

# SEMI-ANNUAL TECHNICAL PROGRESS REPORT

For

REPORTING PERIOD  
BEGINNING MARCH 1, 2006  
ENDING AUGUST 31, 2006

Prepared by Mark A. Carl

Report Submitted September 27, 2006

For

DOE Award No. DE-PS26-04NT15541

*Compilation and Presentation of Existing Data on  
Oil and Gas Leasing Development in a manner useful  
to the NEPA Process*

Report Submitted  
By The  
Interstate Oil and Gas Compact Commission  
P.O. Box 53127  
Oklahoma City, OK 53127-3127

This page left blank intentionally

## **DISCLAIMER**

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights,. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do no necessarily state or reflect those of the United States Government or any agency thereof.

## **ABSTRACT**

The project is titled "Compilation and Presentation of Existing Data on Oil and Gas Leasing and Development in a manner useful to the NEPA Process." The Interstate Oil and Gas Compact Commission (IOGCC), headquartered in Oklahoma City, Oklahoma is the principal investigator and they have partnered with ALL Consulting, Inc., headquartered in Tulsa, Oklahoma in this project. State agencies who have also partnered in the project are the Wyoming Oil and Gas Conservation Commission, the Montana Board of Oil and Gas Conservation and the Alaska Oil and Gas Conservation Commission.

The objective is to develop faster and more comprehensive access to existing oil and gas data to effectively enable land management agencies and operators to make better and faster decisions that supports a legitimate balance between environmental protection and appropriate levels of development. This will be achieved by developing data management tools that provide faster and more comprehensive access to existing data. This will be accomplished by conducting research focused toward improving consistency for decision-makers, defining technically sound analytical methods, detailing real case scenario energy industry parameters, and compile and present nationally assessed data relative to on-shore oil and gas leasing and development, in a manner that is requisite for an efficient NEPA review process.

Data and information from the results of the research will be assembled into a manual with nation-wide applicability. The manual will leverage existing studies, reports and other oil and gas related information to generate a reference list of data sources that will be evaluated and compared to calibrate environmental impact and resource development assessment predictions. An integral part of this research will be conducting a case study on a targeted coal bed natural gas (CBNG) development area in Alaska to validate the manual. The development of this comprehensive

resource manual for source and analysis guidance will allow operators, NEPA specialists, and other federal and state land management agencies to more efficiently develop accurate resource projections, more reliable environmental impact analyses, and provide a common set of sound quantification methods and simple explanations for where, why and how to use them under widely variable political, geographical and environmental settings.

## Table of Contents

DISCLAIMER .....	3
ABSTRACT .....	4
LISTS OF GRAPHICAL MATERIALS .....	6
INTRODUCTION .....	7
EXECUTIVE SUMMARY .....	8
EXPERIMENTAL .....	9
RESULTS AND DISCUSSION .....	10
CONCLUSIONS .....	14
REFERENCES .....	15
BIBLIOGRAPHY .....	17
LISTS OF ACRONYMS AND ABBREVIATIONS .....	18
APPENDICES .....	17

**LISTS OF GRAPHICAL MATERIALS**

**None**

## INTRODUCTION

This is the fourth semi-annual Technical Progress Report for the Department of Energy (DOE) project titled *Compilation and Presentation of Existing Data on Oil and Gas Leasing and Development in a Manner Useful to the NEPA Process* submitted by the Interstate Oil and Gas Compact Commission (IOGCC) under DOE grant number DE-FC26-04NT15541. This report details progress for the months of March, 2006 through August of 2006 completed by the IOGCC and ALL Consulting (ALL) team for the project. This report details the tasks completed, tasks in progress, problems encountered, problems resolved, miscellaneous project activities, and tasks to be conducted over the next quarter.

## **EXECUTIVE SUMMARY**

The Interstate Oil and Gas Compact Commission (IOGCC) and ALL Consulting have been researching methods used to predict development impacts and reasonable foreseeable development scenarios for various conventional and unconventional oil and gas activities on federal lands. To date we have contacted over 50 representatives from the Bureau of Land Management, USDA Forest Service, National Park Service, US Fish and Wildlife Service, various state agencies and several universities. Attached to this report is a list of the individuals that have been contacted to-date from these various federal agencies.

These inquiries, along with independent internet research, have identified over 30 NEPA documents and 11 guidance manuals which address oil and gas development impacts and scenarios. The documents represent some existing DOE studies, BLM Resource Management Plans (RMPs), Environmental Impact Statements (EIS) and Environmental Assessments (EAs). We are currently evaluating these

documents to identify relevant methodologies used to predict oil and gas impacts. However, our initial impression is that there are not any standard analytical methods identified, but rather impacts appear to be based on the experience of the preparers and their feel for the region.

Additional research has involved the Identification of relevant studies of actual oil and gas impact comparisons. We've followed the same approach as described above and made inquiries to the same individuals which has resulted in requests to have studies identified. Only a handful of studies have been identified to date.

#### **EXPERIMENTAL**

There have been no experimental methods used to date in this project.

