all environmental documents. This will allow a comparison of the economic and environmental consequences of the proposed and alternative development levels versus current development levels and existing environmental conditions. Under the no action alternative, full field development of coalbed methane within the project area would not occur. This assumption, however, does not mean denial of coalbed methane exploration or development in the area, since all federal lands within the project area have been leased for oil and gas production or are available for lease as described in the Great Divide Resource Management Plan.

Identified Resource Management Issues, Concerns, and Opportunities

The following issues and concerns have been identified by the BLM to date. It is not meant to be an all-inclusive list, but rather a starting point for public input and a means of identifying the resource disciplines needed to conduct the analysis.

- Increased traffic and associated impacts on existing county, state, and BLM roads.
- Socio-economic impacts to local communities.
- Impacts to surface and groundwater resources, including sedimentation/salinity to the Colorado River system.
- Potential impacts to sensitive soils within the project area.
- Impacts from emissions resulting from additional drilling and production activities.
- Reclamation of disturbed areas and control of noxious weed invasions.

- Potential conflicts with livestock management operations in the analysis area, including possible impacts to range improvement projects.
- Potential impacts to cultural and historical values within the analysis area.
- Potential impacts to wildlife habitats within the analysis area, including big game, greater sage grouse, and raptors
- Potential impacts to listed, or proposed for listing, threatened and endangered plant and animal species, including potential Colorado River depletion and effects on downstream listed fish species.
- Potential impacts to sensitive plant and wildlife species including bluehead sucker, roundtail chub, and flannelmouth sucker.
- Cumulative effects of drilling and development activities when combined with other ongoing and proposed developments on lands adjacent to the Atlantic Rim project area.
- Potential conflicts between mineral development activities and recreational opportunities.

Interim Drilling Activities

While the Atlantic Rim environmental analysis is being prepared, the BLM would allow the drilling of a maximum of 200 exploration wells in nine pod locations specifically for the acquisition of data necessary for the completion of the EIS within the proposed analysis area. The BLM's Rawlins Field Office, with recommendations from BLM's Reservoir Management Group, has developed an interim drilling policy to inform the operators under what criteria interim drilling will be allowed concurrently with EIS preparation. Prior to the development of these wells, the BLM will require that an environmental assessment be prepared for each pod developed on federal acreage. Interim drilling activities would be monitored by BLM to ensure that such activities do not significantly affect the environment or prejudice the decisions to be made as a result of the analysis conducted in the Atlantic Rim EIS.

The primary objective of interim drilling will be to drill, complete, and produce the wells to determine:

- which coals are gas productive,
- which drilling and completion techniques are economical,
- if de-watering of the coal(s) can be achieved, and
- what depths or pressure windows may be preferred to target economic gas production.

Interdisciplinary Team

Based on current understanding of issues, concerns, and opportunities and established objectives from other plans, an Interdisciplinary Team (IDT) made up of the following specialists and skills has been identified:

Air Quality Specialist
 Soil Scientist
 Range Management Specialist
 Archeologist
 Geologist

Realty Specialist
Recreation Planner
Hydrologist
Petroleum Engineer
Wildlife Biologist
Environmental Scientist (surface protection)
Interdisciplinary Team Leader
Public Affairs Specialist

Timing Needs or Requirements

Public input is important in establishing the level and scope of the analysis. The public is encouraged to participate throughout the environmental analysis process to help in identifying the level of analysis needed, alternatives to the proposed action, other issues or concerns that should be analyzed, mitigative opportunities, and any other comments or ideas to help ensure the completeness of the analysis process.

Your comments are due 30 days after the Notice of Intent is published in the Federal Register. We anticipate that date to be June 22, 2001. Please submit your comments by July 25, 2001 to:

Address: Brenda Vosika-Neuman, Project Manager
BLM - Rawlins Field Office
P. O. Box 2407
1300 North Third Street
Rawlins, Wyoming 82301-4376

Email: rawlins_wymail@blm.gov

Public meetings to discuss the proposed project are scheduled for 7:00 p.m. on July 10 and 11, 2001, at the following locations.

July 10, 2001:
Little Snake River School
100 Meeker
Baggs, Wyoming 82321

July 11, 2001:
Bureau of Land Management
Rawlins Field Office
1300 North Third Street
Rawlins, Wyoming 82301

Public Participation

The following individuals and organizations will receive a copy of this scoping statement:

FEDERAL OFFICES

U.S. Bureau of Land Management
Wyoming State Office
U.S. Congresswoman Barbara Cubin
U.S. Senator Mike Enzi
U.S. Senator Craig Thomas

U.S. Army of Corps of Engineers
U.S. Bureau of Reclamation
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

STATE AGENCIES

Governor Jim Geringer
State Engineer's Office
State Senators
Wyoming Department of Environmental
Quality

Wyoming Game and Fish Department
State Representatives
Wyoming State Planning Coordinator
Wyoming Department of Transportation
Wyoming Oil and Gas Conservation
Commission

COUNTY GOVERNMENT

Carbon County Commissioners

Carbon County Planning Commission

MUNICIPALITIES

Mayor-Baggs
Mayor-Rawlins

Mayor-Wamsutter

NATIVE AMERICAN TRIBES

Northern Arapahoe Tribal Council
Ute Mountain Tribe
Shoshone-Arapahoe Joint
Tribal Council

Shoshone Tribal Council
Ute Tribal Council
Uinta-Ouray Tribal Council

GRAZING PERMITTEES

Weber Ranch
Salisbury Livestock Company
Three Forks Ranch Corporation
Mike Sheehan
H.B. Lee
Espy Livestock
PH Livestock Company

Montgomery Livestock Company
Stratton Sheep Company
Sam Morgan
Robert Orchard
Matt Weber
Jack Creek Land and Cattle Company

LEASE AND ROW HOLDERS

Stone & Wolf, LLC
Merit Energy Company
Benson-Montin-Greer

North Finn, LLC
P&M Petroleum Management
KCS Mountain Resources, Inc.

LANDOWNERS

This scoping notice has been sent to 111 landowners potentially affected by the proposal.

LOCAL MEDIA

Casper Star-Tribune
Rock Springs Rocket Miner
Wyoming State Tribune/Eagle
KRAI - Craig, Colorado
KRKK - Rock Springs
KTWO - Casper
KUWR - University of Wyoming

Rawlins Daily Times
Wyoming State Journal
Gillette News-Record
KRAL - Rawlins
KSIT - Rock Springs
KTWO TV - Casper
Northwest Colorado Daily News

OTHER AGENCIES, INDUSTRY REPRESENTATIVES, INDIVIDUALS, AND ORGANIZATIONS

Audubon Society
Wilderness Society
The Nature Conservancy
Field Museum of Natural History
 Department of Geology
Montana Oil Journal
Murie Audubon Society
Petroleum Association of Wyoming
Sierra Club
Wyoming Outdoor Council
Wyoming Stockgrowers Association
Wyoming Woolgrowers Association
Ivan Herold

National Wildlife Federation
Carbon County Stockgrowers
Wyoming Association of Professional
Archaeologists
Independent Petroleum Association
 of Mountain States
The Nature Conservancy
Rocky Mountain Oil & Gas Association
Wyoming Farm Bureau Federation
Wyoming Public Lands Council
Wyoming Wildlife Federation
Vern Brodsho
Little Snake River Conservation District



July 25, 2001

Ms. Brenda Vosika Neuman
Atlantic Rim EIS Project Manager
Rawlins Field Office
P.O. Box 2407
Rawlins, Wyoming 82301

Dear Ms. Vosika Neuman:

RME Petroleum (RME), a wholly owned subsidiary of Anadarko Petroleum Corporation, appreciates the opportunity to comment on the proposed Atlantic Rim Coal Bed Methane Project Environmental Impact Statement (Atlantic Rim EIS). We have confidence that BLM can and will take a reasoned and scientifically supportable approach to its management of the proposed development. The importance of balancing environmental protection with the need to provide much needed natural gas resources for the nation should be recognized by BLM.

RME owns a substantial portion of the surface and minerals located in the analysis area. BLM management decisions will affect RME and its interests in the area.

RME supports BLM's decision to allow interim CBM drilling in the EIS project area while the document is being prepared. However, we question whether the strict limitation of up to 200 CBM wells will yield sufficient information for the Atlantic Rim EIS decision making process. Therefore, RME recommends consideration of provisions for additional interim CBM drilling.

Gaining knowledge about coals that may be productive, the characteristics of those reservoirs and effective drilling and production techniques will be essential to a meaningful analysis. The criteria and conditions applied to the interim CBM drilling operations as well as existing lease terms, conditions and stipulations are more than adequate to prevent adverse environmental impacts.

The interim drilling policy states that: *"No drilling will be allowed in prairie dog towns during interim operations. However, drilling will be allowed in each individual pod containing prairie dog towns upon completion of black-footed ferret surveys . . . The operators also have the option of completing surveys in the whole EIS area which would clear the area for the life of the project"*. This condition does not address how BLM will control public access to wildlife habitat information obtained from private lands. Public access to private property resource data has become a vital concern among many area landowners and potentially threatens to disrupt orderly development. BLM must engage

all affected parties to seek solutions to this issue as the interim CBM development and EIS analysis move forward.

There also needs to be a thorough analysis of the social and economic impacts that would be realized by state and local economies. RME recommends a detailed section entitled "Local Economy" be created. This section should look at historic, present and future economies of the affected communities and local governments and provide an analysis of the impacts, benefits and opportunities, such as employment, increased revenues, tax base growth, school funding improvements, etc.

President Bush's Executive Order 13212 states: *"The increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people. In general, it is the policy of this Administration that executive departments and agencies shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy."* If successful, the Atlantic Rim CBM project could provide meaningful contributions to our nation's energy supply. We request all efforts be undertaken to expedite the review and permitting process.