## **RESULTS AND DISCUSSION**

*Project Status Report: March, 2006 through August, 2006*

*Project Status Report: September, 2006*

*COMPILATION AND PRESENTATION OF EXISTING DATA ON OIL AND GAS LEASING AND DEVELOPMENT IN A MANNER USEFUL TO THE NEPA PROCESS*

This memorandum details progress from March, 2006 through August, 2006 completed by the research team for the

project. The report details, tasks completed, tasks in progress, problems encountered, problems resolved, miscellaneous project activities, and tasks to be conducted over the next quarter.

#### **TASKS COMPLETED**

**Task 1:** Task 1 involved the research of methods used to predict development impacts and reasonable foreseeable development scenarios for various conventional and unconventional oil and gas activities on federal lands. During the task we contacted over 250 representatives from various state and federal agencies as well as industry had been contacted regarding the project.

To maintain consistent inquiries, a questionnaire was developed for these initial conversations. The questionnaires were completed by hand during the phone conversation and kept on file. These inquiries along with independent internet research identified over 30 NEPA documents and 11 guidance manuals which address oil and gas development impacts and scenarios.

The documents represent some existing DOE studies, BLM Resource Management Plans (RMPs), Environmental Impact Statements (EIS) and Environmental Assessments (EAs). The documents were evaluated to identify relevant methodologies used to predict oil and gas impacts. Analysis of these documents showed that there are not standard analysis methods used to predict impacts to most resources, rather impacts are based on the experience of the preparers and their feel for the region. Furthermore, when evaluating the impact predictions most of the documents reviewed do not document how the quantities or quality of the impact has been generated therefore we were left with a daunting task of reverse engineering the impact predictions. Once this was done the methods were evaluated based on their approach, identifying the parameters considered and categorizing them by regional settings. A spreadsheet form was developed to track these various parameters for later comparison.

- **Some of the guidance documents or manuals identify methods that have agency endorsements such as the Interagency (BLM, USFS, EPA, USFWS, NPS) Guidance for RFDs, and therefore these were useful when evaluating actual impacts or development with predicted quantities. The intention was to evaluate these methods for variations, regional influences,**

**significant environmental parameters affecting impacts, and applicability to resource (oil or gas, conventional or non-traditional) development.**

**Task 2:** Task 2 involved the Identification of relevant studies of actual oil and gas impact comparisons. We followed the same approach as described for Task 1 and made inquiries to the same individuals resulting in requests to have studies identified. Only a handful of studies were identified.

Do to the lack of documented studies we increased the emphasis of actual site investigations for known developments to be evaluated by the team member state agencies as described in Task 3. This data was evaluated for parameter influences, regional conditions, environmental settings, type of resource and any other factors which might have led to the current level of impacts. We have relied heavily on the AOGCC, MBOGC, WOGCC and other PAC team members (BLM, USFS, EPA and industry representatives) to guide us to various operations in their states that have both impacts of interest and are known for their exceptional or innovative operations.

**Task 3:** Task 3 involved field verification/field reconnaissance of various oil & gas development sites where federal land access is an issue. To-date, the researchers have conducted visits to approximately 50 sites throughout several Rocky Mountain States, as well as sites in Alaska and Oklahoma. Field reconnaissance has been conducted at both conventional and unconventional production sites and for both oil and natural gas. In addition, researchers have also visited sites not applicable to fluid minerals in an effort to gain a further understanding of applicable federal land access issues (e.g., coal mines). This task is has been completed and includes information and recommendations collected from PAC team members.

#### **TASKS-IN-PROGRESS**

**Task 4 & 6:** Task 4 generally involves the calibration of impact and RFD methods. The research team has conducted analysis using GIS methods for determination of impacted acreage. In addition, the researchers have compiled two case studies for detailed analysis. The first case study is a coal bed natural gas project in the Powder River Basin of Montana where the researchers have worked with BLM and the operator as part of an environmental assessment to evaluate predicted versus actual impacts of a development

project that has been producing for approximately 24 months. Analysis for this effort started in July 2005 (planning) with analysis being completed in late December 2005. In addition, the Swanson River Oil and Gas Field located on the Kenai Peninsula of Alaska near the Cook Inlet was the second case study. The researchers have worked with the AOGCC and operator to evaluate impact analysis methods and to define limitations and regulatory processes that can delay oil and gas development projects on federally protected lands such as National Wildlife Refuges.

Originally, Task 6 was defined for case studies, but the researchers have discovered that combining Tasks 4 and 6 was most efficient and also met the needs of both tasks. Therefore, the analysis done here will be done using a case study oriented approach to get the needed detail for the research.

**Task 5:** Task 5 involves development of a web-based GIS analysis tool. Researchers have initiated conceptual design of the system and discussed options with stakeholders. Technical design of the GIS analysis tool has been initiated and information collected for the Badger Hills case study will be used to further calibrate and validate the tool.

**Task 6:** Task 6 involves case studies and was discussed above in combination with Task 4. However, rather than having a single case study, the researchers have determined that 2-3 detailed case studies will be possible and with two case studies included in the project document that has been developed as discussed in Task 7.

**Task 7:** Task 7 is preparation of a guidance document. This document will be a culmination of ongoing research and an interim document is currently in final review form and includes the analysis that has been completed to date under Tasks 1 and 2 as well as ongoing work for Tasks 3 through 6. The document is based on the outline that was established with the PAC during the IOGCC Jackson Hole Meeting; comments received from PAC members during the IOGCC Billings, MT Meeting and will be available for review prior to the IOGCC meeting in Austin, Texas in October 2006.

### **Problems Encountered**

No problems this period

### **Problems Resolved**

N/A

### **Miscellaneous Project Activities**

Project researchers have determined that the research would benefit from expanding the PAC. Researchers are currently negotiating with the Citizens for Resource Development (a citizens group from Broadus, Montana) and state land offices in Wyoming and Montana. Additional PAC members are being considered.

### **Tasks for Next Quarter**

Work will continue on Tasks 4 through 7, with emphasis on Task 5.

### **CONCLUSIONS**

In reviewing existing documents our initial impression is that there are not any analysis methods identified, rather impacts are based on the experience of the preparers and their feel for the region. Furthermore, when evaluating the impact predictions, it is not well documented how the quantities or quality of the impact has been generated and therefore we are left with a daunting task of reverse engineering the impact predictions.

Only a handful of RMP, EIS and EA studies have been identified to date. Do to the lack of documented studies we will increase the emphasis of actual site investigations for known developments being evaluated by the team members state agencies as described in Task 3. We will rely heavily on the AOGCC, MBOGC, WOGCC and other PAC team members (BLM, USFS, EPA and industry representatives) to guide us to various operations in their states that have both impacts of interest and are known for their exceptional or innovative operations.

#### **REFERENCES**

**List of Supporting Documents for DOE NEPA Study**

1. *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope*, 2003 --National Research Council of the National Academy of Science. (Recommended by Theodore Rockwell, Alaska EPA: "This document is limited to the North Slope and was not specifically designed to compare predictions with actual occurrences but it does lay out a methodology that was employed and discusses effects seen as of 2003 when it was published")
2. *Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way EIS*, U.S. Dept. Of Interior, Bureau of Land Management. (Recommended by Theodore Rockwell, Alaska EPA: "available from BLM Again, this document is limited in scope and does not specifically compare predictions to occurrences but it should provide information associated with that decision to renew authorization.")
3. *NEPA-Study of Effectiveness After 25 Years*, (General NEPA discussion) recommended by David Schmidt, EPA Region 9.
4. National Park Service NEPA Guide (general guide)
5. IPIECA: *A Guide to Social Impact Assessment in the Oil and Gas Industry* (Web search, general guideline for social impact assessment prepared by industry)
6. *Assessing Impacts of Oil and Gas Development on Mule Deer* (Suggested by Wyoming BLM, tried to locate reference used within this study *Evaluation of EIS-level NEPA documents associated with oil and gas development on federal lands in southwest Wyoming*, but haven't been able to).
7. *Modernizing NEPA Implementation* (Web search), report analyzing: "nuts and bolts" of NEPA implementation by focusing on:
  - . Technology and information management and security;
  - . Federal and intergovernmental collaboration; Programmatic analyses and tiering;
  - . Adaptive management and monitoring;
  - . Categorical exclusions; and
  - . Environmental assessments.
8. *Federal Leadership Forum Supplemental NEPA Guidelines for Oil and Gas Activities on Public Lands* (Web search "These guidelines are to set a framework for an early, consistent, and effective process by which affected agencies maximize interaction, and exchange information and opinions on issues, questions or concerns; identify and resolve significant issues;

and/or develop feasible alternatives to the extent practicable." Small, only 13 pages).

9. *Interagency Reference Guide, Reasonable Foreseeable Development Scenarios and Cumulative Effects Analysis for Oil and Gas Activities on Federal Lands in the Greater Rocky mountain Region*, USDA Forest Service suggested, and BLM mandated guidance for RFD development.

The "Gold Book": *Surface Operating Standards for Oil and Gas Exploration and Development* (recommended by many, sent by BLM WY Kemmere

#### **BIBLIOGRAPHY**

None

### LISTS OF ACRONYMS AND ABBREVIATIONS

AOGCC	Alaska Oil and Gas Conservation Commission
BLM	Bureau of Land Management
CBNG	Coal Bed Natural Gas
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
IAP/EIS	Integrated Activity Plan/Environmental Impact Statement
IOGCC	Interstate Oil and Gas Compact Commission
IPIECA	International Petroleum Industry Environmental Conservation Association
MBOGC	Montana Board of Oil and Gas Conservation
NEPA	National Environmental Policy Act
NETL	National Energy Technology Laboratory
NPA	National Park Service
PAC	Project Advisory Committee
RFD	Request for Development
RMP	Resource Management Plan
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WOGCC	Wyoming Oil and Gas Conservation Commission

## **APPENDICES**

None