Expediting the EIS analysis, such that the minimum timeframes established by regulation are met, will rely in part on having sufficient agency staffing. RME requests that BLM assess its manpower needs in light of the Executive Order 13212. Additionally, sufficient agency staffing will be important to timely approval of site specific permitting actions. RME also requests that BLM analyze its expected permitting workloads and planned staffing levels in light of the Executive Order 13212.

Another Executive Order, No. 13211 states: *"The Federal Government can significantly affect the supply, distribution, and use of energy. Yet there is often too little information regarding the effects that governmental regulatory action can have on energy. In order to provide more useful energy-related information and hence improve the quality of agency decision making, I am requiring that agencies shall prepare a Statement of Energy Effects when undertaking certain agency actions. As described more fully below, such statements of Energy Effects shall describe the effects of certain regulatory actions on energy supply, distribution, or use"*. RME believes that mitigation measures resulting from the analysis may be intended to have the force and effect of law or designed to implement, interpret, or prescribe law or policy. Therefore, RME requests that the Statement of Energy Effects be included in the analysis.

We look forward to participating in the EIS process.

Sincerely,



Richard T. Robitaille



U.S. Department of the Interior
Bureau of Land Management
Wyoming State Office

Rawlins Field Office

September 2001

ENVIRONMENTAL ASSESSMENT for the Atlantic Rim Coalbed Methane Project, Sun Dog Pod, Carbon County, Wyoming

Complete document is 3/4 inch thick, 200 pgs.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Rawlins Field Office
1300 North Third Street
P.O. Box 2407
Rawlins, Wyoming 82301-2407 1790

In Reply Refer To:

September 21, 2001

Re: Sun Dog Pod Environmental Assessment

Dear Reader:

Enclosed, for your review and comment, is the Environmental Assessment (EA) for Petroleum Development Corporation's Sun Dog Pod coalbed methane exploration project. The project is located in one of nine areas proposed for interim drilling to provide information for use in the preparation of the Atlantic Rim Coalbed Methane Project Environmental Impact Statement. In order to satisfy the requirements of the National Environmental Policy Act, this EA was prepared to analyze impacts associated with the exploration of coalbed methane resources northeast of Baggs, in Carbon County, Wyoming.

Analysis of the environmental consequences has led to the determination that this proposed project, with the appropriate mitigating measures, will not have a significant effect on the human environment. Therefore, an Environmental Impact Statement will not be required. Pending the results of a public review of this document, the Bureau of Land Management (BLM) will prepare a formal Decision Record.

Your comments should be as specific as possible. Comments on the alternatives presented and on the adequacy of the impact analysis will be accepted by BLM until October 22, 2001. If problems arise with the placement of the document on the Wyoming BLM website, comments will be taken for a full 30-day period after the document is available on the web.

Comments may be submitted via regular mail to:

Brenda Vosika Neuman, Project Manager
Bureau of Land Management
Rawlins Field Office
P.O. Box 2407
1300 North Third Street
Rawlins, Wyoming 82301

or be submitted electronically (please refer to the Sun Dog Pod CBM Project) at:

[e-mail: rawlins_wymail@blm.gov](mailto:rawlins_wymail@blm.gov)

Please note that comments, including names, e-mail addresses, and street addresses of the respondents, will be available for public review and disclosure at the above address during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays. Individual respondents may request confidentially. If you wish to withhold your name, e-mail address, or

street address from public review or from disclosure under the Freedom of Information Act, you must state this plainly at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Please retain this EA for future reference. A copy of the EA has been sent to affected government agencies and to those who responded to scoping or otherwise indicated that they wished to receive a copy of the EA. The EA may also be reviewed at the following locations:

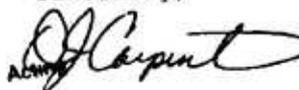
Bureau of Land Management
Wyoming State Office
5353 Yellowstone Road
Cheyenne, Wyoming 82009

Bureau of Land Management
Rawlins District Office
1300 N. Third Street
Rawlins, Wyoming 82301

The document can also be viewed at Wyoming Bureau of Land Management homepage at www.wy.blm.gov.

If you require additional information regarding this project, please contact Brenda Vosika Neuman, Project Lead, at the above e-mail, street address, or by phoning (307) 328-4389.

Sincerely,



Field Manager

Enclosure

MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

WY-030-EA1-243

BLM/WY/PL-01/022+1310

**ATLANTIC RIM COALBED METHANE PROJECT:
SUN DOG POD
ENVIRONMENTAL ASSESSMENT**

Prepared by

**U.S. Department of the Interior
Bureau of Land Management
Rawlins Field Office
Rawlins, Wyoming**

and

**Gary Holsan Environmental Planning
Thayne, Wyoming**

September, 2001

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CHAPTER 1: PURPOSE AND NEED

CHAPTER 1

PURPOSE AND NEED

1.0 INTRODUCTION

1.1. DESCRIPTION AND LOCATION

Petroleum Development Corporation (PEDCO) of Gillette, Wyoming has notified the Bureau of Land Management (BLM), Rawlins Field Office, that the company proposes to explore and potentially develop coalbed methane (CBM) wells in the Sun Dog Pod project area (SDPA) of the Atlantic Rim Project Area (ARPA) of southcentral Wyoming (Figure 1-1). The PEDCO proposal is a part of interim drilling activity authorized by the BLM, Rawlins Field Office while an Environmental Impact Statement (EIS) is being prepared for the entire Atlantic Rim CBM Project Area.

The interim development project consists of drilling, completing, and producing a total of ten exploratory CBM wells, one injection well, and related production and water disposal facilities in the SDPA of the ARPA. Four of these CBM wells and one injection well were previously analyzed in an environmental assessment (EA) completed by the BLM, Rawlins Field Office on October 12, 2000, and the Applications for Permit to Drill (APD) were approved October 27, 2000. To date two wells have been drilled, however, one of these wells has subsequently been plugged and abandoned. Further drilling operations are proposed to begin in late summer, 2001. The total life of the project (LOP) is estimated at 10 to 15 years.

The SDPA is located within the administrative boundary of the BLM's Rawlins Field Office in Township 16 North, Range 91 West, Carbon County, Wyoming (Figure 1-1). Access to the SDPA is by State Highway 789 north from Baggs for approximately 22 miles to the intersection with Carbon County Road 608 ("Dad Road"); see Figure 1-2. The distance from State Highway 789 to the SDPA is approximately 6 miles.

The SDPA encompasses approximately 1,000 acres, all of which are federal surface and federal minerals.

1.2 PURPOSE OF AND NEED FOR ACTION

1.2.1 Purpose and Need For the Proposed Development

Exploration and development of federal oil and gas leases by private industry is an integral part of the BLM's oil and gas leasing program under authority of the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

The purpose of the proposed CBM development is to exercise the lease holders' rights within the project area to drill for, extract, remove, and market gas products. National mineral leasing policies and the regulations by which they are enforced recognize the statutory right of lease holders to

CHAPTER 1: PURPOSE AND NEED

develop federal mineral resources to meet continuing national needs and economic demands so long as undue and unnecessary environmental degradation is not incurred.

Also included is the right of the lease holders within the project area to build and maintain necessary improvements, subject to renewal or extension of the lease or leases in accordance with the appropriate authority. The proposed project would allow PEDCO to determine through exploration and production of CBM if larger scale development is feasible.

1.2.2 Purpose of the Environmental Analysis Process

The purpose of this environmental assessment (EA) is to provide the decision-makers with information needed to make a decision that is fully informed and based on factors relevant to the proposal. It also documents analyses conducted on the proposal and alternatives in order to identify environmental impacts and mitigation measures necessary to address issues. The EA also provides a vehicle for public review and comment on the PEDCO proposal, the environmental analysis, and conclusions about the relevant issues.

This EA has been prepared to evaluate and disclose the potential environmental impacts associated with a CBM project. The proposed exploration project would affect BLM lands managed by the Rawlins Field Office.

Factors considered during the environmental analysis process regarding the exploratory CBM project include the following:

- A determination of whether the proposal and alternatives are in conformance with BLM policies, regulations, and approved resource management plan direction.
- A determination of whether the proposal and alternatives are in conformance with policies and regulations of other agencies likely associated with the project.
- The location of environmentally suitable well pad locations, access roads, pipelines, and production facilities that best meet other resource activities and minimize surface resource impacts yet honor the lease rights within the project area.
- A determination of impacts resulting from the proposed action and alternatives on the human environment, if conducted in accordance with applicable regulations and lease stipulations, and the development of mitigation measures necessary to avoid or minimize these impacts.

1.3 RELATIONSHIP TO POLICIES, PLANS, AND PROGRAMS

The EA is prepared in accordance with the National Environmental Policy Act (NEPA) and is in compliance with all applicable regulations and laws passed subsequent to the act. This EA assesses the environmental impacts of the Proposed Action and No Action Alternatives and serves to guide the decision-making process.

CHAPTER 1: PURPOSE AND NEED

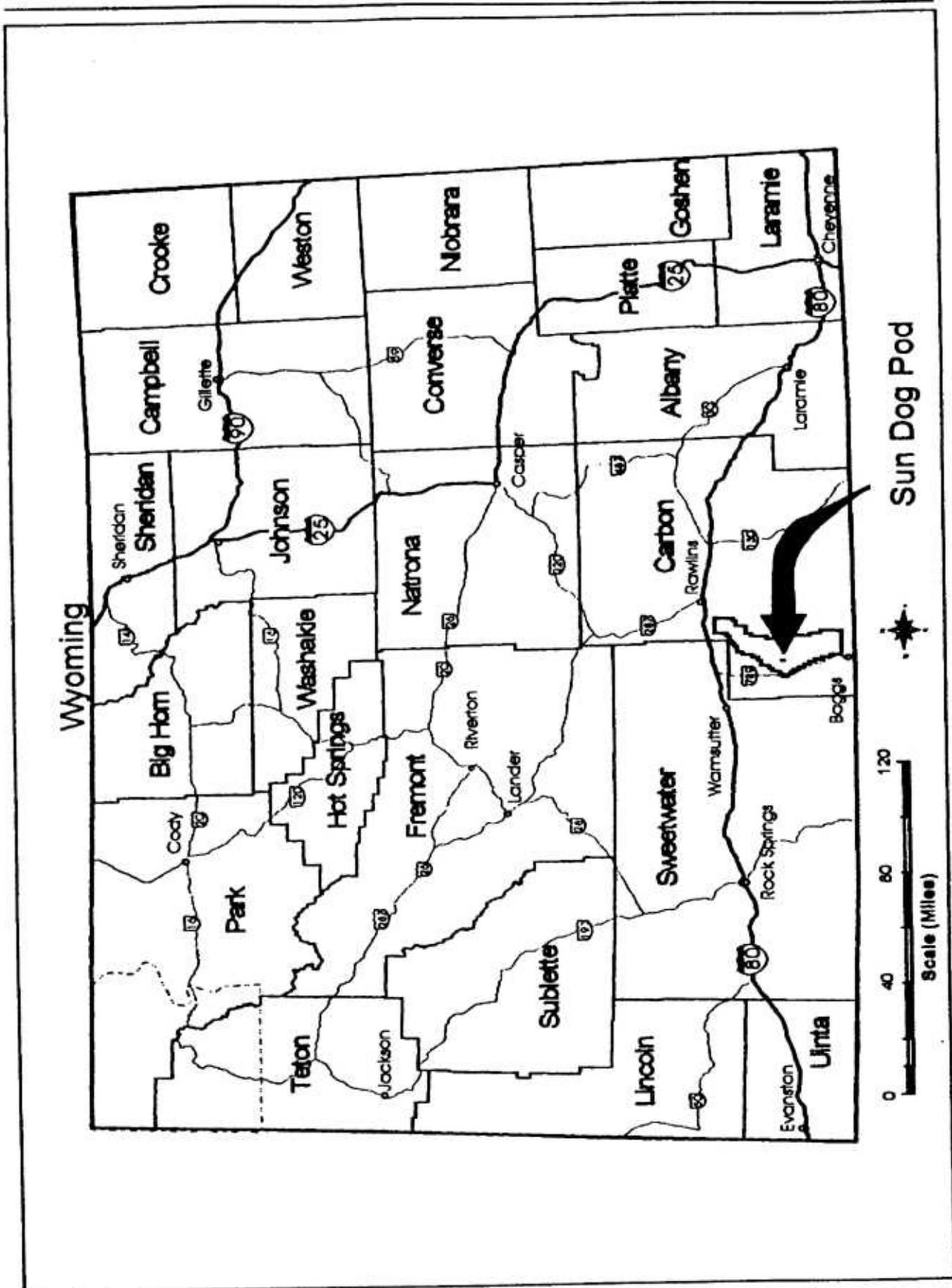


Figure 1-1. Location of the Atlantic Rim - Sun Dog Pod in Southcentral Wyoming.

CHAPTER 1: PURPOSE AND NEED

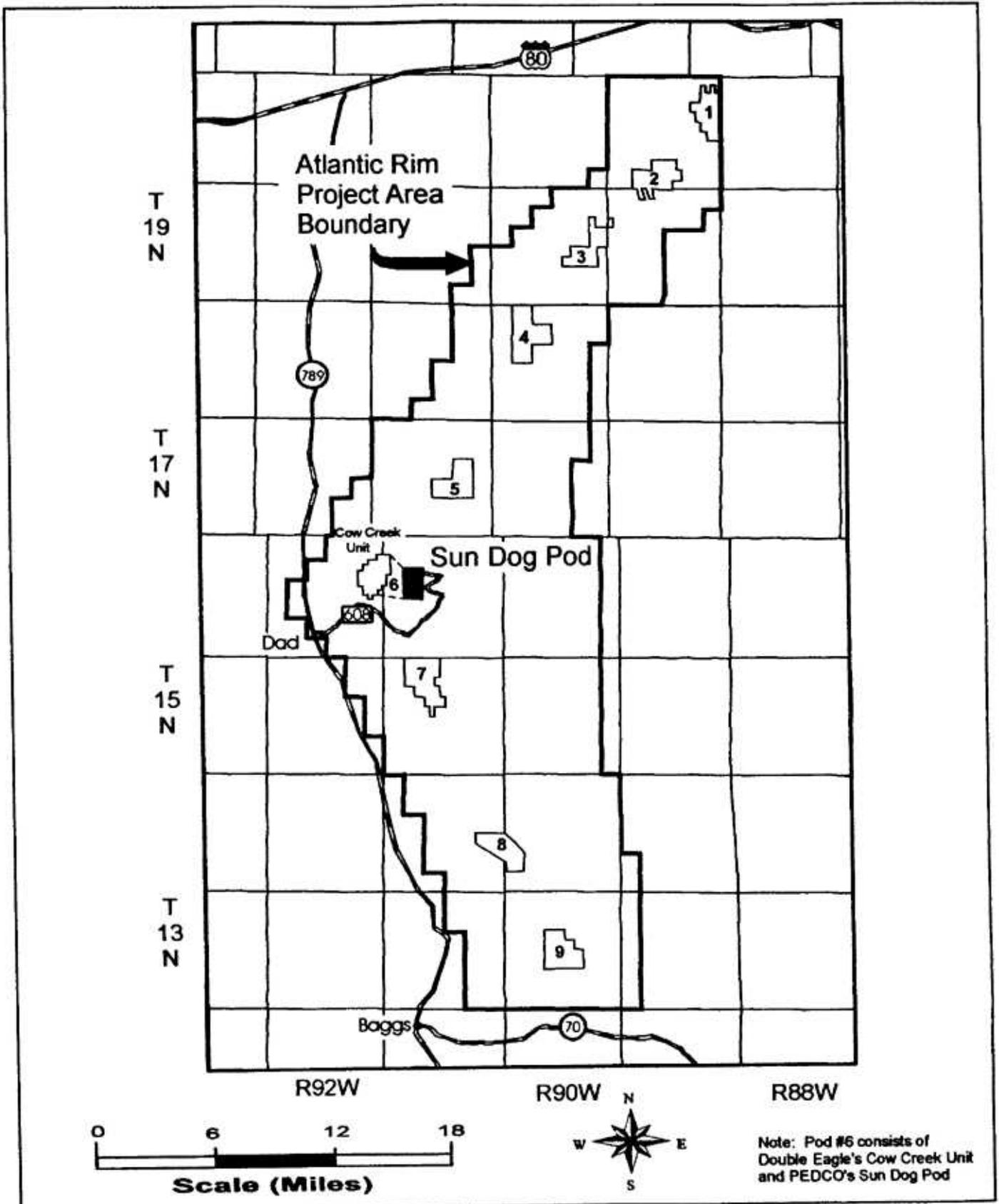


Figure 1-2. Sun Dog Pod in Relation to other Pods within the Atlantic Rim EIS Project Area.

CHAPTER 1: PURPOSE AND NEED

1.3.1 Conformance with Great Divide Resource Area RMP

The BLM's Great Divide Resource Management Plan (RMP) and Record of Decision (ROD) (USDI-BLM 1987, 1988a, 1990) directs the management of BLM-administered lands within the project area. The objective for management of oil and gas resources as stated in the RMP is to provide for leasing, exploration and development of oil and gas while protecting other resource values. The ROD found that all public lands in the resource area are suitable for oil and gas leasing and development, subject to certain stipulations. The BLM considers existing RMP oil and gas decisions to be adequate for CBM and allows for the exploration and testing to determine the viability of CBM development.

1.3.2 Conformance With Interim Drilling Guidelines

The SDPA is one of nine pods that are proposed for exploration and development within the ARPA. Drilling and development is authorized per terms provided in the Interim Drilling Policy - Development Authorized Concurrent with EIS Preparation for the Atlantic Rim Coalbed Methane Project (see Appendix A).

1.3.3 Relationship to Other Plans and Documents

The proposed project is in conformance with the State of Wyoming Land Use Plan (Wyoming State Land Use Commission 1979) and the Carbon County Land Use Plan (Pederson Planning Consultants 1997, 1998) and would comply with all relevant federal state and local laws and regulations (see Appendix B).

The development of this project would not affect the achievement of the Wyoming Standards for Healthy Rangelands (August 1977).

1.3.4 Issues and Concerns

Environmental and social issues of local importance associated with the PEDCO exploratory CBM project are identified as follows:

- Potential impacts to wildlife habitats within the project area and adjacent lands, primarily sage grouse and big game crucial winter range.
- The project area has recorded historical/cultural resource values. There is concern that site disturbing activities associated with exploratory drilling operations may impact historic and cultural values currently unrecorded.
- Reclamation of disturbed areas associated with construction activities and off-road travel is a management concern.
- Potential impacts to surface water quality is a management concern.
- There are concerns regarding potential impacts to air, soil, wildlife, and vegetation within the project area.
- Potential impacts to groundwater is a management concern.

CHAPTER 1: PURPOSE AND NEED

- There are concerns regarding potential impacts to air quality (mostly from generators and processing).
- Cumulative impacts to all resources is a management concern.



October 22, 2001

Ms. Brenda Vosika Newman
Project Manager
Rawlins Field Office, Bureau of Land Management
P.O. Box 2407
Rawlins, Wyoming 82301

Dear Ms. Vosika Newman:

RME Petroleum (RME), a wholly owned subsidiary of Anadarko Petroleum Corporation, appreciates the opportunity to comment on the Environmental Assessment for the Atlantic Rim Coal Bed Methane Project, Sun Dog Pod. RME owns a considerable portion of the minerals located in the proposed development area. The proposed exploration project will affect RME and its interests in the area. Please accept the follow comments and concerns regarding the Sun Dog EA.

GENERAL

Tiering:

The document contains an overly comprehensive analysis of the impacts from CBM development, especially when one considers that the proposal calls for drilling only six new wells. RME recommends that the BLM take advantage of the extensive scope and depth of analysis of this EA and make revisions, if necessary, to the document so that it can be used to tier the EAs for the remaining interim development wells.

Land Use Plan Conformance:

RME concurs with BLM's finding that it has authority to act and that PEDCO's proposal for the Sun Dog Pod is in conformance with the Great Divide Resource Management Plan (RMP), Record of Decision (ROD) and Interim Drilling Guidelines.

It is a well-settled scientific principle that CBM gas exists in coal in three basic states: as free gas; as gas dissolved in the water in coal; and as gas adsorbed on

the solid surface of the coal. *See Amoco Prod. Co. v. Southern Ute Indian Tribe*, 119 S.Ct. 1719, 1724 (1999). In fact, these are the same three states or conditions in which natural gas is stored in other geological formations, including coal seams, sandstones, and shales. *See Amoco*.

Further, an objective of the RMP is for the management of oil and gas resources, while protecting other resource values. PEDCO's proposal satisfies this objective.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES:

General

RME found that the extensive list of project-wide mitigation measures and procedures (2.1.8) to contain instances where PEDCO is asked to comply with requirements that are unenforceable or, in some cases, not supported in their need to mitigate an impact. Examples are illustrated in the comments that follow regarding specific mitigation measures.

2.1.3.3.2 Produced Water-Gathering System and Injection Facilities

The first paragraph in this section states that: "**Prior to drilling injection wells, a permit will be submitted to and received from the SEO and the WDEQ/WQD.**" For purposes of clarity, RME recommends that the sentence be reworded as follows: "Prior to drilling injection wells, a permit application will be submitted to and will be approved by the WDEQ/WQD." RME is unaware of any State Engineers Office (SEO) requirement that "injection" wells be permitted through that agency.

2.1.8 Project-Wide Mitigation Measures and Procedures

It is unclear which elements of mitigation in this extensive section are either "measures" or "procedures" committed to by PEDCO or are actually "BLM required management practices" that would have been imposed regardless of PEDCO's commitment. RME request that those elements of mitigation that are "BLM required management practices" be identified. Without this distinction, it is not clear if certain mitigation measures that are unenforceable and unsupported are "BLM required management practices" or whether PEDCO proposed them.

RME realizes that PEDCO committed to all of the mitigation measures in Chapter 2, however, that does not negate the need for BLM and PEDCO to ensure that such measures are reasonable, enforceable and supported in their need. Our

comments on specific mitigation measures that follow reflect that need.

In this section, the document states that mitigation measures and procedures that are deemed appropriate for public lands would be applied to private lands unless the private surface owners specifically require alternate actions. RME concurs with BLM's recognition of private property owners and their rights and that they should be the ultimate authority to direct activities on their property. It is commonplace for surface owners to enter into surface use agreements with oil and gas lessees. These agreements are the governing document by which activities on private surface should be conducted.

2.1.8.1 Preconstruction Planning and Design Measures

Point No. 6. After the word "be" insert the words "covered with"

2.1.8.2 Resource-Specific Requirements

See 2.1.8 above.

2.1.8.2.2 Air Quality

Point 3 states ". . . PEDCO would initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ-AQD. These concerns include but are not limited to potential exceedences of air quality standards". WDEQ air quality standards contain specific numeric limits at which compliance measures can be initiated. The same cannot be said for "soil loss" or "safety concerns". What measurement or standard will BLM use to identify when unacceptable "soil loss" or "safety concerns" are encountered? For compliance, either a performance standard or specific command or control limit is needed. Statements like these place operators in an untenable position. They can only guess at when a BLM inspector will say, "too much soil loss going on here". RME recommends that restrictions regarding soil loss and safety concerns be eliminated, as they are unenforceable without standards by which compliance can be measured.

Point 6 states "**Except in emergency situations, access would be limited to drier conditions to prevent severe rutting of the road surface**". It is unclear how will BLM define "severe rutting"? On Page 2-17 there are requirements for PEDCO to construct what equates to an all weather road (i.e. crowning, ditching and surfacing) thereby negating the need to have a rutting restriction. Therefore,

RME recommends that this measure be eliminated since it is unnecessary and duplicative of other measures to protect the surface.

2.1.8.2.4 Minerals/Paleontology

In the first paragraph reference is made to WDEQ as setting casing and cementing policies for protection of subsurface mineral resources. This should be revised to refer to the Wyoming Oil and Gas Conservation Commission not the WDEQ.

2.1.8.2.5 Soils

Point 8 asks that PEDCO "install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed". The terminology "if needed" does not provide an adequate performance standard or enforceable limit. RME suggests that these devices be installed to, "avoid or mitigate erosive concentrated flows of surface runoff."

2.1.8.2.6 Water Resources

Point 6 states that "if needed" PEDCO is to design and construct interception ditches, sediment traps etc. The terminology "if needed" does not provide an adequate performance standard or enforceable limit. This standard does not make clear to PEDCO when BLM may require such measures. Providing clear direction to the operator in this document would allow PEDCO to identify and correct problems of concern to BLM prior to BLM inspections.

Point 9 makes a statement that the casing of wells would adhere to the "appropriate" BLM cementing policy. Is there adequate information in PEDCO's drilling plan to determine which cementing policy would be imposed? If so, RME recommends that the specific policies be stated in the document to eliminate potential for "moving target" administration and eliminate potential disputes.

Point 13 states that the coordination of discharging of hydrostatic test water should occur through the State Engineers Office (SEO). RME is uncertain why this is suggested because there is no cite of a regulation.

Point 15 states that the WDEQ requires operators to obtain a field permit (NPDES Storm Water) for fields of 20 wells or more. It is unclear why this requirement was included. The requirement does not exist in either the WDEQ General Storm Water Permit for Construction or Industrial Activities Permit. Oil and gas operations of exploration, production, processing, treatment and

transmission are largely exempt from the industrial permit. Those exceptions are identified in the DEQ Storm Water General Permit for Industrial Activity. Oil and gas "construction" activities are not exempt. However, construction of such facilities as drill sites, pipelines and compressor station are subject only if five or more acres will be disturbed (DEQ General Storm Water Permit for Construction Activity).

2.1.8.2.9 Wildlife

Point 1 requires PEDCO to **"establish a variety of forage species that are useful to resident herbivores"** during reclamation. How is PEDCO to know what an adequate "variety" would be? Would it be the presence of three, four, five or more species? In what densities, how many years of successful plant establishment would meet this requirement? RME recommends that this measure be eliminated, as it is unenforceable without standards by which compliance can be measured.

Point 4 asks that PEDCO complete a raptor survey of the Atlantic Rim Project Area (ARPA) prior to construction. This seems overly broad and unnecessary, as just a small geographic location of the entire ARPA will be drilled for the Sun Dog wells. Some parts of the ARPA are up to 24 miles away from the Sun Dog pod. RME suggests that surveys be limited to areas within 1 mile of well sites. This is consistent with provisions in the EA for seasonal avoidance of raptors.

2.1.8.2.11

Point 1 requires PEDCO to **"utilize existing topography to screen roads, pipeline corridors, drill rigs, well heads and production facilities from view"**. This requirement is inconsistent with the analysis of environmental consequences for visual resources identified in Chapter 4. For instance, Chapter 4 states the following:

" . . . the SDPA area is not pristine"

"Short term impacts to visual resources associated with construction and drilling in the SDPA would include contrasts in line, form, color and texture".

"Potential viewers of the contrasts described would be few in number . . . "

"The short term impacts would exceed level of contrast permitted in Class 3 areas; however, because the contrasts would be seen by relatively few viewers and would be short in duration, they would be considered minimal".

Given the short term nature and the limited number of potential viewers of drilling activities, PEDCO should not be required to locate drilling sites such that rigs are screened by topography. Additionally, the area in which the SDPA will take place is exceedingly remote without major arterial roads that large numbers of the public would travel on a frequent basis. The majority of use in this area will be hunters that will be dispersed throughout the landscape and only be present for three or four months of the year. Therefore, from what viewpoints/highways etc. is PEDCO to protect visual contrasts? The EA fails to provide sufficient justification to impose any requirement for screening of development activities.

2.1.8.2.12 Noise

Point 2 makes reference to compliance with both OSHA and MSHA safe limits for noise and the need for personnel protective equipment. RME recommends that reference to MSHA be eliminated. MSHA does not regulate the oil and gas industry. Additionally, how will this be enforced if standards conflict?

2.1.8.2.13 Recreation

Reference is in this section to adherence to "low speed limits". RME recommends that "low speed limits" in relation to various BLM road classifications be defined (e.g. 30 mph or some other figure for a resource class road)

2.1.8.2.14 Socioeconomics

Point 1 requires PEDCO to "implement hiring policies that would encourage the use of local or regional workers who would not have to relocate to the area". In reality, PEDCO would likely hire very few direct employees. Instead, PEDCO would contract out services such as drilling, pipeline construction, road construction etc. PEDCO has no authority over the hiring practices of their contractors, nor should they. Additionally, the document fails to justify how this requirement would mitigate any impacts. This is witnessed by the statement on page 4-19 that says, "the relatively small, short-term drilling and field development workforce would not generate significant demand for temporary housing or local government services". RME recommends that this requirement be removed. Oil and gas development utilizes specialized equipment and specialized training and skills are required of personnel operating that equipment. Often, these resources are not available either locally or regionally. Furthermore, for safety reasons industry seek to employ the best personnel available.

Point 2 asks that PEDCO **"Establish effective and frequent communication with affected ranchers to monitor and coordinate scheduling"**. RME encourages dialogue regarding resource use among directly affected parties; however, questions arise to how this standard can be enforced. What constitutes "frequent" and "effective"? Who is charged with enforcement? RME recommends that this measure be eliminated, as it is unenforceable without standards by which compliance can be measured.

2.1.8.2.16 Health and Safety

Point 2 requires PEDCO to **"minimize undue exposure to hazardous situations, require measures that would preclude public from entering hazardous areas and place warning signs alerting the public of truck traffic"**. This requirement is extremely vague. For instance, how are "hazardous areas" defined? What "measures" to preclude public from hazardous areas will be deemed appropriate and by whom? For instance, in order to comply what size, number and location of signs will be considered adequate notification of the public of truck traffic? Furthermore, this measure is not supported by the analysis of environmental consequences in Chapter 4. Section 4.13.1.1 states that, **"given the remote nature of the project area, and the relatively low use of lands by others (primarily grazing permittees and hunters), occupational hazards associated with the Proposed Action would mainly be limited to employees and contractors rather than the public at large."** RME recommends that BLM cite specific OSHA or other safety/transportation regulations governing public access to hazardous situations and/or notification requirements for truck traffic.

4.7.1.1.5 Threatened and Endangered Species

Reference is made in this section to Wyoming Water Quality Standards (WDEQ 1997; 2000). The correct reference would be Wyoming Surface Water Quality Standards (WDEQ 2001). The latest rule revision to surface water quality standards was filed on 7/16/2001. This change should be made in this section and other sections where reference to surface water quality standards is made.

3.4.2.2 Quality

This section states that, **"Calculated SAR (47.3) and residual sodium carbonate (41 meg/l) exceed the agricultural suitability limits of 8 and 1.25 respectively"**. The relationship between the irrigation of various crops to sodium adsorption ratios is site specific. For instance, when determining a limit on SAR in irrigation water the type of soil, type of crop and irrigation practices must all be

*Ms. Brenda Vosika Newman
Project Manager
Rawlins Field Office, Bureau of Land Management*

taken into consideration. RME suggest that the document clarify this point and not state that there is a one size fits all suitability limit.

4.0 Introduction

This section states that, **"This chapter of the environmental assessment provides an analysis . . . of six well locations . . ."** Later in the introduction section the following statement is made, **"This environmental analysis addresses cumulative impacts associated with exploration and development of 200 interim CBM wells and other activities. . . ."** The document should be reviewed for consistency and changes made where appropriate. Also, RME would like to support the statement that the analysis addresses cumulative impacts for 200 wells. As earlier indicated, RME requests that this document be expanded so that subsequent interim development pods could be tiered to this document.

RME believe that adequate justification exists for a Finding of No Significant Impact for the Sun Dog Project EA.

Sincerely,

Tom Clayson
RME



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office Reservoir Management Group
2987 Prospector Drive
Casper, Wyoming 82604-2968

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(3181.1)
SunDog (CBM)
WYW152954X

SEP 10 2001

Petroleum Development Corporation
c/o Bonita L. Limpus Jones
P.O. Box 8309
Roswell, New Mexico 88202-8309

Gentlemen:

Your application of August 7, 2001, filed with the Chief, Wyoming State Office - Reservoir Management Group (WSO-RMG), Bureau of Land Management, Casper, Wyoming, requests the designation of 24,137.83 acres, more or less, in Carbon County, Wyoming, as logically subject to exploration and development under unitization provisions of the Mineral Leasing Act, as amended.

Pursuant to unit plan regulations 43 CFR 3180, the land requested, as outlined on your plat marked "Exhibit 'A', Sun Dog (CBM) Unit", is hereby designated as a logical coalbed gas unit area. The unit agreement submitted for the area designation should provide for the drilling of five (5) test wells (Initial Drilling Obligation). The test wells are to be drilled to a depth of 100 feet below the top of the basal Mesaverde Group sandstone at the locations proposed in your application or other locations approved by the Authorized Officer (AO).

The unitized substances are defined as all oil and gas from surface to the base of the Mesaverde Formation as identified on the gamma-ray, dual induction, sonic, and neutron-density logs of the Davis Oil Co. No 1 Ram Canyon well in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 3, T. 19 N., R. 89 W. at a depth of 2,170 feet.

The use of the Form of Agreement for Coalbed Gas (June 1999) will be accepted provided it is modified by inserting the following provisions in Section 9:

c. **Additional Obligations.** The following shall be required in addition to the initial drilling obligation in 9.a. above:

i. The Unit Operator shall drill and complete one set of groundwater-monitoring wells in the unit. General groundwater monitoring requirements are as follows:

The first groundwater-monitoring well shall be completed in the first sandstone aquifer underlying the deepest coalbed in the unit area that the Unit Operator

plans to develop; however monitoring of the underlying sandstone aquifer shall not be required if the underlying sandstone aquifer is more than 100 feet below the base of the objective coalbed. The second monitoring well shall be completed in the deepest coalbed(s) in the unit area that the Unit Operator plans to develop, or in other coalbeds if deemed necessary by the AO. The third monitoring well shall be completed in the first sandstone aquifer above the deepest coalbed(s) in the unit area that the Unit Operator plans to develop. A fourth groundwater-monitoring well may be required downdip of the planned development and a fifth groundwater-monitoring well may be required updip of the planned development, if deemed necessary by the AO.

The target sandstone aquifers and coalbeds will be identified by the AO from open-hole wire-line logs obtained from the deepest (initial) groundwater monitoring well drilled. The minimum acceptable wire-line log suite, for this purpose, shall consist of gamma-ray, caliper, spontaneous potential, and deep and shallow resistivity curves.

The set of groundwater monitoring wells shall be located in the vicinity of sections 8, 9, 16, and 17, T. 18 N., R. 91 W., Carbon County, Wyoming. Specific well locations will be selected by the unit operator with the concurrence of the AO.

ii. The Unit Operator shall obtain a suite of open-hole, wire-line logs from at least one (1) well in the unit. The wire-line logs shall be run from the surface to a depth of one hundred feet (100) below the base of the deepest coalbed in the unit area that the Unit Operator plans to develop for coalbed methane production. The wire-line logs shall be calibrated and properly scaled according to industry standards and shall include, at a minimum, a high-resolution resistivity with spontaneous potential and gamma-ray curves and a high-resolution neutron-density with photoelectric, caliper, and gamma-ray curves. The density-curve logging speed through the coals shall be no greater than ~~X~~ feet/minute. Digital (las format) and paper copies of the logs shall be submitted to the WSO-RMG and paper copies shall be submitted to the Rawlins Field Office.

iii. The Unit Operator shall obtain one (1) whole-seam core for each coalbed that is expected to produce coalbed methane. The cores will be properly collected for desorption, adsorption, and other standard coalbed methane analyses such as proximate analysis, coal rank, cleat orientation, initial saturations, and coal permeability. Coal density/specific gravity measurements will be provided for all core samples in order to calibrate log densities and for correlation with gas-content measurements. All data and analyses should be submitted to the WSO-RMG as soon as it is available. Core-collection locations, procedures, and scheduling can be coordinated with data collection efforts by the U.S. Geological Survey and WSO-

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(per
Rogin Miller
@ BLM
9-28-01)

RMG Cooperative core collection and analysis project. When the need for collection of a proposed core has been established, please contact the WSO-RMG at 307-261-7600.

iv. The Unit Operator shall be allowed to substitute each ground-water monitoring well drilled and completed in accordance with the above paragraphs for one of the unit obligation wells. The Unit Operator shall be allowed to substitute one suite of open-hole, wire-line logs for one of the unit obligation wells. The Unit Operator shall be allowed to substitute one whole-seam coal core which has been collected within the unit area for one of the obligation wells. The Unit Operator shall be allowed to use a well drilled for groundwater monitoring purposes for logging and/or core collection.

In areas where APDs will not be approved until an EIS is completed, the wells drilled for groundwater monitoring, logging, and core collection, as described above, may be drilled as "Science Wells" and can be drilled in addition to the wells authorized by the Atlantic Rim EIS Interim Drilling Policy prior to completion of the EIS and subsequent to unit approval. Once the unit is approved, and prior to commencing operations, you must submit your plans for collection of data under Section 9.c. to the WSO-RMG for approval, with the understanding that these additional requirements will be completed prior to any dewatering operations.

If conditions are such that further modification of said coalbed gas unit agreement form is deemed necessary, two copies of the proposed modifications with appropriate justification must be submitted through the Chief, Wyoming State Office, Reservoir Management Group, Bureau of Land Management, 2987 Prospector Drive, Casper, Wyoming 82604, for preliminary approval.

In the absence of any other type of land requiring special provisions or of any objections not now apparent, a duly executed agreement identical with said form (modified as outlined above) will be approved if submitted in approvable form within a reasonable period of time. However, notice is hereby given that we reserve the right to deny approval of any executed agreement submitted which, in our opinion, does not have the full commitment of sufficient lands to afford effective control of operations in the unit area.

If any well, other than a "Science well", is commenced and penetrates the geologic formation specified in Section 9.a of the unit agreement prior to final unit approval, it cannot be considered as one of the unit obligation wells. In such event all five(5) unit obligation wells still must be drilled. If you elect to initiate drilling of an obligation well prior to final unit approval, please be advised that the agreement must be filed in time to permit it to be processed in the normal sequence of events without requesting priority consideration because of a well drilling in the unit area.

To help prevent delay in the commencement of drilling the unit obligation wells, please review all Federal leases within the unit area as to restrictive stipulations which protect wildlife and other resources. Also, contact the Rawlins Field Office for any additional Conditions of Approval that may be incorporated in the approval of the Application for Permit to Drill (APD) that may delay commencement of the unit wells.

If there are any questions, please call Roger Miller, Geologist, at 307-261-7630.

Sincerely,

for Larry Claypool
Asghar Shariff
Chief, Wyoming State Office
Reservoir Management Group



PETROLEUM DEVELOPMENT CORP.



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December 7, 2001

Roger Miller, Geologist
Bureau of Land Management
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Brenda Vosika Neuman, Project Manager
Bureau of Land Management
Rawlins Field Office
Box 2407
1300 N. 3rd. Street
Rawlins, Wyoming 82301-2407

Re: Atlantic Rim Water Monitoring amendments

Dear Ms. Vosika Neuman and Mr. Miller:

This letter is intended as a formal proposal in response to the meeting in the BLM Casper office on November 20, 2001. PEDCO wishes to combine our water monitoring unit obligations for the Sun Dog (CBM) Unit (ADDITIONAL OBLIGATIONS, 9(c)), and future units, with the recommendations from the RMG that are included in the INTERIM DRILLING POLICY (IDP) (ATTACHMENT 1) approved by the BLM Rawlins Field Office on June 1, 2001. Integrating these requirements should yield a better overall view of the available data for the entire project and be less of a burden for the operators.

The IDP allows the drilling of no more than two hundred CBM production wells throughout the project area (see map of Atlantic Rim EIS area) before completing an EIS for the project. The IDP allows nine pods with no more than twenty-four wells in each pod. The BLM-RMG recommended that monitor wells be required in at least two of these pods.

The Mesa Verde (MV) coals, which are the target horizons in the Atlantic Rim Project, are quite different from the Ft. Union coals being produced in the Powder River Basin in Northeast Wyoming. The MV coals are thin and discontinuous in nature. This lack of continuity make it difficult to examine the reservoir pressure of each MV coal seam. PEDCO is currently looking at four different coal seams in the AR project for commercial gas production. The four groups of coals from the surface are:

1. Garden Gulch,
2. A coals and Cow Creek,
3. Robertson, and
4. Allen Ridge.

The gas content of the individual coal seams varies widely from well to well. At this time we have not perforated any of the Garden Gulch seams but this may change as time goes on and more wells are drilled. Because of our concerns with water disposal in the Colorado River Drainage Basin, we intend to initially only perforate those seams with the highest gas content. This approach should help us optimize our water to gas production ratios.

The coal seams appear to have a uniform pressure gradient across them. We propose that these coals be approached as groups instead of on a seam-by-seam basis for the purpose of monitoring reservoir pressures.

PEDCO believes that there are three distinct geological settings in the project area:

1. The portion from township 18N to the north has very high dips of around sixteen degrees. The outcrop is on the backside of the Atlantic Rim itself and limits any hydraulic recharge. In this area the Mesa Verde formation is more normally pressured. The net thickness of the entire coal section in the Mesa Verde is somewhat thinner than the area to the south. Annual precipitation in the northern portion is less than 10 inches per year, which also reduces the hydrologic recharge of the coal seams.
2. The portion of the project area from township 15N through 17N has more gentle dips in the Mesa Verde formation, approximately one to two degrees. The Mesa Verde is over pressured below the Garden Gulch coal section with pressure gradients around 0.57 psi/ft. The Mesa Verde is on the drainage surface, which allows a significant recharge mechanism. Annual precipitation is moderately higher than the northern end of the project area.
3. The southern portion of the project area has low dip angles in the Mesa Verde formation. The outcrop is on the drainage surface and the Mesa Verde is over pressured below the Garden Gulch coal section. The net thickness of the Mesa Verde group is considerably higher in this area. The annual precipitation at the outcrop is quite high, around twenty-five inches.

PEDCO would like to propose that the Sun Dog (CBM) Unit (ADDITIONAL OBLIGATIONS, 9(c)), and future units, and the INTERIM DRILLING POLICY (ATTACHMENT 1) approved by the BLM Rawlins Field Office on June 1, 2001, be amended to provide for the following:

- I. One pod in each of these distinct settings be selected for monitoring reservoir pressures with the required monitoring well program.
- II. PEDCO will drill one monitor well in each of the three selected pods and use the completion string as shown in figure 2 (attached hereto) which will allow all of the necessary data to be developed and available. The specifications of the completion string are also included with the well schematic.
- III. Take pressure readings from these wells every other month for the first year and then go to quarterly readings or as needed.
- IV. PEDCO would like to drill the first monitor well in the proposed Sun Dog Unit in the NESW of section 17 of 16N-91W. (PEDCO notes that the location of the monitoring well called for in the Sun Dog (CBM) Unit Agreement, page 5, paragraph one, and in the BLM-RMG September 10, 2001, designation letter for the Sun Dog Unit, page two, paragraph three, is incorrectly identified as being in T.18N., R.91W. The township and range should be 16N-91W).
- V. Use one of the proposed production wells to monitor the reservoir pressure of the coal by obtaining initial pressure and annual shut-in bottom hole pressures.
- VI. Use the core obtained in Section 12 of 16N-92W for the whole core obligation. PEDCO will make all of the sidewall core data from additional wells available to the RMG. (PEDCO has spent considerable resources to date correlating gas desorption data from whole cores to sidewall cores to our mud log shows).

VII. Amend and apply these proposals to our other and future CBM unit applications in the Atlantic Rim project area.

PEDCO believes that the above proposals will provide for a more efficient and less costly manner in which to gather the data sought by the BLM in the Sun Dog (CBM) Unit (ADDITIONAL OBLIGATIONS, 9(c)), and future units, and the INTERIM DRILLING POLICY (ATTACHMENT 1).

Your prompt attention to these proposals will be appreciated as PEDCO will begin to drill additional wells in the Sun Dog Unit area in the very near future which PEDCO would like to be able to designate as unit obligation wells. Thank you.

Yours truly,



Ken Gobble,
Rocky Mountain Operations Manager.

cc Bonnita L. Limpus Jones, Consulting Landman

Atlantic Rim Project

Environmental Impact Study Area

Carbon County, Wyoming

R. 92 W.

R. 91 W.

R. 90 W.

R. 89 W.

T
20
N

T
19
N

T
18
N

T
17
N

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16
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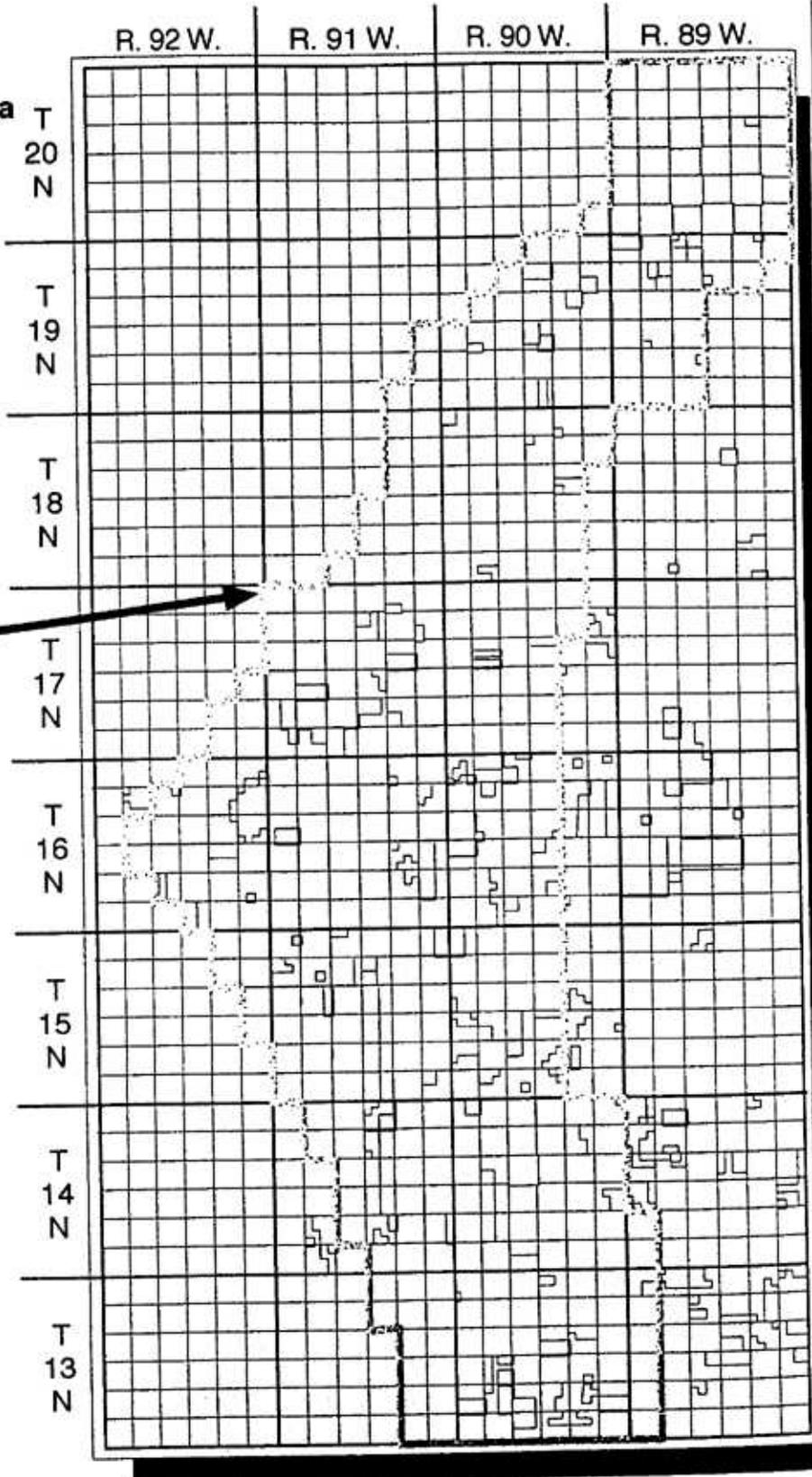
T
15
N

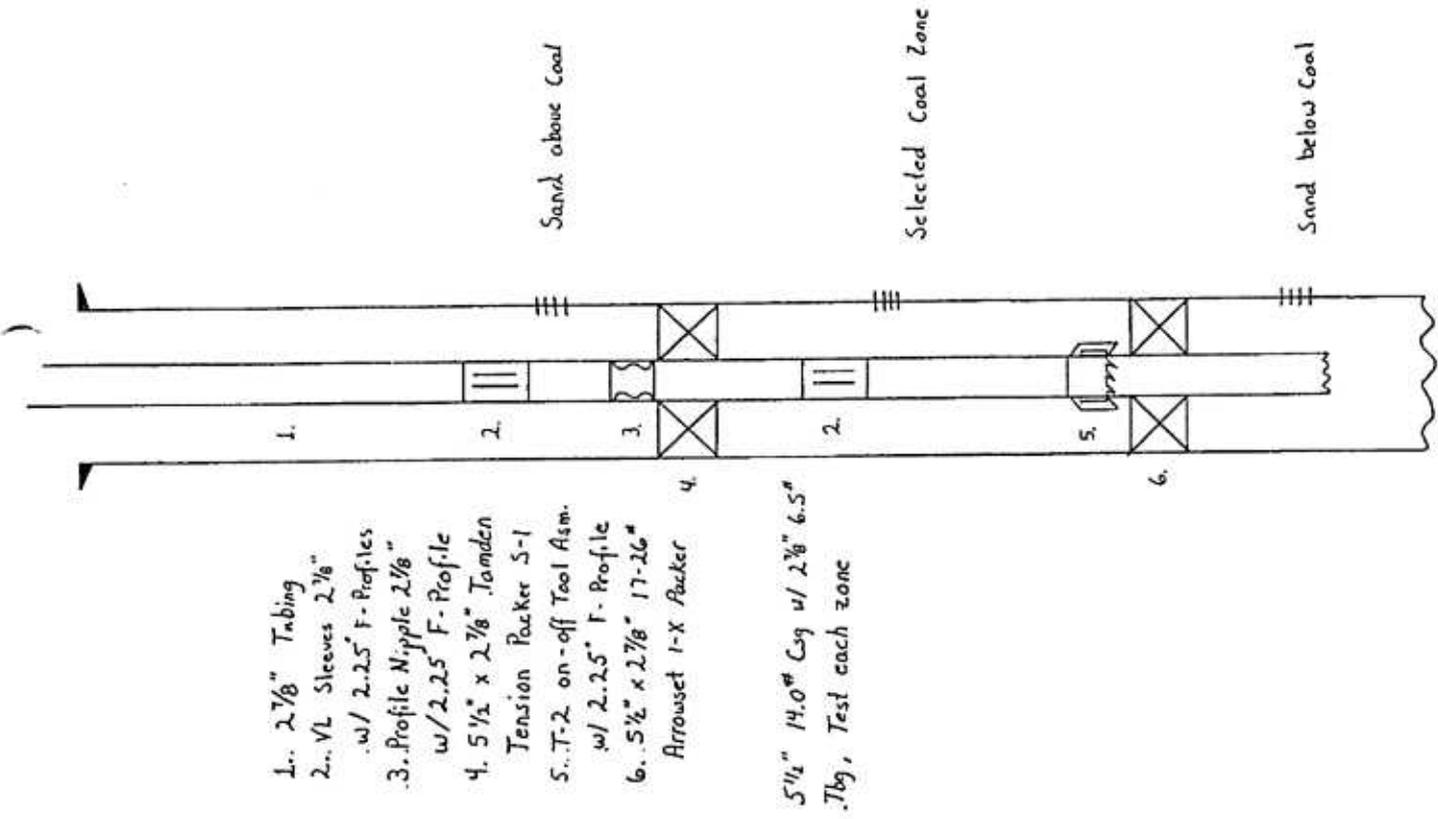
T
14
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T
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Environmental Impact Study area (EIS)

Environmental Impact Study boundary





- 1.. 2 7/8" Tubing
- 2.. VL Sleeves 2 7/8" w/ 2.25" F-Profile
- 3.. Profile Nipple 2 7/8" w/ 2.25" F-Profile
- 4. 5 1/2" x 2 7/8" Tanden Tension Packer S-1
- 5.. T-2 on-off Tool Asm. w/ 2.25" F-Profile
- 6.. 5 1/2" x 2 7/8" 17-26" Arrowset 1-X Packer

5 1/2" 14.0# Csg w/ 2 7/8" 6.5" Tbg, Test each zone

Petroleum Development Corporation - Sun Dog Pod
Monitor Well - Schematic

Weatherford

Completion Systems

FLOW CONTROL

CIRCULATING SLEEVES

The Weatherford Circulating Sleeves are downhole flow control devices mounted in the production tubing. They effectively control the flow between the tubing and the casing annulus by means of an internal sleeve that is opened and closed by standard wireline methods.

CIRCULATING SLEEVES SPECIFICATION GUIDE

TUBING in/mm	"VL"		"VXA"		"VXC"	
	SEAL BORE in/mm	MAX. O.D. in/mm	SEAL BORE in/mm	MAX. O.D. in/mm	SEAL BORE in/mm	MAX. O.D. in/mm
2-3/8 60.33	1.781 45.24	2.810 72.21	N/A	N/A	N/A	N/A
2-3/8 60.33	1.812 46.02	2.810 72.21	N/A	N/A	N/A	N/A
2-3/8 60.33	1.876 47.63	2.910 73.91	1.875 47.63	3.044 78.58	1.875 47.63	3.093 78.50
2-7/8 73.03	2.250 57.15	3.410 86.61	2.310 58.72	3.750 95.25	2.513 63.75	3.750 95.25
2-7/8 73.03	2.313 58.75	3.410 86.61	2.410 61.41	4.500 114.30	2.750 69.85	4.500 114.30
3-1/2 88.90	2.562 65.07	4.250 107.95	N/A	N/A	N/A	N/A
3-1/2 88.90	2.750 69.85	4.250 107.95	N/A	N/A	N/A	N/A
3-1/2 88.90	2.812 71.42	4.750 120.65	2.812 71.42	4.500 114.30	2.812 71.42	4.500 114.30
4-1/2 88.90	2.812 71.42	5.052 128.28	N/A	N/A	N/A	N/A



"VL" Circulating Sleeve



"VXA" Circulating Sleeve



"VXC" Circulating Sleeve

"VL" CIRCULATING SLEEVE

The Weatherford "VL" Circulating Sleeve is a downhole flow control device mounted in the production tubing to provide communication between the tubing and casing annulus.

Features:

- Dependable, simple and quick
- Features a nipple profile above and a packing bore above and below the communication ports
- Ports can be closed without leaving any obstructions in the tubing once the shifting operation is completed
- The Weatherford "D-2" Shifting Tool is used to open (jarring up) or close (jarring down) the sleeve
- All premium threads available

"VXA" CIRCULATING SLEEVE

Features:

- Dependable, simple and quick
- Features a nipple profile above and a packing bore above and below the communication ports
- Ports can be closed without leaving any obstructions in the tubing once the shifting operation is completed
- The Weatherford "B" Shifting Tool is used to open (jarring up) or close (jarring down) the sleeve
- All premium threads available

"VXC" CIRCULATING SLEEVE

Features:

- Dependable, simple and quick
- Features a nipple profile above and a packing bore above and below the communication ports
- Ports can be closed without leaving any obstructions in the tubing once the shifting operation is completed
- The Weatherford "B" Shifting Tool is used to open (jarring down) or close (jarring up) the sleeve
- All premium threads available



Weatherford

Completion Systems

MECHANICAL PRODUCTION PACKERS

S-1 TANDEM TENSION PACKER

The Weatherford S-1 is a tension set, efficient and economical packer.

Applications:

Used for isolating multiple zones. The tandem packer is designed as the upper packer of a tandem string run in conjunction with a tension set packer.

Features:

- Economical
- Shear pinned for safe running
- May be reset
- Simple operation
- Optional set and release features

SETTING PROCEDURE

Initially set the lower packer in tension. Additional tension will shear set screws and pack-off element.

RELEASING PROCEDURE

Slack off applied tension, rotate 1/2 turn to the right at the tool and the packer is now ready for retrieval.

S-1 TANDEM TENSION PACKER SPECIFICATION GUIDE							
CASING				PACKER			BASE PRODUCT NUMBER
O.D. IN/OD	WEIGHT LBS/FT	MIN. I.D. IN/ID	MAX. I.D. IN/ID	MAX. O.D. IN/OD	MIN. I.D. IN/ID	STANDARD THREAD CONNECTIONS	
2-7/8 73.81	0.4 - 8.5	2.375 60.32	2.441 62.00	2.250 57.15	1.125 28.64	1.620 EU STD	437-05
4-1/2 114.00	0.5 - 11.0	3.945 100.37	4.020 102.89	3.750 95.25	1.875 47.63	2-3/8 EU STD	437-06
5 127.00	1.0 - 11.5	4.108 104.36	4.180 106.37	4.125 104.78	2.625 66.67	2-3/8 EU STD	437-07
5-1/2 139.70	1.2 - 11.0	4.778 120.36	5.044 128.17	4.875 124.68	3.000 76.20	2-7/8 EU STD	437-08
7 167.60	1.7 - 29.0	6.104 154.87	6.308 160.37	6.125 155.20	3.750 95.25	2-7/8 EU STD	437-09



S-1 Tandem Tension Packer

TYPE B ANCHOR PACKER

The Weatherford Type B is a compression set, efficient and economical packer.

Applications:

Used for isolating multiple zones. The tandem packer is designed as the upper packer of a tandem string run in conjunction with a compression set packer.

Features:

- Economical
- Shear pinned for safe running
- May be reset
- Simple operation
- Optional set and release features

SETTING PROCEDURE

Initially set the lower packer in compression. Additional compression will shear set screws and pack-off element.

RELEASING PROCEDURE

Straight pull is required.

TYPE B ANCHOR PACKER SPECIFICATION GUIDE							
CASING				PACKER			BASE PRODUCT NUMBER
O.D. IN/OD	WEIGHT LBS/FT	MIN. I.D. IN/ID	MAX. I.D. IN/ID	MAX. O.D. IN/OD	MIN. I.D. IN/ID	STANDARD THREAD CONNECTIONS	
4-1/2 114.00	1.5 - 13.5	3.800 96.52	4.000 101.60	3.750 95.25	1.875 47.63	2-3/4 EU STD	541-45
5 127.00	1.5 - 11.0	4.278 108.67	4.380 111.81	4.125 104.78	2.000 50.80	2-3/8 EU STD	541-51
5-1/2 139.70	13.0 - 20.0	4.778 120.36	5.044 128.17	4.875 124.68	2.000 50.80	2-3/8 EU STD	541-51
7 167.60	1.7 - 29.0	6.104 154.87	6.308 160.37	6.125 155.20	2.625 66.67	2-7/8 EU STD	541-70



Type B Anchor Packer



Weatherford™

Completion Systems

MECHANICAL PRODUCTION PACKERS TYPE T-2 ON-OFF TOOL

The Weatherford Type T-2 is a tubing disconnect device that has an internal lock profile for securing flow control equipment.

The T-2 is designed with two basic components, the overshot which connects to the tubing and the stinger. The overshot is designed with either a right or left-hand J-slot configuration and has a washover shoe which allows cutting through debris.

The overshot is also designed with the seals in the top sub reducing the number of flow wetted parts.

The stinger is the second component. It screws into the packer and is designed with a variety of profiles which allows it to except blanking plugs, standing valves and regulators. The J-slots are located on the seal nipple as well.

Applications:

Designed for production, treating or testing where it is desirable to isolate a lower zone or disconnect the tubing without disturbing the packer.

Features:

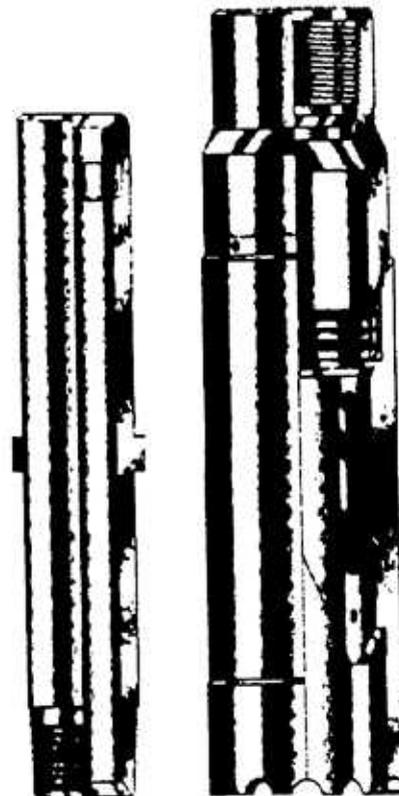
- Standard left-hand release, optional right-hand release available
- Bonded seals allow multiple disconnects
- Can be pinned in a shear-up or shear-down position
- Baker type 'F' and 'R' internal lock profiles are standard
- Otis type available upon request
- Washover shoe allows cutting through debris

TO DISENGAGE THE TUBING

Slackoff the tubing weight and rotate 1/4 turn to the left of the tool and pick-up. (Rotate to the right if the right-hand J-slot configuration is used.)

TO RE-ENGAGE TUBING

Simply lower the tubing and the tool will automatically re-engage.



Stinger

Overshot

TYPE T-2 ON-OFF TOOL 10K SPECIFICATION GUIDE									
CASING O.D. in/mm	TUBING	WASHOVER SHOE in/mm	SEAL NIPPLE AVAILABILITY in/mm					STANDARD THREAD CONNECTIONS	BASE PRODUCT NUMBER
			F AND 'R' PROFILES						
			1.781 45.29	1.812 46.02	1.875 47.63	2.250 57.15	2.312 58.72		
4-1/2 114.30	2-3/8	3.750 95.25	X	X	X			2-3/4 EU 8FD	512-65
5-1/2 139.70	2-3/8	4.500 114.30	X	X	X			2-3/4 EU 8FD	512-65
5-1/2 139.70	2-7/8	4.500 114.30	X	X	X	X		2-7/8 EU 8RD	512-58
7 177.80	2-3/8	3.875 98.73	X	X	X			2-3/4 EU 8RD	512-71
7 177.80	2-7/8	3.875 98.73	X	X	X	X	X	2-7/8 EU 8RD	512-70
7 177.80	3-1/2	3.875 98.73	X	X	X	X	X	3-1/2 EU 8RD	512-70*
7-5/8 193.00	2-7/8	6.375 161.83	X	X	X	X	X	2-7/8 EU 8RD	512-75*
7-5/8 193.00	2-7/8	6.250 158.75	X	X	X	X	X	2-7/8 EU 8RD	512-75*

* Not a 10K.



Weatherford*

Completion Systems

MECHANICAL PRODUCTION PACKERS

ARROWSET I-X

The Weatherford Arrowset I-X is a retrievable production packer, which can be left in tension, compression or neutral and will hold pressure from above or below. A large internal by-pass reduces the swabbing effect during run-in and retrieving. The by-pass closes upon setting the packer. During releasing, the by-pass opens first allowing the pressure to equalize before releasing the upper slips. The Arrowset I-X also features a patented upper slip releasing system that reduces the force required to release the packer. A non-directional slip is released first which makes it easier to release the other slips.

Applications:

Effectively meets several requirements for zone isolation, injection, pumping and production. Full opening gives unrestricted flow and allows the passage of wireline tools and other accessories.

Features:

- Can be left in neutral, compression or tension
- Holds pressure differentials from above or below
- Can be set using tension or compression
- Only 1/4 right rotation to set and release
- Field proven releasing system
- Optional safety release features available upon request
- Versatility of design for most production, stimulation, and injection needs
- Can be run with an On-Off Tool

SETTING PROCEDURE

Run packer to setting depth. Pick-up on the tubing and rotate 1/4 turn to the right at the packer. Lower tubing to engage slips, release right-hand torque while moving tubing downward. Continue to set weight on packer to pack-off elements. After setting weight on packer, pick-up on tubing and pull tension in packer to engage upper slips and complete element pack-off. Repeat setting weight and pulling tension two to three times before landing tubing. Packer may be landed in compression, tension or neutral position.

RELEASING PROCEDURE

The releasing procedures are the same whether the packer has been tension or compression set. Set-down weight on the packer and rotate the tubing 1/4 turn right at the packer, then pick-up holding the right-hand torque. The internal by-pass will open, allowing pressure to equalize. Further pick-up releases the patented releasing sequential slip system, relaxing the elements, allowing the packer to be removed from the well. The packer can be moved and reset without tripping the pipe if the elastomers have not been permanently altered from the well environment.

ARROWSET I-X 10K packers incorporate all the features of the Arrowset I-X, with the ability to withstand pressure from above or below with differential pressures of 10,000 PSI. Available 4-1/2 thru 7-5/8.

ARROWSET I-X HP packers incorporate all the features of the Arrowset I-X, with the ability to withstand pressure from above or below with differential pressures of 7,500 PSI. Available 7-5/8 and 9-5/8.



Arrowset I-X



https://www.state.wy.us: 820

WOLVERINE GAS AND OIL CORPORATION

Energy Exploration in Partnership with the Environment

December 7, 2001

Mr. Marc Strahn
Commissioner
Wyoming Energy Commission
1401 Airport Parkway
Suite 220
Cheyenne, WY 82001

Re: BLM Interim Policy for National Historic Trails

Dear Marc:

Wolverine Gas and Oil Corporation has leased thousands of acres near the four Nationally Designated Trails from the BLM. At the time we purchased the leases we, of course, were aware of the quarter-mile restriction from the trails as contained in the Green River RMP and the lease. Subsequently we have become very concerned with the BLM moving toward a five-mile buffer zone on either side of the trails.

As an operator working in Wyoming and a member of PAW, we have been involved in numerous meetings with the BLM at both the field and State level concerning issues relating to the trails. We believe we are very knowledgeable on trail issues and are disappointed in the Interim Policy for trail management dated October 26, 2001 as drafted by the BLM. The intent of the policy was to provide clear and concise guidelines to field personnel for management of the trails until the implementation of the Wyoming National Historic Trails Management Plan. Unfortunately the policy as written is subjective, confusing, and wrought with pitfalls for an operator trying to develop a lease near the trails. The policy also promotes the potential for mischief at the field office level and does not promote reasonable development of energy.

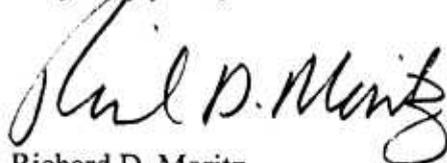
Mr. Marc Strahn
Commissioner
Wyoming Energy Commission
December 7, 2001
Page 2

As you are aware, oil and gas development is of a temporary nature and should not "out of hand" be viewed as detrimental to the trails. Especially when you are over a quarter-of-a-mile from the trails. Energy sources can be developed in proximity to the trails without disturbing the trail "users" experience. I would encourage the BLM to work closely with industry and the Oregon California Trail Association (OCTA) to establish reasonable guidelines for the development of energy near the trails. A policy that balances both the interests of energy development and the interests of credible organizations such as OCTA should be everyone's goal.

All pertinent field offices should be immediately instructed that they are to follow the current Green River RMP and the lease language until an Interim Policy for trail management can be agreed to by the parties. The BLM State Office should also be directed from the National level that they are not the proper authority to be interpreting the intent of Executive Order 13195 and attempting to administer their interpretation through new policy.

Wolverine looks forward to the opportunity of working with the BLM, PAW, OCTA, and others to formulate a fair and credible policy for sound trail management. I am available to discuss this issue further at any time.

Very truly yours,

A handwritten signature in black ink, appearing to read "Richard D. Moritz". The signature is written in a cursive, flowing style with a large initial "R".

Richard D. Moritz

STONE & WOLF, LLC

RE: **BLM Meeting – October 5, 1999**
Rawlins Field Office
Rawlins, Wyoming

During the referenced meeting to discuss coalbed methane development in Carbon County, the following statements were made.

Operators - Stone & Wolf, LLC; Warren Resources/PEDCO; North Finn: "At the last lease sale, we successfully acquired a leasehold position in these four sections (*sections were specifically located on a lease plat for the BLM*). These particular four sections fit in very well with our (*Operators*) lease position in this area and we would like to drill wells on these lands."

Clare Miller with the BLM stated, "You will never drill any wells in those four sections. Those are sensitive lands and I can assure you we will never approve drilling on those sections."

The Operators' response was "We just acquired ten-year leases on these lands at significant expense. We can't believe you're telling us that we can't drill on them."

Clare Miller's response was "The Feds should never have leased those lands."

This attitude and response is absolutely unjustifiable.